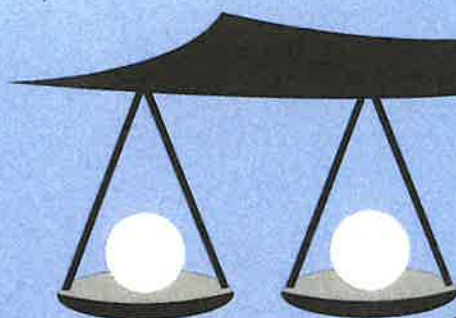


Journal of Space Law

Volume 38

Number 1

2012



In Memory of Carl Q. Christol	<i>Joanne Irene Gabrynowicz</i>
Foreword	<i>Joanne Irene Gabrynowicz</i>
Articles	
A Legal Assessment of the 1996 Declaration on Space Benefits on the Occasion of its Fifteenth Anniversary	<i>Elena Carpanelli Brendan Cohen</i>
Rights Over Areas vs Resources in Outer Space: What's The Use of Orbital Slots?	<i>Philip De Man</i>
Decree and Rules	
The Mexican Space Agency	<i>J. H. Castro Villalobos</i>
Decree through which the Law that creates the Mexican Space Agency is issued (July 30, 2010)	
An Introduction to the PCA's Optional Rules for Arbitration of Disputes Relating to Outer Space Activities	<i>Judge Fausto Pocar</i>
Permanent Court of Arbitration Optional Rules for Arbitration of Disputes Relating to Outer Space Activities (December 6, 2011)	
Bibliography	
Aviation and Space Law: Relevant Publications	<i>P.J. Blount</i>

JOURNAL

OF

SPACE

LAW

VOLUME 38, NUMBER 1

Spring/Summer 2012

JOURNAL OF SPACE LAW

UNIVERSITY OF MISSISSIPPI SCHOOL OF LAW

A JOURNAL DEVOTED TO SPACE LAW AND THE LEGAL PROBLEMS
ARISING OUT OF HUMAN ACTIVITIES IN OUTER SPACE.

VOLUME 38

SPRING/SUMMER 2012

NUMBER 1

Editor-in-Chief

Professor Joanne Irene Gabrynowicz, J.D.

Executive Editor

Jacqueline Etil Serrao, J.D., LL.M.

Faculty Editing Staff

P.J. Blount

Business Manager

Michelle Aten

Student Editor

Matthew Elias

Senior Staff Assistant

Melissa Wilson

Founder, Dr. Stephen Gorove (1917-2001)

All correspondence with reference to this publication should be directed to the JOURNAL OF SPACE LAW, University of Mississippi School of Law, 481 Coliseum Drive, University, Mississippi 38677; jsl@olemiss.edu; tel: +1.662.915.6857, or fax: +1.662.915.6921.

JOURNAL OF SPACE LAW. The subscription rate for 2012 is \$100 U.S. for U.S. domestic/individual; \$120 U.S. for U.S. domestic/organization; \$105 U.S. for non-U.S./individual; \$125 U.S. for non-U.S./organization. Single issues may be ordered at \$70 per issue. For non-U.S. airmail, add \$20 U.S. Please see subscription page at the back of this volume.

Copyright © Journal of Space Law 2012. Suggested abbreviation: J. SPACE L.
ISSN: 0095-7577

JOURNAL OF SPACE LAW

UNIVERSITY OF MISSISSIPPI SCHOOL OF LAW
A JOURNAL DEVOTED TO SPACE LAW AND THE LEGAL PROBLEMS
ARISING OUT OF HUMAN ACTIVITIES IN OUTER SPACE.

VOLUME 38	SPRING/SUMMER 2012	NUMBER 1
-----------	--------------------	----------

CONTENTS

In Memory of Carl Q. Christol.....	<i>Joanne Irene Gabrynowicz</i>	iii
Foreword.....	<i>Joanne Irene Gabrynowicz</i>	v
Call for Papers		vii
Articles		
A Legal Assessment of the 1996 Declaration on Space Benefits on the Occasion of its Fifteenth Anniversary	<i>Elena Carpanelli</i> <i>Brendan Cohen</i>	1
Rights Over Areas vs Resources in Outer Space: What's The Use of Orbital Slots?	<i>Philip De Man</i>	39
Decree and Rules		
The Mexican Space Agency.....	<i>J.H. Castro Villalobos</i>	151
Decree through which the Law that creates the Mexican Space Agency is issued (July 30, 2010)		
An Introduction to the PCA's Optional Rules for Arbitration of Disputes Relating to Outer Space Activities	<i>Judge Fausto Pocar</i>	171
Permanent Court of Arbitration Optional Rules for Arbitration of Disputes Relating to Outer Space Activities (December 6, 2011)		

Bibliography:

Aviation and Space Law: Relevant Publications *P.J. Blount* 211

Aviation

Cases..... 211

Articles 216

Books and Documents 219

Space

Laws..... 219

Cases..... 219

Articles 221

Books and Documents 224

IN MEMORIAM¹
CARL QUIMBY CHRISTOL, 1913 - 2012



As I write this, a well used, dog-eared copy of *The Modern International Law of Outer Space* by the late Carl Q. Christol sits on my desk. Its dark brown cover indicates its serious and weighty subject while a collection of confetti colored “sticky” tabs adorn its pages: red for remote sensing; green for the province of all mankind principle; yellow for liability. It is the first book I bought when I began teaching space law in 1987. I was a new teacher in a new academic subject. Carl’s book was my security and my comfort as well as my trusted source for much of the information I would continue to teach and research during the next 25 years. Although Carl was a prolific writer and his cumulative work product goes far beyond *The Modern International Law of Outer Space*, it is a major opus that continues to be used by my students and colleagues to this day.

I met Carl for the first time in 1991 at the 42nd International Astronautical Congress in Montreal, Canada and corresponded with him over the years. Carl was a lot like my well-

¹ *Carl Quimby Christol Space Law Pioneer Dies at 98 (1913 – 2012)*, RES COMMUNIS (Feb. 24, 2012, 3:06 pm), <http://rescommunis.olemiss.edu/2012/02/24/carl-quimby-christol-space-law-prioneer-dies-at-98-1913-2012/>.

used copy of his book: multi-faceted. Carl's research and writing focused on international space law, international law, U. S. constitutional law, American foreign policy, security issues resulting from terrorism, and human rights. Like his book, Carl's thoughts were well grounded in exhaustive research. As I often tell my students, Carl's book is worth its weight in gold for the footnotes alone. In addition, like the "sticky" tabs on the book's pages, he was colorful. Carl's life, career, and service spanned from a homestead in the American west to the space age. He served in the Army in World War II including at the Battle of the Bulge; received a law degree from Yale; authored eight books and more than 100 scholarly articles; and, he became an icon of space law, among many, many other achievements.

Carl will be missed. When anyone in the space law community finds themselves missing Carl, I have a very special copy of his book that will let you visit with him for a little while.

Joanne Irene Gabrynowicz
Oxford, MS
22 June 2012

FOREWORD

*By Joanne Irene Gabrynowicz**

This volume of the JOURNAL OF SPACE LAW has members of the new generation of space lawyers addressing long-standing questions in space law. In their respective articles, co-authors Elena Carpanelli and Brendan Cohen, and author Philip De Man address different aspects of benefits derived from space—what they are; legal and other obligations regarding them; how they are accessed; how they are used; and by whom.

In *A Legal Assessment of the 1996 Declaration on Space Benefits on the Occasion of its Fifteenth Anniversary*, (Declaration) Ms. Carpanelli and Mr. Cohen analyze the last major declaration of principles relating to space that was adopted as a resolution by the United Nations General Assembly. As they state in their article, resolutions of this kind are inherently non-binding. The authors then assess the legal value of the Declaration and consider whether if, over that last fifteen years, parts of it have become customary international law. They also examine whether the Declaration itself creates a legitimate expectation for States to abide by it. They conclude that, ultimately, the Declaration's primary value has been as a moral and political, rather than a *practical*, legal instrument.

In *Rights Over Areas vs Resources in Outer Space: What's The Use of Orbital Slots?* Philip De Man delves deeply into the problem of reserving orbital capacity without actual use, which is also referred to as the "paper satellite" problem. Dr. De Man examines the two main competing forms of practice that are asserted by proponents to establish the legitimate use of an orbital slot. Although the practices are diametrically opposed to

* Joanne Irene Gabrynowicz is the Editor-in-Chief of the JOURNAL OF SPACE LAW. She is also a professor of space law and remote sensing law and the Director of the National Center for Remote Sensing, Air, and Space Law at the University of Mississippi School of Law. Prof. Gabrynowicz was the recipient of the 2001 Women in Aerospace Outstanding International Award and the 2011 International Institute of Space Law's Distinguished Service Award. She is a Director of the International Institute of Space Law and a member of the American Bar Association Forum on Air and Space Law.

each other, both are perceived to be unlawful by different actors in the space community. Dr. De Man offers a thorough analysis of the applicable legal rules in order to shed some light on the broader underlying philosophy of the free use of outer space.

In his article, *The Mexican Space Agency*, J.H. Castro Villalobos describes the newly established Agency and the legislation that brought it into being. Among the many reasons for the Agency's establishment is the need to prioritize Mexican national space policy in accord with human development, peace, and international security—all subjects related to benefits derived from space. Señor Villalobos' article is accompanied by an unofficial translation of the Mexican law.

