



THE INTERNATIONAL INSTITUTE OF SPACE LAW

Six Decades of Space Law  
and its Development(s)  
(1960-2020)



2020



**The International Institute of Space Law:  
Six Decades of  
Space Law and its Development(s)  
(1960 - 2020)**

Publication of the  
**International Institute of Space Law**  
**2020**

edited by  
Stephan Hobe



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*International Institute for Space Law*

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## Preface

IISL is celebrating its 60th anniversary at a difficult time. Due to COVID-19, the Institute could not hold its major events during 2020. That is particularly sad because we had planned to celebrate the anniversary with the participation of our members. There is indeed much to celebrate.

In terms of its membership, IISL can be proud that during the past decade, it has been successful in bringing together space lawyers from a number of countries and varying backgrounds, such as academics, government, and industry employees, and those in legal practice. It is noteworthy that we have a growing number of enthusiastic and capable young members.

The Institute has also made itself increasingly relevant to the Space Law community by expanding and improving its flagship events, such as the symposia, conferences, the Manfred Lachs Space Law Moot Court, the publication of the Proceedings of its annual symposia, its website, and the motivating social media presence. The impact of IISL and its work is particularly visible through its contribution as a permanent observer in UNCOPUOS.

The 60th anniversary of the IISL falls at a time of the COVID-19 pandemic. With all the disadvantages that it presents, it also allows us to reflect on the Institute's working methods. We should, of course, do so, with a view to continuing on its path towards expanding its membership and its programs to make it more relevant and impactful to the community it serves.

This anniversary publication will assist in shaping the future of the organization, taking into account its history as well. Therefore, we thank Prof. Stephan Hobe, the editor, his collaborators, and particularly, the contributors to this excellent booklet.

With the speed of innovative developments in the information-driven society that we currently live in, it is to be expected that the changes we experience in the next ten years will be even more significant than those of the past ten years. With IISL's outstanding membership of the experienced and the young, the Institute is in an excellent position to have a greater focus on its mission while being agile at the same time. We, therefore, believe that IISL is well equipped to respond and influence the dramatic developments in the field of outer space while focusing on its core mission of promoting the further development of space law and ensuring the maintenance of the rule of law in outer space.

Nandasiri Jasentuliyana, President 1993-2007

Tanja Masson-Zwaan, President 2007-2016

Kai-Uwe Schrogl, President since 2016

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## Introduction

The International Institute of Space Law celebrates its 60<sup>th</sup> anniversary. The Institute is thus a witness of the development in international space law. The work of the Institute under the current Presidency of Kai-Uwe Schrogl reflects the different phases of international law making as well as the challenges through high technology which is in almost no other field of the law so visible as in space law.

This booklet takes stock of this development. Stephan Hobe, Chair of the IISL Directorate of Studies, was tasked, on behalf of the IISL, with preparing this booklet as a new edition of the 1982 brochure published for the 25<sup>th</sup> anniversary of the Institute.\*

Besides a description of the organizational structure and the many activities of the Institute, its history is reflected through learned articles of its members which appear, with their permission, and for the sake of conciseness in an abbreviated and non-footnoted form.

The overview of 60 years of the IISL starts with a short history of the development of space law by Steven Doyle, who in his publications has been for a long time the “guardian” of the historical development of space law.

Next, a short passage is taken from a brochure edited by IISL President Emerita Isabella Diederiks-Verschoor at the occasion of the 25<sup>th</sup> anniversary of the Institute in 1982. Here, Honorary President Eugène Pépin describes in a very concise way the purpose of the Institute.

In the third section it was considered useful to focus more deeply on the interesting thematic phases during these past sixty years. Rather than describing the development, it was considered more illustrative to present publications from the membership.

During the 60 years since 1958, the substantive backbone of the work of the Institute is the annual Colloquia on the Law of Outer Space which take place at the occasion of the International Astronautical Congress together with the International Astronautical Federation and the International Astronautical Academy. In other words: these colloquia reflect the collective wisdom of the members concerning doctrinal questions of space law.

Therefore it was considered worthwhile to assemble from the hundreds of papers during these 60 years, which were impossible to be re-printed in this short booklet, some that characterize a reflection of problems of overarching interest for an entire decade – so that one could reduce the problem of finding only six papers.

- **1960 – 1970** – The series starts with the ten early years – the finding out of “What is Space Law”, in a characteristic publication of Michael Smirnoff, the first President of the Institute. Questions of the area of application of the prohibition of the gaining of property in outer space and on the celestial bodies and the possible alternatives to air law were at the forefront of legal debate at that time well ahead of the Outer Space Treaty of 1967.
- **1970 – 1980** - The second decade is then characterized by the discussion on the emerging *lex lata* for human space activities, presented by a “grand seigneur” of space law making, Bin Cheng from the University College London. His historical account is taken

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\* The brochure is available on the IISL homepage: [https://www.iislweb.org/docs/IISL\\_History.pdf](https://www.iislweb.org/docs/IISL_History.pdf).



from a speech at the occasion of the 30<sup>th</sup> anniversary of the Institute at an Institute's Colloquium in Turin and is a masterpiece of critical reflection of the contemporary issues of the 1970s.

- **1980 – 1990** - The third decade from 1980 – 1990 was heavily characterized by the quest of the so-called developing world for a fair share of the world economy. Their demand for a “New International Economic Order” had important repercussions on the formation of space law, in particular through the formulation of the concept of “Common Heritage of Mankind” in Article 11 of the Moon Agreement. Aldo Armando Cocca from Argentina who claims proprietorship of the principle eloquently describes all these claims and the influx of the ideas of what he calls considerations of equity on international space law.
- **1990 – 2000** - Ambassador and Minister Peter Jankowitsch from Austria, longstanding chair of the United Nations Committee on the Peaceful Uses of Outer Space, in his significant contribution gives account of another important turning point for space law: while the first 30 years are characterized by the old East – West confrontation, notably in Outer Space, the end of the Cold War brought a completely new international scenario in which space law had to find its place. “Space Law after the End of the Cold War” is therefore a brilliant summary of all those events that gave rise to new junctures of space law.
- **2000 – 2010** - The first decade of the new millennium is characterized by Stephan Hobe's piece that tries to “take stock of the development of space law after half a century”. Space Law had lost its innocence, its childhood, and had matured. There were no more illusions on what was possible and what was not, and there was, such the bottom line of this contribution, a growing refuge to what some call “soft law”, in other words to non-binding UNGA resolutions instead of hard binding space law, a development that the author deeply regrets.
- **2010 – 2020** – Finally, Larry Martinez opens the door into a new cyber world which also is significant for yet another juncture of the Institute – its opening for cyber activities as far as they affect space law. The piece of Larry Martinez explains in an insightful way the technological advancement and the legal consequences of the new cyber world.

Thus, in sum, a giant step has been made within these 60 years: from insecure first steps into the space arena to challenges of the space arena though developments in cyber space: a step of 60 years for the Institute and a giant step for mankind!

The reader will find details on the mission and structure of the Institute and on its committees and on its numerous activities. Moreover, the book includes information on the publications produced by the Institute and its members as well as an overview of the awards granted by the Institute. The relevance of the Manfred Lachs Space Law Moot Court Competition is also illustrated by an overview of its history and an example of a moot court case.

In the Annexes to this publication the reader can find the Statutes and By-Laws of the Institute.

Thanks are owed to Ms Rada Popova and Mr Niklas Kaupert (Institute of Air Law, Space Law and Cyber Law, University of Cologne) for their work in preparing this publication and also to Ms Scarlet Wagner (DLR/IISL) for her constructive ideas in sketching the structure of the book.

Gratitude is owed to the many volunteers who have, over the years, provided core input to the IISL activities and to all IISL members for their support and engagement in the Institute's work.

It goes without saying that the Institute is indebted to all its sponsors and partners for the fruitful collaborations throughout the years.

Happy reading!

Stephan Hobe

## I. History of Space Law

### *A Concise History of Space Law: 1910-1957*

*Stephen E. Doyle<sup>†</sup>*



*S.E. Doyle*

The history of space law is broadly internationally based. First mentioned in a journal article in Paris, in 1910, space law was an amorphous idea without shape or substance for more than two decades. In 1932 the first comprehensive monograph appeared, presenting important, fundamental concepts. Brief commentaries appeared in the 1930s and 1940s. The first doctoral dissertation dealing with space law appeared in 1953. By 1954 expanding international exchanges were occurring among jurists and commentators who were concerned about the needs for clarification and definitions of law for anticipated human activity in outer space.

When Sputnik-1 was launched on October 4, 1957, earlier proposed concepts were no longer abstract or academic ideas. Nations had begun placing functioning objects in space beyond the atmosphere, and concepts began to be considered for inclusion in a new body of relevant law to regulate the activities of humankind in space. Following the launch of the first Sputnik the world community began to address possible principles, requirements, and contemplated prohibitions as law.

Development of space law during the 20<sup>th</sup> century evolved in four interrelated phases: (1) the development of concepts of space law before Sputnik: from 1910 to 1957; (2) the clarification and adoption of basic applicable laws: from 1957 to 1966; (3) the expanding uses of space and national and international laws and regulations to manage such uses, which has been a process continuing since the late 1950s; and (4) the regulation of human activities beyond the atmosphere, including eventually development of law to manage settlements and societies existing off the Earth. Regulation of such activities in space has only recently been seriously addressed.

This paper highlights some contributions in each phase. Space law has enjoyed contributions of numerous juris consults, pragmatists and innovators. The “law” that has emerged is mercurial, hard and soft, national and international, accepted and debated. As Judge Vladlen Vereshchetin described the situation during the 52<sup>nd</sup> IISL Colloquium in Korea in 2009:

*“Postmodernist legal theory and legal philosophy are awash with different concepts vis-à-vis the nature of law and its definitions. The same is true of the related categories of legal norms, legal relations and so forth. For some scholars, law encompasses every normative order, irrespective of its recognition as law*

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<sup>†</sup> Honorary Director, International Institute of Space Law. Employed in US Federal Civil Service 1966-1981; aerospace industrial management 1981-1996; power industry entrepreneur 1996-2011; a retired member of the Bars of the District of Columbia and of the Supreme Court of the United States; more detail at [www.stephenedoyle.com](http://www.stephenedoyle.com).

*by States and whether or not it is binding and enforceable. For others the very notion of a legal norm is untenable. They conceive law as a permanent process of decision-making.”*

In this paper, space law is considered the cumulative body of national and international legislation, regulations, treaties, agreements, and conventions, created to enable, manage, and regulate world-wide, regional, and national commercial, civil governmental, and national or regional defense activities in or related to outer space.

### ***Pre-Sputnik Space Law Concepts***

During the first half of the 20<sup>th</sup> century there were only a handful of papers and one significant monograph proposing concepts of space law. The first paper in 1910 was by a Belgian lawyer, Emile Laude. Laude not only believed a new law would govern new juridical relations, he also wrote: “The problem of the ownership and the use of Hertzian [radio] waves will be posed one day.” Laude concluded his brief discourse concerning “practical questions” with a declaration that “The term Law of Space will thus be the generic term”.

The second paper appeared in the USSR in 1926. V. A. Zarzar, a senior official of the Soviet Aviation Ministry, presented a paper at an air law conference held in Moscow. In the final portion of his paper, Zarzar states his primary theme: “Questions of international public air law, thus, are solved by conventions in accordance with the principle of complete sovereignty of nations over their airspace.” The definitional question which Zarzar explicitly raised was not discussed: “We will not attempt to define the altitude at which the international zone begins”. This issue was to become a central focus for later commentators.

Once it was understood that the airspace and outer space were legally and physically separable operational environments, it was clear that legal regimes to apply to these two areas should be substantially different. Laude (1910) and Zarzar (1926) recognized the basic altitude and operational differences between air and space flights and declared the need for separate legal regimes to regulate use of airspace and outer space.

In 1931-32, a prescient and perspicacious Czechoslovakian lawyer, writer, inventor and engineering professor assembled an impressive survey of the emerging problems of space law. Vladimir Mandl followed developments of rocketry in Germany and in other countries, and saw the legal problems emerging long before they were noted by other jurists. Mandl’s monograph on space law, the world’s first, was published in German in Leipzig, but its author was a German-speaking Czechoslovakian lawyer, in Pilsen. Mandl’s 1932 monograph, containing the world’s first comprehensive survey of space law, is being elaborated in a separate paper of this Colloquium by Vladimir Kopal [“The Life and Work of Professor Vladimir Mandl – A Pioneer of Space Law”, IISL Colloquium 2010].

In Leningrad, USSR in 1933, at a conference dealing with air law, the Soviet legal scholar, Y. A. Korovin, presented a paper addressing human penetration of the stratosphere using hot air balloons, and related legal problems. His paper, entitled “Conquest of the Stratosphere and International Law,” was subsequently translated and published in a French public international law journal. Korovin’s article cited all the potentially harmful aspects of over flights, including: optical and infra-red reconnaissance, aerial bombing, contraband delivery, and other potential injury to subjacent population and property by over-flying aircraft. Having

clearly established the unquestionable acceptance and universal applicability of the principle of sovereignty in navigable superjacent airspace, Korovin believed that the altitude or speed of an overflight could not change its legal status.

Thus, prior to 1939, there was an established consensus that sovereignty must prevail with regard to overflights in the airspace. But Laude (1910), Zarzar (1926), and Mandl (1932) conceptually asserted that above the airspace, in what was earlier termed “the ether”, the physical nature of flight (speeds and altitudes) would be so totally different from comparable aspects of aeronautical flight, that flights in “the ether” would be practically beyond the control of subjacent States. Thus, flight in “the layer of unbreathable gas” or “beyond the airspace” would be and should be free of and unrestrained by considerations of sovereignty over the airspace. The notable dissenter was the Soviet scholar Korovin (1934), who believed that altitude and speed notwithstanding, over flights of national territory at any speed or altitude could involve threats to safety and security of States, and States have a right to defend and protect their national integrity by any appropriate means available to them, “from the seizure of the crew...to reprisals of all kinds”.

One aspect of overflight not dealt with by writers until the mid-1950s was the question of “peaceful use” of outer space, and whether or not a concept of State sovereignty would involve denial of overflight for peaceful or scientific purposes. Was there to be a concept of “innocent passage” at extreme altitudes that would parallel the maritime concept of “innocent passage” of a ship transiting through national territorial waters?

A shroud of secrecy fell over most rocket technology development in Europe and the USSR during the 1930s as military officials of governments began to realize the potential contributions to national military efforts offered by liquid and solid fueled rocketry. In the USSR applications of rocketry were being demonstrated to assist aircraft take-off and for tactical ground-to-ground barrage rocketry, and, in Germany, programs were under development for advanced rockets that could extend the historical range of artillery by carrying warheads to targets at distances of hundreds to thousands of kilometers from the launch site. By 1939, the world stage was well set for the military development and applications of rocketry which occurred during the Second World War.

Two papers appeared in the 1940s. The first apparent writing in the English language dealing with state sovereignty at extreme altitudes is in a paper presented to the British Interplanetary Society in London on October 5, 1946. “The Challenge of the Spaceship”, subtitled “Astronautics and Its Impact upon Human Society”, was written and presented by Arthur C. Clarke. The paper contains an assessment of the impact upon society of emerging space flight, and explains that there must be an upper limit to national sovereignty because otherwise “in the course of a day, [on a rotating globe] every country will lay claim to a large portion of the Universe!”.

Another significant early concept appeared on August 28, 1948. The US Department of State released a brief announcement that stirred no attention among students of astronautics. Entitled “Discussions Asked on Territorial Problem of Antarctica,” the release read:

*The Department of State has approached the Governments of Argentina, Australia, Chile, France, New Zealand, Norway, and the United Kingdom informally with a suggestion that a solution for the territorial problem of Antarctica be discussed.*

*It is the viewpoint of the Department of State that the solution should be such as to promote scientific investigation and research in the area. The Department of State has suggested that this can perhaps be done most effectively and the problem of conflicting claims at the same time solved through agreement upon some form of internationalization. The Department of State expects that the question is one which will require an extended exchange of views, consideration of suggestions, and probably reconciliation of varying viewpoints. Until such exchange of views and necessary further study is completed, it is not believed that any useful purpose could be accomplished by a conference on the subject, and no such conference is contemplated at present.*

The suggestion to consider a form of internationalization as a means of promoting scientific investigation and research in the Antarctic area would become an important concept in the formation of a later, largely unprecedented international arrangement.

The first US legal commentary on space law appeared at the US Naval War College in Newport, Rhode Island, in December 1948. Distinguished air law expert, John Cobb Cooper, presented an invited lecture on the topic of “International Air Law”. At the end of his lecture Cooper added a short section headed “Future Use of Guided Missiles above the Airspace”. With the statement of a hypothetical case reminiscent of a case given by Arthur C. Clarke about 26 months earlier in London, Cooper presented a problem to the Naval War College and requested assistance of the officers on duty there. He postulated the supposition that countries A and C, whose land territories did not touch at any point, were at war. A neutral country B occupied the surface territory between A and C. If country A started bombarding country C with guided missiles passing through flight-space over country B at an altitude considered beyond the airspace and at a height where country B would find it impossible to intercept such guided missiles or otherwise prevent their passage over its territory, Cooper asked: “Had the neutral rights of country B been affected?”.

Cooper said his scientific friends were convinced that rockets or other guided missiles may be propelled from the Earth to the Moon within a comparatively few years, and the problem presents curious political and geographic difficulties.

Cooper put the “upper limit” issue before a class of officers of the United States Navy. There is no record of any response from his audience. Less than 26 months after raising the issue at Newport, Cooper had developed a tentative, conceptual solution to the problem. He wrote that it was important and urgent to reach international agreement on the upward limit of national sovereignty before repeated rocket flight operations were begun into areas beyond airspace. Cooper’s first detailed analysis of the airspace definitional question was presented in Mexico City in 1951 and became a standard reference.

In May 1949, a British engineer published a letter which contained an opinion encapsulated in a small phrase that would become a central focus of controversy in space law during the ensuing 50 years. The letter, written in defense of the Moon, declared in a chastisement of the US Government that “the Moon is not their property... it is the common heritage of man”. Additionally, in a French pamphlet published in 1949, being an introductory survey of the emerging field of “astronautics”, Lionel Laming observed that “the conquest of space may mean that all the solar system, and not only the Earth, deserves to be considered as the heritage of mankind”. Concepts of space law were emerging in different countries, some in parallel,

some reinforcing others; but until 1950 national astronomical programs and legal thinking were generally confined in separate language channels. There were a few efforts at cross communication and no institutions worked on a sustained basis to span the frontiers or linguistic boundaries of national astronomical programs.

In Germany in 1950, a distinguished and renowned air law scholar arrived at the University of Cologne to accept appointment to the Law Faculty. Prof. Dr. Alex Meyer's lectures on Public Law and Air Law became a formal part of the University's published curriculum in 1951. "In 1952 the work of the Research Department of Air Law found a new medium through editing a journal of its own, the quarterly *Zeitschrift für Luftrecht* (Journal of Air Law)". From this strategic position, Alex Meyer was to become more widely and internationally recognized as one of the learned students of space law addressing the emerging issues. Prof. Meyer became one of the major early commentators on emerging concepts of space law.

In Montreal, P. Q., Canada, another academic institution welcomed a new educator, Prof. John Cobb Cooper. McGill University is co-located in Montreal, Canada, with the headquarters of the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA). Along with these seats of world governmental and industrial cooperation in civil aviation, with the assistance of the Ford Foundation, McGill University established in 1951 an Institute of Air Law, which in 1957 was expanded and renamed the Institute of Air and Space Law. Cooper was the initial Director of this first institute in North America dedicated to the study of international air law, and from 1957 forward to the study of air and space law. In parallel with McGill, in 1951 Prof. Nicholas Mateesco Matte established a francophone course of study in international air law at the University of Montreal. Similarly, in 1957, Mateesco's course was expanded to include air and space law. In response to the post war explosion in international civil aviation, as well as later emergence of astronomical use of rocketry, a slowly forming cadre and infrastructure for training of specialists in aviation, and then space law, was being built during the 1950s at Cologne and Montreal.

During the 1950s the flood gates were opened, and space law articles and papers began to appear with increasing frequency. Significant comments on space law were published by the Deputy Director of the General Legal Division of the United Nations, Oscar Schachter, in "Legal Aspects of Space Travel". published in the Journal of the British Interplanetary Society (JBIS). Like other English language space law commentators of the early 1950s, Schachter limited his commentary and reactions to other English language writers. International forums, such as the International Astronautical Federation, only began to appear in the early 1950s; consequently there were still relatively few inter lingual exchanges of views among the early pundits on space law.

Concerning early Soviet interest and participation in the International Astronautical Federation (IAF), Robert Crane reported that, in response to invitations to attend the early astronomical congresses, scientists from the USSR sent only brief notes of regret. Some informal correspondence was maintained with select Soviet scientists, but the USSR did not move to join the IAF until after the formal announcement in July 1955 of the planned Soviet satellite program for the 1957-58 International Geophysical Year. With proposals from several of its constituent organizations, the Executive Committee of the International Council of Scientific Unions (ICSU), decided in 1951 to establish the Comité Spécial de l'Année Géophysique Internationale (CSAGI) to begin planning for a comprehensive international cooperation to study

the Earth. Eventually known as the International Geophysical Year of 1957-58, this program stimulated the first launches of man-made vehicles used to study outer space.

An unnoticed but important diplomatic event established a significant precedent in international law on July 21, 1950, when the US and the UK signed an agreement that took immediate effect, permitting the extension of the US Missile Test Range southeastward from Cape Canaveral, Florida through the airspace of the Bahama Islands. This appears to have been the first international agreement to permit test and later operational uses of rockets passing through the superjacent airspace of a non-launching government. This agreement led to the US construction of downrange stations on islands such as Grand Bahama, Grand Turk, Antigua and Ascension. Future downrange stations eventually were added at sites as far distant as Pretoria, South Africa.

The IAF has an important place in the history of space law. The Federation created the first major international forum for the early, regular exchange of views among interested pundits about the development of space law. Although the early congresses of the IAF concentrated for the most part on technical papers on engineering aspects of astronautics, almost from the outset, interested lawyers presented papers.

The Third International Astronautical Congress (IAC) convened in Stuttgart, Germany on September 1, 1952. A legally significant paper presented at that Congress received little notice at the time. Prof. Dr. Alex Meyer, the Director of the Air Law Institute at Cologne, delivered the paper. Meyer's first published paper on space law, entitled "Space Law", was a short set of prefatory remarks combined with a brief bibliography, prepared to introduce the topic of space law to the readership of the new legal journal being established in Germany to deal with air law. "Space Law" appeared in the first volume of the University of Cologne's *Journal of Air Law* Meyer's first discursive paper on space law, "Legal Problems of Flight into the Outer Space", was presented at the Third IAC in Stuttgart.

Meyer's work was an influential statement dealing with several issues that were receiving increasing attention, including the upper limit of national sovereignty and the possibility of the use of space for military purposes. Meyer's address was reproduced later in a 1961 US Congressional symposium of papers about space law. The paper was presented to an international audience of experts from astronautically active countries. It drew on sources in English, French and German language publications, and it demonstrated that the thinking of many commentators in several countries should be taken into account in developing legal positions on spaceflight. A comparison of Meyer's 1952 paper with Mandl's 1932 monograph shows substantial agreement by Meyer with Mandl's thoughts in many subject areas, except Meyer's insistence that outer space should not be allowed to become a theater of military operations. The paper by Meyer became a model and stimulant for other commentators. It was distributed during the 1952 IAC and it was repeated later or described in other sources in several languages. Thereafter, more inter-language citations began appearing in legal commentary on space law.

In 1953 the world's first known doctoral dissertation on legal aspects of space flight was submitted to and approved by the Faculty of Law and Political Science of the Georg-August University in Göttingen, Germany by Welf Heinrich Prince of Hanover. Entitled *Air Law and Space*, the dissertation offered a thesis that "the entire area beyond the atmosphere would have to be considered free territory both on technical grounds founded on the law of nature and for reasons of legal construction and policy". Heinrich paid attention to and cited



both Mandl's 1932 monograph and recent works by Alex Meyer. Drawing on analogies from both air and maritime law, and acknowledging that analogies are imperfect, Heinrich asserted that elements in the existing law could be useful to regulate space flight. Heinrich's work was little known outside Germany until later in the 1950s when it became known to the American lawyer, Andrew G. Haley. Haley was so impressed with the scope and content of Heinrich's dissertation that he arranged a tour across the United States in November 1957, in the wake of Sputnik 1, during which Haley and Heinrich spoke about space law at four major universities, seventeen law schools, and fifteen social or specialist groups ranging from chambers of commerce to bar associations and section meetings of the American Rocket Society. Following the US tour, the two men toured Europe together continuing speaking at universities and other professional forums. As a result of these tours, Heinrich's dissertation eventually became more broadly known and read. Like Meyer's work it contained a broad base of well researched and documented commentary and opinion. Heinrich cited and discussed the earlier works of Fauchille, Mérignac, Meyer, among numerous other early air law pundits; and Mandl, Cooper, Schachter and Meyer on aspects of space law. Heinrich did extensive research in German and French periodicals and current newspapers, and extended the prior analyses of both air law and space law aspects of sovereignty in airspace, discussing implications at various altitudes.

Another article published in Europe during 1953 presented views generally parallel to those of Welf Heinrich. Publishing in Paris in a French periodical, Joseph Kroell wrote about some practical problems of international public law in space. Kroell consolidated earlier commentary into a list of "principles" on which the international community, in some appropriate forum, could begin to take definitive action in order to create a relevant body of law. Although the UN was being increasingly mentioned, there was no consensus on how to, or in what forum to involve the UN in development of space law.

During the 1950s, it was clear to informed observers that significant needs would arise for radio frequency management and the international allocation of sufficient radio frequencies to meet the communications, tracking, and telemetry requirements of capabilities in astronautics. Several works explain and describe radio frequency's criticality to the processes of space flight, and the characteristic nature of satellite and other uses of radio frequency in support of space flight operations. In April 1954, Commissioner George Sterling, US Federal Communications Commission, presented his views to the American Rocket Society National Capital Section on needs for regulation of satellite uses of radio frequency. This early, authoritative statement evidenced some US Government concern about the need for rules and regulations for emerging astronautical radio frequency requirements. Sterling's short paper did not propose solutions so much as it called attention to emerging issues that would require national and international attention of regulators. The global nature and impacts of radio frequency uses in astronautics are repeatedly manifest in the paper. Commissioner Sterling's concern was not widely shared by his colleagues, nor was there any major effort made by the United States to address these emerging issues in the international forums concerned with astronautical radio frequencies. The issues of appropriate US national and international action for radio frequency regulation were to become a central theme in the writings of Andrew G. Haley later in the decade. In April 1954, Sterling's was the earliest call by a senior government official for attention to the political and technical complexities and legal implications of international and national astronautical uses of radio frequency. This need had been pointed out far earlier by Laude (1910) and Zarzar (1925). By 1954 astronautical radios were being designed into launch

vehicles and proposed Earth satellites. The use of radio telemetry and control was required for spaceflight.

In March 1955, the US National Committee for the International Geophysical Year (IGY), established by the National Academy of Sciences in February 1953, issued a feasibility study endorsing the idea of a US Earth satellite project in a report to the US National Academy of Sciences and the National Science Foundation. This endorsement was followed by a detailed Earth satellite program developed by the National Committee for the IGY.

During the early 1950s organizational activity and publications on space law appeared also in Latin America. Two prominent persons in the region were Professors Teofilo Tabanera and Aldo Armando Cocca of Argentina. In Europe two lawyers compiled extensive articles on the emerging issues of space law. British barrister Cyril Horsford wrote an inquiring exposition of many emerging issues, and C. Wilfred Jenks produced a survey of the emerging issues. Once the US and the USSR publicly announced their intentions to launch satellites as part of their IGY programs, the multiplication of articles on concepts and aspects of space law increased exponentially. The US Government, on July 29, 1955, and the Soviet Government, on July 30, 1955, formally announced independent intentions to launch Earth satellites as part of their respective research programs in the IGY.

At the annual meeting of the American Society of International Law in April 1956 an evening symposium was held on the topic "International Air Law." In fact, it was a significant international roundtable on space law. A strong international panel with wide audience participation discussed many space issues. The annual International Astronautical Congresses held during the 1950s also had increasing participation by lawyers addressing space law issues.

### ***Lawyers Spoke Early at International Astronautical Congresses***

<b>Congress Location</b>	<b>Year</b>	<b>Speaker</b>
Stuttgart	1952	A. Meyer
Innsbruck	1954	A. A. Cocca
Rome	1956	Pépin, Cocca, Haley, <i>et al.</i>
Barcelona	1957	Pépin, Haley, Cooper, <i>et al.</i>
The Hague	1958	1 <sup>st</sup> Colloquium <sup>‡</sup>

A particular session, held in Rome in 1956, became quite historically significant. At that session, the American lawyer Andrew Haley was highly distressed by the apparent lack of availability of earlier papers and communication among interested lawyers discussing concepts of space law. Haley was later elected President of the IAF, and in that role, he played a major part in the stimulation and creation of the International Institute of Space Law.

A Japanese article appeared in May 1956 dealing in part with space law. This was among the earliest of the Japanese commentaries. Similarly, on the eve of the first space flight in 1957, two interesting papers appeared discussing the potential relevance and value of maritime analogies for development of space law. In 1955, works on astronautics in the Soviet literature began appearing. And in 1956 Soviet and East European writings on space law emerged and multiplied rapidly.

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<sup>‡</sup> Annual colloquia followed thereafter.

## II. History of the Institute

### *History of the International Institute of Space Law of the International Astronautical Federation (1958-1982)\**

*Eugène Pépin<sup>†</sup>*

*Honorary President International Institute of Space Law*

#### ***International Astronautical Federation and Legal Problems***



*E. Pépin*

Until 1958 the International Astronautical Federation did not include any studies on legal space problems. Certainly, the International Congresses on Astronautics, which have been meeting every year since 1950, have occasionally heard legal communications: in Stuttgart in 1952 by Dr. Meyer; in Innsbruck in 1954 by Dr. Cocca; in Rome in 1956 by Dr. Cocca and Dr. Pépin; and in Barcelona by Dr. Haley and Dr. Pépin.

It is actually in Barcelona, on October 8, 1957, namely four days after the first artificial satellite was placed into orbit that the Eighth International Congress on Astronautics established a special Committee in charge of “defining the respective areas of jurisdiction for air and space law”. After an exchange of views among its members, this Committee proposed to the Federation the inclusion in its program for the Ninth Congress, an international meeting of jurist experts in space law.

At this First Colloquium, which was held at The Hague in 1958, with 44 participants from ten countries, Andrew Haley, President, explained the legal problems that would undoubtedly be raised by the exploration and use of outer space and, consequently the necessity of providing the Federation with a committee to study these problems. On a motion by Dr. Eugène Pépin, and with the assent of a small drafting group, the following resolution was prepared:

*“The legal problems resulting from the development of Astronautics will be solved by a new International Convention;*

*“Within the framework of the Federation a Permanent Legal Committee will be set up, which will be open to jurists of various associations or groups affiliated with the Federation and whose members will have to study all problems concerning space law to be included in the above mentioned Convention;*

*“The present Resolution will be communicated to the Secretary General of the United Nations, who will be assured of the Federation’s desire to co-operate with*

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\* Published in: E. Pépin, *History of the International Institute of Space Law of the International Astronautical Federation (1958-1982)*, New York 1982, pp. 1-4.

<sup>†</sup> Professor Eugène Pépin (France, 1887 - 1988) despite being strongly involved in aviation law, is one of the pioneers of space law who took part in its development. He was President of the IISL from 1963 to 1973.

*any initiative that the United Nations Organization will take in the area of Astro-nautics.”*

This Resolution, unanimously approved by the members of the Colloquium, was formally adopted on October 29, 1958, by the Ninth Congress of the International Astronautical Federation.

Andrew Hailey was requested to invite all interested jurists in the entire world to participate in this permanent legal committee. By April 1959 a membership list was formulated and a Second Colloquium or session of the Permanent Committee was included in the program of the Tenth International Congress on Astronautics.

This Second Colloquium met in London on September 4, 1959 under the chairmanship of Christopher Shawcross and heard various communications. Upon motion by J. J. Hanrahan and Kenneth A. Finch, the following resolution was adopted:

*“The Permanent Legal Committee, now in existence, is replaced by an International Institute of Space Law, and an ad-hoc Organizing Committee, including 5 persons and a secretary, is authorized to prepare the By-Laws for the organization and management of this Institute, in accordance with the Constitution of the Federation and submitted to the approval of the Federation’s Council at a later meeting.”*

The following addition was proposed by E. Pépin in order to speed up the work of the future Institute:

*“The General Counsel of the Federation (Andrew Hailey) is authorized to establish immediately such necessary task forces to study legal space problems which are now subject to regulations, e.g., the allocation of radio frequencies for outer space, presently under study by the International Telecommunication Union (ITU).”*

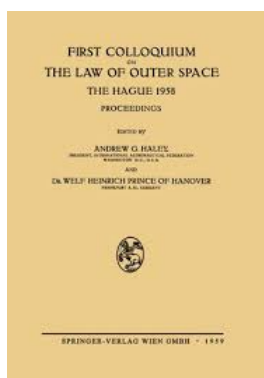
Several task forces were then set up and exchanges of views started among their members. On its part, the Organization Committee (President, Christopher Shawcross; A. Haley, Secretary: M. Smirnoff, F. Gerlach, R. Hombourg and J.C. Cooper), which met in Paris on May 24, 1960, established a set of By-Laws for the future Institute, a project which was finally adopted by the Bureau of the Federation at its Eleventh International Congress on Astronautics held in Stockholm in August 1960.

### III. The Institute's Development as Reflected by Publications of its Members

#### 1. 1960–1970: *What is Space Law?*

#### *The Need for a New System of Norms for Space Law and the Danger of Conflict with the Terms of the Chicago Convention* \*

*Michael Smirnoff*<sup>†</sup>



In view of everything which has been said and written about space law in the United States, Canada, Europe and in other parts of the world, some points are now quite clear and, in theory, there is almost unanimous accord on the essential elements of the law of space. These basic principles are as follows:

(1) It is commonly agreed that the system created by the Chicago Convention is not adequate to solve the problems of law presented by the advent of space flight. For many reasons, the terms of the Chicago Convention, which repeat the principles of the Paris Convention of 1919 concerning the sovereignty of States over the airspace above their territory, cannot be applied to conditions in outer space.

First of all, there are many formal and technical reasons and arguments why the Chicago system cannot be applied to outer space. In Article 1 of the Chicago Convention, we find the concept of the “complete and exclusive sovereignty” of the State “over the airspace above its territory”. Article 3 states that the Convention applies to civil aircraft and the definition of the term “aircraft” is the same as that contained in Annex A of the Paris Convention of 1919; that is, “all machines which can derive support in the atmosphere from reaction of the air”. Both the word aircraft and its definition are hardly applicable to conditions in space since in space there is no air or atmosphere.

Apart from these purely formal arguments there are very important technical facts which prevent the application of the principle of State sovereignty to outer space. The sovereignty of the State has two main characteristics. One is the fact that sovereignty must be real in the sense that it can be defended by the State which claims it. The other characteristic is that, if the claim is to be based on a fact, one must know exactly where this fact occurred. Neither of these characteristics can be found in outer space. First of all, in view of the present technological development, no State can defend its right of sovereignty at an altitude of 2,000 miles, for example. Furthermore, it is impossible to so locate an occurrence 2,000 miles in space that one could say that it took place in the sovereign regions of Belgium or of neighbouring Holland.

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\* Published in: IISL Proceedings of the 1st Colloquium on the Law of Outer Space 1958, pp. 105-107.

<sup>†</sup> Dr. Michael S. Smirnoff (Yugoslavia) was one of the pioneers of space law who took place and contributed to scholarship on space law from the late 1950s throughout the 1960ies and 1970s. He was the first President of the IISL (1960 – 1961) and served, inter alia, as Member of the Editorial Advisory Board of the Journal of Space Law.

The majority of theorists agree that the system of the Chicago Convention is not applicable to the conditions of outer space. Therefore, with flights in space being more and more common we are presented with the dangerous possibility that outer space is at present a legal vacuum. This fact became obvious when the satellites began their journeys round the Earth. Article 8 of the Chicago Convention was completely forgotten and no one protested against the flights of the satellites.

The International Geophysical Year agreement can only partially be regarded as a juridical basis for flights in outer space or as a tacit consensus of all the nations of the world. The real reason why no one protested is found in two facts. The first is that the nations were psychologically unaware of the imminent dangers which space flights presented to mankind. This state of unawareness was also apparent at the beginning of the 20th century when no one seriously protested against the flights of the *Wright* brothers, *Blériot* and others. The second fact is that, because of the legal vacuum in outer space, no one who might have wished to make such a protest could find any firm and stable principles in the law upon which it could be based.

This lack of rules or regulations concerning outer space creates a very serious danger for all of the States and nations of the Earth. If the launching of the satellites only partially revealed the existence of this danger, it is quite clear that the peril will be reinforced by future developments in space flight. It is enough to point out certain problems which are inherent in the present state of space technology. A danger is presented in the fact that States can without warning launch rockets and satellites which may pass through the flight lanes of the innumerable airlines which cross their territories. In time, the lack of regulation will cause this danger to increase. We can easily visualize a rocket or satellite going astray because of some technical defect and causing heavy damage to the civilian population of another country. For the moment we shall pass over the military uses of spacecraft and the dangers they present.

What Professor *Meyer* calls “*Verkehrssicherungspflicht*”, or what may in English be called a mutual obligation not to disturb or endanger national and international air transport, is enough to create a need for bringing this vacuum in the field of space law to an end.

(2) While almost everyone agrees in theory that there is a need for filling this legal vacuum, the question of how to do so is another problem. To the large majority of writers the only way to solve this problem is an international convention. All authors are not united in the choice of the organization which will convoke a conference for the elaboration of this agreement. But after the official initiatives taken in the United Nations we think that the most convenient way to solve, or to begin to solve, this problem is by the holding of a conference under the auspices of the UN. We do not forget, however, that not all nations are members of that body. But, and this is quite clear, every nation is interested in solving this problem. Therefore, we think that the invitations to this conference on the problems of outer space should be sent by the UN to all of the nations of the world. Thus, the name of this gathering really would be the World Conference on Outer Space Problems.

At this point we should, of course, mention the possibility of giving the ICAO the mission of summoning such a conference. In view of its experience, the ICAO would normally be the most appropriate organization to deal with this matter. Nevertheless, there are two reasons why we prefer that the first conference be held by the UN. Although the ICAO has a great number of members its membership is smaller than that of the UN. The second reason is that this is a new problem which, besides its technical novelty, contains many elements of a political

nature. Although we think that it is better that the first conference be under the auspices of the UN, this does not in any way exclude the possibility that the ICAO could be of considerable assistance in the work of any organization which might be formed by the conference to deal with these problems.

Everyone agrees that the Chicago Convention cannot serve as a basis for the new regulation of outer space and that an international convention to deal with this matter should be convoked. Discord appears only when a solution of this problem is proposed.

This is quite natural when we consider the novelty of the question and the political importance attached to any discussion of the legal problems of outer space. Although the principle of sovereignty is generally agreed to apply to airspace, with some recently indicated limitations, it is not as well received when applied to outer space or even to limited areas in space. We are indeed aware of the difficulties which the proposed international conference will encounter for our part, we think that the classic principle of sovereignty of the State over the space above its territory has no application to outer space. When last considered, the application of this principle to the airspace itself was modified and limited in the interest of air traffic and cultural ties between peoples and nations. Therefore, and this is the focus of our paper, we think that the new convention or agreement on the legal status of outer space will be based on principles which will differ substantially from those which support the Chicago Convention. It is from this fact that the danger referred to in the title of this paper arises. This danger is the creation of systems, different in their essential elements, which will in fact regulate but two phases of the same transport entity. To be more clear, our fear may be expressed in other words. We are afraid that the two systems will conflict and that the conflict will especially occur in the case of an airship which in the first stage of its ascent will be under the terms of the Chicago Convention and, after it has left the atmosphere, under the prescriptions of the new convention.