As a reminder that benefits can also be accompanied by problems, this issue of the JOURNAL OF SPACE LAW includes the *Permanent Court of Arbitration Optional Rules for Arbitration of Disputes Relating to Outer Space Activities* (Rules) that were adopted in December 2011. These Rules were catalyzed, in part, by the recognition that events like the *Iridium-Cosmos* on-orbit collision may be on the rise as space is accessed for its benefits by an ever-growing number of space actors. His Excellency Judge Fausto Pocar, of the Permanent Court of Arbitration, offers the reader an introduction to the Rules that is intended to provide insight into the factual and intellectual processes of their development. Judge Pocar served as the Chair of the advisory group of experts that assisted in the Rules' development.

As always, a bibliography that contains the most recent developments in laws, regulations, cases, administrative decisions, articles, books, and reports in aviation and space law completes the volume.

CALL FOR PAPERS

JOURNAL OF SPACE LAW **UNIVERSITY OF MISSISSIPPI SCHOOL OF LAW**

A JOURNAL DEVOTED TO SPACE LAW AND THE LEGAL PROBLEMS ARISING
OUT OF HUMAN ACTIVITIES IN OUTER SPACE.

Volume 38, Number 2

The National Center for Remote Sensing, Air, and Space Law of the University of Mississippi School of Law is delighted to announce that it will publish Volume 38, issue 2 of the JOURNAL OF SPACE LAW in the second half of 2012.

Authors are invited to submit manuscripts, and accompanying abstracts, for review and possible publication in the JOURNAL OF SPACE LAW. Submission of manuscripts and abstracts via email is preferred.

Papers addressing all aspects of international and national space law are welcome. Additionally, papers that address the interface between aviation and space law are also welcome.

Please email manuscripts and accompanying abstracts in Microsoft Word to:

jsl@olemiss.edu

Or, alternatively, a hardcopy of the manuscript and abstract, along with a computer diskette containing them in Microsoft Word or WordPerfect format may be sent to:

JOURNAL OF SPACE LAW
P.O. Box 1848
University, MS 38677
1-662-915-6857 (office)
1-662-915-6921 (fax)

To be considered for the next issue, submissions should be received on or before October 14, 2012. However, the JOURNAL OF SPACE LAW will continue to accept and review submissions on an ongoing basis.

A LEGAL ASSESSMENT OF THE 1996 DECLARATION ON SPACE BENEFITS ON THE OCCASION OF ITS FIFTEENTH ANNIVERSARY

*Elena Carpanelli**
*Brendan Cohen***

I. INTRODUCTION

On December 13, 1996, in resolution 51/122, the United Nations General Assembly unanimously adopted the 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 (the Declaration on Space Benefits), thus concluding a ten-year discussion on the topic within the Committee On the Peaceful Uses of Outer Space (COPUOS) and its Legal Subcommittee.

In 2011, during its fifty-fourth session, the Legal Subcommittee “noted with satisfaction that [this year] marked the fifteenth anniversary of the adoption by the General Assembly of the [Declaration on Space Benefits].”¹ On this occasion, an assessment of the value of this Declaration and its past, present, and future contribution to the development of international space law and policy remains as important as ever. Since the 1960s, the world has become increasingly dependent on space applications, particularly those related to telecommunications,

* LL.M. (Adv.) Air and Space Law, Leiden University, 2011; B.L.C. Università di Parma, 2009.

** J.D. Candidate, Stanford Law School, 2013; B.A., Yale University, 2005. The authors would like to thank Niklas Hedman and Sergiy Negoda of the United Nations Office for Outer Space Affairs for their guidance throughout the research and writing process. Despite their encouragement, support, and suggestions, the views expressed do not represent the views of OOSA, and any errors or omissions are attributable solely to the authors.

¹ Comm. on the Peaceful Uses of Outer Space, Legal Subcomm, *Rep. on its 50th Sess., 28 March–8 April 2011*, ¶ 16, U.N. Doc. A/AC.105/990 (Apr. 20, 2011).

global navigation satellite systems, and earth observation. The increasing commercialization of space activities, the expanding number of space actors, and the growing awareness of the role of space activities in promoting sustainable development and preventing natural and human-made disasters worldwide, lend a timeliness to the analysis of the principles embodied in the Declaration. The near future promises further technological growth and continuing privatization of space activities, factors that might lead to a shift in the traditional concept of space-faring nations and to new developments in the utilization and exploration of outer space. Additionally, the risk of orbit saturation due to the increasing exploitation of outer space may further the debate between current and potential users over the exact meaning of using outer space for the benefit of all countries. In this context, it is important to assess the way in which the Declaration on Space Benefits exerts its influence, in order to establish a clearer understanding of the underlying principles of "international cooperation" and "use and exploration of outer space for the benefit and in the interest of all States."

The present Article will first focus on the legal and political background behind the negotiation and adoption of the Declaration on Space Benefits and will then examine the legal significance of the instrument. On the basis of the assumption that, although not legally binding, recommendatory General Assembly Resolutions can still have legal effects, this Article will attempt to define the Declaration on Space Benefits' potential role in the consolidation and/or formation of customary rules of international law. It will next assess its characterization as an authoritative means of interpretation of pre-existing treaty law. Finally, it will consider the value of the Declaration insofar as it creates a legitimate expectation that States, acting in accordance with the general principle of good faith, will abide by it in the area of space exploration.

Even conceding that the Declaration on Space Benefits has some legal effect, the fact that the Declaration does not define terminology used and lacks any form of enforcement mechanism means its practical legal relevance is inhibited. For this reason, the Declaration serves its purpose much more strongly as a moral and political instrument than as a legal one. Accordingly,

the last portion of the present Article will be dedicated to analyzing its political and moral implications.

II. THE ORIGINS OF THE DECLARATION ON SPACE BENEFITS

A. Legal Background

In 1986, the Venezuelan delegation proposed a new agenda item for the Legal Subcommittee entitled "[e]quitable access by States to the benefits derived from space technology."² Developing nations, in particular, believed that a cornerstone for building any genuine international cooperation in the realm of outer space included precisely defining the scope of the access to these benefits.³ Largely as a result of the vague terminology of Article I of the Outer Space Treaty⁴ and the internal tension it contains in its first two paragraphs, these developing nations began to press for more stringent legal obligations governing international cooperation and the use of outer space for the benefit of all countries.⁵

Specifically, paragraph 1 of Article I of the Outer Space Treaty states 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 interest of all countries, irrespective of their degree of economic or scientific development and shall be the province of all mankind," thus re-affirming principles already set out in the 1963 Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space⁶ (hereinafter 1963 Declaration). In practical terms, by requiring that space activities are undertaken for the com-

² Comm. on the Peaceful Uses of Outer Space, 29th Sess., ¶ 44, U.N. Doc. A/AC.105/SR.282, (Venezuela) (June 4, 1986).

³ Comm. on the Peaceful Uses of Outer Space, Legal Subcomm, 28th Sess., ¶ 3, U.N. Doc. A/AC.105/C.2/SR.519, (Chile) (Apr. 10, 1989).

⁴ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, *opened for signature* Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

⁵ See Nandasiri Jasentuliyana, *Article I of the Outer Space Treaty Revisited*, 17 J. SPACE L. 129, 129 (1989).

⁶ *International Co-Operation in the Peaceful Uses of Outer Space*, U.N. Doc. A/RES/1962 (XVIII) (Dec. 13, 1963).

mon benefit of all mankind, the first paragraph of Article I of the Outer Space Treaty sets a general limit on the "free use and exploration of outer space without discrimination of any kind" recognized in paragraph 2.⁷ In addition, Article I(1) has generally been interpreted to require international cooperation in the exploration and use of outer space, taking into account the interests of all States.⁸ Nonetheless, the practical legal significance of this provision has been greatly debated. Two main issues have been particularly contentious: its legally binding force and the extent of its scope.

First, it has been argued that, given its broad reach, vague content, and the difficulties related to its enforcement, the principle contained in Article I(1) would only impose a *moral* obligation on States that carry out space activities.⁹ Others, however, have stressed that the wording of the provision unequivocally exerts *legally* binding power due to its contractual nature.¹⁰ During the negotiating process leading to the Declaration on Space Benefits, the Chinese representative, for instance, stressed that while "[d]oubts had often been expressed concerning the legal scope of Article I of the Outer Space Treaty," his delegation believed "there were no grounds for claiming that it was merely a general declaration of intents."¹¹

⁷ STEPHAN HOBE, BERNHARD SCHMIDT-TEDD, & KAI-UWE SCHROGL (eds.), COLOGNE COMMENTARY ON SPACE LAW, VOL. I 38 (2009); see also BIN CHENG, STUDIES IN INTERNATIONAL SPACE LAW 404 (1997).

⁸ R. Arzinger, *Legal Aspects of the Common Heritage of Mankind*, in 22ND PROC. COLLOQ. L. OUTER SPACE 89, 89 (1979); see also U.N. Doc. A/AC.105/C.2/SR.519, *supra* note 3, at ¶ 13 (United States of America); Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., 28th Sess., ¶ 3, U.N. Doc. A/AC.105/C.2/SR.520, (Nigeria) (Apr. 6, 1989).

⁹ See, e.g., Bin Cheng, *The 1967 Outer Space Treaty: Thirtieth Anniversary*, 23 ANNALS AIR & SPACE L. 156, 163 (1998); B. Maiorsky, *A Few Reflections on the Meaning and Significance of "Province of all Mankind" and "Common Heritage of Mankind" Notions*, in 29TH PROC. COLLOQ. L. OUTER SPACE 58, 59 (1986); V. M. Postyshev, *On the Question of Space Exploration for the Benefit of Humanity: A Modest Proposal*, in 33RD PROC. COLLOQ. L. OUTER SPACE 236, 238 (1990).