When we add the almost insolvable difficulties which exist in determining a frontier between airspace and outer space, this possibility of conflict becomes much more serious. We have seen that, in theory, all of the proposed delimitations of space in a vertical sense are ingenious fictions, but fictions nevertheless. To base the legal solution of such a problem as the responsibility for acts along such borders on this kind of delimitation is to create what is at this time an almost insolvable legal conflict. It is quite certain that this problem will be one of the crucial questions before the proposed conference but we do not see any possible solution. The conference may adopt one of the several proposals which follow:

- (1) *A system for outer space based on absolute rights of sovereignty;*
- (2) *A system based on the freedom of the whole of outer space. This is the best solution in a world based on collaboration among the peoples but it is a very dangerous thing in a world divided in two. It is clear that it is this system which may be in eventual conflict with the norms of the Chicago Convention;*
- (3) *A system based on different zones of outer space (the Cooper system) which would be ingenious if a fine could be traced in space as easily as a frontier is drawn on the ground. This system also presents a possibility of conflict with the Chicago Convention.*

Therefore, we do not think a solution can be found for the legal status of outer space which will not, at the same time, be in conflict with the system of rules embodied in the Chicago Convention. In short, any solution proposed before an international conference on outer space would be in danger of so conflicting.

The logical and natural consequence of these thoughts is that any draft of a new convention must bear a close and narrow connection with the Chicago Convention. That is in creating a new system of legal rules for outer space, the new conference must amend the Chicago Convention in such a way that a common system of rules applying to airspace and outer space is created. Although at present it may seem difficult to change the Chicago Convention, we think it is the only correct way to deal with this problem.



## 2. 1970–1980: The Emerging *lex lata* for Human Activities in Outer Space – The 1967 Space Treaty: Thirty Years On\*

Bin Cheng<sup>†</sup>

### I. Introduction



B. Cheng

[...] In view of the fact that we already had, and shall continue to have, in the course of this Colloquium, a large number of extremely learned papers on the subject, I hope you will allow me this evening to simply share with you a few random thoughts on the 1967 Space Treaty, 30 years on, without going into details. Such details and any supporting arguments, if I may follow Steve Doyle's excellent example this morning and slip in a commercial, will probably all be found in my *Studies in International Space Law* which Oxford University Press is bringing out next month under the Clarendon Press imprint. [...]

### II. The Space Treaty: 30 Years On

The consensus which emerged clearly from the various speeches at today's first two sessions of the Colloquium, with which I entirely agree, is that the 1967 Space Treaty is a truly remarkable instrument. It has successfully provided an indispensable legal framework for the exploration and use of outer space from practically the beginning of the space age. It was a great political and legal achievement.

On 10 October 1967, when the Treaty actually came into force, having been ratified by all the powers that mattered and more, everyone was able to utter a sigh of relief, and to rejoice that the superpowers were finally able, ten years after Sputnik I, to agree, first, that the agreed principles would take the form of a legally binding treaty instead of just a General Assembly resolution, secondly, that at least celestial bodies would be used exclusively for peaceful purposes, thirdly that no nuclear weapons or any weapons of mass destruction would be stationed anywhere in outer space, fourthly that there would be no race for colonies in outer space, and fifthly that all contracting States would assume direct State responsibility for national activities in space, protect the environment, pay for any damage caused, be helpful to one another, and try to do everything for the good of all. The Treaty met, if not entirely, at least in appreciable measure, some of the deepest concerns and keenest aspirations of the world at the time.

What one has to remember, however, is that that was 1967. In fact, apart from Article IV, much of the Space Treaty had been agreed upon in 1963 in the form of the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space. By then, not a single satellite had yet been launched into the geostationary orbit, and even the Interim INTELSAT had not been established. Both came only a year later. Even by the time

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\* Published in: IISL Proceedings of the 40th Colloquium on the Law of Outer Space 1997, pp. xvii–xxix.

<sup>†</sup> Professor Bin Cheng (China/United Kingdom, 1921-2019) was a leading authority on international air and space law and public international law. He served as a Professor of Air and Space Law at the University College London's Faculty of Laws and as Dean of the Faculty (1971-1973). Through his fundamental writings, Professor Cheng contributed immensely to the development of aviation law and space law.

the Space Treaty was opened for signature in 1967, only France had joined the then space club of two with the successful launching of Asterix in 1965. The Chinese did not do so until 1970, and the United Kingdom only in 1971. Landsat I, the first remote sensing satellite, was launched only in 1972. Often it is not easy to remember how far we have come in the thirty years since 1967.

It is, therefore, hardly surprising if today the 1967 Treaty needs a thorough review in the light of all the changes in circumstances. This is not the time or place to go into details. The most important changes may perhaps be simply enumerated:

- (i) Phenomenal advance in space technology, as exemplified, for instance, by the current US Martian exploration with the spacecraft Pathfinder with its Sojourner rover vehicle, and Alpha the international project of a permanently manned International Space Station,
- (ii) Rapid development of the commercial exploitation of space and space-related activities, such as in the field of remote sensing, not to mention telecommunication and direct television broadcast by satellites; and
- (iii) Increasing participation of private enterprise in all aspects of space activities, including, for example, actual launching of space objects.

As Ambassador Jankowitsch was saying this morning, we have now entered the third phase in man's exploration and use of outer space. However, notwithstanding all these changes, what needs to be done is not a root and branch operation radically to transform and still less to replace the 1967 Treaty. Rather it is a case of judicious adjustments. These may be grouped mainly into three categories:

- (i) Authoritative and more precise or systematic differentiation, classification, clarification or definition of various terms and concepts;
- (ii) Closer co-ordination of the provisions, as well as these terms and concepts, of not just the 1967 Treaty itself, but in all the UN treaties and declarations on space;
- (iii) Specific amendments and supplementary provisions to take into account changes in circumstances since the signing of the Treaty.

Among the many issues that may be raised in reviewing the Treaty for updating, I shall limit myself this evening to merely three areas:

- (i) Terminology;
- (ii) Main areas of concern,
- (iii) Conditions governing the successful making of international treaties and rules. [...]

### **III. Terminology**

#### *1. Filling in Lacunae, e.g., "Outer Void Space"*

Under the heading of terminology, one can mention first of all the task of filling in the many gaps that have revealed themselves over the years in the vocabulary of space law. For example, owing to a lead given by the 1967 Treaty, there is at present no convenient expression to describe the space in between all the celestial bodies. Thus, while the 1963 UN Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space speaks of "outer space and celestial bodies", making a distinction between outer space and celestial bodies, the 1967 Treaty and after it all the other UN treaties and declarations always use the expression "outer space, including the Moon and other celestial bodies", which means that the term "outer space" includes "the Moon and other celestial bodies". As a result, whenever we refer to "outer space", we will be understood to refer also to all the celestial bodies in it, excluding perhaps the Earth. There is no longer a simple expression to designate the space in between the celestial bodies. This is why I have been calling this space the "outer void space." I hope that this name will find general acceptance.

#### *2. Clarifying and Defining Various Technical Terms*

There is a long list of terms used in the 1967 Treaty and other UN treaties and declarations on outer space that are crying out for clarification and definition. Example include "astronauts", "appropriate State", "debris", "national activities", "space objects", and a host of others. They have already received much attention in the literature of space law. There is no need to elaborate the point here, even if we may be referring to one or two of them later.

#### *3. Two Perennials: "Outer Space" and "Peaceful Purposes"*

Then there are those two perennial controversies, the definition and delimitation of outer space, and the proper interpretation of the meaning of "peaceful". I think it is high time that they should be resolved, and these terms and concepts authoritatively defined. The ca'canny and obscurantism involved in delaying a definition of outer space, and the deliberate distortion of the word "peaceful" to mean not "non-military" but "non-aggressive" are the work of politicians and diplomats done, one suspects, at the behest of the military, who, at least in the latter case, may well have based their conclusions on some misreading of the law. Speaking of the antics of some politicians and diplomats, one is reminded of what Sir Henry Wotton wrote in 1604 when he was on his way from England to Venice to take up his post as King James I's ambassador there: "A diplomat is an honest man, sent to lie abroad for the good of his country".

It seems to me that the time has come when we space lawyers have to make a determined effort to convince the powers that be that (a) clarity, precision and accuracy in the use of these and other terms are of paramount importance in the future development of space law and of space activities as a whole, and (b) shielding behind equivocation and the distorted meaning of words is no longer a healthy option.

### **IV. Four Areas of Concern**

If we look back at some of the concerns at the beginning of the space age, the thoughts uppermost in people's minds towards space can probably be divided into four categories:

- (i) The arms race and the military use of outer space;
- (ii) Possible scramble for colonies or resources;
- (iii) Worries over responsibility and control, as well as over potential harm or damage; and
- (iv) International co-operation and mutual assistance.

By and large, the concerns remain much the same today, although the perspectives may have changed over the years.

### *1. The Arms Race and the Military Use of Outer Space*

First, the military use of outer space. For those in the 'fifties and the 'sixties who had only just witnessed the awesome role of air power and air supremacy in the relatively recent conflict, the first and foremost concern was from the military and strategic angle. To use an apt American expression, outer space brought with it a whole new ball game. For the protagonists, it was a question of how to contend and to contain. For third parties, it was how to prevent and to avoid a space war in which they might be embroiled, or of which they might become the victims. Hence, there was this tremendous popular clamour that outer space should be used exclusively for peaceful purposes. To this call the space powers paid lip-service, but with a great deal of mental reservation, inasmuch as their space efforts were then, perhaps even more intensely than now, directed primarily towards military ends.

Insofar as the demilitarisation of outer space is concerned, President L. B. Johnson hailed the 1967 Treaty as "the most important arms control development since the limited test ban treaty of 1963". 1963 was of course also the year when the General Assembly adopted the Declaration of Legal Principles, the precursor of the 1967 Treaty. 1963 was moreover the year when the General Assembly in resolution 1884 (XVIII) welcomed the statement of the two superpowers that they would not station nuclear weapons or other weapons of mass destruction in outer space, and called upon other States to follow suit. It will not escape notice that the only really substantive and important provision in the Treaty that is not in the Declaration of Legal Principles is Article IV. Yet Article IV(1) corresponds basically to resolution 1884. What this means is that what the two superpowers were unable to agree in 1963, and managed to do so only three years later in 1966 was Article IV(2), which restricted celestial bodies for use exclusively for peaceful purposes. This was then the breakthrough referred to by President Johnson.

However, much confusion surrounds the subject of the military use of outer space. Thus, only too often one hears and finds the assertion that under the Space Treaty, the whole of outer space, including celestial bodies, has been reserved for exploration and use exclusively for peaceful purposes. If we examine Article IV and the rest of the Treaty carefully, we will find that this is not true. Only the Moon and other celestial bodies have been restricted by Article IV(2) to use "exclusively for peaceful purposes", but not outer void space. Under the Treaty, apart from the ban to station there nuclear weapons and other weapons of mass destruction, and, as they are reminded by Article III, subject to the ordinary rules of international law, including the Charter of the United Nations, contracting States are perfectly entitled to use outer void space for whatsoever military purpose they wish. They can put up there reconnaissance satellites, antisatellite satellites, early-warning satellites, geodetic satellites, and any other weapon as long as it is not nuclear or capable of mass destruction. There is nothing in the

Space Treaty as such which would, for instance, preclude projects like the United States' "Strategic Defense Initiative" (SDI), unless it turned nuclear or were to cause mass destruction.

What has befuddled the discussions on the military use of outer space during all these years has been the distorted use of the term peaceful to mean non-aggressive instead of its usual meaning of non-military. It is largely this double-talk which has allowed the false impression to be propagated that the whole of outer space, including both the celestial bodies and the outer void space, has been reserved by the Space Treaty for solely peaceful, i.e., to the uninitiated, non-military, purposes. This has in turn caused those concerned with using outer void space for military purposes, who have either not read Article IV of the Space Treaty, or have not read it properly, stubbornly to defend this abuse of the language.

If peaceful means non-aggressive, this would make the first sentence of Article IV(2), which provides that the Moon and other celestial bodies can only be used "exclusively for peaceful purposes", completely meaningless, because, except for the specific prohibitions in the second sentence, the legal status of the Moon and other celestial bodies would then be exactly the same as the outer void space, which, as we have just seen, can be used, and is being extensively used, for all kinds of activities for military purposes except of course for aggressive purposes. Under general international law, and especially Article 2(4) of the United Nations Charter, there is no place in the whole Universe that States may lawfully use for aggressive purposes. Thus, to say that peaceful means non-aggressive is to deprive not only the first sentence of Article VI(2) of the Space Treaty, but also the word peaceful itself of all meaning. [...]

## *2. Scramble for Colonies or Resources: Occupation v. Appropriation*

Secondly, at the beginning of the space age, there was a strong demand especially from the non-space powers that outer space and celestial bodies should not be subject to national appropriation. Some were motivated by anti-colonialism, others wished to discourage a colonial war, and yet others did not want to see the spoils of outer space fall irretrievably and exclusively into the hands of the space powers.

The principle of non-appropriation of outer space and of celestial bodies quickly met the agreement of the superpowers, who at the time were far from sure which of them was to land on the Moon first. The principle was adopted unanimously in General Assembly resolution 1721 A (XVI) in 1961. Only the insistence of the United States prevented it from taking the form of a treaty. Eventually it was the fear that the Soviet Union might be the first to make a landing on the Moon that prompted the United States to change its attitude towards resolutions versus treaties in space-law making, and in May 1966 actually to call for the conclusion of a treaty to prevent any nation from claiming sovereignty over the Moon or any other celestial bodies. It was this that led to the conclusion of the 1967 Treaty. Article II on non-appropriation is thus one of the Space Treaty's chief *raison d'être*, and what brought it into *de facto* existence in the astonishingly short time of a little over seven months, the text having been adopted by the General Assembly on 19 December 1966.

The complete freedom of outer space and of celestial bodies for exploration and use by all thus established in Article II is supplemented by Article I which inter alia specifies "free access to all areas of celestial bodies".

Insofar as the principle of non-appropriation is concerned, while Article II speaks of no national appropriation by means of use or occupation, and Article I of free access to all areas of celestial bodies, the line in fact, if not in law, between occupation and appropriation is often

difficult to draw. This applies to orbits in outer void space as well as to celestial bodies. The problems arising from the continuous occupation of prime slots in the geostationary orbit, and the phenomenon of paper satellites fall into this category. It is to be hoped that the current efforts in COPUOS and in ITU to resolve them may reach early fruition. In due course, the same problem will apply to occupation of portions of celestial bodies when exploitation becomes possible. The Moon Treaty has not really resolved it. Further consideration is required.

### *3. Worries Over Responsibility and Control, as well as Over Potential Harm or Damage*

Thirdly, especially at the beginning, excitement over space was tempered with grave apprehension of the unknown. While space activities were greeted with wonderment, and astronauts were treated almost as superhuman, there were also serious qualms whether some space activities might irreparably damage the space environment, or grievously contaminate, or even destroy the Earth, and wipe out all life on it. Moreover, on a more down-to-earth level, having been brought up to believe that what goes up must come down, people were uncomfortable with the thought that tons and tons of metal objects were to whirl round and round over their head, and were worried over the damage which such objects might cause them or their property when they were to fall down. The feeling was that everything connected with space needed to be strictly controlled by States, which should also be made responsible for any adverse consequences.

When it comes to control of and responsibility for space activities, these are covered basically by the revolutionary principle in Article VI of the Space Treaty which makes the contracting States directly responsible internationally for national space activities, by whomsoever carried on. At the same time, Article VII makes all the contracting States responsible for the launching of a space object directly liable for any damage which the space object may cause to third parties. Both these principles already appeared in the 1963 Declaration, as well as the rule in Article VIII which places space objects and their personnel under the jurisdiction of the State of registry. Article IX of the Treaty now adds a specific duty on contracting States to avoid harmful contamination of either outer space or the Earth. Moreover, Article XIII makes it clear that the Treaty provisions apply to contracting States whether they carry on space activities individually or jointly with other States.

Since 1967, the rise in non-governmental space activities has been beyond belief. Whilst the need for governmental control as envisaged in Article VI of the Space Treaty will always remain necessary, there is need to define which State is responsible for whose and which space activities. At present, both the term national activities, and the term appropriate State in Article VI give rise to a great deal of uncertainty.

Moreover, the extent of the concept of international responsibility is far from clear. We know that contracting States have to assure that national activities conform to provisions of the Treaty, and that they must subject nongovernmental national activities to authorisation and continuing supervision. But does their responsibility for non-governmental national activities extend to beyond compliance with the Treaty and through Article III of the Treaty with rules of international law, including all treaty obligations, to compliance with rules of municipal law, both civil and criminal, including even contractual obligations? And, notwithstanding the fact that Article VI speaks of the "appropriate State" in the singular, does international responsibility fall in fact on all the States which may qualify as launching States?

Switching from Article VI to Article VIII of the Treaty, one finds that Article VIII on jurisdiction is by no means free from ambiguity. Thus, one may well ask whether, according to Article VIII, the jurisdiction of the State of registry of a space vehicle extends to persons who do not form part of that vehicle's personnel? For instance, what is the legal position of an astronaut of State A nationality, part of the crew of a spacecraft registered in State B, assaulting an astronaut of State C nationality, part of the crew of a spacecraft registered in State D, after the two spacecraft docked in outer space and the former astronaut was visiting the latter spacecraft? Or someone visiting a Moon station operated by another State? And how about a space tourist?

Moreover, the interpretation which has been given to Article II of the Registration Convention further weakens the link between the State of registry of a space vehicle and the vehicle itself, as well as all those on board. At present, flags of convenience can be easily established, and it may sometimes be difficult to ascertain which State exercises jurisdiction over which space object and over which persons on board.

Furthermore, the effect of Article VIII is further eroded by some of the other subsequent UN treaties on outer space, which often resort to different connecting factors. Launching, including all the different aspects of it, nationality of the astronaut, and ownership of the space object, and possibly even employment can all come into play. There is probably much to be said for reverting to the traditional concept of nationality, while at the same time tightening the rules on registration.

Consideration needs also to be given to the legal status and registration of installations and manned or unmanned stations on celestial bodies, as well as regulation of and liability for activities carried on in them. There should be better co-ordination between control and responsibility, and generally some redefining and perhaps adjustment of the extent of international responsibility especially for non-governmental activities, in view of the almost phenomenal increase in private commercial space activities.

On the other hand, because of the rapid proliferation of space activities, the suggestion of setting up machinery and procedures for the elaboration of standards and recommended practices along the lines of ICAO (International Civil Aviation Organisation), WHO (World Health Organisation) and IMO (International Maritime Organization) to regulate and coordinate especially the technical aspects of international space activities is to be welcomed. What is needed is probably a high-powered and compact unit, where the different interests are duly represented. To such a body, subjects such as the use of nuclear-powered sources, space debris, and collision now being considered by COPUOS can perhaps with advantage be entrusted.

If a quasi-legislative opting-out procedure is adopted, States which do not opt-out of specific regulations, should be made responsible for their compliance, implementation and enforcement. In order that such measures are effectively implemented and enforced in the case of nongovernmental space activities, States may need to be reminded, encouraged and perhaps even bound by treaty to extend their domestic laws to persons and objects under their jurisdiction in outer space, just as aviation found it necessary to adopt the 1963 Tokyo Convention on Offences and Certain Other Acts Committed on Board Aircraft.

#### *4. International Co-Operation and Mutual Assistance*

[...] In Article I of the Space Treaty on the subject of international co-operation, the space powers paid lip service to the surging expectations of the time of the developing countries.

Some countries and commentators have ever since tried very hard to give Article 1 an excessively literal interpretation involving a legally binding obligation. Such efforts can hardly be said to have succeeded, although there have been, as we all know, a good number of bilateral and plurilateral co-operative and even collaborative arrangements based on mutual interests and mutual consent. Thirty years on, and after ten years of discussion, a more realistic attitude seems to have manifested itself in the 1996 Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States. The key provision is probably to be found in the first part of paragraph 2:

*“States are free to determine all aspects of their participation in international co-operation in the exploration and use of outer space on an equitable and mutually acceptable basis. Contractual terms in such cooperative ventures should be fair and reasonable...”*

In other words, international co-operation is to be voluntary, and it is to be on “fair and reasonable” terms to be negotiated and agreed upon between the parties on either a multilateral or bilateral basis. This said, one should on the other hand equally remind States with space capabilities that it must be in their long-term interests that space technology and space benefits are shared to the widest extent possible. Even the most mercantilist State must realise that in the long run one must be better off living in a world not populated by hungry mouths, but by well-to-do clients. From this point of view, both the ‘67 Treaty and the United Nations can doubtless play useful roles in promoting international co-operation in order to achieve that objective.

#### ***V. Conditions Governing the Successful Making of International Agreements and Rules***

This brings me to my last point that I hope to make. The study of space law has taught me that in a horizontal legal system like international law, in order successfully to forge an international agreement or to build up a rule of international law, three conditions have to be met:

- (i) Perceived need on the part of the States concerned;
- (ii) Due representation of the dominant section of international society having special concern in the subject-matter; and
- (iii) A propitious political climate.

First, the States concerned must feel a need for the agreement or rule. They must feel that it is in their interests to do so. All that one can hope is that all the persons concerned will understand and pursue their countries’ long-term and broader interests, and will not seek short-term success or personal glory to the detriment of those interests, and that the dominant section of international society will not abuse their dominant position. Insofar as we lawyers are concerned, while naturally those who represent clients, whether governmental or private, have to protect their clients’ interests to the best of their ability, I think we all also owe a duty to our profession to ensure that whatever is done is, to use the phrase of the International Co-operation Declaration, “fair and reasonable”. If I recall correctly, it was a famous son of this beautiful country, and of this illustrious city we are in, Count Camillo Benso di Cavour, who once said: “What scoundrels would we not be if we do for ourselves what we do for our country?”. We are,



however, no longer in the turbulent days of fighting for national unity. I do not think it is in a State's long-term interests in whatever negotiations to drive for what in domestic law might be branded as unfair contract terms. In particular, representatives of powerful States would do well to remember that international negotiations are not like a domestic adversarial process where there is a judge to curb forensic excesses. This said, one needs also to remember, on the other hand, the ancient proverb as put by Dr. Samuel Johnson, "One man may lead a horse to the water, but twenty cannot make him drink". This saying is particularly apt when it comes to attempts to change the behaviour of States, big or small, through treaties, when they see no national interest in accepting the obligations the treaties involve, however desirable or even imperative the objectives of the treaties in question may be from the international point of view. The number of poorly ratified treaties unfortunately testify to this sorry tale.

As for due representation of the dominant section, experience has shown that, in any international treaty-making or rule-making, due weight has inevitably to be given to the views of those whose co-operation is indispensable to the working of the treaty or rule, including those which are, in the words of the International Court of Justice in the *North Sea Continental Shelf Cases*, "specially affected". It is only a truism to say that in any society, the law always represents the will of the dominant section.

Finally, as regards a propitious political climate, experience has also shown that even where a given rule or treaty is felt by all the States specially affected as reasonable or even desirable, it is unlike to come to fruition unless the international political situation is propitious for it to be born. Each of the five treaties relating to outer space drawn up by the United Nations proves this. At this moment, as mentioned before, the Cold War has been officially buried. Despite some local turmoils, the overall political barometer reads "Fair-set".

On this auspicious 30th anniversary of the Space Treaty, with Mir circling over us, and the International Space Station being on its way, both outstanding exemplars of international cooperation in space, redoubled efforts ought to be made by all, both in and outside the United Nations, to prepare space law, including all the existing UN treaties and declarations, for the New Millennium. May we wish this enterprise Fair Wind and God speed.

### **3. 1980–1990: A New International Economic Order: Also for Outer Space? – The Common Heritage of Mankind: Doctrine and Principle of Space Law: An Overview\***

*Aldo Amando Cocca†*



*A. A. Cocca*

The doctrine of the Common Heritage of Mankind is 32 years old and represents a significant step in the progressive development of International Law and of the science of Law. Created for space law it was soon accepted in other fields of international law, and it was embodied without delay in the text of international documents, intergovernmental organizations' resolutions and declarations, and could become positive international law with the Moon Agreement in 1979, which is in force since 1984. Its further developments within other domains, as the Seabed rules and the Jamaica Convention, meant an important contribution to its consolidation and evolution that, in several aspects, would be taken into account in the implementation of the Moon Agreement by the law of outer space.

#### ***I. Some Doctrinary Precedents before the 1967 Space Treaty (1951-1966)***

The doctrine of the Common Heritage of Mankind – which later became a legal principle – has appeared as a new and specific concept of the law of outer space.

Because of its scope and possibilities of its contents – both explicit and virtual – this doctrine attracted the attention of other jurists and politicians who considered it applicable to other areas of international law.

As a doctrine, it took many years of elaboration and reflection before it was admitted as a legal principle of space law within the United Nations. I refer here only to the international congresses papers, or articles in largest known publications, documents of intergovernmental organizations, proposals and resolutions, declarations, conventions or treaties.

Perhaps the first reference to the Common Heritage of Mankind was made in 1953 by Joseph Kroell when publishing an article where he states: “L’espace extra-terrestre, celui ou ne se manifeste plus la pesanteur, actuellement bien sans maître défini, ne doit constituer qu’un bien-commun, « une res communes », dont doivent pouvoir jouir et profiter tous les individus groupés dans la collectivité nationale ou étatique de notre globe et forme en dernier analyse l’élément contenant du vaste « domaine public universel » aux limites spatiales pratiquement indéfinissables, nullement susceptible d’une appropriation à des fines particulières, mais réservé à la jouissance collective des membres de la communauté internationale, li forme le *patrimoine commun de l’Humanité*”.

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† Ambassador Professor Aldo Armando Cocca (Argentina), 1924-2020, was a diplomat and professor of law and was Permanent Representative of Argentina to COPUOS in the sixties and seventies where he participated in the drafting of all five UN treaties on space law. He founded and chaired the National Institute of Air and Space Law in Argentina and served as Vice President of the International Astronautical Federation. Cocca was Honorary Director of the IISL since 1995.

Other jurists, before Kroell's time, as Vladimir Mandl (*Das Weltraumrecht*, Leipzig, 1932), John C. Cooper, Alex Meyer (1952), C.A. Pasini Costadoat (1952) or Antonio Ambrosini (1953), made no distinction between the legal régime to be established for outer space and that for the Moon *and other celestial bodies*. This criterion was followed by the 1967 Space Treaty. They all looked for some formula denying State sovereignty in the new regions being explored by man, beyond this planet. John C. Cooper in a talk given in Mexico on 5 January 1951 suggested the study of the possibility of fixing an upper limit to state sovereignty over airspace, because at some point, the rights of the subjacent with respect to others must cease to exist.

Alex Meyer considered that outer space should be free. Pasini Costadoat believed that some kind of co-sovereignty could be agreed on beyond state sovereignty. Antonio Ambrosini favoured the idea of determining some limit to the airspace recognized by the Chicago Convention.

In 1953, I submitted my doctoral thesis "Un Derecho en formación: el Interplanetario" to the University of Buenos Aires. In 1954, I published "Al encuentro de un Derecho nuevo, el Interplanetario" in Argentina. In 1957, "Verfahren zur Erforschung des Weltraums ergebenden Rechtsprobleme" where Einstein's fourth dimension is taken to law. My first book "Teoría del Derecho Interplanetario" also appears in 1957. In 1958, "Reflexiones sobre Derecho Interplanetario" is published. It was the first space law course given in Argentina, which was published by the Universidad Nacional del Litoral, Argentina.

The second space law course in this part of the world was given in 1959 in the Universidad Mayor de San Marcos, Lima, Peru. The chair of Air and Space Law was created in 1960 at the Salvador University, Buenos Aires. In 1961, the postgraduate space law course was established by the Instituto Nacional de Derecho Aeronáutico y Espacial (Argentina), and in 1962 the autonomous first chair on Space Law in the world was created. [...]

## **II. *The Doctrine in International Meetings***

### *1. The International Astronautical Federation*

In 1952, Prof. Alex Meyer's opinion on the legal nature of outer space, was made known at the International Astronautical Federation. As it is already said, in the 3<sup>rd</sup> Congress of Astronautics he favoured a régime of freedom.

At the 5<sup>th</sup> International Congress of Astronautics (Innsbruck, August 1954), I submitted my paper "Die Rechtliche Natur des Weltraums". By then the Permanent Legal Committee of the IAF was not in existence yet, for it was created in 1958. Neither did its successor exist, the International Institute of Space Law, created in 1960.

The difference between my paper and those already mentioned was that the former, adopted a criterion both legal and practical. I stated that the establishment by an international convention of the legal nature of outer space, should be done at a further stage. However, from a realistic stand, it was necessary to regulate the legal condition of the space vehicle, a vital element for the space exploration. If a universal domain for space was desired, as I advocated, all studies, tests, projects and experiences should be internationalized, taking into account that science is a *universal domain of mankind*. In this sense, the space flight, and particularly the

exploration and use of outer space, should be made *by* mankind and *for* mankind. In brief, in 1954, I supported rather than a theoretical declaration, a possibility of a new concept completely original in the field of law. And I gave it, what afterwards was known as “joint venture” in its broadest sense: from the intellectual effort to the building, of the device, the means for the exploration with the participation of all States, with the common purpose of reaching the cosmos and its benefits.

May I stress that I am talking about activities, efforts and shared benefits. These ideas are closely related to those that 12 years later, in 1966, were embodied in Article I of the Space Treaty.

It is precisely the activity of exploration and use of outer space, including the Moon and other celestial bodies, which must be carried out – in accordance with mentioned Article I of the 1967 Space Treaty – in the benefit and interest of all countries irrespective of the degree of their economic and scientific development, and are the province of all mankind. The last phrase “*incumben a toda la humanidad*”, in Spanish, and “are the province of mankind” in English, or “*sont l’apanage de l’humanité toute entière*” in French, is producing a new juridical figure for the Treaty which materializes in a better way in the Moon Agreement, when the words “Common Heritage of Mankind”, “*patrimoine commun de l’Humanité*” or “*patrimonio común de Humanidad*” are used. The Spanish expression “*incumben a toda la humanidad*”, included in the 1967 Treaty, is maybe the more precise in the legal sense because it means: it belongs to mankind and it is not transferable: it is a must so make it.

I also submitted a paper on the research method for space law at the 1956 IAF Congress which, in my view was intended to provoke “*la révision des préceptes fondamentaux, considérés jusqu’à ce jour comme intangibles*”.

## *2. Conseil International de Droit Spatial*

[...]

## *3. The International Institute of Space Law*

From 1962, the participants and readers of the International Institute of Space Law began to get acquainted with papers relating to the different legal nature of the Moon and its natural resources. At the 5<sup>th</sup> International Colloquium, Varna, 1962, I submitted a study on the Moon and other Celestial bodies from which the following conclusions may be drawn. As to the Moon. To establish a regulation for the common exploitation of its natural resources and, concerning celestial bodies: To declare that they are considered a *res communis omnium for all mankind*, regardless of the nation that reached or occupied them.

The following year, in Paris, I began to explain the contents of the expression *res communis humanitatis*: “Law, in its cosmic expansion, reaches its highest category embracing all mankind, beyond any existing international organization. It would be a modern version of natural law, even though its starting point is not the existence of the individual but the recognition of unquestionable faculties appertaining to mankind who has its highest expression in a planetary function.”

In 1964, at Warsaw, on the occasion of the 7<sup>th</sup> IISL Colloquium, I dealt with celestial bodies and celestial products, suggesting the creation of an international organization for the management of celestial products.

4. *Instituto Hispano Luso Americano de Derecho Internacional*

[...]

5. *The Common Heritage of Mankind as Jus Cogens*

The Instituto Hispano Luso Americano de Derecho Internacional, in both opportunities in which it was concerned with the Common Heritage of Mankind principle declared it to be an imperative rule of general international law (*jus cogens*).

When the question was examined at the VIIth Congress in Buenos Aires (1969), it was declared: “The principle contained in the Treaty of 27 January 1967, whereby outer space, the Moon and other celestial bodies, cannot be subject to national appropriation by claim of sovereignty, use or occupation or by any other means is, in addition to a legal rule of positive conventional law, an imperative rule of general international law” (*jus cogens*).

And the Resolution adopted in Lima, at the XIII Congress (1982) states in point 2 of its declaration: “This principle (of the Common Heritage of Mankind) is embodied in many legal instruments, treaties and resolutions of international organizations and explicitly or tacitly recognized by State practice which is evidence of the existence of a general consensus together with the conviction of its nature as *jus cogens*. [...]

**III. *The Concept of Common Heritage of Mankind in the United Nations***

1. *In the Outer Space of Committee (COPUOS)*

The first time the expression *Common Heritage of Mankind* was used, took place on 19 June 1967 at the 75<sup>th</sup> meeting of the Vth Session of the Legal Subcommittee of the COPOUS, that is to say, the inaugural session after the Space Treaty was signed, on that occasion I stated: “The Legal Subcommittee must in its future work never allow itself to forget that the principles it had already laid down entailed the following consequences: First, the international community from now on possessed a written law of outer space which, for reasons of time and procedure was not yet positive law valid for all legal systems, but was nonetheless valid for every inhabitant of the globe considered independently of such systems. Secondly, the international community has recognized the existence of a new subject of international law, namely, mankind itself and had created a *ius humanitatis*. Thirdly, the international community had, in the person of the astronauts, appointed envoys of mankind in outer space. Fourthly, the international community has endowed that new subject of international law – mankind – with the vastest common property (*res communis humanitatis*), which the man mind could at present conceive of, namely, outer space itself, including the Moon and other celestial bodies. Those four basic facts and the responsibilities they implied must at no time be lost sight of. The French text reads “patrimoine commun”, and the Spanish, “patrimonio común”.

This fact, perhaps, not too well known given the discretion in which the COPOUS works, has been emphasized in some occasion. Perhaps it would be only fair to say a few words regarding the Legal Sub-Committee on Outer Space. Indeed, the paternity of the ‘Common Heritage’ concept, is more often than not attributed to the Permanent Mission of Malta to the United Nations in a Note Verbale of 17 August 1967 (recorded in Doc. A/6695 of 18 August 1967). Yet this is not quite exact. If one looks at the archives of Publications in the Library of

the Palais des Nations at Geneva, it is easy to realize that it was in the United Nations Committee on Outer Space, and not in the Seabed Committee, that the expression ‘Common Heritage’ was first used and explained. In this connexion, resort has been made to Doc. A/AC.105/C.2/SR.75 (Spanish, English and French texts) corresponding to the Inaugural session of that year, 19 June 1967, at 3.15 pm. This was the first meeting of the Legal Sub-Committee on Outer Space following the signature of the 1967 Space Treaty. On that occasion, the Argentine Delegate, Professor Aldo Armando Cocca drew attention to the fact that one of the four pillars upon which the 1967 Treaty rested was, precisely, the existence of ‘common property’ (‘patrimoine commun’, ‘patrimonio común’). This expression soon attracted the attention of the seabed lawyers. In fact, the World Peace Through Law Center elaborated in 1967 (that is to say, just after the Space Treaty was concluded) a Draft Treaty Governing the Exploration and Use of the ocean bed which follows, word for word, the drafting and fundamental provisions of the Space Treaty. The Argentine document is, hence, nearly two months older than the Maltese proposal. Consequently, the Common Heritage of Mankind is now being extended to an entirely different area, i.e. the seabed and ocean floor, beyond national jurisdiction.

In view of the imminent Moon landing Argentina made a proposal on 13 June 1969 whereby – in the pertinent part – it was stated: “Considering that in July various substances will be taken from the surface of the Moon and transported to Earth, *Recommends* the Committee on the Peaceful Uses of Outer Space to include in the next session of the Legal Sub-Committee, the study of the question of the legal status of substances, resources and products coming from the Moon”.

This proposal found an echo in the press: “...delegates at the United Nations are suggesting it is time to decide who owns the Moon’s products. Argentina recently raised the question at a meeting of legal experts on space law and suggested the UN study the jurisdiction on materials, resources and products taken from the Moon. Italy promptly agreed that the matter be taken up by the Outer Space Committee”.

On 25 June 1970, I submitted on behalf of Argentina the first draft agreement on the Principles Governing Activities in the Use of the Natural Resources of the Moon and Other Celestial Bodies, document registered as A/AC.105/C.2/L.71 and Corr:1), in the Ninth Session of the Legal Subcommittee on the Peaceful Uses of Outer Space.

It was thereby expressed:

*“Considering: That the Treaty of 27 January 1967 does not establish regulations specifically for activities in the use of the natural resources of the Moon and other celestial bodies:*

*Article 1*

*The natural resources of the Moon and other celestial bodies shall be the Common Heritage of Mankind.*

*Article 2*

*All substances originating in the Moon or other celestial bodies shall be regarded as natural resources.”*

The Moon Agreement adopted on 5 December 1979, was opened for signature on 18 December 1979 and came into force on 11 July 1984. In Article 11 it establishes that the Moon and its natural resources are the Common Heritage of Mankind.

Between 8 and 10 March 1982 an international Round Table was organized in New York by the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE 82), entitled “Alternative Space Futures and the Human Condition”. In said opportunity Prof. Yash Pal, Chairman of the Round Table, stated: “In the same connection, and this is going much further, I think it was Prof. Cocca who introduced a new term in space (I don’t know whether it is accepted) called the “Common Heritage of Mankind”. Now there are, of course, arguments about this still in some areas, but there are many aspects which will happen in the future. We have, of course, the Moon Treaty which is good.”

To celebrate the 40<sup>th</sup> Anniversary of the United Nations publishes a book on its beginnings “How the United Nations Works and Major Issues”. In the Section concerning its major achievements it is said that “the United Nations is responsible for the entire body of existing space law”. These international instruments are listed and then, it is added: “Finally a fifth agreement governs activities on the Moon and other celestial bodies and includes such principles as the obligation to use the Moon exclusively for peaceful purposes and declaring its natural resources the Common Heritage of Mankind; the intention to establish an international régime to govern the exploitation of the natural resources of the Moon, as such exploitation is about to become feasible; and the obligation to inform the United Nations and the public about activities concerned with the exploration and the use of the Moon”.

After this quotation a chapter on the law of the sea is included. No mention is made in this UN publication of the Common Heritage of Mankind principle. Neither is it referred to in the list of “Key provisions of the law of the sea”.

## *2. The Seabed Committee and the Law of the Sea Conference*

As mentioned before, the Permanent Mission of Malta to the United Nations submitted a Verbal Note on 17 August 1967 which was published on 18 August 1967 (Doc. A/6695). It was submitted to the United Nations General Assembly on 12 November 1967.

The first exposé on the meaning of the principle was made at the Legal Sub-Committee of the COPUOS on 19 June 1967 (Doc. A/AC.105/C.2/SR.75). It has also been pointed out that “Resolution No. 15 on Resources of the High Sea” was adopted by the Geneva World Conference on the World Peace Through Law on July 14, 1967.

The first international proposal containing the principle of Common Heritage of Mankind was presented at the Legal Sub-Committee on Outer Space by Argentina on 23 June 1970. The “Declaration of Principles governing the Seabed and Ocean Floor, and the Subsoil thereof, Beyond the Limits of National Jurisdiction” was adopted by the UNGA on 17 December 1970 (Res. 2749 XXV).

The Moon Agreement is in force since 11 July 1984, whereas the Jamaica Convention on the Law of the Sea, adopted on 10 December 1982, is not yet in force.

Commenting this Convention on the Law of the Sea, Prof. E. Pépin expressed: “Les nombreuses références à l’Humanité contenues dans ces textes on fait l’objet de sortes de catalogues, d’énumérations, en vue de faciliter les discussions, notamment dans les colloques de droit spatial, réunis par l’Institut International de Droit spatial (cf. en particulier dans les *Proceedings* du Colloque de Lisbonne 1975, pn. 42-57, un rapport du Prof. Carl Q. Christol).

C'est dans ce climat, et en s'appuyant sur des textes déjà approuvés, que le professeur argentin Aldo Armando Cocca a présenté au Colloque de Constance en octobre 1970 – deux mois avant l'adoption de la Résolution des Nations Unies du 17 décembre relative du droit de la mer et mentionnée plus haut – un rapport sur “l'Humanité nouveau sujet de droit international, nouvelle dimension juridique reconnue par les Nations Unies”. A. A. Cocca estime que “affirmer que l'Humanité est un nouveau sujet de droit, c'est seulement reconnaître un fait qui découle du progrès de la science juridique” (*Proceedings* du Colloque de Constance 1970, pp. 211-214). [...]

## ***VI. Conclusions***

The doctrine of the Common Heritage of Mankind is already thirty-two years old, and in so short a time, has been embodied in many documents, resolutions and declarations of international organizations as well as in the 1979 Agreement and in the 1982 Jamaica Convention. Day after day it is taken to new fields of international law which is indicating that jurists have looked at the concept first, and then at the principle, as conquest of legal sciences and a starting point for elaborating formulae more adapted to today's political reality, and which are able to solve old problems of international law.

Being responsible for the launching and development of this doctrine in the field of positive international law, I cannot but feel highly gratified by the work of so many highly qualified jurists from the most diverse legal systems who have given their scientific support to this proposal, as well as by the attitude of governments agreeing – generally by consensus – embody it within binding international texts as a moment which was decisive for the progressive development of international law and the legal sciences. This recognition is explicit and sincere towards the experts on the law of the sea who, starting from a short verbal note, managed to organize their work successfully in the meritorious task carried out in the 11 sessions over 9 years leading to the adoption of the Montego Bay Convention consisting of 320 Articles and 9 annexes, covering almost all human uses of the seas. As to the settlement of disputes, the Convention establishes that disputes could be submitted to an International Tribunal of the Law of the Sea, to the International Court of Justice, or to arbitration.

In this sense, the Law of Outer Space, may become inspired and closely follow the achievements of the Law of the Sea Convention and, surely, develop that old aspiration – evidenced already in 1982 – of having a statute for a Space Court.



#### ***4. 1990 – 2000: Space Law after the End of the Cold War – From Cold War to Detente in Outer Space: The Role of the United Nations in Outer Space Law Development\****

*Peter Jankowitsch<sup>†</sup>*



*P. Jankowitsch*

In order to understand and appreciate the major role and importance of the United Nations in outer space law development, it is essential to put it into the international context of a difficult period of Post-World-War II history, a period characterised by superpower rivalries and the chilly atmosphere of the Cold War.

Confrontation in the Cold War became increasingly dangerous as it successively left the European theatre in which it had started and rapidly developed into a global phenomenon. Its major players were constantly in search of new areas and fields where advantage over the adversary could be gained and military technology was certainly one of the most typical areas in which this contest took place.

The rapid development of nuclear arms was a clear sign that in this confrontation no avenue would be left unexplored. While thus land, air and sea had already been subjected to military uses the question remained to what extent the arms race would also move into new media: and indeed early ballistic weapons developed by Nazi Germany towards the end of the Second World War – forerunners of today's ballistic missiles – had already begun to infringe upon humanity's last frontier.

When, finally, in October 1957 a first man-made object was launched into outer space, it became clear that a new arena of competition between the two superpowers of the day had been opened. The question remained, however, to what extent this competition would be limited to the civilian field or whether it would also become a military one.

It is not easy to speculate, even today, on the intentions and motives of these two major players in regard to outer space. If, in the end, there was a clear turn towards more peaceful uses of outer space, we can assume that next to political considerations there must also have been economic ones, essentially the cost, even more prohibitive in those early days, of moving (and maintaining) large military structures in outer space.

As early as 1963 therefore, a few years before the conclusion of the Outer Space Treaty, a general understanding was reached between the USA and the USSR to ban the deployment of nuclear weapons or other weapons of mass destruction in outer space. Originally in the form of a bilateral agreement, it was later endorsed by the General Assembly of the United Nations.

The way thus was open for entering into a wider agreement on the principles that should henceforth govern the activities of States in the exploration and uses of outer space. The history

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of the birth of the Outer Space Treaty, leading to its signing, in January 1967 in London, Moscow and Washington, has been told many times and therefore is not in need of a new version.

Much has also been said and written about its legal significance and there is general agreement that this is and remains the cornerstone of an entirely new branch of international public law. Of an innovative nature in many respects it is setting tight limits to the exercise of state sovereignty in outer space and creates a new ethic and spirit in relations between States rarely to be found in the traditional pages of international law which is much stronger marked by “realpolitik” as pages devoted to outer space.

Unlike the continents newly discovered by Europeans from the 16<sup>th</sup> to 19<sup>th</sup> centuries, “outer space”, including the Moon and other celestial bodies, is not subject to national appropriation. And unlike the high seas, which since Salamis and Actium have been the arena of decisive military engagements, the exploration and use of space is to be “for peaceful purposes”.

It is innovative also in the sense that, to this day, it has attempted, albeit not always successfully, to move ahead of technological developments and to try to create a secure legal environment for future scientific or economic activities. This characteristic is perhaps best exemplified by the visionary dispositions of such follow-up treaties to the Magna Charta of outer space as the 1979 Moon Treaty.

By designating in its Article II the Moon itself, as well as its natural resources a “Common Heritage of Mankind” (echoing, incidentally a similar description for natural resources in the deep seabed) a step was certainly made towards a future, more broadly designed regime for such resources. The scope for such a regime would be even wider, as the provisions of the Moon Treaty are also applicable “to other celestial bodies within the solar system, other than the Earth”. Not surprisingly this Treaty, although adopted finally by the General Assembly of the UN has to this day, found only few States willing to ratify it and thus endorse the principles it contains.

### ***The United Nations & Space Law Development***

In developing the broad principles on which space rests, the United Nations had to contend, from the outset, with opposing philosophies which its member States brought to this new subject matter. Thus, the United States and the Soviet Union which for many years governed all major space activities, were primarily motivated by national security concerns and were aiming to allow some military uses of outer space some of which set in from the very beginning of the “Space Age”. Satellites soon became indispensable for military communications, reconnaissance or military weather forecasting and it is estimated that up to 75 % of all satellites launched have some military applications.

Thus, even in the Outer Space Treaty, its rules are guarded in their restraints on national military activities. Article IV, the key provision, states that “The Moon and other celestial bodies shall be used exclusively for peaceful purposes”. As for outer space generally, the only provision restricting military activities forbids the placing “in orbit around the Earth” of “any objects carrying nuclear weapons or any other kinds of weapons of mass destruction [...] or station such weapons in outer space in any other manner”. The “peaceful purposes” rubric applied to the Moon and other celestial bodies is never defined in the Treaty, but presumably comprehends more than the simple prohibition applied to outer space generally.

The reason for the different treatment of “celestial bodies” and “outer space” generally was to accommodate nuclear ballistic missiles, which were just entering the arsenals of the US and the Soviet Union as the treaty was being negotiated. A major portion of the trajectory of such missiles is in outer space, but they do not go into orbit. The language of Article IV was carefully chosen to ensure that the general principle of “peaceful uses” would not interfere with the testing of these weapons.

The treaty also remains silent on the use of military satellites for reconnaissance, surveillance, early warning, and communications.

In any case, it is clear from this history that reconnaissance and other “passive” military satellites are not prohibited by the Outer Space Treaty. This conclusion has since been confirmed by the provisions of the ABM treaty and other arms-control agreements in which the United States and the Soviet Union endorse the use of “national technical means of verification” to assure compliance, and agree not to interfere with them.

Although only a few provisions of the Outer Space Treaty deal specifically with military activities, and those that do leave much ground uncovered, the affirmation of the basic principles of peaceful purposes and international co-operation in exploration and use nevertheless remained important for the construction and application of more specific agreements governing outer space activities.

On the other hand, the space for military activities left open by the 1967 Treaty created numerous controversies over the years as efforts were made to complete its provisions so as to avoid what appeared, especially in the hotter years of the Cold War, a growing militarization of outer space.

These efforts were motivated by efforts of the early space powers, the US and the USSR to use space not only for purposes of information and communication but also to develop “conventional” space weapons: the first of those weapons were anti-satellite weapons whose development started in the late 1950s and which were brought to some perfection in the 1980s. An even more menacing perspective was opened by the idea, proposed by President Reagan in 1983 to build a space-based system of Ballistic Missile Defence using all kinds of new and sophisticated technology and weaponry.

Had this idea been realised it would have eliminated one of the pillars of the arms control system of the Cold War era that also had its relevance for space law, namely the bilateral, Soviet-American AMB-Treaty of 1972 that was motivated by a judgement that security is enhanced and the stability of the strategic balance strengthened if both sides in the Cold War forswear defensive systems. This plan would have undermined the widely accepted doctrine of nuclear deterrence, given rise to an enormously expensive escalation of the arms race and introduced weapons into a realm which had been largely peaceful, or at least non-violent.

It is not difficult to understand, therefore, that in the work of the UN Outer Space Committee militarization of outer space was one of the most contentious issues and the only one that threatened to seriously disrupt its work in the mid 80's. This issue also raised questions about the purpose of the Committee and the United Nations.

The United States, with some support from other Western countries hoped to keep this question out of the Committee and confine it to the 40-nation Conference on Disarmament, where it was less likely to attract less attention in the context of a variety of other arms control questions. A majority of countries, while agreeing that the Conference on Disarmament was

the appropriate body for negotiating formal agreements on the question, insisted that the militarization of outer space was a political issue of general concern and should therefore be discussed in a number of relevant bodies.

This was also an example of the different attitudes of the Third World and the West towards international organisations such as the United Nations. The West considered the United Nations to be a mechanism for reaching agreement on issues where agreement was possible and could serve a useful purpose. For the developing countries, the United Nations were a unique forum in which they could let their views be known to the world and exert the pressure of their numbers, even on questions where clearly there would be no practical effect.

The fact that military and security concerns of the two initial major space powers had a strong influence on the work of the UN Outer Space Committee, not least in its legal work also limited its membership. After the People's Republic of China had been restored to UN membership in 1971 it first refused to occupy its seat in the Committee as it felt that it was too largely dominated by Soviet-American concerns. Albania, that in this period was a close ally of China, followed its example. It was only some years later and in view of the increasing importance that developing countries devoted to the work of the Committee that China finally participated in its deliberation.

While it were thus the security concerns of the major space powers that put severe limitations on the development of space law, the "new majority" of the UN that became dominant in the early 60's brought a different concern to the deliberations of COPOUS: developing nations saw a need to use this new technology for the benefit of their economic and social development. There was, in particular, a fear that space benefits would remain limited to a small number of advanced countries. This view was clearly reflected in a memorandum that U Thant, as Secretary General of the United Nations submitted to the 1968 Vienna Conference on the Exploration and Peaceful Uses of Outer Space. Participants in this first global UN Space Conference were warned that "the space age was increasing the gap between the developed and developing areas at an alarming rate".

An effort was made, therefore, to give space law or initial principles of space law a direction that would also benefit developing countries. A case in point was negotiation of a set of principles relating to remote sensing of the Earth from space, adopted after 13 years of efforts by the legal subcommittee of COPOUS by Resolution A/RES/41/65 of the General Assembly of the United Nations. Here the Committee had to resolve the conflict between the principle of freedom of space activities and the general interest in acquiring global environmental and resource data, on the one hand, and the rights of countries to control access to their natural resources, on the other. Consensus was reached on the principles of a general right to collect data and the right of the sensed States to have immediate access to any data collected over their territories. In the cases of both direct broadcasting and remote sensing, the conflict was intensified in the early stages by fears that the new and somewhat mysterious space technology would revolutionise television broadcasting in the first case and exploitation of natural resources in the second. As the technologies developed and as the practical limits of operational systems became apparent, it became clear that the potential impact of the technologies had been somewhat exaggerated by the agencies that had an interest in promoting them. In the case of remote sensing, the negotiating positions of the parties became more flexible and agreement was reached.

A similar conflict that remained unresolved concerned access of equatorial countries to the geostationary orbit.

A declaration adopted by the COPOUS in 1996, whose lengthy title referred to the need to conduct the exploration and use of outer space “for the benefit and in the interest of all States, taking into particular account the needs of developing countries” reflects a further stage of the North South debate on space co-operation. Whether, as some authors believe, it even marks the end of a contentious North-South Debate in this area remains to be seen.

What it certainly does is, to combine the freedom of the exploration and utilisation of outer space with a reminder to space powers to fulfil their obligation to conduct their activities for the benefit of all countries. Space powers should foster international cooperation on an equitable and mutually acceptable basis. Developing countries interested in space activities might thus be motivated to put their energies into a well prepared strategic towards outer space. This could make many of them more equal partners in cooperation that the space powers might be ready to accept. Another consequence might be a strategy to pool their resources on a regional basis as even the industrialised countries of Europe had to do.

The mandate of COPOUS to promote international co-operation in the peaceful uses of outer space helps in some measure, to outbalance inadequacies felt in the legal field. In this respect, it is more difficult to point to concrete results, since the Committee itself does not actually carry out space activities. Most space programmes contain some degree of co-operation between countries, the practicalities of which are worked out between the responsible agencies and the technical personnel of the countries involved.

In response to the desires of the developing countries to benefit from space technology, the United Nations, through the Committee, organised two major world conferences on outer space – both in Vienna – in 1968 and in 1982. In response to the first, the United Nations established a space applications programme to provide developing countries with information on how they could use space technology. The 1982 Conference, in which 94 countries and 45 international organisations participated, was dominated by conflict between the developing and the developed countries over rights and obligations with respect to the transfer of technology. While it managed to agree that a major expansion of the Space Applications Programme was desirable, there was no agreement on funding, which continued to remain largely voluntary. Nonetheless, the existing programme does provide for a number of seminars and training courses each year in developing countries and administers a number of fellowships for long-term advanced training in space technology in developed countries. UNISPACE III to be held in Vienna in 1999 will be another attempt in this direction.

There can be no doubt that a substantial body of international space law has been created by the UN Committee on the peaceful uses of outer space, particularly by the work of its legal experts in its relevant subcommittee. This body of law has underpinned a wide array of space law developed by other UN organisations, not least the ITU and it can also be regarded as the groundwork on which regional and sub-regional organisations have drafted various instruments of space law.

On the other hand, space law development has gone, over the past years, through a series of stages that have, as was pointed out earlier, been influenced very clearly by geopolitical developments such as the course of the Cold War or the North-South conflict.

As both these phenomena have either disappeared – as the East-West conflict – or been transformed, as the North-South conflict, the question remain why this has not resulted in a

renewed blossoming of space law treaties and a new push to regulate men's conquest of outer space. The last part of this paper will therefore be devoted to discuss possible reasons why even in a new world environment development of space law remains sluggish and slow and early enthusiasms to write or at least codify space rules seems to have completely evaporated.

And indeed there is a clear break between the first decades of space law that saw, after the entry into force of the historic Outer Space Treaty the drafting and adoption of a few more classical legal instruments, such as the 1968 Agreement on the Rescue of Astronauts, the 1972 Convention on International Liability for Damage Caused by Space Objects; the 1976 Convention on Registration of Objects Launched into Outer Space; and the Moon Treaty, which entered into force in 1984, when Austria became the fifth country to ratify it.

Following the Moon Treaty the Committee reverted to the adoption of several sets of principles, the first of which was the "Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting" of December 1982, the last one being the 1996 principles on "Space Benefits" of which mention was made earlier. Very important set of principles also concern remote sensing of the Earth by satellites as well as the use of nuclear power sources in outer space.

While the importance of the adoption of these principles cannot be denied and while they reflect – perhaps with exception of the principles on direct broadcasting which were the only ones adopted by majority vote – a welcome spirit of compromise and understanding they still constitute a significant departure from previous law making efforts.

As mere principles their legal effect is certainly smaller than that of the previous conventions and while they could be important building blocks of later, more mature space law they certainly reflect a growing resistance of some of the major players in space politics to create too stringent a body of space law. This apparent unwillingness to adopt new space regulations and complete the existing body of space law has become visible once again as first efforts to find legal solutions to the problem of space debris have failed.

One reason for this development is certainly a general public mood that first surfaced in the developed world and then became more and more global to liberalise and deregulate national markets and consequently international economic relations. Such an atmosphere was certainly not conducive to the acceptance of new regulations in space, which at the same time saw the massive entry of particularly aggressive private sector players, motivated by the expectation of rapid growth and major economic opportunity. These new players therefore resisted, as elsewhere, the introduction of a legal framework that they considered to be an artificial barrier to their expansion.

Next to economic considerations, national interest also must have played its part: national space agencies, not least those operating in some of the technologically most advanced countries, apparently saw little merit in accepting new legal obligations of an international character and preferred to cast their international relations in bilateral form. While certainly accepting a responsibility to support efforts of developing countries to become users of space technology most developed countries obviously came to prefer the bilateral approach in their assistance programmes.

At the same time however, technological progress as well as new and multiple uses of outer space continue, creating new problems and challenges for which legal solutions are just as important as technical ones.

And while it remains debatable to what extent economic globalisation can safely and successfully continue without some degree of regulation, the global nature of space co-operation certainly requires universally accepted rules to stay on course so as to avoid lawlessness and conflict in outer space.

These developments will certainly renew, at some stage in the future, the traditional role of the United Nations and its Outer Space Committee as indispensable instruments and fora for the further development of space law. Their universal nature is also the best guarantee that interests and concerns of all nations can be met and compromise be reached when philosophies, policies and strategies concerning the exploration and uses of outer space are opposed.

## **5. 2000–2010: Taking Stock of the Development of Space Law After Half a Century – International Space Law in Its First Half Century\***

*Stephan Hobe†*

### **I. Introduction**



*S. Hobe*

During the last half century, space legislation has achieved remarkable successes. Starting immediately after the launch of the first artificial satellite Sputnik I, within 20 years five international conventions have been adopted. But after this time and around the adoption of the fifth international agreement, the Moon Agreement in 1979, new developments took place in outer space legislation. The different phases of these developments shall be discussed in the perspective that it seems that in an increasing way the idea of concluding binding international agreements gets to be abandoned.

In the following paper, therefore, the attempt will be made to investigate reasons for the reluctance of the international community to adopt more binding international agreements. Moreover, the question for the prospects and the perspective of this development will be posed. It shall be asked whether we are heading towards relative normativity with regard to the uses and the exploration of outer space. Furthermore, the consequences and the possible reasons of such possible relative normativity shall be earmarked. Finally, examples shall be given for a possible normative break-through that could enable the international community to come back to stronger normative standards characterised by hard law and clear definitions of key notions of outer space legislation.

### **II. The Origins of Space Flight and Early Writings on Space Law**

Space flight belongs, of course, to the original dreams of mankind. Just take the example of Jules Verne and you will discover how much inspiration mankind got by the pure idea of flying to the Moon or other celestial bodies. It was relatively early that the pioneers of space flight like the German Wernher von Braun and the Russian Konstantin Ziolkovsky discovered the use of outer space as being necessary for defence purposes. The German defence system during the Second World War was dependent on the concept of the V2 rocket that needed to use outer space. Interesting early writings on space law included such important authors like Dr. Vladimir Mandl, attorney-at-law in Pilsen, who published a short treatise of 48 pages in German entitled “Space law, a problem of space flight?”. In this short treatise, Mandl described in a

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first part the public law and the public international law aspects of space flight. Mandl terminates this part with the Treaty of Paris of 13 October 1919 in which the States parties recognise the sovereignty over the airspace. He very foresightedly observes that the respect for the national sovereignty of the airspace would have a far-reaching consequence even for space flight. He, therefore, pleads for a transit right of space objects through the airspace. Mandl explicitly asks for an outer space law. Moreover, he precisely asks the question how far the airspace would go. He foresightedly thinks of the establishment of stations in outer space. Finally, Mandl strongly pleads for international legal rules established in a space that does not, in his opinion, belong to any state. This is again an observation that anticipates developments that later have been laid down in the Outer Space Treaty of 1967.

### ***III. The Crucial Features of Space Law-Making***

Although, as we have seen, Vladimir Mandl foresaw many developments of the shape of international space law, space law making started only 20 years later.

#### *1. The First Phase: Two Decades from 1956 to 1979 of Space Law Making*

And – viewed in a nutshell – space law-making at its initial phase was a tremendous success. After the launch of the first artificial space satellite, the satellite Sputnik 1 on 4 October 1957, the United Nations started immediately to get concerned with these new activities all with a view to eventually implement legislation. Already in 1959, the Committee on the Peaceful Uses of Outer Space was established as an ad hoc Committee to the UN General Assembly. This Committee concerned itself immediately with proposals for legislation. In 1963, the UN General Assembly passed Resolution 1962 which basically included all the important features of international space legislation. This was the starting point for the eventual making of the “Magna Charta” of outer space, the Outer Space Treaty of 1967. In this Treaty, we have the non-appropriation principle in Article II, the demilitarisation principle in Article IV, the registration principle as embodied in Article VIII, the principle of the preservation of jurisdiction and control in the same Article VIII, the general possibility of space activities being carried out by nongovernmental entities in Article VI, and the principle of liability in Article VII as well as the non-contamination principle in Article IX. These are the main principles of outer space legislation, somewhat overarched by the important principle that outer space and the celestial bodies are the common province of all mankind, as embodied in Article I paragraph 1 of the Outer Space Treaty.

Later on, the international community drafted more specific legislation on some principles for the exploration and use of outer space as contained in the Outer Space Treaty. First, in 1968, the Rescue Agreement was adopted which highlighted the importance of the rather non-contested duty of all States to support (help) astronauts in distress as contained in Article V of the Outer Space Treaty. A little more contested was the Convention on International Liability for Damage Caused by Space Objects a more specific example of the general principle as contained in Article VII of the Outer Space Treaty. Important refinements have taken place in that, for example, the differentiation in a strict liability provision as far as damage occurs to space objects and a fault-based liability if the damage occurs to other objects was only highlighted in the Liability Convention of 1972. Moreover, this Convention contains several details, but, interestingly enough, does not very closely define such important notions as “launching

State” or “space object”. The definition of “launching State” in Article 1 c) of the Liability Convention contains of course elements of a definition. It provides for four different possibilities of a State being a launching State. This can be a State that launches itself, or procures the launch (for a private subject), or from whose territory a launch is made, or from whose facility a space object is launched. This has proven almost sufficient so far. However, with a view to registration, this is not sufficient any longer. On the other hand, the term “space object”, although being of key importance for international space legislation, contains a virtual non-definition in Article I (d) of the Liability Convention. According to this provision, the term “space object” includes “component parts of a space object as well as its launch vehicle and parts thereof”. It was clear that this “definition”, which is contained as well in the Registration Convention, did not suffice as a definition. It is interesting enough that so far, relatively few difficulties arose in spite of the non-definition.

As already mentioned, the registration principle of Article VIII of the Outer Space Treaty that is further refined in the Registration Convention of 1975, contains a variety of different and interesting notions. The twofold obligation to provide for a national register as well as to provide information to the United Nations Secretary-General who, in an international register, includes also the information, is one of the key international obligations of this Convention.

Finally, in 1979, the Agreement Governing the Activities of States on the Moon and other Celestial Bodies was adopted. This Convention was a total failure. Although only five ratifications sufficed to bring it into force and these five ratifications were reached after a while (1984), this agreement received until now only 12 ratifications and is – one must clearly say this – although being ratified *inter alia* by Belgium and the Netherlands still a dead international agreement. This is mostly so because of the rather unclear language as contained in Article 11 of the Moon Agreement where the Moon and its resources as well as the resources of other celestial bodies are declared to be the Common Heritage of Mankind.

It is very interesting to observe that all of the five international agreements contain clauses that allow for the making of specific amendments after a certain period of time; this is e.g. the case in Article XV of the Outer Space Treaty, Article 8 of the Rescue Agreement and Article XXV of the Liability Convention as well as Article 9 of the Registration Convention. No such amendments have been made so far. Moreover, the Convention on the Registration of Objects Launched into Outer Space contains a review clause in its Article XXVI that allows for such a review ten years after its entry into force; this would have been in 1985. Also the Moon Agreement contains in its Article 18 such a review clause which would have become effective in 1989. It is thus indicative that of the five international agreements only the Outer Space Treaty with its almost 100 ratifications has found wide-spread support of the international community, the others being in the range of between 60 and only 12 ratifications. Interestingly enough, no amendments to international agreements and no request for a review of such agreements have been made so far.

## *2. A New Second Phase (1980 – 1992): UNGA Resolutions for a Softening of Legal Commitments?*

Rather, in a next phase that started around 1980, a new method of international law-making for outer space activities was applied: the adoption of United Nations General Assembly resolutions. This was the case with regard to guidelines for the use of direct broadcasting satellites.

Here, the rather contested question of a signal overlap as well as the possibility of hindering incoming signals of other broadcasting entities from abroad was discussed by the international community. “Free flow of information” versus “prior consent” was the ideologically inspired question of these days that, as one must clearly admit, in times of the globalised world of national telecommunications of today, does not play a vital role any longer. However, certain quota for national products still play a role if it comes, for example, to certain European States, e.g. France.

Moreover, in 1986, the United Nations General Assembly adopted a next resolution on the use of remote sensing satellites. Here again, a similar question was at stake, namely that and in how far the sensed State could either deny the permission to the sensing State, or at least profit from the giving of a permission in that products of the sensing activities should be given to the sensed State. The principles do in fact signal a compromise. Some authors consider this greater part to be still valid customary international law, others contest such value.

Finally, in 1992, the UN General Assembly adopted Guideline Principles on the Use of Nuclear Power Sources on Board of Space Objects. Here, for safety reasons, certain requirements for the use of such sources were made and the resolution eventually adopted.

What is the effect of UN General Assembly resolutions? It is well known that these resolutions do not have a legally binding character. Rather, they are an indication of a certain State practice supported by *opinio juris*, but are, because of a lack of legislative power of the UN General Assembly, short of being hard public international law. At least initially, the non-binding character of a resolution was deliberately chosen in order to soften the hardcore applications of the space-faring nations and of others. In other words: in order not to destroy the harmony, one could agree on something of legally non-binding character.

### *3. After the End of the Cold War (after 1992 – 2005): A Phase of Reinterpretation of International Space Law?*

Such developments went on through the 1980s until 1992. 1992, obviously, is indicative of a fundamental change of paradigm in international politics as well as in international (space) law. The end of the Cold War between the East and the West had of course important repercussions on the making of space law as well. Moreover, very importantly, the one remaining superpower felt more and more attempted to lose an interest in concerted UN space law-making.

a) What is characteristic for the new phase of space law-making that started a few years after the end of the Cold War around 1992? Interestingly enough, this new and third phase that lasts until today, for the last fifteen years or so is characterised by a re-definition of major notions of international space law in the form of UN General Assembly resolutions. So it is kind of a mix of the methods chosen in the first and in the second phase. This can be first exemplified by the 1996 Declaration on Space Benefits. Since 1988, an almost rephrasing of Article I paragraph 1 of the Outer Space Treaty was on the agenda of the UN Committee on the Peaceful Uses of Outer Space. The Committee, at the request of developing countries, had given itself the task of making concrete recommendations of how States should fulfil their obligation to international cooperation in the sense of Article I paragraph 1 of the Outer Space Treaty. The Space Benefits Declaration is far from concretising such obligations. It is more of the opposite: It highlights almost total freedom of States to choose the means and ways of implementing the cooperation obligation. So, basically, nothing was specified in the Space Benefits Declaration.

b) Next, the rather unclear notion of “launching State” was subject to reconsideration by the Legal Subcommittee. Here, a working group started with its work and came up with the interesting and new proposal declaring that with a view to the current difficulties of making progress in international space legislation, it was up to the member States to implement respective national space legislation where the problems of space objects should be dealt with. This was insofar interesting and important as with this the new phenomenon of private space activities as a result of the growing commercialisation of space activities was taken into account. And indeed, after the year 2000, a number of important national space laws came into existence. This all has to do with the important obligation as contained in the Outer Space Treaty that member States must authorise and continuously supervise private space activities (Article VI Outer Space Treaty). Up to now, 13 States have enacted national space legislation and another 8 are preparing it. In other words: States started to discover that if one wanted to foster commercialisation and privatisation of space activities for the purpose of self-protection, some national space legislation was needed that e.g. allowed for the recourse against private actors. Thus, the more and more unclear international law is still accompanied by a growing body of national space law.

c) Finally, since 2005, the Outer Space Committee of the United Nations is concerned with the practice of States with regard to the registration of space objects. Again, a key notion of international treaty law for outer space activities is going to be reconsidered, cautiously though as only an overview of current state practice is on the agenda of the Committee. But this overview shall be given also with a view to making more concrete and more effective the existing international legal obligations. Again, the final aim shall be the adoption of a UN General Assembly resolution that calls for an authoritative interpretation of key notions for international space legislation.

#### ***IV. Key Aspects of International Space Legislation Reconsidered***

Besides other factors, two aspects of this new development deserve particular mentioning:

##### *1. The Consensus Method as the Basis of Law-Making*

Relatively early after its coming into existence, the United Nations Committee on the Peaceful Uses of Outer Space agreed at adopting a consensus method to its decision-making. Consensus is based on the fact that no formal vote is ever taken, but that informally, the search for consensus governs the entire negotiating process. The chairperson of the fora concerned with law-making must look for such consensus and basically any negotiating partner has the right to disagree with such statement of an achieved consensus. Therefore, basically each of the negotiating partners has a veto right. This, obviously, considerably prolongs the process for international law-making. It ensures on the other hand, that all the parties concerned can live with the result because they have consented to it. However, after some 40 years of applying this method, some critical remarks may be allowed.

In the opinion of the present author the consensus principle first of all leads basically to a considerable prolongation of the negotiating process. This is obvious, because instead of a vote always a search for consensus must take place. Moreover, and maybe even more importantly, the search for consensus is in danger of causing a fatal dilution of the preciseness of the wording of international space legislation. The wording of “space object” or “launching

State” or the timing for registration in terms of “as soon as practicable” are typical examples for the smallest denominator which can be a typical result as a consequence of a method that must always look for consensus in order to guarantee progress. It shall, however, not be negated that at least during the first twenty years, the consensus method was quite successful. But, as we have seen, there are also dark sides of this method in terms of the preciseness of key notions, especially in so-called package deals, that in the opinion of the present author might today overshadow the arguable merits of this method.

## *2. The Importance of Redefinitions*

The more recent time has shown moreover, as demonstrated in the previous section, a tendency towards redefining international treaty law for outer space activities. This development started around the end of phase two. With regard to “space benefits” as a notion contained in Article I paragraph 1 of the Outer Space Treaty and later on “space object” as contained in the Registration and in the Liability Convention and now “registration” as contained in the Registration Convention by way of the UN General Assembly resolutions, new attempts to (re-)define key notions of outer space legislation are directly under way. Seen in a methodological perspective this is a doubtful undertaking. It very clearly pays tribute to the fact that the international space law community does not feel in a position to go ahead with space legislation by redrafting a treaty. Rather, the non-binding form of a UN General Assembly resolution is chosen in order to highlight the importance of certain key notions of international space legislation. From the point of view of the observance of the rule of law, this development can only be regretted. It may, of course, be that an interpretative note in the form of a UN General Assembly resolution is more than nothing, but the question is allowed why the method of amendments (or even of review) to the international agreements has not been taken so long. One of the reasons may be that some States feel more comfortable in having less binding agreements which means also less of an observance of the rule of law.

## *V. Next Steps for Going Back to Stronger Legal Commitments*

These rather sceptical observations do not lead to some kind of progress if they are not transformed into positive action. Therefore, four proposals in this regard shall be made:

### *1. Registration as a Crucial Principle*

The international community has currently an opportunity to come back to the observance of strict international space law. The current process of reconsidering certain notions of the law as contained in the Registration Convention provides for such an opportunity. It is clear that some of the current problems with the Registration Convention are posed because there are a lot of private space activities. Take the example of transfer in orbit, or countries that negate their international legal obligation to register in cases of the launching by private companies from their territory or by international organisations. Moreover, the information provided for by the Registration Convention is by far not sufficient in order to allow for a precise overview on the space object. It is therefore in the interest of all mankind if important precisions to the Registration Convention are being identified through the working group currently under way and that the Committee makes a courageous step forward and comes up with some amendments

to the Registration Convention. The ILA Space Law Committee will provide concrete proposals for such amendments. Obviously, the adoption of a UN General Assembly resolution on guidelines for the interpretation of the main principles of the Registration Convention are more than nothing and therefore would also be a first step into this direction with a view to a later development of such interpretative guidelines into an amendment to the Registration Convention.

## *2. Space Tourists as Astronauts?*

The next step could be the Astronauts Convention of 1968. This Convention that will soon (in 2008) celebrate its 40th anniversary is still up to date as far as the traditional uses of outer space by astronauts are concerned. But it is rather doubtful whether it will suffice for modern undertakings like space tourism ventures. In that respect, it should urgently be reconsidered whether specific conditions for the flight of so-called “flight participants” – these are the non-professional astronauts that fly primarily for touristic purposes – should be worked out and added to the Astronauts Convention. This would perhaps help a growing industry to grow further and would also shed some light upon the sometimes not undisputed question of the delimitation of airspace and outer space. Again, either a UN General Assembly resolution in the form of interpretative guidelines to the Astronauts Convention or an explicit amendment to that Convention should be the order of the day.

## *3. Model Law for National Space Legislation*

Moreover, the examples just given have clearly shown that national space legislation in times of a growing privatisation and commercialisation of space activities becomes more and more important. And we have seen that the number of national space laws has grown, from just a few to already 13 of such laws, 8 more such laws being currently in preparation. It could therefore be worthwhile if the international community through the UN Committee on the Peaceful Uses of Outer Space would adopt a model law for national space legislation. Such model law would provide guidelines for domestic space law drafting and thus stimulate the respective national processes and strengthen the rule of law.

## *4. Moon Agreement*

The International Moon Agreement foresees a review 10 years after its coming into force (Article 18). Such was the case in 1984 so that in 1994, the time limit was reached. Nothing has happened so far. But there is no clear understanding with regard to the limits of commercial exploitation of the Moon and other celestial bodies. Such exploitation could become more and more feasible and it is rather unclear what apart from the rare provisions of the Outer Space Treaty its legal basis would be. The more recent debate on the selling of land on the Moon is an interesting demonstration of new developments. Therefore, the UN Committee on the Peaceful Uses of Outer Space should take the initiative and look into the examples of the Law of the Sea Convention of 1982 and the Implementing Agreement of 1994. It should start to creatively reconsider what the Common Heritage of Mankind concept means in today’s international legal environment with regard to the commercial exploitation of outer space and its resources as well as of the resources of celestial bodies. Here, the 2002 Resolution 1 of the International Law Association of the ILA Conference in New Delhi could be of some guidance.

**VI. Perspectives**

Without any doubt, the sharpening of key notions of international space law is needed. In times of the growing likelihood of future commercial exploitation of the Moon and other celestial bodies, a concrete and precise understanding of these key notions as anticipated already by Vladimir Mandl in 1932 is of great importance. What is also important in this respect is therefore that the international legal obligations of States and private entities are precisely phrased and have binding character. Therefore, a strong plea is made for the UN Committee on the Peaceful Uses of Outer Space and the UN General Assembly to come back to the first phase of international space law-making and to enrich such existing international agreements that are somewhat out of date by specific amendments accompanied by national space legislation. Such additions would bring the *corpus iuris spatialis* up to today's international needs and requirements.

## **6. 2010–2020: Uses of Cyber Space and Space Law The Legal Dimensions of Cyber- Conflict with Regard to Large Satellite Infrastructures and Constellations\***

*Larry F. Martinez†*

### ***I. Introduction: The Internet Is Disrupting Outer Space Governance***



*L. F. Martinez*

2017 will mark the 60th anniversary of the orbiting of the first artificial Earth satellite, Sputnik, and the beginning of the modern era of space exploration. Although space exploration and exploitation cannot function without reliable and interference-free telecommunications links, the initial outer space legal regime was founded upon “hard” (i.e., legally binding) law treaties drafted by the UN Committee on Peaceful Uses of Outer Space (UNCOPUOS) in the 1960s-1970s that, for the most part, did not specifically address legal aspects of space *telecommunications* regulation. Space telecommunications, including radio spectrum allocations and management, was specifically tasked to the International Telecommunication Union (ITU) through its constitutive charter and radio regulations as legally binding agreements beginning in 1963.

The ascendancy of telecommunications-related services as the prime application of outer space technologies prompted the UNCOPUOS to draft and the United Nations General Assembly in the 1980s to adopt non-binding resolutions addressing concerns of countries regarding remote sensing and direct TV broadcasting from space satellites, concerns that were not specifically addressed in the hard law space treaties. The ITU’s periodic World Radio Conferences promulgated the Radio Regulations, “hard” law rules that allocated and managed frequency bands for interference-free satellite operation, while UNCOPUOS-drafted treaties established legal “rules of the road” for accessing and using the orbital regions for the “benefit of all mankind”. Most significantly, however, the legal contours of the UNCOPUOS-ITU regime closely fit the technological configurations of the first generations of “analogue” space telecommunications systems.

Using analogue modulation techniques (i.e., amplitude modulation or frequency modulation, among others) for relaying voice, sound, or video, geostationary (or elongated polar orbiting “Molnya”) satellites were configured as “bent pipes” that re-transmitted back to Earth what they received. In other words, the communications payload (ITU) of a satellite was distinct in a technological and regulatory sense from the physical engineering platform of the satellite itself as launched and placed into orbit (UNCOPUOS).

It is important to note that satellites from the very beginning of the space age employed analogue payloads and digital control technologies. While satellites through the 1990s relied

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on analogue techniques for information relay amongst Earth-bound analogue network providers, the control over satellite functions was accomplished through highly secure telemetry links digitally “piggybacking” on analogue pathways between large Earth stations and the satellites. Significantly, the analogue “payload” – the actual profit-generating communications services whether TV, voice, or other services – was analogue and technologically dissimilar from the digital telemetry pathways used for controlling the satellites. The shift to all-digital satellites that began in the late-1980s, accelerated not only satellites’ ability to provide in orbit switching and Internet services to widely-dispersed users, but also exposed satellites to the same enormous cyber-vulnerabilities that Internet connectivity poses to all networked users. To understand why the Internet is insecure one must look at its origins.

The Internet began in 1969 as an experimental program conducted by the U.S. Department of Defense to develop a digital networking technique called “packet switching” that could allow dissimilar computers at university and governmental research facilities to seamlessly exchange data. Key to the ARPANet’s successful deployment in the 1970s and 1980s was the TCP/IP (transmission control protocol/Internet protocol) software protocol that allowed dissimilar computer networks to seamlessly exchange data through voluntary adoption of the TCP/IP interconnection. Packet-switching decentralized network administration as links were selected “on the fly” by the network’s routers, allowing the network to constantly exploit unused capacity while at the same time correcting for any disturbances or inoperative links. As a network utilized initially by the close community of computer researchers, a high degree of trust supported open and transparent network software such as the TCP/IP inter-connection protocols. From the very beginning, that openness and transparency highly prized by the computer community also discouraged any fundamental efforts to build in features that would enhance security. In the early 1990s, the ARPANet graduated from the universities and became the “inter-network” or “Internet” as commercial network operators also began to voluntarily interconnect their networks using the TCP/IP protocol. The efficiencies of packet-switching and the ability of the TCP/IP protocol to seamlessly interconnect dissimilar computer networks propelled the Internet’s rapid worldwide deployment in the 1990s, albeit with the security vulnerabilities endemic to an open and transparent network architecture instilled by its computer community origins.

To meet the burgeoning worldwide demand for Internet connectivity, network operators in the late-1990s began to look to satellite manufacturers and operators for innovations beyond conventional geostationary (GSO) satellite configurations that could provide affordable Internet connectivity to over half of the human population living in underserved regions. Beginning with Motorola’s Iridium system, satellite manufacturers and operators began in the 1990s to propose large, non-GSO, satellite constellations that would, through inter-satellite links, replicate in low Earth orbit the Internet’s packet switching network architecture.

## ***II. Large Satellite Constellations***

Large satellite constellations, consisting in some proposals of hundreds or even thousands of satellites, are designed to bring low-cost Internet access to underserved regions of the globe, and are now, like the Internet itself, disrupting the long-standing legal and regulatory accommodations between the “hard” law cyber-spatial (telecommunications) and outer space re-

gimes, i.e., the ITU-UNCOPUOS bifurcated regime. Moreover, the growing cyber vulnerability of Internet-based networks in general, and of large constellation satellite infrastructures in particular, operates as one of the key factors shifting space governance to a “soft” law regime, potentially in a very disruptive fashion more reminiscent of the current trends in the “multi stakeholder” forums for Internet governance, such as the Internet Corporation for Assigned Names and Numbers (ICANN). Proposed deployments of large Internet-based satellite infrastructures and constellations in low Earth orbits pose three systemic challenges to established legal and regulatory dimensions for cyber-interference and cyber conflict issues: (1) digital Internet network architectures; (2) spectrum allocations and co-ordinations; and, (3) threats to reliable operation. Taken together, these three clusters of systemic change mark the merging of the digital “soft law” governance model for telecommunications into the pre-existing analogue “hard law” regime for outer space. Outer space will be governed increasingly as “cyber-space.”