¹⁰ See, e.g., Marco G. Markov, *Implementing the Contractual Obligation of Article I, Par. 1 of the Outer Space Treaty 1967*, in 17TH PROC. COLLOQ. L. OUTER SPACE 136, 137 (1975).

¹¹ Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., 28th Sess., ¶ 18, U.N. Doc. A/AC.105/C.2/SR.521, (China) (Apr. 11, 1989).

Second, even if one accepts the latter argument that Article I creates a legal obligation, the vagueness of the terms used still raises questions about the practical meaning of concepts such as "use," "exploration," "benefit and interests of all countries," and "province of all mankind."¹² One wonders, for instance, whether only the "exploration and use" must be beneficial, or also the resources resulting from this activity.¹³ Moreover, does the use of the term "benefit" imply participatory rights for developing countries,¹⁴ and if so, to what extent?¹⁵ This uncertainty over the exact significance of the terms of Article I of the Outer Space Treaty was expressed by the Venezuelan delegation. In the context of the new agenda item concerning international cooperation in space, the delegate suggested that the Legal Subcommittee "might start by trying to elucidate a number of notions found in the Outer Space Treaty, particularly the scope of obligation set forth in article I."¹⁶

One of the reasons behind the vague formulation of Article I(1) is that States involved in the drafting did not share a unanimous view of the value and significance of the general principle of international cooperation in space activities¹⁷ or the way it was specifically provided for in Article I(1). Developed countries mainly linked the idea of international cooperation to the need for mutual assistance in launches or astronaut res-

¹² See Stephen Gorove, *Freedom of Exploration and Use in the Outer Space Treaty: A Textual Analysis and Interpretation*, 1 DENV. J. INT'L L. & POL'Y 93 (1971) [hereinafter *Freedom of Exploration*]; Ernst Fasan, *The Meaning of the Term "Mankind" in Space Legal Language*, 2 J. OF SPACE L. 125 (1974); see also Stephen Gorove, *Concept of Common Heritage of Mankind: A Political, Moral or Legal Innovation*, 9 SAN DIEGO L. REV. 390, 392 (1972); Comm. on the Peaceful Uses of Outer Space, Legal Subcomm, 28th Sess., ¶ 14, U.N. Doc. A/AC.105/C.2/SR.522, (Ecuador) (Apr. 7, 1989).

¹³ See, *Freedom of Exploration*, supra note 12, at 102.

¹⁴ HOBBS, supra note 7, at 40.

¹⁵ See, *Freedom of Exploration*, supra note 12, at 102.

¹⁶ Comm. on the Peaceful Uses of Outer Space, Legal Subcomm, 27th Sess., ¶ 2, U.N. Doc. A/AC.105/C.2/SR.501, (Venezuela) (Apr. 6, 1988); see also U.N. Doc. A/AC.105/C.2/SR.519, supra note 3, at ¶ 3 (statement of the Chilean delegation, arguing that cooperation between developed and developing countries in outer space had been impeded by the lack of a precise definition of what benefits should be shared and the scope of the benefits).

¹⁷ *The 1967 Outer Space Treaty: Thirtieth Anniversary*, supra note 9, at 162.

cues¹⁸ and understood the benefit provision as a general “appeal” limiting the uncontrolled use of outer space but not restricting their right to define how to share the benefits derived from space activities.¹⁹ In contrast, developing countries saw the principle of international cooperation, as it was worded in Article I(1), as a recognition of the developed countries’ “obligation” to concretely share the “resources” obtained from space activities.²⁰

Following the adoption of the Outer Space Treaty, this divergence in the understanding and interpretation of the significance of Article I(1) was evident both in State practice and in the debates in the Legal Subcommittee. The dispute ultimately led to Venezuela’s proposal to introduce a new item on the Legal Subcommittee’s agenda, specifically dedicated to analyzing the “legal aspects related to the application of the principle of the exploration and use of outer space for the benefit and in the interests of all States.”²¹

B. Political Setting

The negotiation, drafting, and adoption of the Declaration on Space Benefits possessed a strong political dimension. Linked to the legal debate described above, the Declaration was rooted in several political developments, such as the increase in space-faring nations (with new countries, such as China and India, acquiring growing space capabilities)²² and an accentuation of the debate between developed and developing nations in the forum of space.²³ In parallel with the developing countries’ attempts to implement a New International Economic Order on

¹⁸ Nandasiri Jasentuliyana, *Ensuring Equal Access to the Benefit of Space Technologies for all Countries*, 10 SPACE POL’Y 7, 9 (1994).

¹⁹ *Id.*; see, e.g., Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., 5th Sess., ¶¶ 4–5, U.N. Doc. A/AC.105/C.2/SR.64, (Italy) and ¶ 6 (France) (Oct. 24, 1966).

²⁰ U.N. Doc. A/AC.105/C.2/SR.521, *supra* note 11, at ¶ 35 (Brazil).

²¹ Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., *Rep. on its 28th Sess., 20 March–7 April 1989*, section 3, U.N. Doc. A/AC.105/430 (Apr. 26, 1989); see also U.N. Doc. A/AC.105/SR.282, *supra* note 2, at ¶ 44 (Venezuela).

²² Marietta Benkö & Kai-Uwe Schrogl, *History and Impact of the 1996 UN Declaration on ‘Space Benefits’*, 13 SPACE POL’Y 139, 139 (1997).

²³ *Id.*

the global scene,²⁴ the debate over the obligations of space-faring nations to share the benefits obtained through space activities with other countries flourished within COPUOS and its Legal Subcommittee.²⁵ Although only a small group of developing countries was demanding new technologies at the time of the conclusion of the Outer Space Treaty, as the membership of COPUOS grew, this distributive conflict between developing and developed countries intensified, especially in the 1970s.²⁶ While developing countries advocated a broad interpretation of the principle of international cooperation and their right to participate in the apportionment of the benefits arising from space activities as essential tools for promoting economic development, developed countries defended the economic value of their efforts and investments by supporting a stricter understanding of the existing legal provisions.²⁷ This tension between different interests, although present at the beginning of the space era,²⁸ intensified once the potential commercial value of space activities became apparent. Consequently, the broader debate addressed issues of the access to geostationary orbit, the potential exploitation of the Moon and other celestial bodies, and the use of data from remote sensing activities.

For instance, when Argentina proposed a draft for a new international agreement relating to the Moon and other celestial bodies in 1970,²⁹ developing countries saw an opportunity to deal with the issue of the equitable distribution of natural re-

²⁴ Declaration on the Establishment of a New International Economic Order, U.N. Doc. A/RES/3201 (S-VI) (May 1, 1974).

²⁵ Edwin W. Paxson III, Note, Sharing the Benefits of Outer Space Exploration: Space Law and Economic Development, 14 MICH. J. INT'L L. 487, 487-88 (1992-1993).

²⁶ Marietta Benkö & Kai-Uwe Schrogl, *Article 1 of the Outer Space Treaty Reconsidered after 30 Years: "Free Use of Outer Space" vs. "Space Benefits,"* in OUTLOOK ON SPACE LAW OVER THE NEXT 30 YEARS 67, 69-70 (Gabriel Lafferranderie & Daphné Crowther eds., 1997).

²⁷ See *id.* at 70.

²⁸ See, e.g., Aldo A. Cocca, *Legal Status of Celestial Bodies and Economic Status of the Celestial Products*, in 7TH PROC. COLLOQ. L. OUTER SPACE 15, 15 (1964).

²⁹ Draft Agreement on the Principles Governing Activities in the Use of the Natural Resources of the Moon and Other Celestial Bodies, U.N. Doc. A/AC.105/C.2/L.71 (June 23, 1970).

sources in space.³⁰ Nonetheless, the drafting process was handicapped by the failure of developing and developed countries to reach an agreement.³¹ The definition of the Moon and other celestial bodies as the “common heritage of mankind”³² and the related equitable sharing by all States of the economic benefits drawn from extra-terrestrial resources³³ became the object of new debate and different interpretations. Under these circumstances, most States did not ratify the Moon Agreement.

The dissatisfaction of developing countries with the outcome of their efforts to ensure their portion of the benefits derived from the commercial use of space technology was likely one of the main driving forces behind the developing countries’ proposal to create a new Legal Subcommittee agenda item. The Chilean delegate to the Legal Subcommittee expressed this sentiment just a few months before the United Nations General Assembly adopted the Principles relating to the Remote Sensing of the Earth from Space.³⁴ He noted, “that, after long years of hard work, the hopes of the developing countries had been dashed, since it had not been possible to reconcile the advances in space technology and the necessary international regulations to cover the uses of outer space.”³⁵

C. Outcome of the Negotiations: the Declaration on Space Benefits

Against this legal and political backdrop, the views of the developing nations had long diverged from those of the developed nations with respect to what they hoped to achieve with the Declaration. The debate intensified in 1991 with the presen-

³⁰ Carl Christol, *International Space Law and the Less Developed Countries*, in 19TH PROC. COLLOQ. L. OUTER SPACE 243, 249 (1976).

³¹ FABIO TRONCHETTI, THE EXPLOITATION OF NATURAL RESOURCES OF THE MOON AND OTHER CELESTIAL BODIES: A PROPOSAL FOR A LEGAL REGIME 56–57 (2009).

³² Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, *opened for signature* Dec. 18, 1979, 1363 U.N.T.S. 21 [hereinafter Moon Agreement].