### *1. Digital Internet Network Architectures*

Cyberspace and outer space are areas of human activity created by technology. Governance, as a combined effort by authorized entities to promulgate, enforce and interpret principles, rules, and regulations affecting the long-term use of cyberspace and outer space, must, from the outset, take technological factors in account. While technological determinism is usually an oversimplification, the emergence of large constellation satellite infrastructures represents a technological evolution with far-reaching implications for governance.

A major component of the Internet’s disruptive influence on the evolution of outer space governance is due to its very nature as a digital telecommunications infrastructure. In replacing the pre-existing analogue infrastructures, the Internet’s packet-switched digital network architecture also brought with it a highly decentralized and non-governmental management arrangement that represents the polar opposite from the earlier governance regimes during the state-monopolist analogue era of telecommunications (both terrestrial and space) regulation that was in effect during the promulgation and entry into force of the “hard” law space treaties in the 1960s-1970s. One other systemic difference marks the digital era as different from the analogue with regard to cyber-conflict. While it was possible to tap into analogue networks for purposes of monitoring, there was almost no opportunity for “hacking” the network’s electro-mechanical analogue components. With the introduction of computerized electronic switches in the late-1960s, some parts of the public-switched network converted to digital technology and thereby became a preferred target for “hackers”. In the early 1970s, two college students in California used inexpensive hobbyist electronic components to mimic digital signalling tones in their “dorm room prank” manipulations of AT&T’s worldwide “Touch-Tone” digital switching technology. These students later went on to establish the Apple computer company.

Analog telecommunication techniques require an “always-on” discrete communication pathway between communicators. The dial tone heard on conventional landline telephone systems indicated to the subscriber that the copper wire link was operating to the network provider’s central office switch. That electro-mechanical switch created discrete pathways between subscribers or between subscribers connected through a series of central office switches.

The economics of “natural” monopolies dictated a highly centralized structure for network operation, administration, and regulation. Satellites were “bent-pipe” extensions of the existing terrestrial analogue circuits between switches and subscribers. In most cases, the same

governmental telecommunications monopolist (usually the Poste, Telegraph and Telephone – “PIT”) represented a particular State party in the promulgation of the ITU Radio Regulations or the UN’s space treaties regulating use and operation of satellite networks. In an operational sense as well, governmental monopolist operators dominated both the major satellite communication providers (INTELSAT, INTERSPUTNIK, INMARSAT, EUTELSAT, ARABSAT, among others). Networked access to GSO satellite links was accomplished through large, very expensive Earth stations, owned and operated by the very same governmental-monopolist entities that represented the state parties in the ITU and UN negotiations leading to “hard” law treaties.

Advances in computer technologies and software also brought about dramatic reductions in information transaction costs predicted by “Moore’s Law”. Translating analogue information into digital ones and zeros allowed network operators to exploit computer efficiencies that obsoleted centralized analogue switches. Voice, video and data could be electronically packaged into digital “packets” that could be sent between the computerized routers constituting what became the inter-network network, or the “Internet”. The nearly seamless integration of computing with network interconnections proceeded through an administrative structure legitimized by the binary performance of the inter-connection (does it work, yes or no?).

The Internet, in contrast to analogue networks, is the regulatory product of a U.S. governmental “hands-off” developmental process conducted by universities working with private digital network providers and data processing companies. The horizontal multi-stakeholder ad hoc regulatory process that grew up around the Internet is out of synch with a vertical and very hierarchical regime structure among governmental-monopolist analogue network operators that sought to maintain their dominance in the institutions constituting the state-centric cyberspace and outer space legal regimes. However the plate tectonics of regulatory evolution are exposing legal fault lines between the Internet and the state-centric regime.

These fault lines were recently brought to light as the UNCOPUOS, the chief global forum for discussing and formulation of the regulatory “rules of the road” for outer space met for its 59th meeting from June 8-17, 2016 in Vienna, approving the first guidelines for long-term sustainable use of outer space. Along with its sister UN organization responsible for frequency management for satellites, the International Telecommunication Union (ITU), both organizations sponsored meetings in June 2016 focusing on efforts being taken by international community in its attempts to grapple with a fundamentally altered regulatory environment for Earth’s orbital regions with significant implications for larger security issues, including those stemming from cyber-related challenges posed by large constellations of Internet-connected satellites at low Earth orbital altitudes.

## *2. Spectrum Allocations and Coordination*

Beginning in the analogue era of the 1960s-1980s, most public-switched telecommunications infrastructures utilizing geostationary low-power satellites were connected through massive terrestrial antenna facilities operated by governmental monopolists (epitomized by the INTELSAT “Standard A” Earth station). As noted above, satellites were “bent-pipes” allowing the interconnection of discrete analogue communication pathways between central office switches dispersed over the satellite’s hemispheric footprint. ITU World Radio Conferences allocated spectrum and specified the procedures for coordinating simultaneous use of frequency bands among contending users (chiefly in the C-, Ku-, and Ka-frequency bands) of satellite systems

in the geostationary orbit. The ITU Radio Regulations were binding “hard” law legal agreements that assigned specific rights to interference-free spectrum use and geostationary orbital slots. Cases of spectral interference would be “coordinated” among the different governmental monopolist claimants to a particular spectrum band and orbital slot(s) as specified by the ITU Radio Regulations and other ITU constitutive agreements.

As noted above, the transition to digital telecommunications networks brought with it a growing diversity of users as governmental “natural” monopolies were broken up in the 1980s-1990s in a wave of telecommunications reforms undertaken first by the leading technology nations and gradually by industrializing countries intent on capturing the Internet’s dynamism for their own nascent information economies. What used to be an analogue networks’ “old boys’ club” of monopoly providers, had become a digital “free for all” as computer, software, and networking firms competed to bring the Internet’s cornucopia of information to customers’ personal and workplace computers initially using wired network connections. Moore’s Law continued to accurately track the shrinking digital chip with the result that cell-phones became hand-held ubiquitous computers by the late 1990s. However, limitations in the bandwidth available for public-switched cell networks severely limited the information handling capabilities of the increasingly powerful handheld devices now flooding the market. Into the 21<sup>st</sup> Century, the digital smartphone revolutionized the concept of connectivity and spectrum use. Today, peta-bytes (a million gigabytes) of data are exchanged daily between an estimated billion+ connected smartphones worldwide using “Wifi” and cellular spectrum, increasingly seen as encroaching on those ITU allocations long used by geostationary satellite networks.

So-called “Wifi” spectrum exemplifies the shift in electromagnetic governance brought on by the Internet and computer revolutions. The ITU in 1947 allocated spectrum for short distance applications, including use of the 2.4 GHz band for microwave ovens. In 1985, the ISM (Industrial, Scientific and Medical) radio bands, were released for use by unlicensed entities by order of the U.S. Federal Communications Commission (FCC). Using digital radio “spread spectrum” modulation techniques, manufacturers of networking equipment were able to create a multi-billion dollar worldwide market in Wifi devices by the early 21<sup>st</sup> Century. Spread spectrum is a digital radio technique of placing information into electromagnetic waves that may directly overlay other waves, relying on software to extract and decipher the embedded information by the receiver. As such, spread spectrum represents a radical departure from conventional analogue spectrum governance that sought to avoid interference by limiting use of frequencies to one authorized user in a particular geographical location. Today, billions of devices interconnect wirelessly in the ISM radio bands used by Wifi equipment, mainly at 2.4 GHz and 5 GHz. The regulatory dominance of the monopolist user was coming to an end.

The June 2016 ITU symposium focusing on the interference issues facing satellite operators outlined the concern whether the ITU’s spectral governance can sustainably accommodate both terrestrial and space spectrum needs for the coming decade(s). Occurring during the same week as the UNCOPUOS meeting in Vienna, both organizations grappled with governance issues challenging reliable operation of satellite systems stemming from physical as well as electromagnetic sources of conflict.

### 3. Threats to Reliable Operation

#### 3.a) Physical Threat: Space Debris

In the broadest, long-range historical view, large satellite constellations have always been an intriguing option for telecommunications providers seeking to exploit the “high ground” of space for reliable worldwide links. Probably the most extreme example of a “passive” large satellite constellation was the Project West Ford launched in 1961 (assumed failure to deploy) and 1963 that deposited “millions” of 1.8 cm copper wires into a 3,500 kilometre polar orbit. Each copper wire was designed to operate as 8 GHz dipole antennas for the purpose of reflecting radio waves between terrestrial communicators. The successful experiments likewise in the early 1960s with “active” satellite relays in LEO (Telstar) and at geosynchronous altitudes (Syncom) obsoleted further plans to test large satellite constellations until the early 1990s, when Motorola presented its proposal for what became the 66-satellite Iridium LEO network. Iridium was followed by deployments of Global-star and Orb-com LEO satellite constellations beginning in the 1990s. Although the three LEO constellations eventually demonstrated their ability to provide a cellular-like service to underserved areas, their customer appeal was limited due to terrestrial cellular’s rapid evolution to smaller and Internet-capable handsets.

Teledesic was the first LEO constellation specifically designed for Internet connectivity. Its ambitious aims to provide global Internet access through a constellation of up to 840 LEO satellites was suspended in 2002, but not before receiving a worldwide spectrum allocation in the Ka-band from the ITU.

Although not a cyber problem *per se*, hundreds or even thousands of small satellites pose a physical challenge to the legal goal set by the Outer Space Treaty for long-term sustainable access for all countries. The problem is trash, orbital trash called space debris that now threatens to make unusable huge swaths of the most favourable near-Earth orbital regions between 300 and 2000 kilometres altitude. Thousands of pieces of debris were created by a Chinese anti-satellite (ASAT) test in 2007 that blew up a retired Chinese satellite and the benign neglect that marked international discussions about space debris up to that point. Following the 2009 collision between a Russian rocket fragment and a perfectly functioning Iridium low Earth communications satellite, the imminent demise of safe space operations suddenly focused the UN’s attention. If it had only stopped there, the space debris issue would be treated in the UN’s typically ponderous but nonetheless predictable manner. This was exhibited at the June 2016 UNCOPOUS meeting where delegations managed to adopt a portion of the guidelines being drafted and discussed by its Working Group on Long-Term Sustainability (LTS). The first “New Space” communications system may be OneWeb, which addressed an ITU confab on satellites and the information society on June 7<sup>th</sup> in Geneva. OneWeb plans to launch 648 satellites by 2020, configured into 18 orbital planes orbiting at an altitude of 1200 km, communicating through potentially millions of Earth-bound routers in the Ku and Ka-bands. The lower orbital height reduces the required power levels of both satellites and ground terminals, plus a reduced latency for round-trip signal paths as compared to the half-second delays with the much higher geostationary links at 35,000 kilometres. OneWeb is not alone. Amazon’s Jeff Bezos and Facebook’s Mark Zuckerberg also have plans for their own large constellations of small low Earth orbit satellites bringing their flavours of Internet content directly to billions of future developing country and rural Internet customers. And you can bet that Google is not going to be left out of the LEO party. All told, even if only some of these systems actually get the funding necessary, within a few years literally thousands of small satellites, both alive and

dead, will be orbiting a few hundred kilometres overhead. The potential benefit to bring broadband Internet to billions of developing country and rural users is significant but so too is the problem with space trash.

Advances in commercial “New Space” satellite and launcher technologies (witness Elon Musk’s SpaceX’s booster rocket landings follow launch) have perhaps made such large constellations feasible following the deployments in the 1990s of the Iridium and Global-star non-geostationary systems. But with thousands of satellites, all with limited engineering lifetimes, the probability is high that a sizeable number will inevitably fail, become inoperable either in orbit, or fail to automatically de-orbit themselves as promised by the network operators. Thus we have a collision in orbit between the commercially-driven new entrepreneurs who want to take advantage of the miniaturizing technologies and the larger collective good of preserving orbital regions clean of space debris.

### 3.b) Electromagnetic Threats

Cyber industries are upsetting the conventional space governance applet, especially in terms of electromagnetic security. For one, the cyber sector is financially huge, much larger than space. NASA’s current budget is about \$19 billion. Last year, Facebook spent reportedly \$22 billion just to buy WhatsApp. Recently, Apple reported its first market downturn in 13 years; it still earned profits more than NASA’s entire yearly budget. To paraphrase, one could today observe that ‘cyber wags the space dog’. Now cyber giants Google, Facebook, Amazon, and their ilk are about to bulldoze a whole new space topography by launching thousands of small satellites into low Earth orbits to bring the Internet from space directly ‘to a smartphone near you, hackers and all’.

The bifurcated ITU-UNCOPUOS regime’s attention is shifting from its longstanding focus on the geostationary satellites which are big and relatively few in number and operated by big governmentally-linked operators, to the much smaller and numerous commercially deployed entrepreneurial systems commonly called “New Space”. And here is where the policy process is proving to be very sticky with great amounts of governmental inertia slowing the shift to a new set of “rules of the road” for the nimble space-internet entrepreneurs.

Perhaps the most pressing problem threatening the operation and future of the Internet is cyber-conflict, intrinsic to all digital technologies. For wireless networks such as satellites, cyber-conflict was during the analogue era confined chiefly to “jamming”. Jamming, or intentional harmful interference (IHI), disrupts the communication pathway through transmission of a strong electromagnetic signal that (1) blocks the Earth-bound receiver’s ability to capture the intended satellite signal, or, (2) blocks the satellite receiver’s ability to receive and re-transmit the intended signal back to Earth-bound receivers. IHI is illegal under ITU Radio Regulations and the ITU Constitution.

As reported at the June 2016 ITU symposium on satellite interference issues, IHI is also on the wane. Digital signal processing techniques enables satellite receivers to discriminate between desired and jamming signals. Improved signal forensics can quickly identify the IHI perpetrator, as well as equipment with embedded signal identifiers. As older generations of analogue satellites are retired and placed in graveyard orbits, the IHI threat may significantly diminish further. Moreover, better training and certification of Earth station operators will avoid many instances due to incompetent personnel. However, the electromagnetic vulnerability of new generations of digital satellites to malicious software hacking in all orbits is growing.

Jason Fritz, in his 2013 article, “Satellite Hacking: A Guide for the Perplexed”, categorizes four kinds of malicious hacking:

*“Satellite hacking can be broken down into four main types: Jam, Eavesdrop, Hijack, and Control. Jamming is flooding or overpowering a signal, transmitter, or receiver, so that the legitimate transmission cannot reach its destination. In some ways this is comparable to a DDoS [Denial of Service] attack on the Internet, but using wireless radio waves in the uplink/downlink portion of a satellite network. Eavesdropping on a transmission allows a hacker to see and hear what is being transmitted. Hijacking is the unauthorized use of a satellite for transmission, or seizing control of a signal such as a broadcast and replacing it with another. Files sent via satellite Internet can be copied and altered (spoofed) in transit. The copying of files is eavesdropping, while spoofing them is hijacking, even though the access point and skillset used for file spoofing fits better with eavesdropping. This illustrates the ability, in some cases, for hackers to move seamlessly between categories, and the difficulty of placing strict categorization on types of satellite hacking. Controlling refers to taking control of part or all of the TT&C ground station, bus, and/or payload – in particular, being able to manoeuvre a satellite in orbit.”*

The actual vulnerability was evidenced by alleged hacking originating from Russian territory of a US-German research satellite, “ROSAT”, in 1998 rendering it useless after commanding its ultra-sensitive sensor to point to the sun. On August 16, 2016, China successfully launched “Micius” satellite, an experimental testbed for using quantum encryption employing principles of photon entanglement derived from quantum theory.

### ***III. Concluding Observations: Digital Governance of Outer Space***

The proposed constellations of hundreds of low Earth orbit satellites for provision of Internet connectivity to potentially billions of users poses direct challenges to existing legal procedures and precedents for outer space governance in general, and cyber-conflict in particular. First, as discussed above, such constellations are organized around digital network architectures. The Internet’s packet-switched digital architecture is intrinsically de-centralized in administration and control, but highly susceptible to unauthorized use and hacking. Thus any satellite system so intimately integrated into Internet infrastructures would itself be highly vulnerable to network disruptions. The analogue era division between the satellite communications payload and the satellite’s engineering platform no longer exists, creating the potential cross-hacking now evident for example in automobiles and perhaps even aircraft. Secondly, large low Earth orbital constellations will seek to use spectrum being used and sought by terrestrial digital mobile and geostationary satellite network providers. The engineering complexity and inevitable failures among hundreds of small satellites makes spectrum conflicts inevitable. Thirdly, the large constellations pose a significant vulnerability in terms of space debris and as a target for malicious hacking and IHI. In sum, the ITU-UNCOPUOS dichotomous “hard law” outer space regime will increasingly be absorbed into a system of “soft law” governance currently being developed by the Internet community.

### *1. The Commons Model for Outer Space Governance*

The “flat” and open access structure for the multi-stakeholder Internet community has proved highly resilient to traditional “hard law” governmental efforts to subsume it within an enclosing traditional institutional structure consisting of governments and their authorized network providers. Instead, the ITU itself has become much more oriented to a more open multi-stakeholder organizational structure. The UNCOPUOS has also inched towards a more open organizational architecture. Meanwhile, its June 2016 meeting set out a process for promulgation of Long-Term Sustainability Guidelines on a purely voluntary basis, most significantly for the issues of space militarization, space debris, and cyber-conflict.

According to economist Jeremy Rifkin, the world is only now beginning to realize the depth and breadth of the paradigm shift transforming governance brought on by the information revolution. The hard shell of the traditional Westphalian sovereignty model of the nation-state fits neatly with hard law versions of top-down treaty governance. Analog networks were dominated by governmental monopolists and these were replicated in outer space. Technology is moving towards self-organizing intelligent “mesh” networks imbued by their creators with increasingly sophisticated levels of intelligence for self-management. What is needed is transparency in order to ensure security. As large constellation satellite networks take on ever greater attributes of shared mesh network configurations, governance will likewise shift, in Rifkin’s words, towards a “collaborative commons”.

#### *1.a) Future Commons Directions: ICANN, Space Data Association, Internet of Things*

The desired ubiquity of Internet connections required for modern commerce and communications is already driving business models towards an increasingly diversified range of satellite infrastructures and large constellations in GSO, MEO, and LEO orbital regions for customized provision of Internet connectivity. The Space-based Internet includes these proposed systems:

- 1. One Web – Richard Branson’s Virgin Group – Qualcomm – formerly World Vu, has ITU authorization for Ku-Band at 1,200 km for planned 648 satellites.*
- 2. Elon Musk announced on January 16, 2015 SpaceX’s plan for a network composed of 4026 satellites orbiting at 1,100 kilometres altitudes, financed with Google and Fidelity backing.*

The sheer financial clout of the Internet sector will increasingly come to dominate discussions over outer space governance as they relate to hacking, spectrum, debris, and interference issues. The key conclusion is that outer space governance will be increasingly dominated by factors originating in the cyber sphere with a very different legal heritage. As a result, outer space governance *in toto* will in coming decades come to resemble current Internet governance characterized by voluntary, non-binding agreements that mirror market dynamics. The over-riding concern of the firms dominating the Internet sphere both as suppliers and users now focuses on cyber-security which will concomitantly dominate the dialogue over future directions of outer space governance. What will that outer space regime look like?

The Space Data Association (SDA) exemplifies the flat and voluntary organizational response to governance of space debris. As a nongovernmental organization, the SDA serves as a clearinghouse for information about orbital objects, their trajectories, and possible collision



threats. It relies on orbital parameters voluntarily supplied to it by its members about their launches and orbital operations. Proprietary information about satellite operations is anonymized, while making it possible to forecast and detect actual collision threats. Similar directions in Internet governance are taking hold as cyber-vulnerabilities of Internet-connected networks and appliances provide a widening diversity of targets to hackers.

## IV. Mission

The objective of the IISL is to promote the further development of space law and the expansion of the rule of law in the exploration and use of outer space for peaceful purposes. To this end, it holds meetings, colloquia and competitions on juridical and social science aspects of space activities, prepares studies and reports, publishes books, proceedings, reports and position papers, and cooperates with appropriate international organizations and national institutions in the field of space law.



*The IISL Board of Directors at one of its meetings*

## V. Organisational Structure<sup>1</sup>

### ***IISL President***

The President is the highest-ranking Officer of the Institute; he chairs all conferences and meetings of the Institute and performs all duties pertaining to the office.



*K.-U. Schrogl*

#### *Current President*

Prof. Dr. Kai-Uwe Schrogl (Germany); current term: 2019-2022.

Prof. Dr. Kai-Uwe Schrogl is the President of IISL since 2016. From 2012 to 2016 he has been IISL Vice President and since 2005 has been a member in the Institute's Board of Directors. In 2003 he received the IISL Distinguished Service Award.

Kai-Uwe Schrogl worked for the European Space Agency (ESA) in Paris, France, as Chief Strategy Officer until 2019. He is currently seconded to the German Federal Ministry for Economic Affairs and Energy in Berlin to support the German EU Council Presidency in the second half of 2020. From 2007-2011 he was the Director of the European Space Policy Institute (ESPI) in Vienna, Austria. Before he was Head of the Corporate Development and External Relations Department in the German Aerospace Centre (DLR) in Cologne, Germany.

Kai-Uwe Schrogl served in numerous functions on the international level, most notably as the Chair of the UNCOPUOS Legal Subcommittee from 2014-2016, as the Chair of the International Relations Committee of ESA from 2003-2005 and currently as Vice Chair of the European State Parties' Coordination Committee on the Intergovernmental Agreement for the International Space Station. He is member of numerous international and national academies (i.a. International Academy of Astronautics, French and Russia academies of astronautics) and advisory boards (i.a. Space Generation Advisory Council) and regularly acts as evaluator for research programmes.

Kai-Uwe Schrogl has published 19 books (as author and editor) and more than 140 articles, reports and papers on space policy and law as well as telecommunications policy and law together with 90 book reviews. He is member of the international editorial boards of the German Journal of Air and Space Law (*Zeitschrift für Luft- und Weltraumrecht; ZLW*, Germany) since 1995, of *Space Policy* since 1999, of *Acta Astronautica* 2006-2011, of *The Aviation and Space Journal* (Italy) since 2008, of the *Journal of Space Safety Engineering* since 2013, of *Advances in Aerospace Science and Technology* (China) since 2017 and of the book series *Studies in Space Law* (Nijhoff) since 2006 and *Southern Space Studies* (Springer) since 2018. He is also founding editor of the book series *Yearbook of Space Policy and Studies in Space Policy* (both Springer Wien / New York) 2007-2011. He teaches international technology policy at the University of Tübingen, Germany as a Honorary Professor since 2007.

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<sup>1</sup> For all details on the organizational structure of the IISL, see the IISL Statutes and By-Laws in the Annex.

*Past presidents of the IISL*

- 1960-1961: Dr. Michel S. Smirnoff (Yugoslavia)
- 1961-1962: Dr. John Cobb Cooper (USA)
- 1963-1973: Prof. Dr. Eugène Pépin (France)
- 1973-1990: Prof. Dr. Isabella H. Ph. Diederiks-Verschoor (The Netherlands)
- 1990-1993: Ambassador Prof. Manfred Lachs (Poland)
- 1993-2006: Dr. Nandasiri Jasentuliyana (Sri Lanka)
- 2007-2016: Assist. Prof. Tanja Masson-Zwaan (The Netherlands)
- Since 2016: Prof. Dr. Kai-Uwe Schrogl (Germany)

*IISL Presidents emeriti*

On recommendation of the Board of Directors, an outgoing President who has served in that capacity over several terms and has made outstanding contributions to international cooperation in the exploration and use of outer space for peaceful purposes, or to the development of space law, and has contributed substantially to the development and the activities of the Institute may be elected in exceptional cases for life as President Emeritus by the General Assembly. Presidents Emeriti are not Members of the Board but may attend the meetings of the Board of Directors as observers and provide consultation on matters relating to the management of the Institute.

The IISL presidents emeriti are:

- Nandasiri Jasentuliyana
- Tanja Masson-Zwaan

***IISL Board of Directors***

The Board of Directors is elected by the General Assembly and is responsible for the efficient and effective management and supervision of the activities and affairs of the Institute in accordance with its Statutes and By-Laws.



*Board of Directors meeting 2018*

*Officers and Members*

The Board meets twice per year and is composed of twenty-one members, five of whom serve as Officers (President, two Vice Presidents, Executive Secretary and Treasurer).



*The current/outgoing officers 2020*

*Current Board of Directors<sup>2</sup>*

<b>Position</b>	<b>Title, Name</b>	<b>Nationality</b>	<b>Term of Office</b>
<b>Officers</b>			
President	Prof. Dr. Kai-Uwe Schrogl	Germany	2019-2022
Vice President	Mr K.R. Sridhara Murthi	India	2017-2020
Vice President	Prof. Dr. Setsuko Aoki	Japan	2017-2020
Executive Secretary	Prof. Diane Howard	United States/Canada	2017-2020
Treasurer	Mr Dennis J. Burnett	United States	2017-2020
<b>Board of Directors</b>			
Director	Dr. P.J. Blount	United States	2018-2021
Director	Prof. Frans G. von der Dunk	Netherlands	2017-2020
Director	Dr. Marco Ferrazzani	Italy	2018-2021
Director	Prof. Steven Freeland	Australia	2019-2022
Director	Prof. Joanne Irene Gabrynowicz	United States	2018-2021
Director	Prof. Dr. Stephan Hobe	Germany	2017-2020
Director	Prof. Dr. Mahulena Hofmann	Czech Republic/Germany	2017-2020
Director	Ms Corinne Jorgenson	France/United States	2018-2021
Director	Prof. Armel Kerrest	France	2018-2021

<sup>2</sup> The current list of BoD Members in term along with the photos and biographies of the IISL Directors can be found on the IISL homepage.

Director	Dr. Martha Mejia-Kaiser	Mexico/Germany	2019-2022
Director	Prof. Peter Martinez	South Africa	2019-2022
Director	Ms Elina Morozova	Russia	2019-2022
Director	Prof. Lesley-Jane Smith	UK/Germany	2018-2021
Director	Dr. Milton 'Skip' Smith	United States	2018-2021
Director	Prof. Maureen Williams	UK/Argentina	2018-2021
Director	Prof. Zhenjun Zhang	China	2018-2021

### *Honorary Directors*

On recommendation of the Board of Directors, outgoing Members of the Board who have made outstanding contributions to international cooperation in the peaceful uses of outer space, or to the development of space law, and who have served for several succeeding terms and have contributed substantially to the work of the Institute, may be elected for life as Honorary Directors by the General Assembly. Honorary Directors are not Members of the Board but may attend the meetings of the Board of Directors as observers and provide consultation on matters relating to the management of the Institute.

- Prof. Dr Karl-Heinz Böckstiegel (Germany)
- Prof. Dr Aldo Armando Cocca (Argentina)
- Dr Stephen E. Doyle (United States)
- Dr Ernst Fasan (Austria)
- Prof. Jonathan Galloway (United States)
- Dr Peter Jankowitsch (Austria)
- Prof. Toshio Kosuge (Japan)
- Prof. Francis Lyall (United Kingdom)
- Prof. Jose Monserrat Filho (Brazil)
- Dr. Sylvia Ospina (Colombia)
- H.E. Judge Vladlen S. Vereshchetin (Russia)
- Amb. Eugeniusz Wyzner (Poland)
- Prof. Sergio Marchisio (Italy)

### *IISL Committees<sup>3</sup>*

The IISL Standing Committees include, first, Committees of the Board of Directors and, second, Committees of the General Assembly.

The Committees of the Board of Directors include:

- **Moot Court Committee**
- **Symposium/Colloquium Committees** (IISL Colloquium at IAC Committee, IISL/ECSL Symposium at the UNCOPUOS Legal Subcommittee Committee and Eilene M. Galloway Symposium Committee)

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<sup>3</sup> For all details on the structure, composition and mandate of the IISL committees, see the IISL Statutes and By-Laws in the Annex.

- **Studies and Communications Committees** (Directorate of Studies, Public Relations Including Social Media Committee (PRISM), Committee on the Status of International Agreements Relating to Activities in Outer Space)
- **IISL Association Committees** (Membership Committee, Sponsorship Committee, Awards Committee, Diederiks-Verschuur Award Committee)

The Committees of the General Assembly include:

- Election Committee
- Audit Committee

Additionally, the following additional functions have been established:

- IISL Parliamentarian
- IISL Representative in the IAC Steering Committee
- Assistant Secretary
- Assistant Treasurer

Detailed information on all committees can be found on the IISL homepage. Below, details on few of them are provided.

#### *IISL Directorate of Studies*

The major task of the DoS is to help the IISL Board of Directors to adequately fulfil its responsibilities. It does so by carrying out numerous activities relevant for the agenda of the Board. First, the DoS is active by identifying topics for future IISL colloquia to be discussed and agreed upon by the Board. Next, it is in charge of preparing analyses of legal problems with the aim of helping the Board to find the basis for a common statement. Thirdly, the DoS studies help to synthesize existing legal views on pressing and important problems of international space law for which guidance of the Board is sought. Finally, the DoS prepares answers of the Board to requests from UN organs like UNOOSA with regard to important agenda of the UN-COPUOS for its future meetings involving the IISL as an NGO with an observer status.

#### *Committee on Public Relations Including Social Media (PRISM)*

It is the main mission of the IISL Committee on Public Relations Including Social Media (PRISM Committee) to use all modern means for communication with the general public to raise awareness of and further enhance the visibility of IISL and of the relevance of its activities in order to further the aims and objectives of IISL, in accordance with the IISL Statute and the IISL By-Laws, and to ensure the interests of IISL are properly and in a coherent fashion represented.

#### *Membership Committee*

The Membership Committee has the responsibility to recruit new members, both individual and corporate, and to prepare the reports to the Board and the Executive Secretary of the Institute as described herein.

The Committee members shall seek to enhance the membership of the Institute by identifying individuals and corporate entities that possess the qualifications needed to become members of the Institute. The Committee shall also act as a liaison between such potential members and the Institute to facilitate the nomination process. When identifying prospective members, the Committee shall take into account the criteria for nomination set forth in Article III of the Institute Statutes.

Each prospective member must be nominated by a Director or by three Members. The Committee shall submit a report to the Executive Secretary twice a year listing the new members elected at the most recent Board meeting, with complete contact information for each new member, for inclusion in the Spring and Fall Newsletters. The Committee shall also submit a report to the Executive Secretary once a year listing all new members elected during the previous year, with complete contact information for each new member, to be included in the annual Proceedings.

#### *Moot Court Committee*

The Manfred Lachs Moot Court Committee supervises the annual Manfred Lachs International Space Law Moot Court Competition. Toward this end, the Committee shall promote and coordinate with the regional competitions and organize and conduct the Semi-finals and Final rounds of the competition. The functions of the Committee shall include, among other things, the maintenance of the Official Rules of the competition, the establishment of the schedule, and the preparation of the Moot problem.

The Committee shall ensure that the problem is drafted and posted on the IISL website in a timely manner in accordance with a schedule. The Committee shall distribute the Problem to the regional organizers and shall oversee the provision of clarifications by (i) collecting questions for clarification from the regional organizers, (ii) obtaining responses from the problem author and (iii) drafting a comprehensive document containing all clarifications which shall be provided to the regional organizers for distribution to the teams. The Committee shall also ensure that the Problem author prepares a summary of the problem and a bench memorial in a timely manner so that such materials can be provided to the judges.

The Committee shall serve as the IISL liaison with the Local Organizing Committee for the IAF to arrange for the Semi-finals and Final rounds of the competition during the annual Colloquium. The Committee shall also be responsible for other tasks in connection with the Semi-finals and Final rounds of the competition such as (i) the preparation of written brochures or other descriptive materials, (ii) arranging the production of plaques and certificates, (iii) arranging for time keepers and judge assistants, (iv) inviting judges to judge written memorials and semi-finals oral arguments and providing them with the memorials and other necessary materials and (v) collecting the funds from award sponsors.

The original Manfred Lachs Trophy has been placed on permanent display at the International Court of Justice at the Peace Palace in The Hague, The Netherlands. A replica trophy shall be kept and maintained by the Moot Court Committee (e.g. a co-chair) and be presented during the World Finals and for exhibition purposes in other events.

The Committee shall prepare an annual Moot Court Report for inclusion in the Proceedings of the IISL which shall include the names of the Judges, the members of the teams participating in the Semi-finals and Final, the winners of the competition and the awards, names of sponsors



and the memorials pleaded by the finalist teams during the Final (in edited form). The Committee shall also prepare revisions to the Official Rules as may become necessary or advisable (with the understanding that all rule revisions must be approved by the Board).

## VI. Activities of the Institute

### *IISL Colloquia*

As can be seen from the list below, IISL Colloquia are held from 1958 on. Generally at the same location of the congresses of the IAF and the IAA, the Institute provides for the opportunity to discuss current topics of space law and policy. The Colloquium has four to five topical sessions. The selection of papers at the Colloquium is done on the basis of abstracts at the spring meeting of the IAA, IAF, and IISL.



*The very first IISL Colloquium in 1958 in The Hague – with Dr. M. Smirnoff, Prof. E. Pépin, Prof. I. Diederiks-Verschoor, A. Haley and Dr. F. Gerlach (from left to right).*

### *List of IISL Colloquia dates and locations*

<b>Date</b>	<b>Location</b>
August 29, 1958	The Hague, The Netherlands
September 4, 1959	London, United Kingdom
August 14-15, 1960	Stockholm, Sweden
October 3-4, 1961	Washington, D.C., USA
September 23-29, 1962	Varna, Bulgaria
September 26-28, 1963	Paris, France
September 9-10, 1964	Warsaw, Poland
September 14-15, 1965	Athens, Greece
October 14, 1966	Madrid, Spain
September 24-29, 1967	Belgrade, Yugoslavia
October 17-18, 1968	New York, New York, USA
October 5-10, 1969	Mar del Plata, Argentina

VI. *Activities of the Institute – IISL Colloquia*

October 4-10, 1970	Constance, Germany
September 20-25, 1971	Brussels, Belgium
October 8-15, 1972	Vienna, Austria
October 7-13, 1973	Baku, USSR
September 28-October 5, 1974	Amsterdam, The Netherlands
September 21-27, 1975	Lisbon, Portugal
October 12-15, 1976	Anaheim, California, USA
September 25-October 1, 1977	Prague, Czechoslovakia
October 3-5, 1978	Dubrovnik, Yugoslavia
September 16-22, 1979	Munich, Germany
September 21-28, 1980	Tokyo, Japan
September 6-12, 1981	Rome, Italy
September 27-October 2, 1982	Paris, France
October 10-15, 1983	Budapest, Hungary
October 7-13, 1984	Lausanne, Switzerland
October 7-12, 1985	Stockholm, Sweden
October 4-11, 1986	Innsbruck, Austria
October 10-17, 1987	Brighton, United Kingdom
October 8-15, 1988	Bangalore, India
October 11-13, 1989	Torremolinos-Malaga, Spain
October 6-12, 1990	Dresden, Germany
October 5-11, 1991	Montreal, Canada
August 28-September 5, 1992	Washington, USA
October 18-22, 1993	Graz, Austria
October 9-14, 1994	Jerusalem, Israel
October 2-6, 1995	Oslo, Norway
October 8-11, 1996	Beijing, China
October 6-10, 1997	Turin, Italy
September 28-October 2, 1998	Melbourne, Australia
October 4-8, 1999	Amsterdam, The Netherlands
October 2-6, 2000	Rio de Janeiro, Brazil
October 1-5, 2001	Toulouse, France
October 10-19, 2002	Houston, Texas
September 29-October 3, 2003	Bremen, Germany
October 4-8, 2004	Vancouver, Canada
October 17-21, 2005	Fukuoka, Japan
October 2-6, 2006	Valencia, Spain
September 24-28, 2007	Hyderabad, India
September 29–October 3, 2008	Glasgow, Scotland
October 12-16, 2009	Daejeon, Republic of Korea
September 27-October 1, 2010	Prague, Czech Republic
October 3-7, 2011	Cape Town, South Africa
October 1-5, 2012	Naples, Italy

September 23-27, 2013	Beijing, China
September 29-October 3, 2014	Toronto, Canada
October 12-16, 2015	Jerusalem, Israel
September 27-30, 2016	Guadalajara, Mexico
September 25-29, 2017	Adelaide, Australia
October 1-5, 2018	Bremen, Germany
October 21-25, 2019	Washington, D.C., USA
October 12-14, 2020	online (CyberSpace) edition

*IISL Colloquia in pictures*



*V. Kopal and I. Diederiks-Verschoor at the 28th IAC in Prague, Czechoslovakia 1977*



*H. Safavi, P. Sterns, S. Gorove, M. Safavi and L. Tennen at the 29th IAC in Dubrovnik, Yugoslavia 1978*



*E. Galloway and E. Fasan at the 35th IAC in Lausanne, Switzerland 1984*



*K.-H. Böckstiegel and E. Galloway at the 35th IAC in Lausanne, Switzerland 1984*



*E. Finch, K. Schwetje, C. Christol, P. Sterns and C. Okolie at the 38th IAC in Brighton, United Kingdom 1987*



*Group foto at the 42nd IAC in Montreal, Canada 1991*



*N. Matte, C. Okolie, E. Galloway, P. Sterns, S. Jasentuliyana, M. Mentor, He Qihzi and N. Jasentuliyana at the 42nd IAC in Montreal, Canada 1991*



*Speakers at the 43rd IAC in Washington, United States 1992*



*V. Vereshchetin and V. Kopal at the 43rd IAC in Washington, United States 1992*



*H. Qizhi, K. Doetch, L. Tennen, A. Clarke and G. Mueller at the 47th IAC in Beijing, China 1996*



*B. Cheng, I. Diederiks-Verschoor, V. Vereshchetin, E. Galloway, S. Doyle, Judge-Koroma, G. Sgrosso, Judge Rezek and E. Back-Impallomeni at the 48th IAC in Turin, Italy 1997*



*T. Masson-Zwaan, D. Crowther, K. Gorove and W. White at the 48th IAC in Turin, Italy 1997*



*G. Sgrosso, G. Gal and P. Sterns at the 50th IAC in Amsterdam, Netherlands 1999*



*M. Ferrazzani, S. Ospina, W. White, M. Hofmann and V. Vereshchetin at the 51st IAC in Rio de Janeiro, Brazil 2000*





*M. Cocca, M. Ferrazzani, M. Andem, Mr. Sgrosso, G. Sgrosso, T. Kosuge, M. Hofmann, R. Hofmann at the 51st IAC in Rio de Janeiro, Brazil 2000*



*V. Kopal, R. Jakhu, B. Jakhu, P. Sterns and V. Kopal at the 53rd IAC in Houston, United States 2002*



*Mrs. Guillaume, Judge Koroma, P. Sterns, V. Vereshchetin, L. Love, Judge Guillaume and L. Tennen at the 54th IAC in Bremen, Germany 2003*



*IISL Colloquium 2019 © Dikaios Pang*



*IISL Executive Secretary Diane Howard, 2019 © Dikaios Pang*

***Nandasiri Jasentuliyana Keynote Lectures and Young Scholars Session***



*N. Jasentuliyana*

In order to react to important developments in the area of space law and space activities it was decided by the Board of Directors at an initiative of the Directorate of Studies to introduce the so-called Nandasiri Jasentuliyana Highlight lecture on International Space Law, named after the 5<sup>th</sup> President of the Institute.<sup>1</sup>

Each year since 2009, at the International Astronautical Congress, the Nandasiri Jasentuliyana Keynote Lecture on Space Law is presented by a leading expert on space law during the annual IAC. The keynote lectures are published in the IISL Proceedings. Here, the inaugural keynote lecture, held by Judge Vladlen S. Vereshchetin, is reprinted, followed by a list of the subsequent topics and speakers at the annual Nandasiri Jasentuliyana Keynote Lecture on Space Law.