³³ *Id.* at art. 11(7).

³⁴ Principles Relating to Remote Sensing of Earth from Outer Space, G.A. Res. 41/65, U.N. GAOR, 41st Sess., 95th plen. Mtg., U.N. Doc. A/Res/41/65 (Dec. 3, 1986).

³⁵ Comm. on the Peaceful Uses of Outer Space, Legal Subcomm, 25th Sess., ¶ 9, U.N. Doc. A/AC.105/C.2/SR.439, (Chile) (Apr. 3, 1986).

tation of a working paper that pushed for a redistribution of technologies in a way that gave preferential treatment to developing countries.³⁶ As other authors have noted, in this "regime of forced cooperation[,] . . . States would virtually have lost their freedom in choosing their cooperative partner[s] and in determining the modalities of such cooperation."³⁷

Though the developing nations softened the language of forced cooperation over the next several revisions to this working paper³⁸ and developed countries pointed out that they were already engaged in multilateral and bilateral space projects with developing nations,³⁹ it was not until the presentation of a new working paper by France and Germany in 1995 that there was a significant breakthrough in the negotiation. The Franco-German paper emphasized that nations should be free to determine their level of cooperation, stressed that the manner of cooperation should be appropriate and efficient, and proposed several areas in which this cooperation could be conducted.⁴⁰ In light of these advances, the final text developed from a merger of the two proposals during the Legal Subcommittee session in 1996.⁴¹

³⁶ *Principles regarding international cooperation in the exploration and use of outer space for peaceful purposes*, Working Paper submitted by: Argentina, Brazil, Chile, Mexico, Nigeria, Pakistan, Philippines, Uruguay, and Venezuela, U.N. Doc A/AC.105/C.2/L.182 (Apr. 9, 1991), at Annex.

³⁷ See, e.g., TRONCHETTI, *supra* note 31, at 71; Marietta Benkő & Kai-Uwe Schrogl, 'Space Benefits' – Towards a Useful Framework for International Cooperation, 5 SPACE POL'Y 5, 6 (1995).

³⁸ See *Principles regarding international cooperation in the exploration and use of outer space for peaceful purposes*, Working Paper submitted by: Argentina, Brazil, Chile, Colombia, Mexico, Nigeria, Pakistan, Philippines, Uruguay, and Venezuela, U.N. Doc A/AC.105/C.2/L.182/Rev.1 (Mar. 31, 1993); see also *Principles regarding international cooperation in the exploration and use of outer space for peaceful purposes*, Working Paper submitted by: Brazil, Chile, Colombia, Egypt, Iraq, Mexico, Nigeria, Pakistan, Philippines, Uruguay, and Venezuela, U.N. Doc A/AC.105/C.2/L.182/Rev.2 (Mar. 23, 1995).

³⁹ See, e.g., Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., 30th Sess., ¶ 25, U.N. Doc A/AC.105/C.2/SR.544, (United Kingdom) (Apr. 17, 1995).

⁴⁰ *Declaration on international cooperation in the exploration and use of outer space for the benefit and in the interests of all States, taking into particular account the needs of developing countries*, Working Paper submitted by: Germany and France, U.N. Doc A/AC.105/C.2/L.197 (Mar. 24, 1995).

⁴¹ *Draft Resolution*, Working Paper submitted by: the Chairman of the Working Group, U.N. Doc A/AC.105/C.2/L.202 (Mar. 27, 1996).

In its final form, the Declaration on Space Benefits provides eight paragraphs, whose content can be summarized as follows:

- International cooperation in the exploration of outer space should be conducted for the "benefit and interest of all states . . . and shall be the province of all mankind." Particular account should be taken of the needs of developing countries;
- States are free to choose how they engage in this cooperation, but it should be on an "equitable and mutually acceptable basis";
- States with more advanced space programs should promote international cooperation, especially with countries with incipient space programs;
- Countries engaging in cooperative ventures should determine the mode that is most effective, "including, *inter alia*, governmental and non-governmental; commercial and non-commercial; [and] global, multilateral, regional or bilateral;"
- International cooperation should strive to accomplish three goals: promoting development of space science and its applications, fostering this development in interested states, and facilitating exchanges of technology on a mutually acceptable basis;
- Space applications should be considered when contemplating methods of international development;
- COPUOS should have a strong role in this exchange of information; and
- States should be encouraged to contribute to the UN Programme on Space Applications.

III. LEGAL REVIEW AND ANALYSIS OF THE DECLARATION ON SPACE BENEFITS

A. *Introductory Considerations*

The Declaration on Space Benefits was discussed and adopted during the period that is often called the "second law-making phase" of COPUOS and its Legal Subcommittee. After the adoption of the 1979 Moon Agreement, the creation of treaty-law that had characterized the work of the Legal Subcommittee since the conclusion of the Outer Space Treaty in 1967 ended, and the adoption of declarations of principles by the

United Nations General Assembly became the preferred form for regulating certain issues on which the international community was not yet ready to negotiate legally binding instruments.⁴² Several factors may have played a role in the shift towards a non-binding regulation of space activities.

Especially in areas where there is a significant amount of uncertainty, the use of soft law instruments⁴³ can provide a way for the parties to learn about the impact of their agreements before formalizing them and instituting strict legal consequences.⁴⁴ This is particularly relevant to the field of space, in which there are currently many unknowns and technological and scientific developments continuously change the practical framework in which agreed legal obligations have to be set. Furthermore, “soft law facilitates compromise, and thus mutually beneficial cooperation, between actors with different interests and values, different time horizons and discount rates, and different degrees of power.”⁴⁵ The discussions that ultimately led to the adoption of the Declaration on Space Benefits fit into this scheme, as the final form that was adopted by consensus significantly diminished the obligations that were in earlier versions of the working papers. The developed and developing nations certainly had divergent interests and goals. In this way, the use of a soft law agreement to govern international cooperation in

⁴² Sergio Marchisio, *The Evolutionary Stages of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS)*, 31 J. SPACE L. 219, 231 (2005). Four sets of principles were adopted in this second law-making period, namely: Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting, G.A. Res. 37/92, U.N. GAOR, 37th Sess., 100th plen. Mtg., U.N. Doc. A/RES/37/92 (Dec. 10, 1982); Principles Relating to Remote Sensing of the Earth from Outer Space, *supra* note 34; Principles Relevant to the Use of Nuclear Power Sources in Outer Space, G.A. Res. 47/68, U.N. GAOR, 47th Sess., 85th plen. Mtg., U.N. Doc. A/RES/47/68 (Dec. 14, 1992); and 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, G.A. Res. 51/122, U.N. GAOR, 51st Sess., 83d plen. Mtg., U.N. Doc. A/Res/51/122 (Dec. 13, 1996) [hereinafter Declaration on Space Benefits].

⁴³ For a definition of “soft law,” see, for example, ANTHONY AUST, *HANDBOOK OF INTERNATIONAL LAW* 11 (2nd ed. 2010); WILLIAM R. SLOMANSON, *FUNDAMENTAL PERSPECTIVES ON INTERNATIONAL LAW* 36 (6th ed. 2010).

⁴⁴ Kenneth W. Abbott & Duncan Snidal, *Hard and Soft Law in International Governance*, 54 INT’L ORG. 421, 435 (2000).

⁴⁵ *Id.* at 423.

space served the purpose of facilitating compromise between States with different space capabilities.⁴⁶

On the other hand, the desires of developing countries to establish new legal regulations that would keep pace with technological developments and fill the *lacunae* of existing international legal instruments seem to have been frustrated by the adoption of a non-legally binding Declaration.⁴⁷ However, the legal relevance of the Declaration on Space Benefits cannot be underestimated.

Except for resolutions concerning internal administrative and financial issues, United Nations General Assembly resolutions cannot be considered binding upon Member States and do not create per se norms of public international law.⁴⁸ Even so, considerable debate exists over whether recommendatory General Assembly resolutions can have legal *effects*, especially when they assume the form of solemn declarations and are adopted by consensus. Different opinions exist, both among States and in doctrine, about the effective legal significance of these resolutions.⁴⁹ One view is that these resolutions are merely "recommendations," thus wanting any legal value and having at most moral or political effects.⁵⁰ A second view is that even if these

⁴⁶ *Id.* at 448.

⁴⁷ *Consideration of the Legal aspects related to the Access of States to the benefits derived from the exploration and use of Outer Space*, Working Paper submitted by: the Group of 77 of the Legal Sub-Committee, ¶ 5, U.N. Doc. A/AC.105/C.2/L.162, (Group of 77) (Apr. 1, 1987).

⁴⁸ Some authors, however, consider General Assembly resolutions as a source of international law by themselves. See D. H. N. Johnson, *The Effects of Resolutions of the General Assembly of the United Nations*, 32 BRIT. Y.B. INT'L L. 97, 105 (1955-1956); see also Christopher Joyner, *UN Resolutions and International Law*, 11 CAL. W. INT'L L.J. 445 (1981). The authors of the present Article, nonetheless, do not agree with this view due to its inconsistency with the terms of Article 38(1) of the Statute of the International Court of Justice, which lists as primary sources of international law only international conventions, customs, and general principles of law recognized by civilized nations. Statute of the International Court of Justice, art. 38(1), June 26, 1945, 59 Stat 1031.

⁴⁹ Andrei Terekhov, *UN General Assembly Resolutions and the Outer Space Law*, in 40TH PROC. COLLOQ. L. OUTER SPACE 97, 97 (1997).

⁵⁰ But see F. Blaine Sloan, *The Binding Force of a 'Recommendation' of the General Assembly of the United Nations*, 25 BRIT. Y.B. INT'L L. 1, 1 (1948) (pointing out that some scholars take the extreme position that "no resolution can create either a legal or a moral obligation").

resolutions lack an element of "true obligation," they may still maintain a certain "legal relevance."⁵¹

The perspective that a General Assembly resolution carries some legal effects is generally supported by the jurisprudence of the International Court of Justice. Although it did not specifically indicate the reasons motivating its conclusions, the Court has acknowledged the legal value of General Assembly resolutions in the development of international law.⁵² In particular, in the advisory opinion on the *International Status of South-West Africa*,⁵³ the Court observed that the United Nations General Assembly Declaration on the Granting of Independence to Colonial Countries and Peoples⁵⁴ contributed to and was part of the "development of law through the Charter of the United Nations and by way of customary law."⁵⁵ Hence, the Court seems to have recognized the potential legal effects of General Assembly resolutions, at least as a means of interpretation of treaty law or as a factor contributing to the consolidation or emergence of customary rules.⁵⁶

Although not legally binding, General Assembly resolutions may play a significant role in the development of international law. The International Court of Justice, when deciding how best to decide disputes in accordance with international law, looks to customs, treaties,⁵⁷ and "general principles of law recognized by

⁵¹ Johnson, *supra* note 48, at 117.

⁵² Western Sahara, Advisory Opinion, 1975 I.C.J. 12, ¶¶ 52–59 (Oct. 16) (referring, for example, to the Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations).

⁵³ Legal Consequences for States of the Continued Presence of South Africa in Namibia (South-West Africa) Notwithstanding Security Council Resolution 276 (1970), Advisory Opinion, 1971 I.C.J. 16, 31 (June 21).

⁵⁴ U.N. Doc. A/RES/15/1514 (Dec. 14, 1960).

⁵⁵ See *supra* note 53, at 31.

⁵⁶ Stephen M. Schwabel, *The Effect of Resolutions of the U.N. General Assembly on Customary International Law*, 73 PROC. OF THE AM. SOC'Y OF INT'L L. 301, 303 (1979).

⁵⁷ See, e.g., Faustino Pocar, *The Normative Role of UNCOPUOS*, in: OUTLOOK ON SPACE LAW OVER THE NEXT 30 YEARS 415, 417 (Gabriel Lafferranderie & Daphné Crowther eds., 1997); see also Johnson, *supra* note 48, at 116 (arguing that General Assembly resolutions, although not sources of international law, display their "legal effect" as a means of determining the rules of international law).

civilized nations.”⁵⁸ Non-binding resolutions can help clarify these sources of international law.

As far as custom is concerned, General Assembly resolutions might help establish obligatory rules by declaring and specifying pre-existing customary norms or by contributing, where followed by consistent State practice or expressions of *opinio juris*, to the establishment of new customary rules.⁵⁹ Additionally, under certain conditions, these resolutions could be regarded as a valuable means of interpretation of pre-existing (or even future) treaty provisions, insofar as they contribute to the clarification of rights and obligations expressed in conventions.⁶⁰ Finally, declaratory resolutions may create certain legitimate expectations that States should respect under the general principle of good faith.

The fact that the Declaration on Space Benefits was adopted as a General Assembly resolution means that we must consider its legal assessment within the framework described above. For this reason, and recognizing that General Assembly resolutions vary significantly in their scope and content, each of the possible legal hooks requires a thorough analysis to determine whether and to what extent it is of any relevance.

B. Principles of the Declaration on Space Benefits as International Custom

Article 38(1)(b) of the Statute of the International Court of Justice identifies a primary source of international law in “international custom, as evidence of a general practice accepted by law.”⁶¹ Two elements traditionally constitute customary law: State practice and *opinio juris*, the latter denoting a State’s subjective belief that its conduct is prescribed as a legal obligation.⁶²

⁵⁸ Statute of the International Court of Justice, *supra* note 48, at art. 38(1)(a)-(c).

⁵⁹ Pocar, *supra* note 57, at 417; *see also* Marchisio, *supra* note 42, at 332.

⁶⁰ Pocar, *supra* note 57, at 420.

⁶¹ Statute of the International Court of Justice, *supra* note 48, at art. 38(1)(b).

⁶² *See generally* Tullio Treves, *Customary International Law*, in MAX PLANCK ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW, ¶¶ 7–11, available at http://www.mpepil.com/subscriber_article?id=/epil/entries/law-9780199231690-e1393 (last visited May 12, 2012); Niels Petersen, *Customary Law without Customs? Rules*,

Consequently, even though the Declaration on Space Benefits has no formal legal power as a whole, certain principles may become vested with legal authority *erga omnes*, where they are supported by continuous and consistent State practice and where States regard them as constituting legal duties.

From this perspective, however, it is difficult to assess whether the principles of the Declaration reflect the actual commitment of the Parties to be bound by them, due to the conceptual tension of attempting to attribute legal effects to provisions that States deliberately chose to include in non-binding instruments.⁶³ Cutting in favor of the potential customary law value of the Declaration, though, is not only its adoption by consensus in COPUOS and unanimously in the General Assembly,⁶⁴ but also the presence of the term “declaration” in its title.

Manfred Lachs, former Judge of the International Court of Justice and Chairman of the COPUOS Legal Subcommittee, in referring to the 1963 Declaration, emphasized States’ commitment to abide by General Assembly declarations by stating: “one cannot underestimate the value of these principles once they are adopted in a solemn Declaration by the General Assembly of the United Nations.”⁶⁵ Similarly, Professor Kopal recognizes that declarations of principles adopted by the Legal Subcommittee could be regarded as expressions of “a legal conviction of all members of the world organization, or an overwhelming majority thereof, concerning their particular subject matter.”⁶⁶

Principles and the Role of State Practice in International Norm Creation, 23 AM. U. INT’L REV. 275, 280 (2008).

⁶³ Christine Chinkin, *The Challenge of Soft Law: Development and Change in International Law*, 38 INT’L & COMP. L.Q. 850, 856 (1989).

⁶⁴ But see Schwebel, *supra* note 56, at 302 (expressing the view that the consensus requirement loses any practical value due to the fact that it is generally moved by political reasons and not by the real desire of States to abide by the principles expressed).

⁶⁵ Comm. on the Peaceful Uses of Outer Space, 5th Sess., U.N. Doc. A/AC.105/PV.24, 4–5 (Poland) (Nov. 22, 1963).

⁶⁶ Vladimír Kopal, *The Role of UN Declarations of Principles in the Progressive Development of Space Law*, 16 J. SPACE L. 5, 19 (1988). This was particularly true with regard to the 1963 Declaration, for which the terminology “Declaration” was used and the principles were explicitly referred to as “legal.” *Id.* at 17.

According to the 1962 "Memorandum of the United Nations Office of Legal Affairs on the Use of the Terms 'Declaration' and 'Recommendation'":

In United Nations practice, a "declaration" is a formal and solemn instrument, suitable for rare occasions when principles of great and lasting importance are being enunciated. . . .

. . . In view of the greater solemnity and significance of a "declaration," it may be considered to impart, on behalf of the organ adopting it, a strong expectation that Members of the international community will abide by it. Consequently, in so far as the expectation is gradually justified by State practice, a declaration may by custom become recognized as laying down binding rules upon States.⁶⁷

It is clear from the above quotation that a General Assembly Declaration does not act per se as a source of custom. Nonetheless, due to its solemnity and significance, it constitutes strong evidence of the commitment of States to act according to its content. If this *opinio* is supported by consistent State practice, the principles embodied in the Declaration might become binding obligations by means of customary law. Consequently, the principles contained in a General Assembly Declaration can assume legal relevance by declaring or consolidating pre-existing customary rules or by representing emerging *opinio juris* that, where supported by continuous and coherent State practice,⁶⁸ can lead to the formation of new customs.⁶⁹

⁶⁷ 18 U.N. ESCOR, ¶¶ 3-4, U.N. Doc. E/CN.4/L.610 (1962), (quoted in Bin Cheng, *The United Nations and Outer Space*, in *STUDIES IN INTERNATIONAL SPACE LAW* 91, 133 (1997)).

⁶⁸ Some authors propose that, in the new institutionalized framework of international relations, customary rules would directly descend from States' *opinio juris* as embodied in General Assembly resolutions, thus obviating any need for further State practice ("instant custom" doctrine). See Joyner, *supra* note 48, at 457. This understanding appears not only to conflict with the view expressed by the United Nations Office of Legal Affairs, but also raises questions about States' deliberate choice to use a non-binding instrument and the General Assembly's lack of legislative powers. In addition, despite the fact that the instant customary law doctrine was first proposed by Professor Bin Cheng with reference to the earliest resolutions on outer space, Cheng, *The United Nations and Outer Space*, *supra* note 67, the International Court of Justice has been reluctant to adhere to it. Indeed, even where the Court practically concentrated its analysis on the subjective element of *opinio juris*, as in the *Nicaragua Case*, Military

As to the first point, some of the principles embodied in the Declaration on Space Benefits seem to merely restate pre-existing treaty law and confirm previous State practice. For instance, Paragraph 1 recognizes that:

International cooperation in the exploration and use of outer space . . . shall be conducted in accordance with the provisions of international law . . . [and] shall be carried out for the benefit and in the interest of all States, irrespective of their degree of economic, social or scientific and technological development, and shall be the province of all mankind.