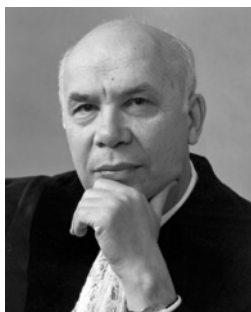
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<sup>1</sup> Dr. Nandasiri Jasentuliyana (born 1938) was Director of the United Nations Office for Outer Space Affairs (1988 to 1999); Executive Secretary of the United Nations Conference on the Peaceful Uses of Outer Space (UNISPACE) (1981-1982) and President of the International Institute of Space Law (IISL) (1993-2006).

***The Law of Outer Space in the General Legal Field  
(Commonality and Particularities)***

*Inaugural Nandasiri Jasentuliyana Lecture (2009)\**

*Vladlen S. Vereshchetin†*



*V. S. Vereshchetin*

I thought that this inaugural lecture could provide an appropriate occasion to reflect on some fundamental elements of our discipline, encompassing features similar to and distinctive from other legal disciplines.

I also plan to deal with some topical space policy issues concerning international cooperation and military uses of outer space. Certainly, time constraints do not allow me to expand on all aspects of this multifaceted subject and therefore I shall confine myself only to some of them.

***Revealing the Contents of Certain Terms***

As is well known, practical legal questions arose immediately after the launch of the first sputnik. Due to the vast political, military and economic implications of the advent of space technology, a new law emerged in a historically short time span. After a brief period of somewhat differing designations of the new legal discipline, the term “the law of outer space” (or “space law”) acquired general recognition. But in using this seemingly clear term do we uniformly perceive its meaning and the complexity of its content? I am afraid this is not always the case.

Legal science and the law itself are expected to operate with precisely defined terms. However, in reality all too often the terms used in legal discourse either have no universally agreed definitions or are defined very broadly and hence allow for different interpretations. The law of outer space is not an exception in this sense. In common parlance this term is often used to denote the regulation of space and space-related activities through the amalgamation of all possible rules – binding and non-binding, legal and political. However, this all-encompassing approach fails to provide a sound understanding of the term for those in the legal profession.

Professors Francis Lyall and Paul Larsen in their recently published treatise perceptively compare the broadest use of the term “space law” with a “label attached to a bucket that contains different types of rules and regulations rather than as denoting a conceptually coherent single form of law”.

Let us try to sort out the contents of that “bucket”. To do this we need some reference points, if not in the form of agreed definitions, then at least in terms of a basic level of understanding. The expression “the law of outer space” contains two elements: one is purely juridical

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\* Published in: IISL Proceedings of the 52nd Colloquium on the Law of Outer Space 2009, pp. 3-15.

† Judge Vladlen S. Vereshchetin served as a Member of the International Court of Justice in 1995-2006. Before that he was a member and Chairman of the International Law Commission and Member of the Permanent Court of Arbitration. He is Professor of International Law (Institute of State and Law of the Russian Academy of Sciences), Doctor of Juridical Sciences, Maître émérite des Sciences of the Russian Federation (title bestowed by the President of the State), and Honorary Director of the International Institute of Space Law. He is also a member of several national and international academies, including the International Academy of Astronautics.

– the law; the other is closely related to natural sciences – outer space. To start with the latter, the notion of outer space is not defined in natural sciences. Scientists continue to argue whether the Universe is finite or not, eternal or not, and even generally whether there exists one single Universe or several of them. As the story goes, Albert Einstein used to say that only two things were infinite, the Universe and human stupidity, but then he would add that he was not sure about the former.

Although the law of outer space presumes the absence of an “outer limit” of outer space, in view of the current state of space technology, it does not purport to regulate human activity beyond the solar system (see Article 1 of the Moon Agreement). As for the boundary between airspace and outer space it remains to be seen whether the recently announced discovery of new physical data evincing the existence of such a boundary in nature lying at a height of 118 km above the Earth will be recognized by the scientific community and whether this will help overcome the political unwillingness of some States to legally formalize a boundary between the two spaces whose legal regimes are fundamentally different.

Meanwhile, the inextricable link between law and technology makes itself felt in the wording of a number of provisions of space law agreements which implicitly confirm that the drafters proceeded from the assumption that a satellite placed in an sustainable orbit around the Earth, including the lowest one, must be seen as situated in outer space (see Article IV of the Outer Space Treaty or Article II of the Convention on Registration).

Turning to the first part of the expression “the law of outer space”, one has to admit that the state of general legal theory does not make it easy to separate “law” from “non-law”. This complicates our task of sorting out the different kinds of rules we find in the above-mentioned “bucket” labelled “space law”. Postmodernist legal theory and legal philosophy are awash with different concepts vis-à-vis the nature of law and its definitions. The same is true of the related categories of legal norms, legal relations and so forth. For some scholars, law encompasses every normative order, irrespective of its recognition as law by States and whether or not it is binding and enforceable. For others, the very notion of a legal norm is untenable. They conceive law as a permanent process of decision-making.

Difficulties in understanding the nature of law and legal obligations have always existed in legal history. It was not by chance that Wolfgang Friedmann observed that “over thousands of years the most powerful minds of all nations have been unable to agree on a universal definition of law”. What cannot be denied however is the fact that the binding force, consistency, stability, and hence predictability, of law as well as the legal consequences in terms of the responsibility incurred for its violation make law distinguishable from other social orders. The distinction between law and non-law is strictly observed by States and their organs, and by national and international courts and tribunals.

Another undeniable fact relevant to the understanding of the term space law is the division of law in general terms into two largely autonomous systems: national law (or rather the plurality of national laws) and international law, with multiple complex links and significant interaction between them. Accordingly, the law of outer space does not exist as a single coherent and comprehensive body of legal principles and rules relating to space activities. These legal principles and rules either lie within the international law system, where they form a separate branch (international space law), or within the system of national laws of different States. Thus, from the point of view of its normative contents the term space law in its broadest

sense is everything and nothing at the same time, like a general without an army. In a narrow sense this term is often used to denote public international space law. [...]

As one of various specific areas of law, space law “borrows” from law in general not only its tools, general categories and notions, but also its unresolved problems. Of equal relevance to space law as to other areas of law are problems such as the nature of law generally and international law in particular, the relationship between national and international law, between law and politics and between so-called hard law and soft law. Some of these issues will be discussed later.

### ***On some Specific Features of Public International Space Law***

Since initially the only actors in outer space were States and interstate organizations, space law inescapably emerged as part of public international law. It was elaborated within the UN with the help of a specially established body – UNCOPUOS (the United Nations Committee on the Peaceful Uses of Outer Space). The fundamental basis of this new branch of public international law was and remains the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (Outer Space Treaty), which to date is binding on 100 States. Four other UN space agreements can be seen as implementing and developing the relevant provisions of this Treaty.

According to the Outer Space Treaty, the freedom of exploration and use of outer space and celestial bodies is not unlimited. It is subject to a number of conditions and restrictions such as non-appropriation, authorization and supervision of private activities, concrete prohibitions of certain military uses and others. The most general guiding principle, expressed in Article III of the Treaty, provides that activities in the exploration and use of outer space must be conducted “in accordance with international law, including the Charter of the United Nations”.

Clearly, this is but another affirmation of the well-established tenet of international law that human activities anywhere beyond national jurisdiction are governed by international law. Problems arise when we turn to the different conceptions of international law by positivists, realists, constructivists and proponents of other schools of thought. Certainly, I cannot deal with these theories in the time frame of this lecture. I will proceed from what in my view can be taken as the mainstream position, namely the widely held approach which places emphasis on the distinctive role of law among other normative orders, on the unity of international law, as a system, and on the universality of its basic principles and at the same time which fully recognizes the existence of specialized legal regimes within this law.

The international legal regime of outer space features a number of peculiarities. [...] The very first Article of the Outer Space Treaty directs that “the exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind” (emphasis is added). It is true that from the very outset there has been a wide range of different views and interpretations among States and publicists as to the legal significance of this provision. For some it is no more than a statement of general purpose or moral principle, conversely for others it is an *erga omnes* obligation or even a peremptory norm of international law (*jus cogens*).

In any case, however, it cannot be denied that these and related concepts and provisions (such as the “Common Heritage of Mankind” in the Moon Agreement) and the constant reference in many documents to the necessity to take “into particular account the needs of developing countries” have exerted a strong influence on the content of international space law and have given an impetus to the further development of the notion of solidarity in international law generally.

However, the practical implementation of these praiseworthy concepts and provisions has proved to be less than successful. Suffice it to recall the fortune of the Moon Agreement. The expectations of “distributive justice” have never materialized. Moreover, with the much-claimed global triumph of free market ideology, the prospects for the implementation of these innovative concepts in space law have become ever more distant. Commercialization and privatization are now the catchwords of space policy in space-faring nations, although the trust in invisible rational market is waning in the wake of the recent financial and economic crises.

The 1996 set of principles relating to space cooperation, despite its impressive title – Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries – in its operational provisions, in view of many, did not advance the practical realization of earlier assumed undertakings, but rather construed them in a less binding and more ambivalent way. Let us hope, to use a metaphor of Judge Bedjaoui, former President of the International Court of Justice, that even if the “revolutionary” concepts and principles of space law “undergo a gradual eclipse”, they will not disappear “like a comet”.

### ***On National Space Legislation and the Relationship between Space Law and Private International Law***

It is often said that the “golden age”, or “la grande époque”, of public international space law was very short-lived. There have been no new UN space treaties or agreements since 1979. The failure to elaborate new legally binding international instruments of general application can be contrasted with the current burgeoning of national space legislation that now exists in about 20 States. In domestic law (maybe with the exception of a very few States) space-related legislative acts have not yet acquired the status of a separate branch of national law. Many of those acts do not ensure comprehensive regulation of national space activity, but concern only some of its aspects which in the view of the legislator are of direct relevance to the given State (e.g. licensing, certification, insurance or other).

The growth in the transborder circulation of people, goods and services in the era of globalization, among other things, requires the harmonization and unification of the respective domestic legal regulation. National space and space-related activities, especially due to their rapid commercialization and privatization, are now part of this global process. This brings into the picture the issue of the relationship between space law and private international law.

The UNIDROIT Protocol on Matters Specific to Space Assets, although it is as yet only at a preliminary draft stage, can serve as an example of a private international law instrument specifically designed for space activities, in particular for mitigating the risks involved in the private financing of these activities. The system constituted by the Cape Town Convention on International Interests in Mobile Equipment and the Space Protocol attached thereto is aimed

at the unification of domestic law legislation relating to asset based commercial space financing. These problems directly concern all key players in commercial space activities: manufacturers, operators, financiers and insurers. The above-mentioned preliminary draft Protocol still needs to be further harmonized so as to take into account the basic principles of public international space law whose primacy over the provisions of the Protocol is assumed.

It would be wrong or at least premature to claim the existence of a distinct private international space law. However general private international law, with all the tools that it has developed, has been widely applied by international private and public private space enterprises. Therefore, one can say that space-related activities are governed not only by public international space law but also by private international law. [...]

Growth in the economic uses of space technology and the privatization of such uses have led not only to the wider application of private international law, but also to the scholarly construction of so-called “branches” of space law, such as space economic law, space telecommunication law, space transportation law. In reality these “branches” are simply conflation of binding and non-binding rules originating from different sources (national and international) and assembled around a certain subject connected with space activities. They can have pedagogical value and in some practical respects be useful, provided that we do not lose sight of the diverse nature of these assembled rules and the varying consequences that flow from their violation. The differences between law and non-law, international and national law, public and private law, despite their increasing interaction and even appearance of “hybrid” forms of regulation, should be kept in mind when we are confronted with the maze of regulation of public and private space activities in the era of globalization or with the efforts of the private sector to reshape space law to its liking. [...]

I would like to add my voice to those warning against the revision of the Outer Space Treaty that today continues to duly reflect the balance of interests of all States and of all sectors of space activities. The process of adjusting and further clarifying various terms, concepts and provisions of this Treaty and other space law agreements can be achieved by other means, as evidenced, for instance, by the work of UNCOPUOS resulting in the adoption by the UN General Assembly of the resolution on the application of the concept of the “launching State”.

### ***“Hard” Law versus “Soft” Law***

As noted earlier, over the past 30 years there has been a dearth in new international instruments relating to the general regulation of space activities, and those that did appear were not in legally binding form. This trend in space regulation and in particular the recent initiative of the European Union concerning the draft of a voluntary Code of Conduct for Outer Space Activities, in large part due to its claim to “lay down the basic rules to be observed by space-faring nations”, has led to a resurgence of theoretical and practical interest in the notion of “soft” law. Of course, this problem is anything but new either for international law generally or for international space law in particular.

At the beginning of the space age it was actively discussed mainly in the context of the role of UN General Assembly resolutions as a source of international law. The result of this academic debate was not conclusive, but it was not contested that some General Assembly resolutions, although not legally binding, played a singular role in the origin and further evolution of international space law. It is recalled that the precursor of the Outer Space Treaty of



1967 was the 1963 Declaration of Legal Principles unanimously adopted in the form of a UN General Assembly resolution. Some of the principles stated in that Declaration and in a number of earlier General Assembly resolutions arguably became customary law even before the entry into force of the Outer Space Treaty.

Nevertheless, it is also useful to recall that the UN Office of Legal Affairs in 1981 advised that “in the practice of the United Nations a declaration is a formal and solemn instrument suitable for those occasions when principles considered to be of special importance are being enunciated. Apart from the solemnity and formality associated with a declaration there is legally no distinction between a declaration and a recommendation which is less formal”.

In the years from 1982 to 1996 most of the sets of principles relating to concrete space applications and space cooperation were adopted in the form of UN General Assembly declarations. At that time, States evidently proceeded from the clear assumption that they were voting on or consenting to legally non-binding documents. This basic assumption cannot be dispelled, although it is tempered by the weight and significance of those principles, their thorough and protracted drafting by the authorized representatives of the States and by the fact that some of them were accepted by consensus.

Certainly, some of those principles in the same or modified form can acquire a legal character either through a treaty-making procedure or by way of formation of customary rules. Internally, within a State, they can become legally binding at any given moment under national procedure. Those principles can also serve as evidence of State practice in the legal discourse on the interpretation of certain rules of national and international law. From this perspective one can speak of their “legal relevance”.

However, the formal distinction between law and non-law cannot be bridged simply by characterizing these principles as “quasi-law”, “pre-law” or “soft-law”. No court of law would render its judgment in a dispute and determine the legal responsibility of a party basing itself solely on such a category of “law”. This does not exclude the fact that in certain circumstances a court or arbitration tribunal can deduce from resolutions of the UN General Assembly and other material the existence of a customary rule of international law or an evidence of the emergence of such a rule.

Some authors use the term “soft” law also in respect of provisions of legally binding instruments that are vague, imprecise or very broadly formulated and for this reason do not conform to their understanding of “hard” law. The case law of the International Court of Justice does not support the view that such provisions of a treaty in force do not constitute formal legal obligations, although depending on the particular circumstances of a case, these kinds of provisions, taken in isolation, may prove to be insufficient, for example, to ground the Court’s jurisdiction *ratione materiae*.

By making a distinction between legally binding and legally non-binding regulation of space activities it is not to say that the latter is not important. Space and space-related activities, along with human activities in other fields, are ordered not only by legal rules and principles, but also by legally non-binding instruments, whether or not we call them “soft” law. Instances of this kind of regulation include the aforementioned declarations of principles, Space Debris Mitigation Guidelines, the Recommendations on the Practice of States and International Organizations in Registering Space Objects or the UN General Assembly resolution on the application of the concept of the “launching State”. In many cases those instruments, whose titles

vary, deal with specific, often technical, matters – but this does not diminish their significance for outer space regulation.

Moreover, the drafting history of Article IV of the Outer Space Treaty shows that legally non-binding arrangements can pave the way for firm treaty commitments even in matters of such magnitude as military uses of outer space. Since the Draft Code of Conduct for Outer Space Activities was introduced by the European Union as a voluntary non-binding instrument in the Conference on Disarmament, it would be logical to look at this document precisely from this perspective. However, before that I would like to say a few words on the issue of the relationship between space law and space policy.

### ***Space Law versus Space Policy***

The doctrines and national policies of the most concerned States often give impetus to the formation and strongly influence the contents of new areas of legal regulation. Even before the launch of the first sputnik, the United States had started to formulate its national space law policy. Somewhat later, in the former Soviet Union, under the auspices of the Ministry of Foreign Affairs, an inter-ministerial Commission on political and legal questions relating to the exploration and use of outer space was also established. The political and legal positions of these two major actors in the field of space activities played a singular role in the elaboration of the first instruments of international space law.

With the increase in awareness of the current and potential benefits of space applications, more and more States, international organizations and institutions of regional integration started to formulate their space law policies and actively participate in the elaboration of legal rules governing space activities. The body of such rules has significantly accrued through interstate cooperative agreements and constitutive instruments of international space organizations.

However, once a new international legal document has come into force no State on which it is binding can invoke against it its own divergent space policy. Law takes precedence over policy. The policy of a State must remain within the bounds of and conform to the dictates of international law in force. This is especially true when what is at stake is conduct in outer space, the exploration and use of which is defined in the Outer Space Treaty as the “province of all mankind”. National space policy must be checked against law, but not vice versa. Designed to serve international community interests, the law cannot be reduced to a position of subservience to the changing policies of one or several members of this community.

Certainly, international law is not a frozen system of binding norms defined once and for all. It is a living organism that should adequately reflect the exigencies of international life. There exist lawful ways for the termination or modification of legal obligations. At the same time, according to the well-established jurisprudence of the International Court of Justice and of its predecessor, the Permanent Court of International Justice, even the national law of a State may not be invoked as justification for its failure to fulfil its international obligations. It goes without saying that this principle is also applicable to a national space policy or to another executive decision of a State.

***On Two Areas of Concern over Space Policies***

Twelve years ago Professor Bin Cheng in his lecture devoted to the thirtieth anniversary of the Outer Space Treaty highlighted four areas of concern existing in people's minds at the beginning of the space age. In the words of Bin Cheng those concerns were the following:

- “(i) The arms race and the military use of outer space;
- (ii) Possible scramble for colonies or resources;
- (iii) Worries over responsibility and control, as well as over potential harm or damage;
- and
- (iv) International cooperation and mutual assistance”.

I would like to single out and speak from the current perspective to the first and the fourth of those concerns, and will do so in reverse order.

We are all very well aware that the principle of international cooperation in the exploration and use of outer space permeates the Outer Space Treaty and all other instruments of international space law. The debate over the legal nature and consequences of this principle was a typical feature in the early literature and in different forums on space law. Thanks to my former direct involvement on the legal side in a number of significant space projects and programmes, I clearly remember the impressive evolution of international space cooperation from the mere exchange of results of scientific experiments carried out in outer space to the joint work on the building and operation of the International Space Station and the creation of a number of international space organizations providing indispensable services to all people on Earth.

It is encouraging that nowadays governments and private enterprises envisage new important projects and space agencies of different nations have established regular meetings and consultations on matters of common interest. But on the other hand, it is disquieting that the breath-taking plans of future human flights to the Moon and beyond, requiring tremendous material and intellectual resources, are sometimes seen in terms of the competition of old between the space actors rather than cooperative endeavours built on the accumulated experience of multinational space projects. The trendy slogan “back to the Moon” is often presented as a “race” of different players, including the United States, Russia, China, India, Japan, ESA and the private sector. It would be extremely regrettable, if political, military and commercial interests of individual States and private corporations were to prevail and anew put competition ahead of cooperation.

Much more worrisome than the “Moon race” would be an arms race in outer space. This would be manifestly inconsistent with “the common interest of all mankind in the progress of exploration and use of outer space for peaceful purposes” and with “the strengthening of friendly relations between States and peoples” as directed in the Outer Space Treaty. By recalling those lofty purposes of the Treaty I do not intend to prolong the perennial polemic on the meaning of the terms “peaceful uses” or “peaceful purposes” in the text of that Treaty. The application of space technology for military and so-called “dual use” purposes has become a fait accompli. However, up to now outer space has remained free from weapons as such. The situation would radically change should the plans for space-based weapons go ahead and trigger a new spiral in the arms race both in outer space and on Earth.

Even the deployment of “conventional” weapons in outer space, which is not formally and specifically prohibited by any treaty in force, could ultimately make of outer space a “fourth battlefield”. The gloomy prospect of a war in outer space would be in no-one’s interest. It remains to be seen whether the pledge of President Barack Obama, during his election campaign, to seek a ban on space weapons will lead to a substantial change to this effect in the 2006 U.S. National Space Policy formulated by the Bush Administration. That policy was widely viewed as giving a green light to U.S. weapons in space and in the past was translated into the inexorable refusal of the American delegation in the Conference on Disarmament even to start negotiations on a treaty which would secure non-weaponization of outer space. Such negotiations were labelled “pointless and unneeded”.

It is against this backdrop that one has to assess the significance for the regulation of outer space military uses of the new proposal announced in the Conference on Disarmament by the Presidency of the European Union. As noted before, the mere fact that the EU Draft Code of Conduct for Outer Space Activities was introduced in the Conference on Disarmament suggested its close connection with the problem of military uses of outer space. Indeed, many other elements of that proposal, relating to the security of space activities in the broadest sense of the term, such as measures on space debris control and mitigation or registration of space objects, are already being dealt with or could be dealt with by relevant expert bodies, for example UNCOPUOS.

But what was actually proposed in the EU Draft with regard to military activities in outer space? The authors satisfy themselves with just mentioning among “general principles” the responsibility of States “to take all the adequate measures to prevent outer space from becoming an area of conflict”. This general statement is not supported by any specific commitments, albeit voluntary and non-binding. On the contrary, it is diluted by numerous reservations, scattered throughout the document, which can be read as justifying different kinds of military activities because they are “vital to national security”, or on such grounds as “legitimate defense interests”, “inherent right of self-defense” or “imperative safety considerations”.

In vain does one try to find in the document one single word concerning the need to prevent space weaponization – the most pressing measure required in order to avert outer space from “becoming an area of conflict”. Elsewhere, the authors explain this away by reference to their unwillingness to duplicate or compete with other initiatives to this effect. However, there is little persuasive force in this argument.

Enhancement of the security of space activities against the risks posed by harmful interference is a real and important task of space regulation. This was dramatically demonstrated by the collision of two space objects on 10 February 2009. However, the main threat to the security of space activities would be an unbridled arms race provoked by space-based weapons. Therefore, the enhancement of space security, transparency and confidence building measures announced as the main objectives of the proposed EU Code are incompatible with any kind of neutrality towards the placement of weapons in outer space. Even if non-binding, a multilateral document that claims to be a code of “basic rules to be observed by space-faring nations” cannot neglect this obvious concern.

***Concluding Remarks***

Solid foundations for the law of outer space were laid down at the dawn of the space era. There may be some truth to the nostalgic view that the “golden age” of international space law is over. Currently, we are witnessing the development of mainly national laws, in large part relating to private space activities. However, the future evolution of space law, as of any other area of law closely connected with science and technology, depends on the character and pace of progress in the respective field of human activity. One of the great prophets of the space era, Sir Arthur Clarke, on his 90<sup>th</sup> Birthday some two years ago, said, among other things, referring to the past 50 years: “We’ve accomplished a great deal in that time, but the ‘Golden Age of Space’ is only just beginning”. This prophecy infuses us with confidence in the continuing need for strengthening and improving the legal framework of space and space-related activities.

When one reads the papers presented at the annual colloquia on the law of outer space by young lawyers – some of them still students – or hears their cogent arguments at the moot court competitions before the Judges of the World Court, there can only be one conclusion: the future progress of this exciting legal discipline is in safe and reliable hands.

- **2009:** *The Law of Outer Space in the General Legal Field*  
Speaker: Vladlen S. Vereshchetin
- **2010:** *A Concise History of Space Law*  
Speaker: Stephen Doyle
- **2011:** *The Development of International Law and the Peaceful Uses for Outer Space*  
Speaker: Abdul G. Koroma
- **2012:** *The Legal Dimension of the Sustainability of Outer Space Activities: The Draft Code of Conduct on Outer Space Activities*  
Speaker: Sergio Marchisio
- **2013:** *A Normative System for Outer Space Activities in the Next Half Century*  
Speaker: Tare C. Brisibe
- **2014:** *Orbit/Spectrum International Regulatory Framework: Challenges in the 21st century*  
Speaker: Yvon Henri
- **2015:** *The Legal Evolution of a 'Use' of Space: the Case of Remote Sensing*  
Speaker: Joanne Gabrynowicz
- **2016:** *Space Law and Diplomacy*  
Speaker: Kai-Uwe Schrogl
- **2017:** *The Outer Space Treaty: Its First Fifty Years*  
Speaker: Peter Jankowitsch
- **2018:** *Space Law and International Organisations*  
Speaker: Marco Ferrazzani
- **2019:** *International Cooperation Mechanisms in Outer Space Activities for the Next Decade*  
Speaker: Setsuko Aoki
- **2020:** *A New Format for Space Law*  
Speaker: Stephan Hobe



*Young Scholars Session 2019*

**Further Academic Events<sup>1</sup>**

*IISL/ECSL Symposia*

The IISL/ECSL Symposia at the UNCOPUOS Legal Subcommittee (LSC) are very special events with enormous impact. They traditionally take place in the afternoon of the first day of the LSC sessions and last for the full 3 hours of the regular meeting time in that afternoon. They are co-organised by IISL and ECSL with a small programme committee led by the Presidents of the two organisations. In this context, it should be noted that the current Presidents have both served as Chairs of the LSC in the past: Sergio Marchisio, President of ECSL, from 2004-2006 and Kai-Uwe Schrogl, current President of IISL, from 2014-2016.



*IISL/ECSL Space Law Symposium held on the occasion of the 43rd Session of the Legal Subcommittee of UNCOPUOS in Vienna in 2004*

The Symposia are organized as panels with typically six experts providing various backgrounds, including regional balance. They give presentations and following this, the two Presidents animate a discussion with the delegations. This happens in presence of the LSC Chair, who gives opening and closing remarks. The topics are selected in view of their relevance for the discussions at LSC. The panels are intended to provide interesting and original views besides the national positions presented during the formal deliberations of the Subcommittee. Through this, opportunities emerge to give impetus and new perspectives also to debates, which might be characterized by little or no movement. The topics for the Symposia are therefore either oriented at the LSC agendas or they shed light on the application of existing law, which can usually be highlighted for anniversaries of treaties. Consequently, in the past decade the 50<sup>th</sup> anniversaries of the 1967 Outer Space Treaty and the 1968 Rescue Agreement and also the 40<sup>th</sup> anniversaries of the 1972 Liability Convention, the 1975 Registration Convention and the 1979 Moon Agreement were used to discuss at the respective Symposia the application and also the shortcomings of these treaties.

<sup>1</sup> The description in sections a), c) and d) has been kindly provided by Kai-Uwe Schrogl. Section e) has been kindly provided by Elina Morozova.



*IISL/ECSL Symposium 2018*

In addition, new relevant topics were also tested at the Symposia. Actually they proved to be of particular impact as the topic Space Traffic Management, which saw the immediate establishment of such an agenda item and the topic small satellites, which led to a recommendation on registration, frequency management and debris mitigation for small satellites, which was prepared by UNOOSA and ITU and which was acknowledged by the Subcommittee. In general, IISL can, together with ECSL, raise the impact of its work and expertise, increase its visibility and actively support the international law makers in strengthening the rule of law in outer space.

The IISL Symposia at the UNCOPUOS Legal Subcommittee already started in the early 1990s. By 1996, ECSL joined for the organisation. In the early phase, Ernst Fasan was the driving force behind these events. Since 2003, the Symposia are reported on the IISL website.

Topics of the IISL/ECSL Symposia since 2003:

- **2003:** Reinforcing the Registration Convention
- **2004:** New Developments and the Legal Framework covering the Exploitation of the Resources of the Moon
- **2005:** Recent developments in remote sensing and the desirability of reviewing the 1986 United Nations Principles Relating to Remote Sensing of the Earth from Outer Space
- **2006:** Legal Aspects of Disaster Management and the Contribution of the Law of Outer Space
- **2007:** Capacity Building in Space Law
- **2008:** Legal Implications of Space Applications for Climate Change
- **2009:** 30th Anniversary of the Moon Agreement: Retrospect and Prospects
- **2010:** National Space Legislation: Crafting Legal Engines for the Growth of Space Activities
- **2011:** A Fresh Look on the Delimitation of Airspace and Outer Space
- **2012:** Transfer of Ownership of Space Objects: Issues of Responsibility, Liability and Registration
- **2013:** The UNIDROIT Space Protocol
- **2014:** Regulatory Needs for Very Small Satellites
  
- **2015:** Space Traffic Management
- **2016:** Registration Convention and Today's Practical Issues



*VIII. Activities of the Institute – Further Academic Events*

- **2017:** Legal Models for Exploration, Exploitation and Utilization of Space Resources 50 Years After the Adoption of the Outer Space Treaty
- **2018:** The 50th Anniversary of the Rescue and Return Agreement: Relevance and Challenges
- **2019:** The Moon Agreement Revisited: The Road Ahead

*Annual Eilene M. Galloway Symposia on Critical Issues in Space Law*



*E. Galloway*

Dr. Eilene M. Galloway (1906-2009) was a pioneer in the fields of space law and policy, one of the founders of the IISL and Vice President of the Institute between 1967 and 1979. To honor her legacy, since 2006, the IISL has held annually the Eilene M. Galloway Symposium on Critical Issues in Space Law, bringing together the brightest and most brilliant advocates in international space law. The Symposium has its roots in a 2006 conference and workshop organized by the Institute of Air and Space Law (IASL), Faculty of Law, McGill University and the International Institute of Space Law in cooperation with the Cologne Institute of Air and Space Law, the Leiden International Institute of Air and Space Law and the University of Mississippi National Center for Remote Sensing, Air, and Space Law.



*Dinner at the occasion of the 2018 Eilene M. Galloway Symposium*

The topics of the Eilene M. Galloway Symposia since 2006 were dedicated to the following topics:

- **2006:** *no title*
- **2007:** International Civil Space Cooperation: Obstacles and Opportunities
- **2008:** Article VI of the Outer Space Treaty: Issues and Implementation
- **2009:** Peaceful Purposes and Uses of Outer Space
- **2010:** Peaceful Purposes and Uses of Outer Space

- **2011:** A Comparative Look at National Space Laws and Their International Implications
- **2012:** Global and Regional Space Organisations and the Law
- **2013:** Disruptive (Game Changing) Space Technologies, Laws and Policies
- **2014:** Non-Traditional Commercial Space Activities, Legal & Policy Challenges, Opportunities, and Ways Forward
- **2015:** Through the Looking-Glass of Time: What Has Been Achieved and Where It Leads
- **2016:** Forming International Rules and Norms for Exploration and Use of Outer Space 50 Years after the Outer Space Treaty
- **2017:** Implementation of the Outer Space Treaty: Issues for the New U.S. National Space Council
- **2018:** *no title*
- **2019:** Contemporary Issues and New Lessons in Space Commercialization
- **2020:** Critical Issues in Space Law: Space and the Challenges of the COVID-19 Pandemic

Not only the Eilene M. Galloway Symposium on Critical Issues in Space Law gives rise to recollect the name and the personality of Eilene M. Galloway. The following article demonstrates in an impressive way her political and legal farsightedness.

## ***Guidelines for the Review and Formulation of Outer Space Treaties<sup>1</sup>***

*Eilene Galloway*

### ***Abstract***



*E. Galloway*

We approach the 21<sup>st</sup> century with 40 years of international cooperation in maintaining peaceful exploration and beneficial uses of outer space and avoiding space wars. Nations have complied with UN-formulated principles for guiding space activities. Space law has become a recognized branch of international law. New trends are developing, particularly in space commercialization which is outpacing governments in space operations. New relationships are likely to develop between governments and the private sector, national and international. Five space treaties are on the agenda of the Legal Subcommittee of the UN Committee on the Peaceful Uses of Outer Space for review. A list of subjects, compiled from many sources, indicates the nature of proposed revisions and extensions of treaty concepts.

Suggestions are made on how to approach the task of review in preparing for the future of space law.

### ***Introduction***

At this time, there are two movements influencing appraisals of existing space law and proposals for formulating new international agreements: (1) the accumulation of recommendations for defining and extending concepts of space law which has already achieved the status of an agenda item on the UN COPUOS Legal Subcommittee as “review of the Status of the Five International Legal Instruments governing Outer Space”; and (2) the rapid increase in space commercialization which portends changes in the relations between governments and the private sector. These discernible trends are taking shape as we approach the 21<sup>st</sup> century, a dramatic event that encourages planning for the future. If we neglect to seize this propitious time for making decisions, global space commercialization could result in patterns of organization and management of operations with minimal guidance and control by States, and not necessarily with a unifying core of basic principles such as we have observed in the past 40 years.

The purpose of this analysis is to identify the nature of the task that confronts those who are undertaking the review and formulation of future space treaties in terms of what has been accomplished, where we stand now, and factors to take into account in making decisions that will ensure the continuation of producing space benefits for mankind.

First, it is necessary to examine the policies and programs we have pursued since the Sputnik was orbited on October 4, 1957 to determine the reasons for our four-decade record of sustaining development of peaceful space benefits and, based on this appraisal, decide on policies to continue, amend, or abandon. Second, we must estimate future probabilities and be

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<sup>1</sup> Published in the Proceedings of the 41<sup>st</sup> Colloquium on the Law of Outer Space 1998, pp. 245-253.

prepared to control them. This will require a discriminating analysis because, as we shall see, the task for future planning is more difficult now than it was in 1957-1958.

### ***Motives and Forces for Peace Following Sputnik***

Worldwide reactions to Sputnik's dramatic opening of outer space was amazement of this technological feat of rocketry, quickly followed by the dread of space wars. Fear was the motive that launched the drive that galvanized three action groups to merge their powers to use rocketry for international security from war and preserve the new environment for beneficial exploration and uses. These influential groups were (1) the organization of the International Geophysical Year (IGY); (2) leading nation States; and (3) the United Nations.

### ***The International Geophysical Year***

I have chosen to describe the IGY first because both the Soviet Union and the United States conducted rocket research in connection with the program of this 67-nation organization that selected an 18-month period (July 1, 1957 to December 31, 1958) to conduct interdisciplinary global studies of the Earth, oceans, atmosphere and outer space. This organization of the international scientific community was an outstanding example of cooperation among nations, scientific disciplines, civilian and military entities, and dedication to peaceful research for the benefit of mankind. Scientists and engineers could explain to political decisionmakers the variety of benefits that could be expected from the exploration and uses of outer space, *i.e.*, communications, contributions to meteorology, remote sensing, navigation and expanding knowledge of the solar system and the Universe. Values that came to be included in space law, particularly benefits to mankind and future generations, can find their roots in guidelines of the international scientific community. This was a strong factor in balancing the scales against space wars and influencing nations to relinquish some sovereign rights to remove potential causes of international conflicts.

The first States that developed space technology, the USSR and the United States, did not consider separate national monopolies but moved toward international space cooperation, a policy indeed dictated by the factual characteristics of satellites that orbited the Earth in about 90 minutes and required a network of national tracking stations for receiving and sending information for uses on the Earth. They developed cooperative arrangements with other nations and, despite differences, managed to cooperate with each other within the United Nations on formulating space law by consensus.

### ***United States National Space Program***

The United States moved quickly to separate civilian from military space programs by creating the National Aeronautics and Space Administration (NASA) on July 29, 1958, stating that "The Congress hereby declares that it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind". The NASA Act provides for cooperation with nations and groups of nations and in the peaceful application of the results. The U.S. began in 1958 to conclude bilateral agreements with other nations on such matters as satellites, experiments on NASA satellites, solar eclipse experiments, manned flight, deep

space, optical, moonwatch, data acquisition, resident research associateships, international fellowships, the training of persons at NASA centers, etc. By 1965, 69 nations were involved, a number that expanded to over 100 in later years and included additional subjects.

The U.S. Senate Committee on Aeronautical and Space Sciences required a weekly report from NASA on the progress of its international cooperation program. The motivating philosophy was that any nation could participate in space activities even if it started with only one scientist or engineer.

On January 31, 1958, the U.S. Representative to the United Nations requested the Secretary General to place on the General Assembly agenda the “Program for International Cooperation in the Field of Outer Space” proposing the establishment of an ad hoc Committee on the Peaceful Uses of Outer Space to make studies and recommendations “to assure that outer space will be used solely for the benefit of all mankind”. This initiative came to fruition on December 13, 1958 when the ad hoc Committee was created.

### ***The United Nations***

The permanent Committee on the Peaceful Uses of Outer Space was established on December 12, 1959 when it was agreed that decisions would be made by consensus and without the need for voting. The United Nations became the focal point for international cooperation in the peaceful uses of outer space, the forum which succeeded in extending international law and the UN Charter into outer space, and negotiating space treaties that have become part of a specialized branch of international law.

The organization and practices of COPUOS will continue into the future. The necessity for adjusting legal principles to the unique characteristics of outer space is recognized by the role of the Scientific and Technical Subcommittee which can review some referred matters before consideration by the Legal Subcommittee. The fact that all Committee members are also represented on both subcommittees, and that decisions are made by consensus, strengthens compliance with the results. Formulating new agreements and conventions by extending general principles into more specific documents when developments cause problems to ripen for solutions, and repeating basic provisions of the Outer Space Treaty in each case, are factors that ensure consistency in the development of space law.

The policy of adopting declarations which may evolve into treaties is also a forward planning procedure. The United Nations Office for Outer Space Affairs has an outstanding record of professional assistance to delegates charged with the responsibility for formulating principles to maintain beneficial conditions for space management and operations.

COPUOS was charged by the General Assembly “to study the nature of legal problems which may arise from the exploration of outer space” and the initial decisions, as well as satellite operations, were pragmatic in adjusting legal considerations to technology. No delay in operations was caused by the lack of defining the difference between airspace and outer space, and activities proceeded on the basis that airspace extended to the height planes can fly and outer space began where space objects can go into orbit. No nation objected to the rapid satellite overflights which were perceived by States as not harmful, a situation that developed into common law.

No attempt was made to establish a world space organization which was deemed premature, and instead it was recognized as realistic to emphasize the existing roles of functional

institutions: the International Telecommunication Union (ITU) and the World Meteorological Organization (WMO). Attention was directed to outer space as an area within which functions were to be performed and States were considered responsible for supervision. There was general agreement and complete acceptance of the fact that space activities require regulation, considering that adjustments must be made to outer space as a dangerous expensive environment where it is necessary to keep track of orbiting objects and such factors as the allocation of radio frequencies for communications. It was so essential to engineers to monitor satellites that the U.S. and Soviet Union began registration with the United Nations even before the Registration Agreement of 1975.

Throughout the period of developing space law the practice has been to make adjustments to the laws of physics and other technical requirements for successful operations. Planes could legally be shot down in sovereign airspace and aviators imprisoned, but space law accorded astronauts every assistance in case of accident, and provided that damaged space objects must be returned to the country of origin.

Ninety-three nations have adopted the basic guidelines in the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (October 10, 1967). These principles are familiar to the legal community but a reminder of the main points is necessary for other groups and individuals evaluating the effectiveness of our present system. Outer space is considered “the province of all mankind” with exploration and use carried out for the benefit and interests of all countries; no claims of sovereignty are permitted “by means of use or occupation or by any other means” ; international law and the UN Charter are extended to outer space; the Moon and other celestial bodies are to be used “exclusively for peaceful purposes”; military bases are prohibited but military personnel may engage in scientific research on the Moon and other celestial bodies; astronauts become “envoys of all mankind”; States Parties are internationally responsible for national space activities, including authorization and supervision of governmental and nongovernmental entities; international liability for damage is required for each State that launches, procures launchings or uses its territory for launchings of a space object and its component parts that damage another State Party (its natural and juridical persons) located on the Earth, air, in outer space or on the Moon and other celestial bodies; States retain jurisdiction and control over their registered launched objects; international cooperation is required; the UN Secretary General is to be informed of space activities; a basis of reciprocity between States and consultations must govern projected visits to space stations on the Moon and other celestial bodies.

General principles were expanded specifically in the next four treaties: Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (April 22, 1968); Convention on International Liability for Damage Caused by Space Objects (March 29, 1972); Convention on Registration of Objects Launched into Outer Space (January 14, 1975); and Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (July 11, 1984). Principles have been adopted for International Direct Television Broadcasting, Remote Sensing, and Nuclear Power Sources in Outer Space.