Without repeating the debate over the moral or legal value of such general provisions and the difficulties relating to their enforcement, it could be argued that a restatement of principles, where so broadly formulated, might be regarded as consolidating their customary law nature.⁷⁰ Some evidence to support this argument rests on the inclusion of similar provisions in the Outer Space Treaty and their consequent application to multilateral and bilateral relations.⁷¹ The lack of debate during the negotiating process leading to the adoption of the Declaration itself constitutes further evidence. In that context, while considerable discussion took place as to the practical content and application of these principles, no State questioned their general validity.

and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.), Merits, 1986 I.C.J. 14, 101 (June 27), it formally reiterated the traditionally two-fold approach of international customary law as constituted by both State practice and *opinio juris*, *id.* at 183, and recognized that a General Assembly declaration only indicates a State's *opinio juris* as to the existence of customary international law on the subject, *id.* at 191 (referring to the Declaration on Principles of International Law and Co-operation among States in accordance with the Charter of the United Nations (G.A. Res. 2625 (XXV))). Based on the above considerations, the Declaration on Space Benefits has to be regarded as a solemn expression of States' commitment to abide by its principles. Nonetheless, these principles can acquire a legal value by means of custom only to the extent that they declare and thus consolidate pre-existing customary rules or express a general *opinio juris* followed by and crystallized in subsequent State practice.

⁶⁹ Chinkin, *supra* note 63, at 857.

⁷⁰ TRONCHETTI, *supra* note 31, at 26.

⁷¹ See, e.g., Agreement between the Government of Australia and the Government of the Russian Federation on cooperation in the field of the exploration and use of outer space for peaceful purposes, pmbl., May 23, 2001, 2438 U.N.T.S. 43916.

Similar considerations may also apply to the Declaration's principle that cooperation should take into particular account the needs of developing countries.⁷² Looking at related previous State practice and *opinio juris*, we could argue that the consensus reached on the inclusion of this provision in the Declaration on Space Benefits cemented its pre-existing general acceptance. Article 11(7) of the Moon Agreement, foreseeing the potential establishment of an international regime to govern the exploitation of the natural resources of the Moon and other celestial bodies, states that "the interest and needs of the developing countries . . . shall be given special consideration." Regardless of the small number of nations that are party to this Treaty,⁷³ the relevance of this provision lies in the fact that the Moon Agreement was adopted by consensus within COPUOS. In addition, the principle that the needs of developing countries should be given special consideration is also contained in Principles 1 and 6 of the Direct Television Broadcasting Principles and in Principle II of the Remote Sensing Principles. Although intrinsically lacking binding force, these instruments, in the same way as the Declaration on Space Benefits, can constitute evidence of the general perception and practice of a given principle of law, thus acquiring binding effects by means of custom.

Broadening our perspective slightly, it is worth noting that the principle that international cooperation in space activities should take into particular account the needs of developing countries could also be read as a specific application of a more general international legal obligation to the space sector. This concept is expressed in international instruments such as United Nations General Assembly resolutions 1803 (XVII) ("Permanent Sovereignty over Natural Resources"),⁷⁴ 3384 (XXX) ("Declaration on the Use of Scientific and Technological Progress in the Interest of Peace and for the Benefit of all Man-

⁷² Declaration on Space Benefits, *supra* note 42, at ¶¶ 1 and 3.

⁷³ Thirteen, as of this writing in July 2012. See Treaty Status Index, UN OFFICE FOR OUTER SPACE AFFAIRS, <http://www.oosa.unvienna.org/oosatdb/showTreatySignatures.do> (last visited May 12, 2012).

⁷⁴ G.A. Res. 1803 (XVII), U.N. GAOR, 17th Sess., Supp. No. 17, U.N. Doc. A/5217, at pmbl. (Dec. 14, 1962).

kind")⁷⁵ and 41/128 ("Declaration on the Right to Development").⁷⁶ While each of these is a non-binding instrument, when considered together, they might be indicative of the customary law nature and the binding force of certain obligations.

Thus, the inclusion in the Declaration on Space Benefits of the principles that recognize the need to carry on space activities for the benefit of all mankind and to take into particular account the needs of developing countries in this respect can substantiate the existence of customary law principles, as supported by previous State practice and other evidence of *opinio juris*.

The scenario differs, though, when analyzing the other principles of the Declaration on Space Benefits, in particular Paragraphs 2, 3, and 4. Read together, these paragraphs state the absence of any mandatory form of international cooperation and assert the need to develop cooperative ventures that take into consideration both the interests of developed and developing countries. Putting aside any consideration of the practical significance and application of these provisions, we must determine whether the dual right and duty of space powers to determine their level of cooperation and to set equitable contractual terms for this cooperation can be regarded as expressing general customary law principles. One cannot deny that international cooperation in space activities has generally developed according to these principles since the beginning of the space era. Despite this expression of state practice, however, when considering earlier expressions of *opinio juris*, there was no clear manifestation of the States' unanimous recognition of the binding nature of these principles. On the contrary, as already highlighted, the controversy over the legal strength and specific terms of guidelines for international cooperation in space activities was ultimately the *raison d'être* behind the negotiations of the Declaration on Space Benefits.

⁷⁵ G.A. Res. 3384 (XXX) U.N. GAOR, 30th Sess., Supp. No. 34, U.N. Doc. A/10034, at pmbl. and ¶ 4 (Nov. 10, 1975).

⁷⁶ G.A. Res. 41/128, U.N. GAOR, 41st Sess., Supp. No. 53, U.N. Doc. A/RES/41/128, at pmbl. and art. 4(2) (Dec. 4, 1986).

Nonetheless, the fact that these principles do not declare or consolidate pre-existing customary rules does not prevent them from becoming expressions of new *opinio juris*, agreed upon by both developed and developing countries. Where followed by consistent State practice, they would have already come to define new customary rules, or may do so in the future. This continuous State practice by the international community would demonstrate the shared perception that certain provisions of the Declaration fill an international normative gap or supply missing legal needs,⁷⁷ thus attaching the legal nature of international customs to these principles.

An examination of State practice following the adoption of the Declaration on Space Benefits indicates consistency between States' actual conduct and the principles enshrined in the Declaration. For example, the development of international cooperation in space activities on an equitable and mutually acceptable basis has been fostered through various bilateral agreements.⁷⁸ This principle has also been affirmed in multilateral contexts such as UNISPACE III,⁷⁹ during which States acknowledged the advantages of working together for common goals and identified bilateral and regional agreements, program-specific agreements, and transnational commercial activities as mechanisms to follow in order to enhance international cooperation in space.⁸⁰

Similarly, paragraph 7 of the Declaration on Space Benefits, which advances the idea that the role of COPUOS should be strengthened as a forum for sharing information on space activities, was applied practically when the Legal Subcommittee

⁷⁷ See Joyner, *supra* note 48, at 463.

⁷⁸ See, e.g., Agreement between the Government of the Federative Republic of Brazil and the Government of Ukraine on technology safeguards associated with participation of Ukraine in launches from the Alcantara Launch Centre, pmbl., Jan. 16, 2002, 2298 U.N.T.S. 40946.

⁷⁹ Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), held in Vienna from 19 to 30 July 1999, U.N. Doc. A/CONF.184/6 [hereinafter UNISPACE III]; see, e.g., Report on the United Nations/Brazil Workshop on Space Law on the theme "Disseminating and developing international and national space law: the Latin America and Caribbean perspective," (Rio de Janeiro, Brazil, Nov. 22-25, 2004), ¶ 27, U.N. Doc. A/AC.105/847, (Feb. 8, 2005).

⁸⁰ UNISPACE III, *supra* note 79, at 19.

agreed to add new agenda items like “General exchange of information on national legislation relevant to the peaceful exploration and use of outer space”⁸¹ or “Information on the activities of international intergovernmental and non-governmental organization relating to space law.”⁸²

More generally, COPUOS Member States have further reiterated their acceptance and perception of the value of the general principles contained in the Declaration as part of the discussion within the Committee.⁸³ This is evident, for example, in the 2011 COPUOS “Report on international cooperation in promoting the use of space-derived geospatial data for sustainable development,” according to which, “[i]n building up national infrastructure to use space-derived geospatial data for sustainable development, States should act in accordance with . . . the Declaration [on Space Benefits].”⁸⁴

Fifteen years have elapsed since the adoption of the Declaration on Space Benefits and subsequent State practice has shown a general observance of the principles embodied in the instrument. Nonetheless, considering the unavoidable arbitrariness of the concepts of “state practice” and “customary law,” it is too early to affirm with certainty that some of these principles can be regarded as international customary rules, especially in the absence of a decision by an international tribunal or their subsequent codification into a treaty.

⁸¹ This agenda item was agreed upon by COPUOS at its 46th session and subsequently endorsed by the General Assembly in its resolution A/RES/62/217 (Dec. 22, 2007). See, e.g., Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., *Rep. on its 47th Sess., 31 March–11 April 2008*, ¶ 131, U.N. Doc. A/AC.105/917 (Apr. 18, 2008).

⁸² This agenda item was agreed upon by COPUOS at its 42nd session and subsequently endorsed by the General Assembly in its resolution A/RES/45/77 (Dec. 12, 1990). See e.g., Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., *Rep. on its 39th Sess., 27 March–7 April 2000*, ¶ 27, U.N. Doc. A/AC.105/738 (Apr. 20, 2000).

⁸³ See, e.g., Draft Report of COPUOS on the implementation and recommendations of UNISPACE III, ¶ 9, U.N. Doc. A/AC.105/L.255 (Apr. 13, 2004).