### ***The Moon Agreement***

Review of the Moon Agreement is a special case which requires a different approach from that of the previous four treaties because in almost 20 years it has been ratified by only 9 nations (and no spacefaring State) and is obviously unacceptable to the international community.

Allowing more time will not achieve the kind of preponderant support required for compliance with space law, and leaving it irresolutely pending would amount to neglecting the analysis of problems it was intended to solve. We have had the experience of changing the perception of a problem in the case of direct broadcasting satellites and this is what is required for future planning for the uses of resources in outer space. The Moon Agreement was drafted at a time when the Moon was first briefly explored and the problem was perceived as preventing exploitation of natural resources by providing criteria for a future institution based on a specific view of the Common Heritage of Mankind (CHM). The CHM concept is subject to so many different interpretations that it is difficult to select a meaning that can achieve consensus. The value of sharing benefits among nations is involved and since the Moon Agreement was drafted the United Nations has been able to define practical guidelines more closely in the General Assembly Resolution of December 13, 1996 which provides that:

*States are free to determine all aspects of their participation in international cooperation in the exploration and use of outer space on an equitable and mutually acceptable basis.*

*Contractual terms in such cooperative ventures should be fair and reasonable and they should be in full compliance with the legitimate rights and interests of the parties concerned, as, for example, with intellectual property rights.*

The uses of outer space resources require clarification not only for the Moon but for all celestial bodies, including asteroids, and outer space. A review could probably make progress if the Moon were not lifted out of context, so to speak, and treated separately, while all other celestial bodies and outer space areas (such as orbital paths) are ignored as far as management and operation of uses are concerned.

Comparisons with Antarctica, which adopted a system covering both scientific research and commercialization, are lacking.

### ***Nature of Proposals for Legal Revisions***

Considering the success of international space cooperation in maintaining peace and dependable conditions in outer space for 40 years, anyone might wonder why there is criticism of legal provisions and proposals for revision. The causes may be the expansion of space technology into fields which created new problems, omission of some subjects, and a tendency to spin general principles into specific terminology. The following list reveals the scope of suggestions for revising the space treaties: the list is not inclusive or arranged in priority order, and some of the subjects are interrelated.

- Definitions of where airspace ends and outer space begins; limits of sovereignty.
- Role of the International Telecommunication Union (ITU) in allocating the radio spectrum and geostationary orbit.
- Provisions based on functions of spacecraft and/or area in which they operate.
- Sovereignty and remote sensing.
- Space exploration and uses for the benefit of all countries, including sharing.
- Concerns regarding developing countries
- Relation of “province of all mankind” to “Common Heritage of Mankind”.
- Relation of national governments to the private sector.
- Effects of increase in commercialization, national and international.
- Selection of activities for regulation and responsible entities; Enforcement and deregulation.
- Responsibility for space debris.
- Insurance and liability for damage.
- Settlement of disputes.
- Influence of regional agreements.
- Registration of space objects; Selection of additional information.
- Integrating national space laws with international space law.
- Protection of intellectual property.
- Extension of arms control provisions.
- Protection of Space and Earth environments from contamination.
- Creation of new international institutions, including a world space agency.
- Terminology: meaning of terms such as space object, appropriate state, peaceful, benefits, launching authority, term for outer space, etc.

Opinions and recommendations on these subjects have been expressed in meetings of the UN COPUOS, legislatures of States, conferences of space organizations such as the European Space Agency, American Institute of Aeronautics and Astronautics, International Astronautical Federation, International Academy of Astronautics, International Institute of Space Law, leading law journals, i.e., “Journal of Space Law”. Notable books are “Perspectives on International Law” edited by Nandasiri Jasentuliyana, and “Outlook on Space Law Over the Next 30 Years” edited by Gabriel Lafferranderie and Daphne Crowther.

### ***Difficulties for Future Space Law Planning***

As we have observed in casting back to the beginning of the space age when we had a clean slate, at that time the essential political, economic, scientific technological and legal elements merged quickly to shape space policies, organizations and implementing programs. This degree of unity no longer exists and it will be more difficult to get agreement on global space systems and the integration of national entities. The difficulties must be identified so that they can be overcome.

Peace is now taken for granted and there is no longer the spur of fear from orbiting weapons and other methods of disrupting satellite launchings and orbital flights. There is a



disconnect between space scientists/engineers, politicians, and lawyers, partly because the objective of an International Geophysical Year no longer links the scientific community to national and international decisionmakers, and partly because many space lawyers have been immersed in the meaning of words adapted to earthly problems and with little regard for new situations created by adapting technology to outer space. Now we must be concerned not only with the relationship between law and science/technology, but also with international economic trends and national political factors. Review of treaties is not the kind of subject that is considered first by the Scientific and Technical Subcommittee and then transferred to the Legal Subcommittee; instead, it would seem that the Legal Subcommittee would act first in seeking advice from scientists and engineers, especially about any segment that requires regulation.

Originally, there was agreement, practically without question, that space activities required regulation, a function performed by States. Now we live in a period where there is a psychological political atmosphere favoring deregulation, and commercial interests that hold this point of view can be expected to take advantage of the situation. The scope of space activities has broadened to a variety of uses, a global movement that can be expected to continue, and it will be difficult to define what is embodied in the concept of space law as a special branch of international law, a problem that requires a realistic conception of the difference between general and specific legal provisions. General provisions should be sufficiently precise so they are not subject to many interpretations, but broad enough to serve as an umbrella under which many different functions can exist.

Satellite-oriented information is used to solve or mitigate problems on the Earth and it is only natural that Earth-oriented legal problems may require solutions from other sources than space law. This will become evident as specific cases accumulate and form patterns. There are so many calls for revision and amendment of existing international space law that efforts for improvement can scatter in different directions and it will be difficult to maintain unity of purpose. There is the danger of new parts not adding up to the whole, and we must be careful not to cripple the system we have before we can be sure of improvement.

Decisions will be required on the order in which recommended changes are placed on the agenda: is this to be chronological order of treaty dates of ratification, or by selecting similar provisions that occur in more than one treaty?

Dealing with the extension of arms control in outer space and on celestial bodies is complicated by the institutional division in the United Nations between disarmament as a whole and the part that occurs in COPUOS, so ways and means must be found for coordination.

Even after agreement is reached on the wording of revisions, there is the problem of getting all States Parties to ratify the new texts. If the 1967 Outer Space Treaty is considered first for review, there is the danger of losing some of the values we now have. Also, even if consensus on a revision is attained, there is the possibility that advances in space science and technology can render it obsolete before long, so attention must be given to the flexibility of general provisions for covering different specific situations. It becomes obvious when reading some of the suggested revisions that there is a weak link, sometimes nonexistent, between legal guidelines and technical space operations.

There are, however, some positive features which favor space law planning at this time. The growing preponderance of the private sector in global space activities will force some changes in relations between industry and States Parties to the treaties and this movement re-

quires direction and control. There is the responsibility of the UN COPUOS Legal Subcommittee to undertake the task of reviewing the treaties. Identifying conditions essential for the management and operation of space programs could assist in the formulation of practical principles for maintaining dependable orbits and communications facilities. Two kinds of regulation are available for productive space activities: those that are practically self-enforcing because they provide for compliance with the unchangeable laws of physics and necessary protective conditions; and those that require an organization with personnel to manage operations. The Legal Subcommittee can formulate international standards and recommended practices that are highly self-enforcing and regulatory because they ensure safe efficient operations needed by all participants. Models to study are the International Telecommunication Union and the International Civil Aviation Organization for management procedures.

### ***Comments***

My review of many studies on the five UN-formulated space treaties leads to the following additional comments.

We have preempted outer space for beneficial purposes to such an extent that peace is taken for granted and little or no attention is being given to arms control. Among other types of potential disruptive forces, space debris is the greatest concern for scientists, engineers, lawyers and commercial entities, and can be expected to continue to receive priority attention. It would be prudent to codify all the elements necessary to preserve outer space as a dependable orderly environment, including measures for arms control.

There is a lack of knowledge among some lawyers about the unique characteristics of the outer space environment and the ways in which it is radically different from the Earth, air and oceans. This can result in proposals that are based on assumptions projected from Earth-oriented habits that do not adequately cover unusual aspects created by space technology.

Outer space as an area has positive influences which we can use, such as radio waves for communications, and negative effects we must guard against, notably lethal radiation. Scientists term outer space a vacuum, but this does not mean it is a void, as in nothingness. There is a high but not complete vacuum so space vehicles operate in microgravity, a condition that enables valuable research that cannot be done on Earth.

The Earth has a magnetosphere, ionosphere and upper atmosphere which thins at higher altitudes. The vacuum is measured by the unit Torr in honor of the inventor of the barometer, Evangelista Torricelli (1643). Attention must be paid to influences from the solar wind of electrons, protons and subatomic particles, bursts of energy from solar flares, cosmic rays. There are the Van Allen radiation belts, gases, plasmas and other phenomena which are subjects of constant research. Astronauts must be protected from radiation and satellites constructed to perform specific functions in certain orbits and avoid destructive conditions. Orbital mechanics is an exact discipline, permitting the placement of satellites in precise orbits for their designed functions. All the principles in UN space treaties apply to the area of outer space as well as celestial bodies. A variety of legal problems can arise, and legal planning cannot proceed on the basis that there is nothing in outer space in addition to the celestial bodies. We need to anticipate, for example, legal problems connected with the construction and management of a solar power system.

We should consider whether to carry over to the next century a discussion of the meaning of “peaceful”. The policy decision at the beginning of the space age was to ensure peace and not war, the same objective as that of the United Nations, and well understood when the word “Peaceful” was included in the name of the Committee on the Peaceful Uses of Outer Space.

The basis for argument was created when “peaceful” was opposed to the word “military” which was assumed to be entirely destructive. But “military” is subject to different meanings, i.e., a force engaged in war, a government defense department, a deterrent to war and other violent actions, military personnel, military equipment, etc. In this author’s opinion the requirements for space law cannot be met by defining “peaceful” as “non-military”, especially when no definition is offered for “military”; nor is it adequate to use “non-aggressive” because apparently its meaning is not obvious for space law purposes. It should be noted that the Soviet Union’s space program has been operated by its military department according to international cooperation for peaceful purposes, and continues to do so. The U.S. Department of Defense, as well as such establishments in other countries, has a deterrent-to-war function to keep the peace, engages in humanitarian disaster relief, and more recently put its Global Positioning System, with its many civilian applications, at the disposal of all countries without charge. There is no use in posing an argument in imprecise terms that can be continued in definitely without fruitful results, especially considering the remarkable beneficial nondestructive record of space activities since 1957. Insofar as space law purposes are concerned, future provisions controlling selected military matters could be precisely defined as they are in parts of Article IV of the 1967 Outer Space Treaty. We must keep in mind that guarding against destructive forces involves more than military matters.

Defining the difference between sovereign airspace and nonsovereign outer space has been a continuing concern for lawyers seeking a definite basis for legal situations involving airplanes and satellites. COPUOS sought, but found it impossible to obtain, a scientific basis for demarcation. Meanwhile, space activities flourished on the basis that airspace extends to the height planes can fly while outer space begins where satellites can go into orbit.

Proposals for an artificial line have not found acceptance, probably because there have been no problems since the space age began that required for their solution a line between airspace and outer space. One part of the debate has been on whether matters of management, control, and settlement of disputes, could be handled according to (1) area or functional criteria, or (2) primarily by area with functions considered secondarily. This line of thought appears to overlook the fact that when the space age started two types of institution developed: organizations concerned only with space, such as NASA and INTELSAT; and organizations with functions that are space-related, such as the ITU with communications and the WMO with the weather, both functions also organized nationally throughout the world. The debate has often been abstract about area/functions without mention of all the separate functions that are managed according to their own statutes.

The probability of spaceplanes that can fly in both airspace and outer space will add a new dimension to this problem, and it will be necessary to find out what functions such an object performs and how it is to be regulated. Another point to consider is that the Global Positioning System can locate an object precisely in a short time, and a monitoring system could have information about its function. We shall need a new definition of the entire problem:

the relation of this new technology to sovereignty; the effects on the International Civil Aviation Organization, and how spaceplanes fit into regulation for international security.

Outer space benefits “taking into particular account the needs of developing countries” is on the agenda of the Legal Subcommittee. Space activities have developed a broad spectrum of benefits, general and specific. Examples of general benefits for all countries are uses of remote sensing for information that will protect the environments of Earth, oceans, the atmosphere and outer space; weather predictions that save lives and property in cases of disaster; and research in microgravity that results in health improvement. Such general benefits are usually taken for granted in spite of their worldwide applications. There are specific benefits from bilateral and multilateral agreements for cooperative space projects on communications, meteorology, health, education, etc. There is a long list of spinoff benefits from space technology with commercial applications. Benefits to mankind are broadly distributed and the term cannot be confined to space technology. The scope and variety of benefits, and opportunities for strengthening the capabilities of States for solving problems, is evident in the program planned for the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) to be held in Vienna, Austria from July 19-30, 1999. One of the primary objectives of UNISPACE is “to strengthen the capabilities of the Member States, in particular developing countries, to use the applications of space research for economic and cultural development”.

### ***Conclusions***

Regulation of space activities is the priority problem now and for the future. Uncontrolled deregulation of launchings, orbits and functions must not be allowed to develop and imperil the orderly dependable system that has been built up by international cooperation during the past 40 years. However, no participants want more regulation than is required for conducting beneficial purposes. Existing practices have been guided by States according to values legally enshrined in treaties whose compliance is based on factual requirements of space science and technology for operations in outer space. At the beginning of the space age the necessity for regulation was evident and is reflected in the 1967 Outer Space Treaty, notably Article VI, which provides for the relationship between States and their nongovernmental entities as well as international organizations. Article VI is a general principle which provides that:

*States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. When activities are carried on in outer space, including the Moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization.*

It should be noted that in accordance with the U.S. Constitution, Article VI of the 1967 Outer Space Treaty has become part of the “supreme law of the land”. The growth of the private sector in space operations raises the question of how to interpret Article VI in specific ways that assure smooth relations between the government and private entities. It is obvious that the role of government will be paramount in certain areas, i.e., the conduct of foreign relations, especially in international agreements required for joint projects with other nations and for ground segments throughout the world; matters relating to national defense; government licenses for use of launching facilities, etc. Also, it would be unacceptable for States to be absolutely liable for damages resulting from private ventures, an area which requires attention also to provisions in the Convention on International Liability for Damage Caused by Space Objects. Those in charge of nongovernmental entities, both national and international, need to know what to expect from supervision by States.

Leadership is essential for analyzing all aspects of this problem and proposed recommendations for solution. This task can be undertaken by the United Nations Committee on the Peaceful Uses of Outer Space Legal Subcommittee in combination with the Scientific and Technical Subcommittee. In addition, national governments that are primarily involved with private sector and international space organizations should expedite proposals for specific interpretations of existing space law, especially if needed before any new legal provisions could become effective.

*Joint IISL/China International Symposia*

IISL is currently establishing a regular symposium, which shall take place on an annual basis in China for the Asian-Pacific region. An initial event on space law took place as part of the International Symposium on the Peaceful Use of Space Technology (Health), organised by the Chinese Society for Astronautics, the China High-Tech Industrialization Association and the International Peace Alliance (Space) from 17-19 November 2019 in Zhuhai. Another full-fledged space law Symposium has been foreseen for March 2020 but had to be postponed to September 2020 (or a later date). It shall take place as International Symposium on Maintaining the Rule of Law in Outer Space in an Age of Rapid Innovation in Fuzhou. It will be co-organised by IISL, the Chinese Society of Astronautics, the China Institute of Space Law and Space Law Center of China National Space Administration and held in conjunction with the 2020 China Space Conference. From that date on, it is planned to enter into an annual mode. With the establishment of this series, IISL – with the generous support of its Chinese partners – can build an additional continuous presence and visibility in this world region.

- **2019:** International Symposium on International Governance of Emerging Space Issues under the Rule of Law (24 - 25 April 2019, Changsha, China).
- **2020:** International Symposium on Maintaining the Rule of Law in Outer Space in an Age of Rapid Innovation (postponed, Fuzhou, China)



*Participants at the 2019 Joint IISL/China International Symposium*

The IISL/China workshops close a gap of activities of the Institute in the Asia-Pacific region. Before 2015, IISL organized events in Singapore 2001, Beijing 2004, Bangkok 2006 and Chiangmai 2007. Also joint conferences were held with IAA in Bangalore 2005 and Trivandrum 2014. For all activities, IISL could build on generous and enthusiastic support by local authorities and institutions.

*IAA/IISL Scientific-Legal Roundtables*

The establishment of the Scientific-Legal Liaison Committee (SLLC) was initiated by the late John Cobb Cooper, Professor of the Princeton University and founder of the Institute of Air Law, Mc Gill University, which later on became the present Institute of Air and Space Law. He wanted to create a body, which should explore the space issues of joint interests of scientists, engineers and lawyers. In this pioneering endeavour, he was supported by Andrew G. Haley, who was a leading personality, during the 1950s and 1960s in the IAF and also in the newly emerging IAA and IISL. Both of them wanted the new body to consider firstly the issue of delimitation of airspace and outer space. This was done at two succeeding sessions, but Cooper and Haley passed away during the second half of the 1960s.

The chair of the committee was then entrusted to Prof. Edward A. Brun (France) and Prof. Vladimir Kopal (Czechoslovakia), one representing the scientific part of the body, the other its legal part. When Professor Brun passed away, Pierre Contensou of France succeeded him and later on Jean-Jacques Dordain (the later Director-General of ESA), André Lebeau (France) and Edward R. Finch (USA) became co-chairs of the committee. Judge Manfred Lachs, when he was elected as IISL President, also chaired the SLLC for a certain time. Vladimir Kopal served as one of the co-chairmen for four decades, last time together with Wendell Mendell (USA). He was replaced by Kai-Uwe Schrogl (Germany) for more than a decade. Today, Larry Martinez (USA) from the IISL-side and Rainer Sandau (Germany) from the IAA-side are co-chairing the joint committee with Nicola Rohner-Wilsch (Germany) as the Committee secretary.



*Members of the IIA/IISL Scientific-Legal Liaison Committee (from left to right): Chair K.-U. Schrogl, Co-Secretary N. Rohner-Wilsch and Co-Chair R. Sandau*

So far, the Roundtable held more than 30 sessions with a wealth of exciting topics. For the occasion of the 30<sup>th</sup> Roundtable, a brochure was published,<sup>2</sup> which contains the full history of the Roundtable including the topics and panels since 1977 as for example space debris remediation, commercial human spaceflight, “paper satellites”, preventing the abuse of space data and many more. The IAA/IISL Scientific-Legal Liaison Committee is continuously screening appropriate topics and issues, which are good for the format of a multi-disciplinary session, involving both the IAA and IISL communities and bodies. In IISL the selection of the topics is confirmed by the Board of Directors and the Roundtables are integral parts of the IISL Colloquia at the IACs (they constitute one out of currently 6 sessions in the symposium, organised by IISL as its Colloquium). Detailed reports from the Roundtables are included in the annual IISL Proceedings.

The list of topics includes:

- **1977:** Scientific and Legal Aspects of International Cooperation in Remote Sensing
- **1978:** Scientific and Legal Aspects of International Cooperation in Remote Sensing

<sup>2</sup> The brochure can be accessed at [https://iislweb.org/wp-content/uploads/2020/05/2016\\_30\\_IAA\\_IISL\\_Roundtable.pdf](https://iislweb.org/wp-content/uploads/2020/05/2016_30_IAA_IISL_Roundtable.pdf).

- **1979:** Scientific and Legal Aspects of Large Systems in Space: Problems and Prospects
- **1980:** *No report*
- **1981:** *No report*
- **1982:** Energy from Outer Space: Problems of Technological Feasibility and International Cooperation
- **1983:** *No report*
- **1984:** Present and Expected Uses of Outer Space and Problems of Protecting the Space Environment
- **1985:** Legal and Technical Implications of Space Stations
- **1986:** *No Roundtable*
- **1987:** *No report*
- **1988:** *No report*
- **1989:** The Impact of Significant Scientific and Technological Changes on the Law of Outer Space
- **1990:** Scientific/Legal Aspects of Management of Space Debris
- **1991:** *No Roundtable*
- **1992:** Exploration and Uses of the Moon and Other Celestial Bodies
- **1993:** Scientific and Legal Aspects of Space Debris
- **1994:** *No Roundtable*
- **1995:** *No report*
- **1996:** Space Telecommunications
- **1997:** *No report*
- **1998:** SETI and Society
- **1999:** Protection of the Space Environment
- **2000:** *No roundtable*
- **2001:** Scientific and Legal Implications of Establishing Solar Power Systems on the Geostationary Orbit
- **2002:** *No information*
- **2003:** *No information*
- **2004:** *No information*
- **2005:** Space Traffic Management
- **2006:** Nuclear Power Systems in Space – The New Reality
- **2007:** Google Earth et al. – Pros and Cons of an Easier Access to Satellite Images
- **2008:** Paper Satellites
- **2009:** Assessing Commercial Human Spaceflight
- **2010:** The New Age of Small Satellite Missions
- **2011:** Space Debris Remediation
- **2012:** Optical Communications
- **2013:** Space and the Polar Regions – Issues of Satellite Applications, Policies and Regulations
- **2014:** Controlling the Eyes in the Sky: Preventing Abuse of Space Data
- **2015:** Universities as Actors in Space
- **2016:** The Future of Regional Cooperation



- **2017:** Technological and Legal Challenges for On-Orbit Servicing
- **2018:** Global Cooperation in Planetary Defence
- **2019:** Mega Constellations and Microsatellites: Challenges, Including Registration and Liability
- **2020:** Scientific and Legal Aspects of Artificial Intelligence in Space Missions and Activities.



*IAA/IISL Scientific Legal Roundtable 2019*

### *Annual All-Russian Meeting of the IISL*

With a view to satisfying the significant interest for international space law and policy in Russia and to uniting same-minded people, in December 2017, an informal gathering of IISL members residing in Russia and other space enthusiasts competent in various fields of science was conducted for the first time at RUDN University in Moscow. It gathered 35 attendees, including those from Moscow, St. Petersburg, and Kaliningrad, so it was called all-Russian.

The second all-Russian IISL gathering was held in December 2018, again at RUDN University. The discussion included video talks on space law and policy aspects by IISL members from abroad, namely by Michelle Hanlon, Ram Jakhu, and Tanja Masson-Zwaan to open each of the three panel discussions. The 2018 meeting was attended by 46 participants, including those from Moscow, St. Petersburg, Samara, and Rostov-on-Don.

The third All-Russian meeting was held in December 2019. Due to growing interest, it was decided to hold a full-day event. The meeting started with an official part and continued with a full-weight space law and policy round table. A number of IISL members from all over the world, namely Chuck Dickey, Frans von der Dunk, Steven Freeland, Stephan Hobe, Mahulena Hofmann, and Peter Martinez, recorded special video talks. The third meeting attracted 64 attendees, including those from the Russian cities of Moscow, St. Petersburg, Kaliningrad, Samara, Kazan, and Chelyabinsk, as well as from Minsk (Belarus) and Baku (Azerbaijan) and guests from Bulgaria and France what made it a truly international event.

*Cooperation between IAF, IAA and IISL*

At IAC 2018, the Presidents of IAF, IAA and IISL signed a MoU to join forces in investigating Space Traffic Management (STM), which is one of the key technological and regulatory challenges to maintain safe space utilization. The three organisations set up sub-groups, which are working now in a coordination fashion in order to present comprehensive and consolidated results in the near future.

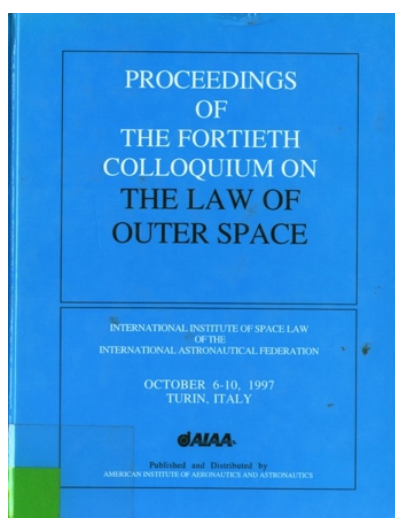


*The presidents of IISL, IAA and IAF in 2018*

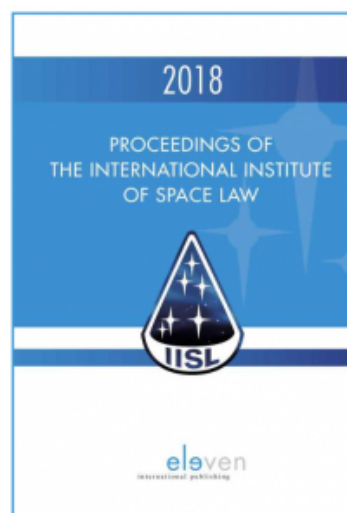
## VII. Publications of the IISL

### *Proceedings of the Annual IISL Colloquia*

Each IISL Proceedings issue contains selected papers that have been accepted for the Colloquium concerned, as well as reports of the Standing Committee on the Status of International Agreements Relating to Activities in Outer Space, the IAA/IISL Scientific-Legal Roundtable programme, the IISL/ECSL Symposia programme presented to the Legal Subcommittee's Delegates and staff, and the Manfred Lachs Space Law Moot Court Competition.



*Publisher (from 1992 to 2010): AIAA*



*Since 2011: Eleven International Publishing*

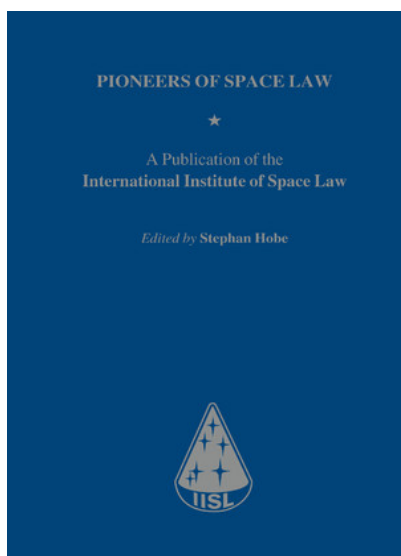
### *Newsletter of the IISL*

The newsletter appears on the IISL website regularly throughout the year and is aimed at the IISL membership, keeping those interested in space law informed about the latest news from the Institute and about developments in space law in general.

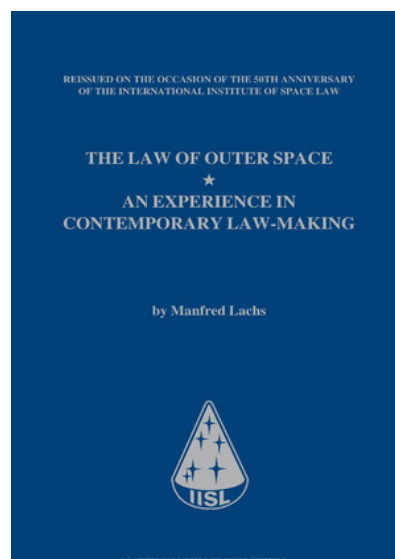
Apart from the announcements of the officers and IISL committees about the various activities of the Institute, also all other members are invited to contribute news on activities and events on space law of interest for the membership of IISL.



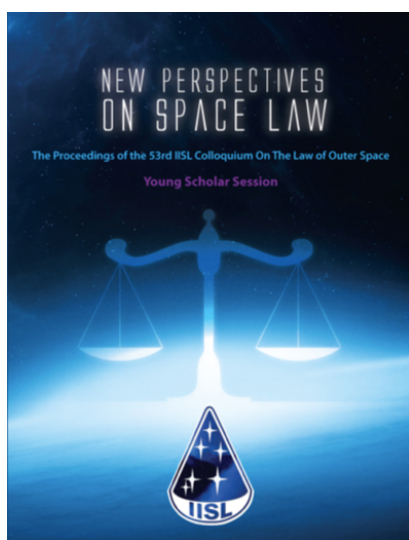
***Book publications of the IISL***



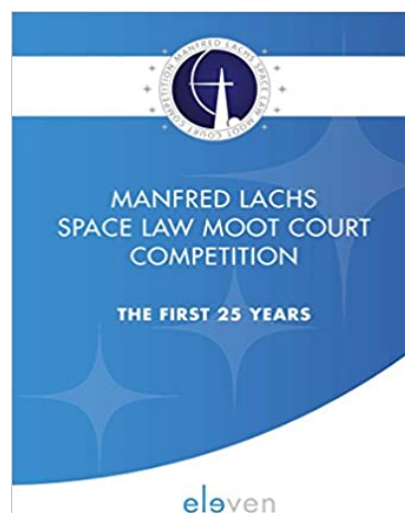
Hobe (ed.)  
**Pioneers of Space Law**  
(Martinus Nijhoff Publishers, 2013)



Hobe/Masson-Zwaan (eds.)  
**The Law of Outer Space: An Experience on Contemporary Law by Manfred Lachs**  
re-issued on the occasion of the 50<sup>th</sup> anniversary of the IISL  
(Martinus Nijhoff Publishers, 2010)



Sundahl/Gopalakrishnan (eds.)  
**New Perspectives on Space Law**  
(Eleven Publishing, 2016) (e-book)<sup>1</sup>



International Institute of Space Law  
**Manfred Lachs Space Law Moot Court Competition: The First 25 Years**  
(Eleven Publishing, 2016)

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**Statements of the IISL Board and Studies of the IISL DoS<sup>1</sup>**

*Statement by the Board of Directors of the IISL on Claims to Property Rights Regarding the Moon and Other Celestial Bodies (2004)<sup>2</sup>*

International Law establishes a number of unambiguous principles, according to which the exploration and use of outer space, including the Moon and other celestial bodies, is permitted for the benefit of mankind, but any purported attempt to claim ownership of any part of outer space, including the Moon and other celestial bodies, or authorization of such claims by national legislation, is forbidden as following from the explicit prohibition of appropriation, and consequently is prohibited and unlawful. Since there is no territorial jurisdiction in outer space or on celestial bodies, there can be no private ownership of parts thereof, as this would presuppose the existence of a territorial sovereign competent to confer such titles of ownership. This legal situation gave rise to the following statement of the IISL Board of Directors:

*Claims to own the Moon or parts thereof by private parties have been made for many years, but so far such claims have not been taken very seriously. However, this could change, as “deeds to lunar property” have started to appear, raising the opportunity for individuals to be misled. In addition, the scope of such claims has been extended recently to other celestial bodies. Thus, the Board of Directors of the International Institute of Space Law (IISL) has concluded that there is a need for a statement regarding the current legal situation concerning claims to private property rights to the Moon and other celestial bodies or parts thereof. While this issue is only a small part of a much broader context surrounding private sector activities on the Moon and other celestial bodies, this statement is limited only to the topic of claims to private property rights to the Moon and other celestial bodies or parts thereof.*

*Article II of the 1967 Outer Space Treaty states that “Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means”. The object and purpose of this provision was to exclude all territorial claims to outer space, including the Moon and other celestial bodies. As of March 2004, the Outer Space Treaty has been ratified by 98 nations, and signed by an additional 27 countries.*

*Article VI of the Outer Space Treaty provides that “States bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities”, that is, private parties, and “for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty”. Article VI further provides that “the activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty”.*

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<sup>1</sup> All statements of the IISL BoD and the IISL DoS are available on the IISL homepage.

<sup>2</sup> Available at: <https://iislweb.org/statement-by-the-iisl-board-of-directors-on-claims-to-property-rights-regarding-the-moon-and-other-celestial-bodies/>.

*Therefore, according to international law, and pursuant to Article VI, the activities of non-governmental entities (private parties) are national activities. The prohibition of national appropriation by Article II thus includes appropriation by non-governmental entities (i.e. private entities whether individuals or corporations) since that would be a national activity. The prohibition of national appropriation also precludes the application of any national legislation on a territorial basis to validate a 'private claim'. Hence, it is not sufficient for sellers of lunar deeds to point to national law, or the silence of national authorities, to justify their ostensible claims. The sellers of such deeds are unable to acquire legal title to their claims. Accordingly, the deeds they sell have no legal value or significance, and convey no recognized rights whatsoever.*

*According to international law, States party to a treaty are under a duty to implement the terms of that treaty within their national legal systems. Therefore, to comply with their obligations under Articles II and VI of the Outer Space Treaty, States Parties are under a duty to ensure that, in their legal systems, transactions regarding claims to property rights to the Moon and other celestial bodies or parts thereof, have no legal significance or recognised legal effect.*

*Note: Notwithstanding matters covered in the above Statement, the Board of Directors of the IISL recognises that other private activities on the Moon and other celestial bodies are permitted. Article VI of the Outer Space Treaty affirms that non-governmental entities, including private individuals, companies, and organizations, have the right to conduct activities in space in accordance with international space law, and subject to the authorization and continuing supervision of the appropriate State Party. The IISL plans to convene a Workshop to explore issues regarding the relationship of government and private sector in space.*

#### *Statement by the IISL Board of Directors on Claims to Lunar Property Rights (2009)*

In 2004, the Board of Directors of the IISL issued the following statement relating to the issue of 'property rights' in outer space:

*In view of recent misleading views and discussions on this subject in the press, the Board considers that it is appropriate to further clarify a number of salient points as follows: International Law establishes a number of unambiguous principles, according to which the exploration and use of outer space, including the Moon and other celestial bodies, is permitted for the benefit of mankind, but any purported attempt to claim ownership of any part of outer space, including the Moon and other celestial bodies, or authorization of such claims by national legislation, is forbidden as following from the explicit prohibition of appropriation, and consequently is prohibited and unlawful. Since there is no territorial jurisdiction in outer space or on celestial bodies, there can be no private ownership of parts thereof, as this would presuppose the existence of a territorial sovereign competent to confer such titles of ownership.*

*The current international legal regime is binding both on States and, through the precise wording of Article VI of the Outer Space Treaty of 1967, which has been ratified by 100 countries, including all the space-faring countries, also on*

*non-governmental entities, i.e. individuals, legal persons and private companies. The clear goal of such a regime is to preserve outer space, including the Moon and other celestial bodies, for the exploration and use of all mankind, not only for those States and private enterprises that are capable of doing so at any particular time.*

*At present, international space legislation does not include detailed provisions with regard to the exploitation of natural resources of outer space, the Moon and other celestial bodies, although it does set down a general framework for the conduct of all space activities, including those of private persons and companies, with respect to such natural resources. The IISL is of the opinion that a specific legal regime for the exploitation of such resources should be elaborated through the United Nations, on the basis of present international space law, for the purposes of clarity and legal certainty in the near future. The IISL will continue to play an active role in any such discussions as they develop.*

### *IISL Position Paper on Space Resource Mining (2015)*<sup>3</sup>

The IISL has issued a position paper on space resource mining, adopted by consensus by the Board of Directors on 20 December 2015:

#### I. The U.S. Commercial Space Launch Competitiveness Act

*On 25 November 2015, the President of the United States signed into law the U.S. Commercial Space Launch Competitiveness Act (H.R.2262).*

*It consists of four Titles: I. Spurring Private Aerospace Competitiveness and Entrepreneurship; II. Commercial Remote Sensing; III. Office of Space Commerce; and IV. Space Resource Exploration and Utilization.*

*Title IV, which is of interest here, addresses in a preliminary way space resource exploitation.*

*It consists of three sections, whereby Section 402 with its amendments contains most of the substantial legal provisions and envisions: the facilitation of “commercial exploitation for and commercial recovery of space resources by United States citizens”; discouragement of “government barriers to the development in the United States of economically viable, safe, and stable industries for commercial exploration”; and promotion of “the right of United States citizens to engage in commercial explorations for and commercial recovery of space resources free from harmful interference, in accordance with the international obligations of the United States and subject to authorization and continuing supervision by the Federal Government”.*

*The Act determines in § 51303 that United States citizens engaged in commercial recovery of an asteroid resource or a space resource under this chapter “shall be entitled to any asteroid resource or space resource obtained, including to possess, own, transport, use and sell the asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of the United States”.*

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<sup>3</sup> Available at: <https://iislweb.org/iisl-position-paper-on-space-resource-mining/>.

*Finally, Section 403 of the Act assures that the United States does not assert sovereignty or sovereign or exclusive rights or jurisdiction over, or the ownership of, any celestial body.*

## II. The Legal Situation Relating to Space Resource Exploitation under International Space Law

*1. In 2004 and 2009, the Board of Directors of the IISL addressed questions regarding the appropriation of the Moon, other celestial bodies and their resources, in two statements to which reference is made. The adoption of the United States law gives rise to the following evaluation of the current legal situation:*

*a) First, the Outer Space Treaty of 1967 contains the basic legal regulation for outer space and celestial bodies. In its Article II, it provides that “Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means”.*

*b) Second, it is uncontested under international law that any appropriation of “territory” even in outer space (e.g. orbital slots) or on celestial bodies is prohibited, it is less clear whether this Article also prohibits the taking of resources. Article I paragraph 2 of the Outer Space Treaty specifies the right of the free exploration and use of outer space and celestial bodies, without discrimination of any kind, on the basis of equality and in accordance within international law. Yet, there is no international agreement, whether the right of “free use” includes the right to take and consume non-renewable natural resources, including minerals and water on celestial bodies.*

*c) Third, according to the Moon Agreement of 1979, concluded twelve years after the Outer Space Treaty and adopted by consensus in the United Nations General Assembly, natural resources cannot become “property of any State, international intergovernmental or non-governmental organization, national organization or non-governmental entity or of any natural person” (Article 11 paragraph 3). State Parties to the Moon Agreement agreed to establish an international regime to “govern the exploitation” of mineral resources “as such exploitation is about to become feasible”. This clause, be it interpreted as a moratorium or not, is binding upon the sixteen States that have so far ratified the Moon Agreement, but not upon the United States. Moreover, Article 11 has not gained the status of a rule of customary international law.*

*2. Therefore, in view of the absence of a clear prohibition of the taking of resources in the Outer Space Treaty one can conclude that the use of space resources is permitted. Viewed from this perspective, the new United States Act is a possible interpretation of the Outer Space Treaty. Whether and to what extent this interpretation is shared by other States remains to be seen.*

*3. This is independent from the claim of sovereign rights over celestial bodies, which the United States explicitly does not make (Section 403). The purpose of the Act is to entitle its citizens to these resources if “obtained in accordance with*



*applicable law, including the international obligations of the United States”. The Act thus pays respect to the international legal obligations of the United States and applicable law on which the property rights to space resources will continue to depend.*

### III. Future Perspectives

*It is an open question whether this legal situation is satisfactory. Whether the United States’ interpretation of Article II of the Outer Space Treaty is followed by other states will be central to the future understanding and development of the non-appropriation principle. It can be a starting point for the development of international rules to be evaluated by means of an international dialogue in order to coordinate the free exploration and use of outer space, including resource extraction, for the benefit and in the interests of all countries.*

#### *IISL Directorate of Studies Background Paper on Space Resource Mining (2016)<sup>4</sup>*

Does international space law either permit or prohibit the taking of resources in outer space and on celestial bodies, and how is this relevant for national actors? What is the context, and what are the contours and limits of this permission or prohibition? A study was prepared under the overall responsibility of Professor Stephan Hobe, Cologne, Chair of the IISL Directorate of Studies, and presented to the IISL Board of Directors at its session of 26 March 2017. The contributing authors were: Setsuko Aoki, Christopher D. Johnson, Olavo de Bittencourt Neto, Stephan Hobe, Mahulena Hofmann, Irmgard Marboe, Rada Popova, Li Shouping, Olga Volynskaya. Due to the 46 pages length of the background paper, here only the final results are reprinted.

*[...] Under the existing international legal framework, mining of space resources raises a range of legal issues that need to be addressed adequately. Such use of outer space is not explicitly mentioned in the Treaties and there is no specific legal order for such activities. However, any prudent interpretation of the *corpus iuris spatialis* leads to the conclusion that space resource mining is not prohibited per se and that it is an activity falling under the freedom of the use of outer space as laid down in Article I paragraph 2 Outer Space Treaty, limited however by the fact that according to Article I paragraph 1 such use must be for the benefit of all mankind and according to Articles IV and IX must be in conformity with the provisions concerning military uses and environmental considerations.*

*However, such use and the “free access to all areas of celestial bodies” are to be exercised under the conditions imposed by the Treaty. Apart from being one of the international legal instruments with a considerable support, the milestone norms in the Outer Space Treaty are widely accepted and may arguably even be customary law. Such are “the benefit and in the interests of all countries” clause of Article I paragraph 1, the prohibition of discrimination in Article I paragraph 2, the requirement in Article III that space activities shall be carried out “in ac-*

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<sup>4</sup> Available at: [https://iislweb.org/docs/IISL\\_Space\\_Mining\\_Study.pdf](https://iislweb.org/docs/IISL_Space_Mining_Study.pdf).

*cordance with international law”, the principles of due regard and of “cooperation and mutual assistance” contained in Article IX. Thereby, the Outer Space Treaty provides a guarantee that States, in perceiving their freedom to use outer space, should ensure that these standards are met before resource mining activities can be exercised. All such uses may not amount to national appropriation of outer space or celestial bodies. Also in view of national legislation and the possible repercussions of following partly or more strictly the monist and dualist approaches in national legal orders, this seems to be a line of interpretation which can hope to find consensus.*

*The constitutional practice of almost all important space faring countries shows that the international law – mostly enshrined in international agreements – fits in hierarchical terms under the constitution and at the same level as statutory national law. But partly principles of customary international law and particularly principles of jus cogens may be more important than in hierarchy and even constitutional norms.*

*Subsequent state practice in interpreting the freedom of use and the non-appropriation principle enshrined in the Outer Space Treaty can be found in the Moon Agreement which in its Article 11 paragraphs 5 and 7 allows for the exploitation of natural resources on the Moon and other celestial bodies only after an international regime to govern these activities is established. Thereby, both national legislation and the subsequent State practice to Articles I and II of the Outer Space Treaty entailed in the Moon Agreement do not lead to a different result: the legal framework governing activities in space does not prohibit the exploitation of resources as an activity open to States, but it nevertheless requires that such exploitation shall take place under the conditions laid down in the Outer Space Treaty which are to be shaped in an appropriate international legal order multilaterally.*

*Taking the fact that outer space law is not particularly outspoken with regard to space mining, the plea of the Moon Agreement to establish an international regime for mineral resource mining should be undertaken only as an effort of the international community.*

## **Awards**

Each year, IISL recognizes eminent and extraordinary contributions and services to the field of space law, and for advancing the broader objectives of the Institute through prestigious IISL annual awards. The names of the awardees can be found on the IISL homepage.

The Institute gives out annual awards in the following five categories:

### *Lifetime Achievement Award*

This Award may be given in recognition of a person’s lifetime (i.e. generally 25 years) of exceptional and untiring (continuous) service to the space law profession and original contribution to the development of international and/or national space law and policy.



*Lifetime Achievement Award 2019 for C. Brünner © Dikaios Pang*

### *Distinguished Service Award*

This Award may be given in recognition of a person's about 15 years of outstanding and original contribution to the development of international and/or national space law and policy. This Award could also be given to a person in recognition of his/her selfless dedication and service to the IISL, inter alia, through service on the IISL Board and its Committees, representation of IISL to other bodies and fora, the organization and support of the annual Manfred Lachs Space Law Moot Court Competition and other significant and sustained support of the Institute's program and promotional activities.

### *Award of Appreciation*

This Award may be given very exceptionally to someone who has made an extra-ordinary and significant contribution, for over 20 years, to innovative approaches to the development and dissemination of juridical and social science aspects of space activities.

### *Certificate of Gratitude*

This Certificate may be given very selectively to someone who has rendered extra-ordinary service to the Institute; i.e. in recognition of his/her/their (a) exceptional work on behalf of the Institute, or (b) outstanding support to the IISL in hosting/organizing IISL Colloquia, symposia, and/or Space Law Moot Court Competitions.

### *Space Law Award for Young Achievers*

Since 2019, a new category of awards – the IISL Space Law Award for Young Achievers has been introduced, to recognize meritorious contributions and outstanding achievement relevant to the field of space law or distinctive service to the activities, events or goals of the IISL by young individuals (below 40 years of age).



*Awardees of IISL Awards 2019: F. Tronchetti, P.J. Blount, T. Dethlefsen, C. Brünner, with M. Ferrazzani and K.-U. Schrogl*

### *Prof. I. H. Ph. Diederiks-Verschoor Award*



*I. H. Ph. Diederiks-Verschoor*

Prof. Dr. Isabella Diederiks-Verschoor was a Professor of Air and Space Law at the University of Utrecht; President of the IISL (1972-1990) and President Emerita thereafter. The Prof. Dr. I. H. Ph. Diederiks-Verschoor Award is granted annually by the IISL Board of Directors. The Award, initiated by Prof. Oscar Fernandez Brital from Argentina, is given to the best paper accepted for presentation at the Institute's Colloquium Young Scholars Session by an author not older than 30 years and who has not published more than five papers in the Proceedings of IISL Colloquia.

### *Young Scholars Sessions/Winners:*

- **2010:** *The Commercial Exploitation of Outer Space and Celestial Bodies – A Functional Solution to the Natural Resource Challenge*  
Philip de Man
- **2011:** *Supranational Space: Why the Powers of the EU Are not Quite Parallel*  
Irina Kerner
- **2012:** *The Elusive Frontier: Revisiting the Delimitation of Outer Space*  
Olavo de Oliveira Bittencourt Neto
- **2013:** *Interpreting “Damage Caused by Space Objects” under the 1972 Liability Convention*  
Elena Carpanelli and Brendan Cohen
- **2014:** *Legal Issues Relating to Unauthorised Space Debris Remediation*  
Joyeeta Chatterjee
- **2015:** *The Impact of National Space Legislation on Private Space Undertakings: A Regulatory Competition between States?*  
Dimitri Linden
- **2016:** *Article III of Outer Space Treaty and Its Relevance in the International Space Legal Framework*  
Pierfrancesco Breccia

- **2017:** *Space Traffic Management: Top Priority for Safety Operations*  
Claudiu Mihai Taiatu
- **2018:** *The Non-Appropriation Principle: A Roman Interpretation*  
Andrea Capurso
- **2019:** *On-Orbit Servicing: Repairing, Refuelling and Recycling the Legal Framework*  
Thea Flem Dethlefsen

In order to honour the work of young scholars to the development of space law, here, as an example of the outstanding contributions of young authors, the winning paper from the 2014 Young Scholars session by Ms. Joyeeta Chatterjee as an outlook into future space activities and future challenges for the development of space law is reprinted.

## ***Legal Issues Relating to Unauthorized Space Debris Remediation*** \*

*Joyeeta Chatterjee* †

### ***I. Introduction***



*J. Chatterjee*

The international space community has been cognisant of the growing threat of orbital congestion since the 1980s. However, concerted international action to address the problem did not begin until the establishment of Inter-Agency Space Debris Coordination Committee (IADC) by the various national and regional space agencies in 1993 to foster dialogue across nations. The IADC adopted a set of guidelines for space debris mitigation measures in 2002. With a view to expediting the international adoption of voluntary debris mitigation measures, a Working Group of the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS) collaborated with the IADC to update and revise the IADC guidelines on debris mitigation. Finally, the agreed upon guidelines were adopted and subsequently endorsed by COPUOS in 2007, as the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space.

Since the launch of Sputnik 1 in 1957, space debris in the form of uncontrollable man-made objects in the Earth orbit continue to pose increasing navigational threats to functional satellites and other space assets, including human space flight and robotic missions. The International Space Station has had to perform more than a dozen collision avoidance manoeuvres in the last decade.

It is clear that the preventive measures taken during the last decade in the form of voluntary non-binding debris mitigation guidelines have clearly not been able to effectively address the impending catastrophic situation. Based on scientific analysis and the projections made by various technical models, the only way to ensure secure and sustained access to and long-term utilization of space is through space debris remediation in the form of active removal of debris and on-orbit satellite servicing.

Unlike space debris mitigation which aims to arrest the generation of further debris, space debris remediation refers to actively remedying the congested nature of outer space. Remediation activities can include retrieval of a space object from the outer space environment or from a particular orbit, repairing/servicing a space object, refuelling missions to extend the life of the space object or salvaging a space object for recycling or other purposes. On-orbit servicing and salvaging operations remediate space debris by repairing and restoring manoeuvrability in an object or removing it to avoid collisions with a functional satellite. The following sections will study the implications of the existing framework of international space law and public international law on space debris remediation.

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\* Published in the Proceedings of the 65<sup>th</sup> Proceedings of the International Institute of Space Law 2014, pp. 13-34.

† Ms. Joyeeta Chatterjee, LL.M. (McGill), is currently a legal counsel at Airbus, Toulouse.

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## II. Definition of Space Debris for Active Remediation

The objective of this section is to study the question: is ‘space debris’ equivalent to a ‘space object’ *ad infinitum*? It is important to draw a distinction between a ‘space object’ and a piece of ‘space debris’ because the absence of a clear legal definition introduces severe ambiguity in enforcement of the rights and obligations assigned to States in relation to the objects they have launched in space or the debris created by their activities in outer space. To understand the legal milieu in which space debris are sought to be regulated, it is necessary to study the definition of ‘space debris’. First, this section will chronologically discuss the international legislative attempts to define a ‘space object’. It will then address the current definition of ‘space debris’ with its origin in ‘soft law’ and its implications in the operation of space activities. Finally, it will comment on the legal uncertainties surrounding the status of objects in space vacillating between that of a ‘space object’ and/or ‘space debris’ by relying on the example of the decommissioning of the Envisat satellite by ESA.

The current regime of international space law, consisting of the five United Nations treaties and five Declarations, does not contain any definition of ‘space debris’. The operative terminology used in those instruments is a ‘space object’, which has been rather obliquely defined.

Article VII of the Outer Space Treaty lays down that the launching State will be held internationally liable for damage caused by an object launched into outer space or its component parts. This principle is echoed in Article II of the Liability Convention which states that: “A launching State shall be absolutely liable to pay compensation for *damage caused by its space object* on the surface of the Earth or to aircraft in flight” (emphasis added). Further, Article III of this Convention emphasizes this criterion again to determine liability for damage caused elsewhere than on the surface of the Earth. Hence, the concern over the absence of a proper definition of ‘space object’ is aggravated by the fact that “the basis of liability is that the damages or injury is caused by a space object”.

### 1. Defining a ‘Space Object’

Even prior to the promulgation of any of the space law treaties, the Convention for the Establishment of a European Organization for the Development and Construction of Space Vehicle Launchers (ELDO) defined a ‘space vehicle’ as “a vehicle designed to be placed in orbit as a satellite of the Earth or of another heavenly body, or to be caused to traverse some other path in space [...]”.

In the 1963 Declaration of Legal Principles which serves as the precursor to the 1967 Outer Space Treaty, a space object has not been defined but has been referred to as “object launched into outer space and [...] their component parts”. Adopting this language, the 1967 Outer Space Treaty has alluded to a ‘space object’ in Articles VII and VIII as “an object launched into outer space”, including “objects landed or constructed on a celestial body”.

The Liability Convention was the first international agreement, which attempted to define a ‘space object’ as “component parts of a space object as well as its launch vehicle and parts thereof”. The Registration Convention adopted this definition in its Article 1(b). This description fails to define the term exhaustively while merely providing a vague inclusive boundary for the term. Strikingly enough, it does not include functionality as a decisive criterion.

The term ‘space object’ has not yet been defined in international space law. More importantly, it is also silent as to when, if at all, a space object or its component or fragmented parts, ceases to be a ‘space object’. Assuming that there is no change in the status of such fragmented space objects and are still continued to be regarded as ‘space objects’ under international space law, then *de jure* jurisdiction and control will be retained by the launching State on whose registry the space object is carried.

The definition for a ‘space object’ prescribed by Baker in his excellent treatise on the legal status of space debris is of particular importance. He postulates that a ‘space object’:

*1. Means*

- (a) any object*
  - (i) intended for launch, whether or not into orbit or beyond;*
  - (ii) launched, whether or not into orbit or beyond; or*
  - (iii) any instrumentality used as a means of delivery of any object as de*  
*finied in 1(a); and*

*2. Includes*

- (a) any part thereof or*
- (b) any object on board which becomes detached, ejected, emitted, launched or thrown, either intentionally or unintentionally, from the moment of ignition of the first-stage boosters.*

In the spirit of the Liability Convention as an example of victim-oriented law, it is suggested that the interpretation of space object ought to be “liberal [...] in favour of an innocent victim”. Hence, ‘space objects’ should be given a broad interpretation to include objects constructed or assembled in outer space under the regime of the Liability Convention to ensure that States do not ignore the law by constructing or assembling their space objects in outer space. This is important to address issues arising from the status of satellites whose components have been derived from functional parts of ‘space debris’ salvaged or serviced in outer space. It is not a technologically distant dream because the goal of the Phoenix program under the aegis of the United States Defence Advanced Research Projects Agency is focused on recycling space assets by 2015.

With the above understanding of the legal definition of a ‘space object’, the following sub-section will focus on the definition and attributes of space debris, for the purposes of performing active debris remediation.

*2. Defining ‘Space Debris’*

Unanimously adopted at its 66<sup>th</sup> conference in 1994, the International Law Association’s International Instrument on Space Debris was the first international attempt to provide a legal definition of ‘space debris’. In the first Article on definitions, space debris has been defined in paragraph (c) as, “man-made objects in outer space, other than active or otherwise useful satellites, when no change can reasonably be expected in these conditions in the foreseeable future”.

The Technical Report on Space Debris was published in 1999 as a product of the multi-year work plan 1996-1998 of the Scientific and Technical (S&T) Subcommittee of the UN



COPUOS. It was one of the earliest United Nations documents on space debris which served as a basis for further deliberations on the topic of congestion in the space environment. It reports the following definition proposed at the 32<sup>nd</sup> session of the S&T Subcommittee for the sake of a common understanding of the term ‘space debris’:

*“Space debris are all manmade objects, including their fragments and parts, whether their owners can be identified or not, in Earth orbit or re-entering the dense layers of the atmosphere that are non-functional with no reasonable expectation of their being able to assume or resume their intended functions or any other functions for which they are or can be authorized.”*

In 2002, pursuant to its charter, the IADC developed the ‘IADC Space Debris Mitigation Guidelines’ based on the fundamental principles present in the national policies of the member agencies and were agreed to by consensus.

The definition of space debris contained therein was an abbreviated form of the above-mentioned definition, which was later borrowed verbatim in the United Nations Space Debris Mitigation Guidelines. The publication of the IADC Guidelines prompted the S&T Subcommittee of the UN COPOUS to create a Space Debris Working Group, which produced a draft set of “high-level qualitative guidelines” based on the work of the IADC. This draft was adopted by the UN COPOUS in 2007 and endorsed by the General Assembly later that year through Resolution 62/217. The definition of space debris provided in the UN COPOUS Guidelines is as follows:

*“All man-made objects including fragments and elements thereof, in Earth orbit or re-entering the atmosphere, that are non-functional.”*

It is interesting to note that the definition of ‘space debris’ is not contained in any of the actual Guidelines but it is included in the introductory section entitled ‘Background’ of the document. Further, it is important to bear in mind that this definition is explicitly limited to the purpose of this document by a preceding proviso.

Although the General Assembly has declared that the UN Guidelines “reflect the existing practices as developed by a number of national and international organizations”, the legal status of the Guidelines are amply clear insofar as it states, in no uncertain terms, that “They are not legally binding under international law”. It further states that “Member States and international organizations should *voluntarily* take measures ... to ensure that these Guidelines are implemented” (emphasis added). It is evident that these Guidelines reflect technical best practices. The technical nature of the Guidelines is underscored over its legal implications by the fact that they were adopted solely by the S&T Subcommittee without any involvement or contribution from the Legal Subcommittee.

Thus, the definition of space debris enshrined in the UN Guidelines can be classified as ‘soft law’. Although soft law is said to lack “the requisite normative content to create enforceable rights and obligations”, they are, nonetheless, capable of producing certain legal effects.

It is not only considered as an “expression of emerging notions of an international public order”, but it also constitutes “an important element in the progressive institutionalization

of international cooperation”. Hence, the definition of ‘space debris’ contained in these Guidelines reflect a relatively less obligatory approach, which helps to balance the conflicting priorities of the space players and to establish a minimal standard of care for States in the realm of debris mitigation and remediation measures.

### *3. Decommissioning of Envisat*

On 8 April 2012, ESA lost contact with Envisat, the largest non-military Earth observations satellite in orbit. After several failed attempts to regain control of the satellite, ESA declared the end of its mission on 9 May 2012.

It is currently drifting uncontrolled in a sun-synchronous polar orbit and is being tracked by the U.S. Joint Space Operations Centre. Its enormous size – ten metres in length and five metres in width, with an even larger solar array and weighing 8 tons – aggravates the concern of its collision with other functional space objects. It has been estimated that given its orbit and area-to-mass ratio, it will take 150 years for natural decay through atmospheric drag. ESA has calculated a 30 percent collisional probability with other orbital debris in this duration. Therefore, it is potentially an ideal candidate for removal from orbit.

In this case, the question arises whether Envisat can be qualified as ‘space debris’. Although it is drifting uncontrolled and is no longer manoeuvrable due to loss of communications, it is otherwise an intact satellite. Further, if technological development allows re-establishing communications with it, as in the case of the Intelsat Galaxy-15 satellite, then Envisat can be recommissioned back to service as a ‘space object’.

### *4. Analysis*

It has been rightly pointed out by the 2006 IAA Cosmic Study on Space Traffic Management that “no legal distinction is made between valuable active space-craft and valueless space debris”. It further recommended the UN COPUOS to “start discussing whether or not space debris are space objects in the sense used in space law. If it is decided that space debris are space objects, an additional protocol should be elaborated stating what provisions of the treaties apply to valuable spacecraft and which provisions apply to space debris. If it is decided that space debris are not space objects, the protocol should determine under what conditions space debris may be removed or re-orbited in order to prevent collisions or close encounters with valuable spacecraft”.

The formulation of a “transparent and reasonable selection matrix on the basis of which objects are targeted” is a prudent method to ascertain which space objects can be designated as targets for removal. In the wide gamut of views put forth by experts, the consensual opinion seems to be based on the common denominator of “the ability of the man-made instrumentality to traverse in outer space”. Hence, the manoeuvrability or functionality of the space object is key to determining its status as space debris so that it can be classified as a target for remediation.

While a fresh legislative endeavour in the form of an additional protocol or a separate treaty to address this situation is the easiest and ideal solution, our current geo-political environment is not conducive for such an approach due to the competing interests and priorities of different States. Hence, it is essential to investigate a pragmatic alternate resolution to this problem through optimal utilization of the already available resources, that is, to effectuate a

broader interpretation of the existing legal principles in order to accommodate the rapidly changing commercial and environmental realities of activities conducted in outer space.

### ***III. State Responsibility for Space Debris Remediation***

Due to the absence of a legal status granted to space debris, orbital remedial activities give rise to a plethora of regulatory complexities and unanswered legal questions. Imagine the following hypothetical scenario: Conjunction analysis has identified an uncontrolled satellite, X belonging to State A as a high-probability threat to a functional satellite, Y belonging to State B, which attempts to deorbit X without authorization from State A. Due to technical anomalies, it erroneously incapacitates another satellite belonging to State A. In the meanwhile, State A manages to successfully revive satellite manoeuvre it back to its allotted orbit.

Is State A under an international legal obligation to avoid causing damage to another State's space assets? Is State B justified in exercising jurisdiction and control over satellite X to avoid collision with its own space asset? What are the legal implications of unauthorized active debris removal?

State responsibility has been viewed as "a legal construct that allocates risk for the consequences of acts deemed wrongful by international law to the artificial entity of the State". The distinction between State responsibility and liability lies in the fact that the prerequisite to the former is an act breaching international law and to the latter, the harmful effects of an activity, which is not *per se* a violation of international law. In international space law, while responsibility applies to a "State's obligation to regulate and control space activity both in the present, and in the future, to assure compliance with not only the letter but the spirit of the Outer Space Treaty principles", liability on the other hand refers to an "obligation of a compensate for damages".

As has been observed by Cheng, international state responsibility in the outer space field arises the moment a breach of an international obligation is produced and not when the State is seen to have failed in its duty to prevent or repress such breach, for the State is immediately accountable for the breach on the international plane as if it itself had breached the international obligation.

#### ***1. International Responsibility: Article VI, Outer Space Treaty***

The vital question of responsibility over space objects is addressed in *lex spatialis*, first in the 1963 Declaration of Legal Principles and then in the 1967 Outer Space Treaty. At the time of its adoption, the Outer Space Treaty represented "the lowest common denominator of issues on which consensus existed in COPUOS". This sentiment was reflected in the views of the then U.S. Secretary of State, who had described the legislative efforts behind the conclusion of the Outer Space Treaty as an "outstanding example of how law and political arrangements can keep pace with science and technology". As of 1 January 2014, the Outer Space Treaty has been ratified by 103 State and signed by 25 signatories. It is noteworthy that all spacefaring States so far have ratified the Treaty which indicates that some of its provisions have likely crystallized into customary international law.

The possible involvement of private enterprises in outer space and the attribution of responsibility for such private activities to the States had been one of the controversial issues between the U.S.A. and the erstwhile Soviet Union during the development of a legal regime

governing outer space activities. Principle 5 of the United Nations General Assembly Resolution 1962 (XVIII) reflected the compromise reached between the two parties by allowing private participation in space activity subject to the control of the “appropriate State” and imposing consequent international responsibility on the State for such activities. It was later incorporated in Article VI of the 1967 Outer Space Treaty. On deconstructing this Article, it is clear that the following obligations are imposed on States:

- (i) To bear responsibility for national activities in outer space regardless of whether such activities are carried out by public or private entities;
- (ii) To assure that national activities are conducted in conformity with the Outer Space Treaty and, through Article III, with international law;
- (iii) To authorize and continually supervise, where appropriate, the activities of nongovernmental entities in outer space; and
- (iv) To share international responsibility for the activities of international organizations of which the State is a participant.

The scope of this paper is to examine the space behaviour of States as subjects of public international law and *a fortiori*, international space law. The regulatory concerns about the activities of private actors will not be addressed because ultimately, States shall “bear international responsibility for such activities”, which “require authorisation and continuing supervision” by the appropriate State under the dictate of Article VI of the Outer Space Treaty. Hence, this paper will explore the duties and responsibilities of States as members of the international space community and their legal rights and obligations for space debris remediation conducted under their national jurisdiction and control.

The extent of obligation as far as damage to third parties is concerned is the international responsibility of the obligation to control; in particular to make sure that the obligations set by Article III (activities must be carried on according to international law, including the Charter of the United Nations as *lex generalis*) and Article VI (activities must be carried on according to the Outer Space Treaty as *lex specialis*) of the Outer Space Treaty are implemented.

In the event of a space debris remediation activity, it can be inferred from Article VII of the Outer Space Treaty that although the remediation might be conducted by a third party, the launching State of the space object in question would continue to entail international responsibility for any damage caused by it. While international law does not explicitly impose an obligation to avoid causing damage to another State’s space assets, there is an underlying duty to observe a Standard of care or due diligence in performance of its activities. With a view towards balancing the conflicting State interests in its 1978 report, the Working Group to the International Law Commission noted that “the essential obligation owed by a State in such a context has tended to be conceived as one of moderation, or of care or diligence, in relation to its own activities or of private activities within its jurisdiction or control”. It was emphasized in the Special Rapporteur’s report that “treaty regimes of a universal character dealing with acts not prohibited by international law”, had been established in relation to, “among other issues, the regulation of ‘space objects’”.

It is stated in Special Rapporteur Baxter’s first report on international liability for injurious consequences arising out of acts not prohibited by international law in 1980:

*“Depending upon the circumstances, the standard of reasonable care or due diligence may well require a Standard more exacting than its own as part of a special regime of protection that includes guarantees of redress for the potential victims of any hazard that cannot be wholly eliminated.”*

He goes on to clarify the controversy regarding the absence of a Standard of care in space law with the following remarks:

*“[T]he regime of absolute liability provided in the [Liability Convention] may be regarded not only as an applicable conventional rule, but also as evidence of the standard of care which the authors of the Convention believed to be reasonable in relation to that particular activity.”*

## *2. Need for Consent*

The existing framework of international space law does not authorize interception with space objects without the prior consent of the launching State. In the case of a removal of an object without the authorization, it would constitute an internationally wrongful act.

However, prior consent obtained from the launching State, or the State of registry in the case of multiple launching States, would constitute a circumstance precluding the wrongfulness of conduct that would otherwise not be in conformity with the international obligations of the State performing the remedial activity. It has been opined by the ICJ that the existence of such a circumstance does not annul or terminate the obligation; rather it provides a justification or excuse for non-performance while the circumstance in question subsists.

Article 20 of the International Law Commission’s Articles on State Responsibility reflects the basic international law principle of consent:

*“Valid consent by a State to the commission of a given act by another State precludes the wrongfulness of that act in relation to the former State to the extent that the act remains within the limits of that consent.”*

In accordance with this principle, consent by a State to particular conduct by another State precludes the wrongfulness of that act in relation to the consenting State, provided the consent is valid and to the extent that the conduct remains within the limits of the consent given. Validity of the consent must be assessed to ensure that it is freely given and clearly established. It must be actually expressed by the State rather than merely presumed on the basis that the State would have consented if it had been asked. It must also not be vitiated by the influence of error, fraud, corruption coercion.

## *IV. State Jurisdiction and Control Over Space Objects*

The term ‘jurisdiction’ has been described as “the lawful power of a State to define and enforce the rights and duties, and control the conduct, of natural and juridical persons”. It is “the power of the State under international law to regulate or otherwise impact upon people, property and circumstances and reflects the basic principles of state sovereignty, equality of States and non-interference in domestic affairs”.

Eminent jurist, Judge Manfred Lachs has defined jurisdiction as “a basic attribute of a State, whereby it exercises fundamental powers as a subject of international law”. He has qualified the limits upon the exercise of such jurisdiction as “determined by the rights of other States and the requirements of cooperation in international relations”.

This section contains a survey of the identical and uniform treatment bestowed on the twin concepts of ‘jurisdiction and control’ over space objects in international space law followed by some additional comments on related concepts such as ownership and registry of space objects.

### *1. Jurisdiction and Control*

Article VIII of the Outer Space Treaty relates to jurisdiction and control over a space object by a State through launching of the space object. It provides that:

*“A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body” (emphasis added).*

Some commentators have suggested a conceptual distinction between ‘jurisdiction’ and ‘control’ insofar as describing ‘control’ in terms of a separate technical function – “a separate concept, to mean not only observation (passive) but, in the first place, an obligation for the State of Registry, to active guidance of the space object; and a prohibition of interference with the space object by a third (non-Registry) State”. The Soviet authors have further expanded the concept to include “activities of special services of the State of Registry aimed at monitoring the technical condition of the space object during the launching and putting into orbit, as well as its functioning in outer space and during the landing”. It is unnecessary to dissect the twin concepts of ‘jurisdiction and control’ that have received identical and uniform treatment throughout international space law instruments. Hence, it has been rightly pointed out that “jurisdiction should induce control and control should be based on the jurisdiction”.

In the context of this discussion, it is important to simultaneously take into account the provisions of the Registration Convention because it is viewed as an attempt towards further elaboration of Article VIII of the Outer Space Treaty. Article II(2) of the Registration Convention provides that:

*“Where there are two or more launching States in respect of any such space object, they shall jointly determine which one of them shall register the object [...], bearing in mind the provisions of Article VIII of the [Outer Space Treaty], and without prejudice to appropriate agreements concluded or to be concluded among the launching States on jurisdiction and control over the space object and over any personnel thereof.”*

In order to exercise legitimate jurisdiction, it is essential for the State to identify a “sufficient nexus between itself and the object of its assertion of jurisdiction”. There is wide scholarly consensus that registration of space objects establishes such a link between the State and the space object. In case if a space object is not registered, it has been observed that ownership serves as the determining factor to ascertain which State could exercise jurisdiction and control.

However, some authors do not consider registration as a “legal confirmation of ownership” or a “binding legal commitment of liability” on the ground that the State of registry may not be the launching State. The State of registry has been defined in the Registration Convention as “a launching State on whose registry a space object is carried [...]”. It follows that the State of registry, therefore, has to be one of the launching States, that is, a State which launches or procures the launching of a space object or a State from whose territory or facility a space object is launched.

In the wake of increasing international collaborative space ventures and private participation, the election of a State of registry among multiple launching States for the purpose of retention of jurisdiction and control is likely more complicated than it may appear. The State whose national is the owner of the payload/satellite will be more interested in acquiring legitimate jurisdiction and control rather than the State from whose territory/facility the launch had taken place. Although State practice with respect to the registration of space objects is sometimes sketchy and seemingly inconsistent, clarifying declarations by spacefaring States help to eliminate the ambiguities.

From the above discussion, it is apparent that public international space law is silent about the legality of remediation when it relates to assuming or transferring legal jurisdiction and control of a particular space object. In the event of a remediation carried out by a State or a State licensed actor, it will be considered legitimate if the State retains *de jure* jurisdiction and control of that space object or obtains explicit authorization from the State or registry. Thus, no legal complications are anticipated when a State seeks to remediate its own space objects. However, when a State or State licensed actor seeks to remediate a space object that it did not carry on its registry, the question will arise whether there can be an exception to this general rule of jurisdiction and control on grounds of the public policy goal of facilitating space debris remediation to avoid orbital congestion and ensure long-term sustainability of outer space.

## 2. *Transfer of Registration*

Neither the Outer Space Treaty nor the Registration Convention contains any provisions for the transfer of the registration of a space object. Consequently, this has generated extensive academic debate about the validity of such transfer agreements. The process of privatization of the International Maritime Satellite Organization (INMARSAT) had highlighted this issue.

Before proceeding to examine this issue in greater detail, it is important to take note of the language in Article II of the Registration Convention, which lays down that space objects can be registered by launching States only.

Several commentators have argued in favor of an amendment to the registration of a space object. However, existing State practice demonstrates otherwise where non-launching States have successfully registered space objects over which they retain jurisdiction and control pursuant to Article VIII of the Outer Space Treaty. This was evident in the transfer of satellites registered in the United Kingdom to China as a consequence of the handover of Hong Kong in 1998. This is consistent with Article II because it does not prohibit subsequent transfers of jurisdiction and control rights among launching States.

However, the Registration Convention does not explicitly regulate subsequent transfers of jurisdiction and control rights to non-launching States. The *note verbale* submitted by the Netherlands to the UN COPOUS to register the transfer of ownership of satellites from New

Skies Satellites is particularly interesting because it expressly renounces the status of the launching State or the State of Registry and consequently rejected its obligation to furnish information under Article IV of the Registration Convention. However, by virtue of the in-orbit transfer of ownership, it assumed international responsibility under Article VI of the Outer Space Treaty and also claimed the retention of jurisdiction and control under Article VIII of the Outer Space Treaty.

It is also noteworthy that the principle of ‘treaty stipulations in favor of third States’ is well-recognized in customary international law. It allows States to enter into agreements conferring actual rights of their own to a third State, which can then exercise such a right upon compliance with the conditions of its exercise. It has been codified in Article 36 of the Vienna Convention on the Law of Treaties and has been substantiated by international jurisprudence espoused by the world courts and juristic opinion in favor of it. Therefore, launching States may enter into specific agreements with non-launching States to lawfully transfer the right to jurisdiction and control over a space object.

The language in Article II of the Registration Convention unambiguously imposes a positive obligation on launching States to register the space object. However, in the event of transfer of ownership to a non-launching State, such a right to register the space object can be found in Article VIII of the Outer Space Treaty for domestic registrations and General Assembly Resolution 1721B (XVI) for registration with the United Nations. Hence, this eliminates any need for an amendment of the Registration Convention and the transfer of ‘jurisdiction and control’ can be carried out under the existing framework of space law.

### *3. Ownership*

Under the current legal regime, ownership of space objects is not co-extensive with the jurisdiction and control over such objects. Article VIII of the Outer Space Treaty states that:

*“Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth”*  
(emphasis added).

While ‘jurisdiction and control’ is clearly geo-spatial in nature as it can be retained “while in outer space or on a celestial body”, ‘ownership’ is in perpetuity as it “is not affected by their presence in outer space or on a celestial body or by their return to the Earth”. The law is silent about the temporal factor of ‘jurisdiction and control’ as to when can a State relinquish *de jure* jurisdiction and control. This is particularly important in cases when a State of registry has lost *de facto* control over a space object due to a technical anomaly which has rendered the space object non-functional and consequently, a potential target for remediation.

It is important to bear in mind that Article VIII of the Outer Space Treaty enjoins the State of Registry to retain its jurisdiction and control over the space object. More so, it cannot be abandoned after the expiry of its functional phase because Article VIII grants ownership in perpetuity, which ties the State of Registry to bear international responsibility and liability for any damage caused by its space object, pursuant to Article VII of the Outer Space Treaty, even though it is no longer operational or controllable.



While this provision has been alleged as an impediment towards space debris remediation activities, it is, in fact, not an inhibiting factor as States can enter into separate agreements for the transfer of ownership of space objects as discussed in the preceding section. Thus, although international space law does not contain explicit provisions for the transfer of registry, public international law jurisprudence coupled with contemporary State practice have circumvented that lacuna through conclusion of bilateral or multilateral agreements. Therefore, it would be misleading to make an unequivocal assertion that space debris remediation activities are being thwarted by the 'ownership' clause in the Outer Space Treaty.

### ***V. Concluding Remarks***

From the above discussion, it has been observed that public international law jurisprudence developed over the years can effectively resolve the unanswered questions arising from space debris remediation and principles from public international law can be relied upon to address the lacunae in the legal fabric of international space law.

The next step is for the international community, particularly the established space actors, to engage in discourse for developing State practice and legal and policy guidelines on space debris remediation. Given the lack of political will on the international level towards encouraging remedial activity, it might be prudent for the major space players to undertake unilateral action and also proactively encourage responsible space behaviour amongst their licensed private entities to expedite organizational and operational aspects of space debris remediation.

## VIII. Manfred Lachs Space Law Moot Court Competition



*Judge M. Lachs (Poland)*



*Judge P. Tomka (Slovakia), Judge A. G. Koroma (Sierra Leone) and Judge H. Owada (Japan) at the 2007 Manfred Lachs World Finals in Hyderabad, India*

Since its inception by the International Institute of Space Law (IISL) in 1992, the Manfred Lachs<sup>1</sup> Space Law Moot Court Competition has grown to cover five world regions: Africa, Asia Pacific, Europe, Latin America and North America. More than 60 teams participate yearly in this competition. Registered teams get exclusive online access to papers of the IISL's Colloquium Proceedings from 2005. The regional winners from the African Region, Asia-Pacific, Europe, Latin America and North America receive financial support to attend and compete in the World Finals which take place within the framework of the IISL's annual Colloquium in the International Astronautical Congress held on a different continent each year. The World Final of the Manfred Lachs Moot Court Competition has the distinction of being judged by sitting Judges of the International Court of Justice.

### ***Introduction***<sup>2</sup>

The first competition was organized by the Association of US Members of the IISL for the first World Space Congress held in Washington, D.C., in 1992. Several Washington DC area law schools participated. The inaugural competition was judged by three judges on the International Court of Justice (ICJ): Manfred Lachs, who was also President of the International Institute of Space Law, together with his fellow ICJ Judges Stephen Schwebel and Gilbert Guillaume.

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<sup>1</sup> Manfred H. Lachs (1914–1993) was a Polish diplomat, Judge on the International Court of Justice, and jurist who greatly influenced the development of international law after World War II. He was a judge at the International Court of Justice (ICJ) for twenty-six years and its President (1973-1976). After his passing away, the Manfred Lachs Space Law Moot Court was named in his honour.

<sup>2</sup> The section "Introduction" has been kindly provided by Milton 'Skip' Smith.

Judge Lachs, one of the great personalities of international law in the twentieth century, passed away in 1993 and the competition was named in his honour.



*Moot Court Judges M. Lachs, S. M. Schwebel and G. Guillaume with M. "Skip" Smith (left to right) at the first IISL Moot Court Competition, Washington, D.C. 1992*

One year later, the Competition was expanded to all law schools in the North American Region and to a European Region. In 2000, the Asia Pacific Region was added, and the African Region was inaugurated in 2012. Recently, the Latin American Region has been added following an inaugural test round in 2019.



*Moot Court during the 44th IAC in Graz, Austria 1993*

Preliminary competitions are held between April and June in each Region. The winning teams of the Regional rounds meet in the World Finals, which are held in conjunction with the annual IISL Colloquium on the Law of Outer Space. The Final Round is traditionally judged by three ICJ Judges. This unique feature makes the Manfred Lachs Moot Court one of the most prestigious moot court competitions in the world.



*Moot Court during the 45th IAC in Jerusalem, Israel 1994*



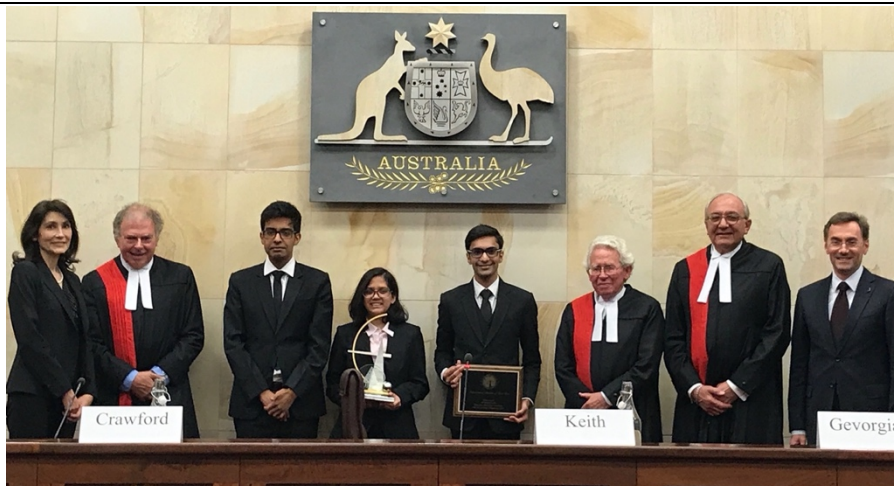
*Moot Court session during 50th IAC in Amsterdam, Netherlands 1999*

The competition is based on a hypothetical space law dispute before the ICJ. The Problem is written by a Member of the IISL. Regional Rounds must comply with the Official Rules adopted by the IISL Board of Directors. Participating teams are required to submit a ‘Memorial’ for both the Applicant State and the Respondent State on the legal issues of the hypothetical case.

In the Regional rounds, each team presents oral arguments before panels of judges and typically will argue several times. The four winning Regional teams advance to the World Finals where they submit revised Memorials and compete in semi-final oral arguments conducted in closed sessions before three-judge panels. The two winning teams advance to the Final round, which is judged by three ICJ Judges and attended by IISL members and dignitaries from around the world. At a Gala Awards Dinner, the World Finals winning team is presented with the Manfred Lachs Trophy and Awards are also given for the Best Memorials and the Best Oralist.

By participating in the Lachs Moot, students develop valuable analytical and advocacy skills while learning about core issues of contemporary concern in international space law. These experiences often carry through in later life, helping to shape successful careers in different areas of legal practice.

The Lachs Moot has grown continuously and now brings together student teams from some 60+ universities spread out on five continents. Thousands of students have actively participated in the competition in addition to thousands of judges. A new generation of scholars and lawyers have joined those interested in the legal regime governing the ever-growing activities in outer space and in the challenges these activities generate. We believe Manfred Lachs would be immensely proud of the competition that bears his name.



*Moot Court Judges and participants 2017*



*Moot Court Bremen, Germany 2018*



*Moot Court respondents 2019 © Dikaios Pang*

### ***IISL Young Scholars Fund***

The Young Scholars Fund was created in 2011 to support the achievements of students participating in each of the five Regional Rounds of the Manfred Lachs Space Law Moot Court Competition (Africa, Asia-Pacific, Europe, Latin America and North America). The Fund

grants monetary prizes to the winning team, to the team with the best memorials and to the best oralist of the regional round. The Young Scholars Fund has been formed and is largely maintained by donations from IISL members, to honour the very significant achievement of these students.