⁸⁴ *Report on international cooperation in promoting the use of space-derived geospatial data for sustainable development*, ¶ 36, U.N. Doc. A/AC.105/973 (Mar. 21, 2011).

C. The Declaration on Space Benefits as an Authoritative Means of Interpretation of Pre-existing Treaty Law

The legal relevance of the Declaration on Space Benefits might also rest on its use as an authoritative means of interpreting Article I(1) of the Outer Space Treaty, whose terms are expressly recalled in the title of the Declaration.⁸⁵

According to Article 31(3) of the Vienna Convention on the Law of Treaties,⁸⁶ whose provisions apply *erga omnes* and retroactively by means of their customary law nature,⁸⁷ when interpreting a Treaty, one should consider the context along with “(a) any subsequent agreement between the parties regarding the interpretation of the treaties or the application of its provisions; [and] (b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation.”

The term “agreement” in Article 31(3)(a) does not limit the applicability of the provision to subsequently ratified treaties, but extends its scope to informal agreements such as those recorded in the minutes of a meeting or a press release.⁸⁸ According to Judge Weeramantry’s dissenting opinion in the *Kasikili/Sedudu Case*,⁸⁹ the mere “understanding” between the parties would also qualify as an “agreement” within the meaning of Article 31(3)(a).⁹⁰ Regardless of whether one agrees with this last view, however, it is evident that a General Assembly resolution, especially where unanimously adopted by States, can fit within the broad interpretation generally attributed to the word “agreement” in Article 31(3)(a). In addition, while some authors believe that only acts performed with the intent to es-

⁸⁵ TRONCHETTI, *supra* note 31, at 62.

⁸⁶ The Vienna Convention on the Law of Treaties, May 23 1969, 1155 U.N.T.S. 331, 8 I.L.M. 679.

⁸⁷ See, e.g., Arbitral Award of 31 July 1989 (Guinea-Bissau v. Sen.), Judgment, 1991 I.C.J. 53, ¶ 48 (Nov. 12); Gab ikovo-Nagymaros Project (Hung. v. Slov.), Judgment, 1997 I.C.J. 7, ¶ 46 (Sept. 25).

⁸⁸ Hazel Fox, *Article 31(3)(a) and (b) of the Vienna Convention and the Kasikili/Sedudu Island Case*, in ISSUES OF TREATY INTERPRETATION AND THE VIENNA CONVENTION ON THE LAW OF TREATIES: 30 YEARS ON, 59, 63 (Malgosia Fitzmaurice, Olufemi Elias, and Panos Merkouris, eds., 2010).

⁸⁹ *Kasikili/Sedudu Island* (Bots. v. Namib.), Judgment, 1999 I.C.J. 1045 (Dec. 13).

⁹⁰ *Kasikili/Sedudu Island* (dissenting opinion of Judge Weeramantry), at ¶ 24.

establish a legal relationship could qualify as an “agreement” under Article 31(3)(a)⁹¹ – thus indirectly excluding non-binding General Assembly resolutions from the scope of this provision – this view clashes both with the use of the general term “agreement” in the text of the Convention and with the jurisprudence of international tribunals.⁹²

The Declaration on Space Benefits could also be regarded as “subsequent state practice” under the terms of Article 31(3)(b).⁹³ The never-ending doctrinal debate over the exact scope of State practice in international law notwithstanding, the majority of legal scholars see not only actual conduct, but also “paper practice” (e.g., declarations or written agreements), as state practice.⁹⁴ Furthermore, even if the term “practice” generally implies that a State’s conduct has occurred with a certain frequency,⁹⁵ there is nothing that formally excludes a State’s declaration, a one-time occurrence, from being relevant as State practice. This is especially true, considering that the language of Article 31(3)(b) implies that the reiteration of certain conduct only functions to demonstrate that the parties agree to a given treaty interpretation.⁹⁶ Consequently, where a one-time action expresses the agreement of the parties, as in the case of the Declaration on Space Benefits, this conduct would qualify as “state practice” under Article 31(3)(b). Nevertheless, even if one rejects the latter argument and accepts that State practice exists only as a sum of consistent and continuous acts, the adoption of the Declaration on Space Benefits retains indicative value of exist-

⁹¹ ULF LINDERFALK, ON THE INTERPRETATION OF TREATIES: THE MODERN INTERNATIONAL LAW AS EXPRESSED IN THE 1969 VIENNA CONVENTION ON THE LAW OF TREATIES 162 (2007); *see also* MUSTAFA KAMIL YASSEEN, L’INTERPRÉTATION DES TRAITÉS D’APRÈS LA CONVENTION DE VIENNE SUR LE DROIT DES TRAITÉS [TREATY INTERPRETATION ACCORDING TO THE VIENNA CONVENTION ON THE LAW OF TREATIES] 44–45 (1976).

⁹² *See, e.g.*, United States-United Kingdom Arbitration Concerning Heathrow Airport Users Charges, Award of 30 November 1993, 102 I.L.R. 216; The Kingdom of Belgium, The French Republic, The Swiss Confederation, The United Kingdom and the United States v. The Federal Republic of Germany, Award of 16 May 1980 (Young Loan Case), 59 I.L.R. 495 (*quoted in* LINDERFALK, *supra* note 91, at 171–73).

⁹³ Pocar, *supra* note 57, at 419.

⁹⁴ Petersen, *supra* note 62, at 278.

⁹⁵ MARK E. VILLIGER, COMMENTARY ON THE 1969 CONVENTION ON LAW OF TREATIES 431 (2009).

⁹⁶ LINDERFALK, *supra* note 91, at 166.

ing State practice with respect to a certain interpretation of a treaty provision.

There are, however, two possible objections to the applicability of Article 31(3)(a) and (b) to the case at hand.

First, the general rules of interpretation set out in Article 31(3) “can only be invoked if all the parties of the treaty have been involved in the interpretation of a treaty provision or if one or more of the parties have been involved by means of an instrument or subsequent state practice to which the other parties have agreed.”⁹⁷ The Declaration on Space Benefits was negotiated and adopted by consensus in COPUOS. The fact that the number of States that were (and still are) members of COPUOS is far less than the number of States that have ratified the Outer Space Treaty⁹⁸ might cast doubt on the validity of using the Declaration as an authoritative interpretation of Article I of the Outer Space Treaty. Nonetheless, the Declaration on Space Benefits was unanimously adopted as a Resolution of the General Assembly; hence, all the Parties of the Outer Space Treaty (all of whom are Members of the General Assembly) indirectly consented to it. Accordingly, the Declaration on Space Benefits would express the agreement of all the Parties to the Outer Space Treaty, regardless of the fact that only some of its Parties were part of its negotiation and adoption in COPUOS.

Second, there may be doubts as to whether the Declaration on Space Benefits can be viewed as an agreement “*regarding*” the interpretation of the Outer Space Treaty or as State practice “*in the application*” of this Treaty. For an agreement to be “*regarding* the interpretation of a treaty,” it is necessary that its purpose is to clarify the meaning of a treaty or to set guidelines for its application.⁹⁹ State practice “*in the application* of [a] treaty” refers instead to any measure taken by a State on the basis of the interpreted treaty.¹⁰⁰ Is the interpretation of Article I(1) of the Outer Space Treaty the purpose for which the Decla-

⁹⁷ VILLIGER, *supra* note 95, at 429.

⁹⁸ As of this writing in July 2012, COPUOS has 71 Member States and the Outer Space Treaty has 101 States Parties and 26 Signatories. For up-to-date information on treaty status, see Treaty Status Index, *supra* note 73.

⁹⁹ LINDERFALK, *supra* note 91, at 162.

¹⁰⁰ *Id.*

ration on Space Benefits was negotiated and adopted? Can this Declaration be regarded as a measure taken by States on the basis of the Outer Space Treaty? That the wording of Article I(1) of the Outer Space Treaty appears in both the title and the first operative paragraph of the Declaration on Space Benefits supports affirmative answers to these questions. In addition, as previously noted, it was the uncertainty over the vague wording of Article I(1) of the Outer Space Treaty that led developing countries to insist on the inclusion of a new item on the agenda of the Legal Subcommittee and that dictated the terms of the negotiations leading to the adoption of the Declaration. Furthermore, the strong link between the Declaration on Space Benefits and the need to clarify the exact meaning of Article I(1) of the Outer State Treaty is further confirmed by the fact that, as a first step in the drafting process, States were asked to report on any national legal frameworks related to the application of this provision.¹⁰¹ Nonetheless, the question of whether such elements are enough to describe the Declaration on Space Benefits as an agreement whose main purpose is the interpretation of Article I of the Outer Space Treaty or as an action taken as a result of the Treaty is at least debatable, especially considering that no specific mention of this (agreed) intent appears either in the text of the Declaration or in its drafting records.

D. The Declaration on Space Benefits and the Duty of States to Act in Good Faith

The Declaration on Space Benefits might acquire legal relevance because when States adopted it, they created a legitimate expectation in the minds of other Parties that they would act in good faith. Despite the debate over the nature and effect of good faith in international law, it is evident that if this principle is considered a source of law,¹⁰² a State's conduct can acquire legal significance from the expectation that the State would act in

¹⁰¹ U.N. Doc. A/AC.105/C.2/SR.519, *supra* note 3, at ¶ 1.