*In 2018, the World Finals of the Manfred Lachs Moot Court Competition in Bremen, Germany, were won for the first time by a team from (South) Africa*

### ***Example of A Moot Court Case***

See the following page.

***Summary of the 2019 Problem***  
***Case Concerning Military Uses of Space Resources***  
***(Suniza v Azasi)***<sup>3</sup>

Approximately twenty years ago, Suniza embarked on an ambitious program to harness its extensive mining expertise to explore for space resources on celestial bodies, particularly the Moon. Suniza entered into a launch services agreement with its neighbor, Azasi, to transport personnel and equipment to establish a permanent lunar facility, eZulwini 1 (“eZ1”). eZ1 consisted of crew and tourist habitation facilities, and modules for research and scientific experimentation. One area, Module 5, was inhabited and operated exclusively by Suniza personnel to research and process sefarite, a lunar mineral resource. The sefarite was mined and transported to eZ1 by artificial intelligence robots provided and operated by Azasi.

Sefarite could be used in very small quantities as a bonding and hardening material. Suniza paid Azasi to transport the processed sefarite to a facility in Suniza. The Suniza Defense Department incorporated sefarite in its strategic offensive weapons to strengthen the casings for missiles and armored vehicles. Research at eZ1 indicated that the hardening properties of sefarite were enhanced when the purified ore was infused with oxygen in a low gravity process. The infused sefarite could only be detected with special equipment. Suniza infused a small quantity of sefarite with oxygen in Module 5 on eZ1. The infused sefarite was loaded aboard the Azasi 7 spacecraft bound for return Suniza along with non-infused ore and several tourists from various countries. Azasi was informed that the cargo consisted of “sefarite ore” but did not otherwise identify or describe the enhanced sefarite. Unfortunately, the spacecraft exploded just a few seconds after take-off, and the Azasi crew and the tourists perished instantly. The Azasi 7 spacecraft and Azasi launch pad were completely destroyed.

Suniza refused to permit Azasi to inspect Module 5, prompting Azasi to recall its crew working on the eZ1 and announce that it would no longer provide any further human or robotic missions and support to eZ1. Unable to provide support for its crew, Suniza publicly announced that it would no longer continue activities on eZ1 and arranged for the transport of the remaining crew and tourists back to Earth but at triple the normal cost. Six months after the last Suniza crew and other personnel were evacuated from eZ1, Azasi launched a mission to the Moon, and eventually gained access to the entire eZ1 facility.

Azasi started processing and incorporating sefarite in various commercial products. Suniza protested and demanded consultations which Azasi refused. Azasi scientists found a partially destroyed computer hard drive which contained the blueprints for the process to infuse the ore with oxygen. Subsequent investigation of the Azasi 7 crash site found traces of infused sefarite. A panel of Azasi scientists concluded that enhanced sefarite was potentially unstable until bonded with other substances.

The parties have asserted claims for damages against each other, and being unable to resolve their dispute, have agreed to present the case to the International Court of Justice.

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<sup>3</sup> Taken from the brochure published on the occasion of the 28<sup>th</sup> Manfred Lachs Space Law Moot Court Competition 2019, pp. 12-13. The author of the case is Mr. Pethole Sekula from South Africa.

***Submissions to the Court***

The parties have submitted competing claims against each other for monetary damages, thus there are two parallel submissions to the Court. The claim of Suniza has two components of damage, which will be discussed in separate sub-headings. The formal submissions are:

Suniza requests the Court to adjudge and declare that:

1. Azasi is liable for the occupation and use of eZ1 contrary to international law and for the costs charged by ISpS for the transportation of the crew and tourists from eZ1 to Earth; and
2. Suniza is not liable for damages for the loss of Azasi 7 and launch pad.

Azasi requests the Court to adjudge and declare that:

1. Azasi had the right to occupy and use the abandoned eZ1 facility pursuant to international law and is not liable to Suniza for the transportation costs incurred with the ISpS; and
2. Suniza is liable for damages for the loss of Azasi 7 and launch pad.



## IX. Outlook

The age of sixty years means maturity. The IISL has reached that good age. It has accompanied the developments of space law, be they big or small, as its intellectual backbone of space law making, through critical analysis. We are proud to have this Institute! This critical reflection about doctrinal developments will be necessary also in the future. We need to indicate important challenges for space law: how will the upcoming era of private space activities – mostly for commercial ends – be accompanied by the appropriate law? What can the United Nations and its special Committee, the UNCOPUOS, do for this development? Is UNCOPUOS still the appropriate body for space law making? And are the methods of space law making still appropriate in order to assure the observance of the rule of law?

These are very important questions and we are certain the IISL will be very engaged in this discussion. We are convinced that the IISL will be involved in decisions about future private activities, space traffic management, space debris mitigation and remediation, the legal order for the use of space resources and the question of an equitable participation of all countries in the profits from resource exploitation. Since outer space and the celestial bodies are - as other international commons - a common province of mankind, IISL can and will pave the way for a constructive discussion about this future. What has been useful for the past 60 years, shall be useful in the future as well.

Happy Birthday, dear Institute, and many happy returns!

## Annex: The IISL Statutes and By-Laws

### ***IISL Statutes***

#### **ARTICLE I – Name and Registered Office**

The name of the Association shall be the International Institute of Space Law (IISL), hereinafter referred to as the Institute. It has its registered office in Leiden, The Netherlands, and may have its place of business elsewhere.

#### **ARTICLE II – Purposes and Objectives**

The purposes and objectives of the Institute shall include:

- a) The promotion of further development of space law and expansion of the rule of law in the exploration and use of outer space for peaceful purposes;
- b) The fostering of development of professional standards and professional ethics in the field of space law;
- c) The holding of meetings, colloquia and competitions on juridical and social science aspects of space activities, thereby providing fora for individuals from different legal systems and regions of the world to engage in the free expression and exchange of ideas relevant to space law and space policy;
- d) The preparation or commissioning of studies and reports;
- e) The publication of books, proceedings, reports and position papers;
- f) The granting and presentation of awards and certificates;
- g) The cooperation with appropriate international organizations and national institutions in the field of space law; and
- h) The conduct of such other activities as may be considered desirable in fostering the development of space law and studies of legal and social science aspects of the exploration and use of outer space for peaceful purposes.

#### **ARTICLE III – Membership**

##### **1. The Institute has the following members:**

###### **a) Individual Members**

Individuals distinguished by their contributions to or of proven interest in the field of space law or other social science aspects related to space activities may be nominated for Individual Membership to the Institute by a Director or by three Individual Members in good standing of the Institute.

###### **b) Institutional Members**

Corporate entities and other institutions actively engaged or otherwise interested in the field of space law or other social or scientific aspects related to space activities, may be nominated for Institutional Membership of the Institute by a Director or by three individual Members in good standing of the Institute.

c) Prospective Members

Young professionals and other individuals who have demonstrated an interest in space law may be nominated for Prospective Membership of the Institute by a Director or by three individual Members in good standing of the Institute.

The By-Laws shall determine the procedure for transition from Prospective Membership to Individual Membership.

**2. Admission of Members**

The decision to admit a Member shall be made by the Board of Directors upon the recommendation of the Membership Committee.

**3. Payment of Annual Dues**

All Members of the Institute shall pay annual Membership dues, as set out in the By-Laws.

**4. Amount of Annual Dues**

The General Assembly, on a proposal by the Board of Directors, shall establish the amount of annual Membership dues.

**5. Members in Good Standing**

Members of the Institute are in good standing when they are less than or equal to two years in arrears of Membership dues. The Board may terminate the Membership of Members who are in default of their Membership dues for more than two years, in accordance with Section 7 of this Article.

**6. Waiver of Annual Dues**

On cause shown and only in exceptional circumstances, the Treasurer, in consultation with the President, may reduce or waive the Membership dues for a particular Member.

**7. Termination of Membership**

I. Membership is terminated:

- a) Upon the death of a Member, or in the case of a legal person, when it ceases to exist;
- b) By notice of termination by the Member;
- c) By notice of termination by the Institute;
- d) By removal.

II. Notice of termination of Membership by the Member may be given only at the end of a financial year, in writing to the Executive Secretary, and with at least four weeks notice. If notice of termination is not given in a timely manner, the Membership continues until the end of the next financial year.

The Membership terminates with immediate effect:

- a) If it cannot reasonably be required of the Member to continue the Membership;
- b) Within four weeks after a decision to restrict the rights of the Members or to increase their obligations has become known or has been communicated to a Member (except when this concerns a change in the financial rights and obligations);
- c) Within four weeks after a decision to convert the Institute into another legal form or to merge it has been communicated to the Members.

III. Notice of termination of the Membership by the Board on behalf of the Institute is possible only at the end of the current financial year. The Board shall give written notice, with a notice period of at least four weeks. If notice of termination is not given in a timely manner, the Membership continues until the end of the following financial year.

The notice may, however, result in immediate termination of the Membership if it cannot be reasonably expected of the Institute to continue the Membership.

Termination of Membership by the Institute shall take place only if:

- a) A Member has ceased to fulfil the requirements for Membership as stated in these Statutes, or
- b) A Member does not fulfil his/her/its obligations vis à vis the Institute
- c) It cannot be reasonably expected of the Institute to continue the Membership.

IV. Removal shall only take place if a Member acts in breach of the Statutes, By-Laws or decisions of the Institute or when the Member's actions or conduct prejudice the Institute unreasonably. Removal is carried out by the Board, which shall notify the Member as soon as possible of the decision and the reasons on which it is based. The decision of the Board shall be taken with a two-thirds majority of the votes cast. The Member shall have the right to appeal to the General Meeting through the Executive Secretary within four weeks after having received notice of the decision. During the period for appeal and pending the appeal, the Member shall be suspended. The decision of the General Assembly on removal shall be taken with a two-thirds majority of the votes cast.

V. If the Membership is terminated in the course of a financial year, the annual dues remain due in full, unless the Board decides otherwise.

## **ARTICLE IV – General Assembly**

### **1. Annual and Other Meetings**

Every year the Board of Directors shall convene at least one General Assembly meeting of the Institute, normally within six months after the end of the fiscal/financial year.

The President shall chair the General Assembly meetings.

Besides the abovementioned General Assembly meeting, General Assembly meetings may be convened by the Board of Directors whenever desirable. A General Assembly meeting may also be requested in writing by at least ten percent (10%) of the Members with the right to vote who are in good standing, and the Executive Secretary shall send notice of the requested meeting to all members within four weeks of receipt of the request.

There shall be neither less than four weeks nor more than six weeks notice of General Assembly meetings to all Members. The notice shall include the subjects to be discussed.

General Assembly meetings may be held as virtual meetings if the Board so decides, in which case adequate means of electronic communications shall be set up, so that Members may take part in the discussions and the decision-making in an informed and effective manner.

### **2. Attendance and Voting Rights**

Each Member who/that has not been suspended has the right to attend the General Assembly meeting; Individual Members and Institutional Members may vote on all matters that are addressed. Prospective Members have the right to attend meetings of the General Assembly, but do not have the right to vote.

Each Individual Member and each Institutional Member has one vote.

Except where the Statutes or the By-Laws prescribe otherwise, the General Assembly shall adopt resolutions and take other decisions by a simple majority vote. If the votes on business matters are equally divided, the proposal shall be dismissed. If the votes on the election of persons are equally divided, the drawing of lots decides. If during an election between more than two persons none obtains an absolute majority, a revote shall be held between the two persons having obtained the largest number of votes, if necessary after an intermediate vote.

Each Member in good standing may have his or her vote cast by another Member in good standing who has been authorised thereto in writing or by other reliable communications systems and has notified the Executive Secretary, at least two weeks prior to the concerned meeting. A Member may act as authorised representative of no more than two Members.

### **3. Parliamentarian**

The General Assembly shall elect a Parliamentarian for a period of three years, one year prior to the first General Assembly in which he or she is to serve as such. The Parliamentarian shall advise on rules and procedures when needed and shall perform tasks as specified in the By-Laws.

### **4. Annual Reports**

At the General Assembly, (a) the President shall present the annual report of the Board on the activities of the Institute containing an outline of the events and accomplishments of the preceding year and setting out its plans as to future policy, activities and projects of the Institute, and (b) the Treasurer shall present the Institute's accounts for the past financial year, including a balance sheet and a statement of income and expenditure with explanatory notes and tentative estimates for the current financial year. The General Assembly shall approve the report of the Treasurer.

### **5. Committees of the General Assembly**

In addition to the Audit Committee and the Election Committee, the General Assembly may by resolution create permanent or ad hoc committees, appoint Chairs of such committees, and invest in such committees such powers and responsibilities as the General Assembly may deem advisable. Chairs of such committees shall invite an appropriate number of Members in good standing to serve on their respective committees. If a committee Member does not regularly participate in the committee's work, the Chair may terminate the Member's committee Membership and invite a new Member as a replacement. In this event, the Chair shall report the change to the General Assembly. The Chair of each committee shall report to the General Assembly.

### **6. Audit Committee**

The General Assembly shall elect an Audit Committee of at least three Members in good standing, one of whom shall be designated as the Chair, who shall not be Members of the Board of Directors. At least one of the Committee Members shall have relevant experience in financial matters. The Audit Committee has oversight responsibility for ascertaining that the Institute's financial reports represent the true picture and are backed by adequate records and are consistent with the estimates/purposes presented to the General Assembly. The Audit Committee

shall report its findings to the Board. The report shall be submitted to the General Assembly for approval. If in the opinion of the Committee such inspection or audit requires special accounting knowledge, it may arrange for the assistance of an expert at the reasonable expense of the Institute.

The Treasurer shall provide the Audit Committee with all the relevant information it desires, present to the Audit Committee evidence of the funds and assets, if it so requires, and make the books and documents of the Institute available for inspection. Based on Audit Committee's recommendations, the General Assembly may adopt and implement such steps, actions or additional procedures as deemed appropriate.

## **7. Rules of Procedure**

Rules governing procedure for all meetings of the General Assembly shall be those as specified in the By-Laws.

## **ARTICLE V – Board of Directors**

### **1. Composition**

The Board of Directors shall be elected by the General Assembly and shall be composed of twenty-one members, five of whom shall serve as Officers, i.e. the President, two Vice Presidents, Executive Secretary and Treasurer. The abovementioned Officers are charged with the day-to-day management of the Institute.

Individual Members and representatives of Institutional Members, if in good standing, may serve on the Board of Directors. Only Individual Members may serve as Officers.

The President, who shall meet the qualifications established in the By-Laws, shall be the highest-ranking Officer of the Institute. Except where the Statutes or By-Laws prescribe otherwise, the President shall chair all conferences and meetings of the Institute and shall perform all duties pertaining to the office.

In the absence or disability of the President, one of the two Vice Presidents shall perform all duties of the President.

The Vice Presidents shall actively assist the President in the performance of his/her responsibilities, and shall carry out duties assigned to them by the General Assembly, the Board of Directors or the President.

The Executive Secretary shall keep the minutes of all proceedings and record the same in a permanent record. He/she shall give notice of all meetings, notify Members of election matters, notify officers of election, send the names of newly-elected Members to the Treasurer and perform such other duties as his/her office may require.

The Treasurer shall be the custodian of all funds of the Institute. The Institute's funds shall be deposited into the Institute's account by the Treasurer, and shall be disbursed upon submission of appropriate bills or statements by the Treasurer.

### **2. Power of Representation**

The Board of Directors represents the Institute. Power of representation is also vested in two Officers acting jointly, one of whom must be the President or a Vice President.

### **3. Terms of Office**

The Board Members and Officers shall be elected for a three-year term of office and they may be re-elected. If the Board consists of less than twenty-one Members, it nonetheless retains its powers. The Board shall convene a General Assembly meeting as soon as possible, during which the filling of the vacancy (or vacancies) shall be addressed.

### **4. Vacancies**

If in the period between two General Assembly meetings a vacancy occurs in the Board of Directors, the Board may appoint a temporary Director to fill that vacancy until the expiration of the relevant term, subject to the confirmation of that appointment by the next General Assembly meeting.

### **5. Ethical Responsibilities**

In all affairs of the Institute, the Board Members shall maintain the highest ethical standards, avoiding conflicts of interest, self-dealing, financial irregularity, and the appearance of impropriety.

### **6. Dismissal**

A Board Member, even if elected for a certain term, may at all times be dismissed or suspended by the General Assembly for gross negligence of duties, wilful violation of the provisions of the Statutes or the By-Laws of the Institute or any conduct, which results in a serious damage to the reputation of the Institute. A decision to dismiss shall be taken by a two-thirds majority of the votes cast at the General Assembly meeting, with due regard for principles of fairness and justice.

## **ARTICLE VI – Responsibilities and Powers of the Board of Directors**

### **1. Responsibilities**

The Board of Directors is responsible for the efficient and effective management and supervision of the activities and affairs of the Institute in accordance with its Statutes, By-Laws and the decisions of the General Assembly. In this regard, the Board of Directors shall carry out all necessary activities of the Institute, including:

- a) Carrying out the purposes and objectives of the Institute as set forth in Article II of these Statutes;
- b) Implementing resolutions and directives adopted by the annual and other General Assembly meetings of the Institute;
- c) Creating standing committees with appropriate terms of reference and powers for their functions;
- d) Creating ad hoc committees and working groups for specific purposes and functions;
- e) Appointing Members of the Institute to fill vacancies occurring in the Membership of the Board of Directors, in accordance with the Statutes;
- f) Supervising the correspondence of the Institute and providing for the safekeeping of its archives;
- g) Establishing a secretariat as appropriate, designating its duties and supervising all its activities;

- h) Arranging for meetings and colloquia;
- i) Arranging for the publication of books, proceedings, reports and other papers;
- j) Deciding on the bestowal of medals, certificates, prizes and awards;
- k) Preparing budgets and supervising accounts;
- l) Accepting donations and legacies, and funds from private sources, and contributions from national and international organizations, governments, institutions, and agencies;
- m) Deciding on the reports of the President and the Treasurer, to be presented at the General Assembly and other meetings, and responding to Audit Committee observations on accounts and proposing any corrective measures as deemed necessary.

## **2. Meetings and Quorum**

The Board of Directors shall meet at least twice a year and may pass resolutions and take decisions at a meeting only if at least twelve Directors are present and/or represented, including the President or the acting President.

The President shall chair the meetings of the Board of Directors.

Each Member of the Board of Directors may have his or her vote cast at the Board meeting by another Board Member who has been authorised thereto in writing or by other means of reliable communications systems and notified the Executive Secretary, at least two weeks prior to the meeting. A Board Member may act as authorised representative of no more than one other Board Member.

The Board may also pass resolutions or take decisions without holding a physical meeting, provided that all Board Members are given reasonable opportunity to cast their vote by mail or other reliable communication system(s), or by a virtual meeting held electronically pursuant to the procedural rules, included in the By-Laws, for virtual meetings and made known in advance.

When a matter is to be decided by a virtual meeting held electronically, the same number of participants shall be required for a valid decision of the Board.

Rules governing procedure for all meetings of the Board of Directors shall be those specified in the By-Laws.

The Board of Directors shall endeavour to take decisions by consensus.

Except where the Statutes and the By-Laws provide otherwise, resolutions and decisions of the Board that have been put to a vote are considered validly passed when a majority of the votes has been cast in favour of the proposal. If the votes are equally divided, the President shall cast the decisive vote.

## **3. By-Laws**

The business of the Institute shall be conducted in accordance with the Statutes and the By-Laws of the Institute. The By-Laws shall be adopted on the recommendation of the Board of Directors by the General Assembly. In the event of any conflict between the By-Laws and the Statutes, the Statutes shall prevail.

## **4. Committees and Assistants of the Board of Directors**

The Board of Directors may by resolution create standing (permanent) or ad hoc committees, appoint Chairs of such committees, and mandate such committees with such powers and responsibilities as the Board may deem advisable. Chairs of committees shall invite and appoint



such number as appropriate Members in good standing (at least one of which shall be a Board Member) to serve on their respective committees. If a Member does not regularly participate in the committee's work, the Chair may terminate the Member's committee Membership and invite a new Member as a replacement. In this event, the Chair shall report the change to the Board. The Chair of each committee shall report in writing to the Board in advance of the Board meetings.

The Board of Directors may appoint Assistants as needed.

## **ARTICLE VII – Special Positions**

### **1. Honorary Directors**

On the recommendation of the Board of Directors, outgoing Members of the Board who have made outstanding contributions to international cooperation in the peaceful uses of outer space, or to the development of space law, and who have served for several succeeding terms and have contributed substantially to the work of the Institute, may be elected for life as Honorary Directors by the General Assembly. Honorary Directors shall not be Members of the Board.

### **2. Presidents Emeriti**

On the recommendation of the Board of Directors, an outgoing President who has served in that capacity over several terms and has made outstanding contributions to international cooperation in the exploration and use of outer space for peaceful purposes, or to the development of space law, and has contributed substantially to the development and the activities of the Institute may be elected in exceptional cases for life as President Emeritus by the General Assembly. Presidents Emeriti shall not be Members of the Board.

### **3. Past President**

An outgoing President may serve one three-year term as Past President. The Past President shall not be a Member of the Board.

### **4. Privileges**

Honorary Directors, Presidents Emeriti and Past Presidents may attend the meetings of the Board of Directors as observers and receive documents related to these meetings. They may provide consultation to the Board of Directors on matters relating to the management of the Institute.

### **5. Advisory Council or Advisory Counselors**

The Board of Directors may appoint an Advisory Council or Advisory Counselors from outside the Institute.

## **ARTICLE VIII – Elections**

### **1. Election Committee**

Each year, on a proposal by the Board, the General Assembly shall elect an Election Committee, which shall be responsible for conducting the election of Board Members whose terms of office are to begin following the next General Assembly.

The Committee shall be composed of three Members who are not Board Members, are in good standing and do not have any conflict of interest.

## **2. Candidates for Board positions**

Candidates for Board positions shall be nominated by a Member in good standing, shall be supported by the signatures of five Members in good standing, and shall confirm that they accept to be nominated.

Members may sign the candidacies of more than one candidate.

Candidates shall specify whether they stand for a Board position or a specific Officer's position, and shall submit information in a format prescribed by the Election Committee and any additional information the Committee may request.

Candidates may only stand for one open position. The number of candidates per position is unlimited.

## **3. Voting**

The election committee shall draw up the list of qualifying candidates, supervise the election process and count the votes. It may, if necessary, seek support of Members of the secretariat who are not parties to the election, for counting or other duties.

Voting shall take place by mail and/or other reliable communications systems, from eight weeks prior to the General Assembly until four weeks prior to the General Assembly.

Members in good standing may cast as many votes as there are open positions. They may cast fewer votes, but may only vote for one candidate for any given vacant position. If they cast more votes than allowed, or cast votes for multiple candidates for a given position, their vote shall be invalid.

For each position, the candidate with the most votes shall be elected. In case of a tie, a re-election between the persons concerned shall be conducted, the details of which are established in the By-Laws.

## **Article IX – Amendments to the Statutes and By-Laws**

The Statutes and By-Laws may be amended at a General Assembly meeting where at least ten percent (10%) of the Members in good standing are present or represented, by the decision taken on the proposal of the Board of Directors and by a majority of the votes cast.

The resolution of the Board of Directors to propose an amendment to the Statutes or By-Laws shall be adopted by a two-thirds majority of the votes cast.

A proposal to amend the Statutes or By-Laws may also be submitted by at least ten percent (10%) of the Members in good standing. The Executive Secretary of the Institute shall be informed in writing of any proposals for the amendment to the Statutes or By-Laws of the Institute, other than those made by the Board, at least six weeks prior to the General Assembly meeting.

A notice of at least four weeks shall be given to all Members regarding the convening of the meeting and shall contain an announcement that an amendment to the Statutes or By-Laws will be proposed at that meeting, with a clear statement of the proposed amendment.

The amendment of the Statutes shall be effective only after a notarial deed has been drawn up. Each of the Members of the Board is authorised to have the deed of the amendment of the Statutes executed.

## **ARTICLE X – Dissolution**

### **1. Decision about Dissolution**

The Institute may be dissolved at a General Assembly meeting where at least ten percent (10%) of the Members in good standing are present or represented, by a decision taken on the proposal of the Board of Directors and by a majority of the votes cast. The dissolution of the Institute must be on the agenda of the General Assembly meeting and notice of at least twelve weeks prior to the General Assembly shall be given to all Members of the Institute.

### **2. Distribution of Assets**

In the event of the dissolution of the Institute, unless the General Assembly decides to use the credit balance or assets of the Institute differently, such credit balance or assets shall be offered to an international institution having objectives comparable to or consonant with those of the Institute.

## ***By-Laws***

### **ARTICLE 1 – Adoption and Amendment of the By-Laws**

Article VI, Section 3 of the Statutes of the International Institute of Space Law (hereinafter referred to as “Statutes”) provides that the By-Laws shall be adopted by the General Assembly on the recommendation of the Board of Directors. These By-Laws were approved by the Board of Directors, following the requirements set out in Article VI, Section 3 of the Statutes, and were submitted for adoption to and were duly adopted by the General Assembly on 3 October 2012 in Naples, Italy.

These By-Laws shall be read in conjunction with the Statutes. In the event of any conflict between the By-Laws and the Statutes, the Statutes shall prevail. The Board of Directors shall decide on matters not specifically provided for in the Statutes or the By-Laws.

These By-Laws may be amended in accordance with Article IX of the Statutes.

### **ARTICLE 2 – Fiscal Year**

The fiscal year of the Institute shall extend from 1 August until 31 July.

### **ARTICLE 3 – Membership**

#### **3.1. Membership Committee**

The Board of Directors shall appoint a Membership Committee, composed of at least three and not more than five Members, which may include Members of the Institute who are not elected to the Board of Directors. The Members shall serve for three years and may be re-appointed.

#### **3.2 Format and procedure of nominations**

Nominations for Membership of the Institute shall be on the nomination forms available on the Institute’s website and shall meet the requirements set in Article III of the Statutes. The nominations, accompanied by a Curriculum Vitae (CV) in MS Word format, shall be submitted to the Chair of the Membership Committee not later than February 1st for the Spring meeting of the Board of Directors, and August 1st for the Fall meeting of the Board of Directors.

#### **3.3 Evaluation and election**

All nominations shall be evaluated by the Membership Committee according to the criteria listed in Article III of the Statutes. The Committee shall submit a written report with its recommendations to the Executive Secretary not later than four weeks before the meeting of the Board of Directors. The Board shall decide on the nominations at its meetings.

#### **3.4. Transition from Prospective Membership to Individual Membership**

Prospective Members who have had that status for two years may apply for Individual Membership. A Prospective Member wishing to transition to Individual Membership should resubmit an updated application form and curriculum vitae, signed by the requisite nominator/s (this can include the initial nominator/s if feasible). The resubmission should occur by the application deadline occurring approximately eighteen months after election as a Prospective Member.

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If no application has been made by this described deadline, the Prospective Membership will be automatically terminated after the initial two-year period has expired.

### **3.5 Contact person of Institutional Members**

Institutional Members shall indicate on their nomination form who shall serve as their contact person(s) for purposes of communications with the Institute. A maximum of three contact persons may be designated for each Institutional Member.

## **ARTICLE 4 – Membership Dues**

### **4.1. Individual Membership dues**

On a proposal by the Board of Directors, the General Assembly shall establish the amount to be paid for individual Membership for the following fiscal year.

### **4.2. Institutional Membership dues**

On a proposal by the Board of Directors, the General Assembly shall establish the amount to be paid for Institutional Membership for the following fiscal year.

### **4.3 Exceptions**

Prospective Members shall be exempt from the payment of Membership dues.

The Board may decide, with the approval of the General Assembly, to grant a reduction in membership dues to employees of Institutional Members who wish to join as individual Members.

### **4.4. Payment**

Dues shall be paid per fiscal year. The Treasurer shall send out a call for payment of dues in the second quarter of the calendar year, and a reminder in the third quarter of the calendar year. Dues shall be paid according to the instructions provided by the Treasurer. Cheques shall only be accepted against payment of an extra fee to cover the bank charges, as determined by the Treasurer.

Members elected before 1 July shall be required to pay the dues for that calendar year.

Members elected on or after 1 July shall be required to pay as of the following calendar year.

### **4.5. Notice of termination by the Institute**

A Member of the Institute deemed to no longer be in good standing pursuant to Article III Section 7 of the Statutes shall receive a final communication from the Treasurer. If outstanding dues are not settled within four weeks after that communication, the Membership may be terminated by decision of the Board of Directors in accordance with Article III Section 9 of the Statutes.

## **ARTICLE 5 – General Assembly**

### **5.1. Attendance and right to vote**

All Members of the Institute, except those who have been suspended, as well as persons who have been invited by the Board of Directors and/or the General Assembly, may attend the General Assembly.

Institutional Members shall inform the Executive Secretary as to who shall express their vote at the General Assembly and shall send the name and contact details in writing to the Executive Secretary at least two weeks prior to the General Assembly.

With the exception of suspended Members and Prospective Members, each Member in good standing is entitled to one vote at the General Assembly.

### **5.2. General Assembly requested by the Members**

A request for a special General Assembly, pursuant to Article IV Section 1(c) of the Statutes, shall be made by at least 10% of the Members in good standing, and communicated in writing to the Executive Secretary, together with the subjects to be discussed. The Board shall set a date, place and time for the meeting not later than eight weeks from the receipt of the request. The Members shall be given notice of such a meeting at least four weeks in advance.

### **5.3. Presiding at meetings**

If, in accordance with Article V Section 1(c) and (d) of the Statutes, neither the President nor a Vice President as nominated by the President is able to preside at meetings of the General Assembly, the President may appoint another Director to preside at a particular meeting. If the President is unable to appoint or has not done so in a timely manner, a Vice President, or if necessary another Director, appointed by a majority of the Members of the Board present, shall preside and have the powers of the President for the purpose.

### **5.4. Decision-making by the General Assembly**

Voting on motions at the General Assembly shall be by a show of hands. Voting on matters relating to persons shall be by written ballot. The President or Executive Secretary shall inform the meeting of the views of those not present who have notified their view in writing on a matter. Such written views shall be treated as votes on matters relating to persons and on motions unless the motions have been amended.

### **5.5 Rules of procedure and Parliamentarian for meetings of the General Assembly**

The General Assembly shall follow Robert's Rules of Order (latest edition).

The General Assembly shall elect a Parliamentarian to advise the President and other officers, committees, and Members on matters of parliamentary procedures during General Assembly meetings. He/she shall be a consultant, usually a professional who is knowledgeable of Robert's Rules of Order, and shall be elected for a specific term or for a given session of the General Assembly.

### **5.6. Minutes of meetings of the General Assembly**

The Executive Secretary shall keep minutes of the General Assembly meetings. Draft minutes shall be available to the Members at the latest twelve weeks after the meeting, and shall be approved by the next General Assembly.

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## **5.7. Committees of the General Assembly**

Unless otherwise expressly provided herein, the General Assembly shall seek and consider the advice of the Board on the scope and terms of reference for committees created by the General Assembly pursuant to Article IV Section 3, in order to ensure the harmonious functioning of other committees of the Board and the Board itself.

Committee Members shall be from different regions of the world.

In the event that any Member or chair of the committee is unable to carry out his/her duties, the Board, in consultation with the chair and/or the other Members of the committee, may take suitable remedial actions to ensure the effective functioning of the Committee and continuation of such remedial actions are subject to ratification by the General Assembly at its next meeting. Committees shall submit a written report to the Executive Secretary at the latest six weeks prior to the General Assembly. The Executive Secretary shall make such reports available to the Members of the Institute.

### **5.7.1. Audit Committee**

The General Assembly shall elect the Audit Committee of not less than three and not more than five Members who are not Members of the Board of Directors. The Committee shall select its Chair. Members of the Audit Committee shall be elected for a term of three years and may be re-elected.

The Treasurer shall submit all necessary information to the Audit Committee at the latest six weeks prior to the General Assembly. The Audit Committee shall submit its written report to the Executive Secretary at the latest three weeks prior to the General Assembly. The Audit Committee's report shall be appended to the Treasurer's report, with any clarification as necessary by the Board for approval by the General Assembly.

### **5.7.2. Election Committee**

The General Assembly shall elect the Election Committee of three Members who are not Members of the Board of Directors. The Committee shall select its Chair. Members of the Election Committee shall be elected for a term of one year and may be re-elected.

Election procedures and timelines are set out in Article 9 of these By-Laws.

## **5.7. Documents for the General Assembly**

The Executive Secretary shall make the documents and reports for the General Assembly available to the Membership via the Institute's website or other reliable communications systems as they become available. A paper version shall be available upon request and may be subject to payment of a mailing fee.

## **ARTICLE 6 – Board of Directors**

### **6.1. Presiding at meetings**

In the absence or disability of the President, a Vice President as nominated by the President shall perform the duties of the President in accordance with the provisions of Article V Section 1 of the Statutes. If however neither the President nor any of the Vice Presidents can preside a meeting of the Board, the President may appoint another Director to preside at a particular meeting. If the President is unable to appoint or has not done so in a timely manner, a Vice-President, or if necessary another Director, appointed by a majority of the Members of the Board present, shall preside and have the powers of the President for the purpose.

## **6.2. Decision-making by the Board of Directors**

The Board of Directors shall endeavour to take decisions by consensus, but, if necessary, voting at the Board of Directors shall be by a show of hands, except when voting on matters related to persons, which shall be by written ballot. The President or Executive Secretary shall inform the meeting of the views of those not present who have notified their view in writing on a matter. Such written views shall be treated as votes on matters related to persons and on motions unless the motions have been amended.

## **6.3 Rules of procedure for meetings of the Board of Directors**

The Board of Directors shall follow Robert's Rules of Order (latest edition).

## **6.4. Minutes of meetings of the Board of Directors**

The Executive Secretary shall keep minutes of the meetings and of all actions taken by the Board. Such minutes, after adoption by the Board of Directors, shall be deposited with the Secretariat of the Institute and any Member of the Institute in good standing may inspect them by sending a written request to the Executive Secretary. Draft minutes shall be available to the Board of Directors at the latest twelve weeks after the meeting.

## **6.5 Committees**

Members of committees created by the Board of Directors pursuant to Article VI Section 4 of the Statutes shall serve for a term of three years and may be re-appointed. Committees shall submit a written report to the Executive Secretary at the latest four weeks prior to the Board Meeting. The Executive Secretary shall make such reports available to the Board of Directors, which shall report to the General Assembly.

The Board shall appoint a Moot Court Committee, an Awards Committee, a Directorate of Studies, a Membership Committee, a Publications Committee, and may appoint other Committees as needed for its various conferences, meetings and activities.

Each Committee shall be governed by Terms of Reference decided by the Board of Directors.

## **6.6 Assistants**

The Board may create the position of Assistant to the Officer(s) (Assistant Executive Secretary or Assistant Treasurer or other Assistants) as necessary to assist them in carrying out their respective functions and shall determine the terms and conditions of such appointments. The concerned Officer in consultation with the other Officers may appoint assistants, generally for a term of two years. The concerned officer shall be in charge of supervising the assistant and shall keep the Board informed of the performance of the assistant.

Assistants may be invited to attend meetings of the Board of Directors as observers.

## **ARTICLE 7 – Responsibilities of the Members of the Board**

### **7.1. Responsibilities of all Board Members**

All Board Members shall endeavour to attend all meetings of the Board of Directors and all General Assemblies and shall actively contribute to the realisation of the purposes and objectives of the Institute.

While maintaining the highest ethical standards, they shall act in the best interest of the Institute and treat all information discussed in meetings with due confidentiality.



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## **7.2. Responsibilities of the President**

The President shall fulfil the Purposes and Objectives of the Institute on a daily basis, particularly in accordance with Article II, Article IV section 1(b), Article V, section 1(c) and Article VI, Section 2(b) of the Statutes.

## **7.3. Responsibilities of the Vice Presidents**

The Vice Presidents shall assist and give advice to the President on the day-to-day activities of the Institute and act on behalf of the President in his or her absence, in accordance with Article V Section 1(d) of the Statutes.

## **7.4. Responsibilities of the Executive Secretary**

The responsibilities of the Executive Secretary include:

- (a) Maintaining the list of Members of the Institute;
- (b) Maintaining all necessary records;
- (c) Making arrangements for meetings of the Board;
- (d) Taking the minutes of the meetings of the Board, and the General Assembly;
- (e) Keeping copies of the minutes of the meetings and with the approval of the Board, making suitable arrangements for the custody of the records of the Institute;
- (f) In accordance with the decisions of the Board, making arrangements for the annual and special meetings of the General Assembly of the Institute;
- (g) Coordinating the committees established by the Board;
- (h) Conducting the routine correspondence of the Institute;
- (i) Communicating with Members of the Institute, including the preparation and distribution of the Institute's Newsletter.

## **7.5. Responsibilities of the Treasurer**

The responsibilities of the Treasurer include:

- (a) Collecting Membership dues and receiving donations and other monies received for, or arising from the work of the Institute;
- (b) Maintaining the financial records of the Institute;
- (c) Operating appropriate bank accounts on behalf of the Institute;
- (d) Preparing appropriate budgets and financial reports;
- (e) Paying bills incurred by the Institute or its officers in the carrying out the purposes of the Institute, from monies held by the Institute.

## **7.6. Insurance**

The Institute shall maintain appropriate liability insurance coverage for the Officers and other Members of the Board of Directors.

## **ARTICLE 8 – Qualification criteria for Members of the Board**

### **8.1 Qualification criteria for the position of President**

To qualify for the position of President, a candidate shall be an Individual Member, shall have served on the Board for at least two terms, be committed to the Purposes and Objectives of the Institute and be a recognized expert in the field of space law.

## **8.2 Qualification criteria for the position of Vice President**

To qualify for the position of Vice President, a candidate shall be an Individual Member, shall have served on the Board for at least one term and be dedicated to the Purposes and Objectives of the Institute.

## **8.3 Qualification criteria for the position of Executive Secretary**

To qualify for the position of Executive Secretary, a candidate shall be an Individual Member and have previous experience in maintaining records and other secretarial work and be committed to the Purposes and Objectives of the Institute.

## **8.4 Qualification criteria for the position of Treasurer**

To qualify for the position of Treasurer, a candidate shall be an Individual Member and have previous experience in financial accounting and be committed to the Purposes and Objectives of the Institute.

## **8.5 Qualification criteria for the position of Member of the Board**

To qualify for the position of Member of the Board, a candidate shall be an Individual Member or a designated representative of an Institutional Member, shall have significant experience in the juridical or social science aspects of space activities, and be committed to the Purposes and Objectives of the Institute.

## **ARTICLE 9 – Elections**

### **9.1. Candidates for Elections**

Nominations for candidates shall be submitted to the Chair of the Election Committee using special nomination forms made available on the Institute's website, accompanied by a Curriculum Vitae (CV) in MS Word, at the latest on May 15th. The Committee shall draw up a list of all qualifying candidates. The list, the forms and the CVs of all candidates shall be made available to the Members of the Institute by the Executive Secretary on June 15th.

### **9.2. Voting**

Voting shall take place between June 15th and July 15th.

Voting may take place by mail and/or by electronic means, to be decided by the Board of Directors in each case.

For the purpose of voting, the Members of the Institute shall be encouraged to consider the following factors necessary for a proper functioning of the Board:

- (a) The competence and professional reputation of the candidate
- (b) The need for representation from the different regions of the world;
- (c) The need for rotation as well as for continuity.

The Election Committee shall count the votes and determine the election results, which it shall submit to the Executive Secretary who shall communicate them to the Members.

In the event of a tie, the Committee shall call a new vote among those Candidates at the latest on August 30th, and voting shall be conducted from August 30th until September 15th.

The Committee shall count the votes and determine the results, which it shall submit to the Executive Secretary who shall communicate them to the Members.

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**ARTICLE 10 – Communications**

For the purposes of the Institute’s Statutes and By -Laws a ‘reliable communication system’ is defined as postal mail or other communication system, including electronic mail, which provides or can provide a permanent copy to the recipient and can allow verification of traceability to the transmitting end.

If the Board of Directors decides to hold a virtual meeting electronically pursuant to Article VI, Section 2d of the Statutes, such a meeting shall be conducted by a technology that allows all persons participating to hear each other at the same time and, if a videoconference, to see each other as well.

The Institute shall publish two newsletters per year and shall also maintain an active presence on the social media.



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