¹⁰² In particular, good faith would fall under the terms of "general principles of law recognized by civil nations." Statute of the International Court of Justice, *supra* note 48, at art. 38(1)(c).

conformity in the future. It has been pointed out that good faith in its objective sense "is a powerful source of obligations, attaching *ex lege* certain consequences to certain courses of conduct."¹⁰³ These obligations arise because good faith requires that when one acts in a certain way so as to create a reasonable expectation in another party, that party should be able to rely on its expectation, regardless of the actor's real intent.¹⁰⁴ Historically, this interpretation seems supported by the *bona fides* principle's roots in natural law, which was conceived to induce States to consider the legitimate expectation of other international actors.¹⁰⁵

If this acceptance of good faith is applied to the case at hand, a State's acceptance of the Declaration on Space Benefits could be regarded as carrying legal consequences regardless of its intent to be legally bound by it. As a result of the expectation created in the international community following the adoption of the Declaration, States would be required to respect the principles of international cooperation in space activities to which they had agreed. The reliance generated would be stronger for COPUOS Member States, due to their involvement in the negotiation and adoption of the Declaration within the Committee. On the other hand, it would not be limited to COPUOS Member States because of the Declaration's later unanimous adoption by the General Assembly. In addition, this expectation would apply both to the current and future space powers and, according to the terms of the Declaration, implies compliance with certain principles of international cooperation by both developed and developing countries.

¹⁰³ Robert Kolb, *Principles as Sources of International Law (With Special Reference to Good Faith)*, 53 NETH. INT'L L.R. 1, 19 (2006).

¹⁰⁴ See *id.* at 17.

¹⁰⁵ Anthony D'Amato, *Good Faith*, in *ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW* 599, 600 (Rüdiger Wolfrum ed., 1992).

The idea of good faith as source of international law seems to be endorsed by the decision of the International Court of Justice in the *Nuclear Tests Case*.¹⁰⁶ According to the Court:

Trust and confidence are inherent to international co-operation, in particular in an age when this co-operation in many fields is becoming increasingly essential. Just as the very rule of *pacta sunt servanda* in the law of treaties is based on good faith, so also is the binding character of an international obligation assumed by unilateral obligation.¹⁰⁷

By using the principle of good faith to attribute legal effects to a State's unilateral declaration,¹⁰⁸ the Court set the basis not only for the recognition of the normative role of this principle, but also for its extended application to the mere unilateral pronouncements of States.¹⁰⁹ Logically then, a formal multilateral Declaration can, in the same way or even more strongly, assume legal relevance through the application of the good faith principle.

Some authors, however, have contested the normative role of the good faith principle in international law.¹¹⁰ In general, these scholars see good faith not as a source of international law, but rather only as a moral guiding principle in the application of existing legal rules.¹¹¹ They base their view on the word-

¹⁰⁶ *Nuclear Tests Case* (N.Z. v. Fr.), 1974 I.C.J. 457 (Dec. 20); cf. Kolb, *supra* note 103, at 21–23 (arguing that the idea of good faith as a source of law also informed other judgments of the International Court of Justice, for example, *Fisheries Case* (U.K. v. Nor.), Judgment, 1951 I.C.J. 116 (Dec. 18) and *Temple of Preah Vihear* (Cambodia v. Thai.), Merits, Judgment, 1962 I.C.J. 6 (June 15)).

¹⁰⁷ *Nuclear Tests Case*, *supra* note 106, at 473.

¹⁰⁸ D'Amato, *supra* note 105, at 601.

¹⁰⁹ *Id.*

¹¹⁰ MALCOLM SHAW, *INTERNATIONAL LAW* 98 (2003); see also Andrew Mitchell, *Good Faith in WTO Dispute Settlement*, 7 MELB. J. INT'L L. 339, 345 n.44 (2006) (quoting Disa Sim, *The Scope and Application of Good Faith in the Vienna Convention on Contracts for the International Sale of Goods*, in *REVIEW OF THE CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS (CISG) 2002–2003* 19, 61 (PACE INT'L L. REV. ed., 2004), available at <http://www.cisg.law.pace.edu/cisg/biblio/sim1.html>).

¹¹¹ Cf. Sim, *supra* note 110 (arguing that "[o]ne should thus treat good faith as a moral aspiration, but not as a substantive legal doctrine"); see also SHAW, *supra* note 110, at 98.

ing of Article 2(2) of the United Nations Charter,¹¹² the Declaration on Principles of International Law Concerning Friendly Relations and Co-operation among States,¹¹³ and the jurisprudence of the International Court of Justice.¹¹⁴ Each of these sources refers to good faith as the basic principle informing States' compliance with *existing* legal obligations. Contrary to the view quoted above, the *Nuclear Tests Case* could, in theory, be used to support this argument, when one recognizes that the Court looked first to the intentions of the declaring State¹¹⁵ when it determined the legal value of a unilateral declaration. In addition, it acknowledged that good faith is a "basic principle governing the *creation and performance of legal obligations, whatever their source*" (emphasis added),¹¹⁶ thereby appearing to implicitly exempt good faith as one of these sources. In practice, however, the Court ultimately used the good faith principle as a foundation on which a unilateral declaration can assume legal relevance. Thus, it seems that the Court further expanded the scope of good faith in international law, not only encompassing a general principle governing the application of existing legal obligations, but also including its role as a source of law.

In any event, even if one denies that the good faith principle acts as a source of international law, a case can be made that it endows General Assembly Resolutions with a "quasi-legal" status. Indeed, even if a General Assembly Resolution does not by itself legally oblige compliance, good faith forms the basis for a general duty of States to act in accordance with it. This difference is only one "of degree rather than of kind."¹¹⁷ Consequently,

¹¹² U.N. Charter art. 2 para. 2 (stating "All Members, in order to ensure to all of them the rights and benefits resulting from membership, *shall fulfil in good faith the obligations assumed by them in accordance with the present Charter*" (emphasis added)).

¹¹³ Principle 1, according to which all States shall, among other duties, "*comply in good faith with their obligations* under the generally recognized principles and rules of international law with respect to the maintenance of international peace and security, and shall endeavour to make the United Nations security system based on the Charter more effective" (emphasis added).

¹¹⁴ See, e.g., *Border and Trans-border Armed Actions (Nicar. v. Hond.)*, Jurisdiction and Admissibility, Judgement, 1988 I.C.J. 69, 105-06 (Dec. 20); see generally, SHAW, *supra* note 110, at 98.

¹¹⁵ *Nuclear Tests Case*, *supra* note 106, at 472.

¹¹⁶ *Id.* at 473.

¹¹⁷ Johnson, *supra* note 48, at 101.

according to the terms of the Declaration on Space Benefits, a quasi-legal duty to engage in international cooperation in space activities would rest on the adopting States by virtue of good faith.

E. Shortcomings

Despite the possible legal effects that one could attribute to the Declaration on Space Benefits by means of custom, good faith, or as authoritative means of interpretation of pre-existing treaty law, the vagueness of its wording and the solely "moral" dimension of most of its provisions prevent this instrument from having *practical* legal value. Its language encourages States to adopt certain conduct, rather than declaring mandatory rules.¹¹⁸ This is confirmed by the fact that this is a "should," rather than a "shall" declaration.¹¹⁹ The principles expressed are "general and reflect desiderata,"¹²⁰ defining "more rights, than [they do] obligations."¹²¹ Furthermore, even when these principles present a certain mandatory dimension, essential expressions such as "on an equitable and mutually accepted basis" and "in the modes that are considered most effective and appropriate by the concerned States" are not defined. On top of that and in addition to the fact that no enforcement mechanism is provided for in the text of the Declaration, its imprecise language and its vague content impede any practical enforcement of the provisions.

Under these circumstances, it is evident that any attempt to affirm the potential role of the Declaration on Space Benefits in consolidating pre-existing customs or leading to the formation of new customary law stalls due to the impossibility of identifying the exact content of the related obligations.

¹¹⁸ Jitendra S. Thaker, *The Development of the Outer Space Benefits Declaration*, 22 ANNALS AIR & SPACE L. 537, 555 (1997).

¹¹⁹ See H. A. Wassenbergh, *The International Regulation of an Equitable Utilization of Natural Outer Space Resources*, in 39TH PROC. COLLOQ. L. OUTER SPACE 138, 139 (1996).

¹²⁰ *Id.*

¹²¹ Thaker, *supra* note 118, at 555.

Similarly, when looking at the Declaration as an authoritative means of interpretation of Article I(1) of the Outer Space Treaty, there is still a question as to whether, and to what extent, this new instrument has clearly interpreted the vague terminology of the "benefit of mankind provision," thus ending the controversy over its moral or legal nature and the extent of its scope. Although it is apparent from the text of the Declaration that cooperation should be on an "equitable and mutually acceptable basis,"¹²² and therefore that any interpretation of Article I(1) of the Outer Space Treaty that is based on a concrete sharing of economic benefits needs to be rejected, no further *clear* indication is given as to the terms by which States should determine their participation in international cooperation in the exploration and use of outer space.

The same reasoning applies when the legal or "quasi-legal" value of the Declaration comes from the general duty of States to act in good faith, to satisfy the legitimate expectations created by their adoption of the Declaration. Again, the Declaration does not possess the clarity sufficient to inform States of their precise legal duties. Thus, if States adhere to the principles of the Declaration, this observance appears to be mainly based on their moral and political convictions.

Nonetheless, despite its lack of clear legal obligations, there is nothing to suggest that the Declaration on Space Benefits has failed to contribute to the development of international space law or that it has been an inadequate instrument in regulating international space relations. Because of these legal shortcomings, the true essence of the Declaration on Space Benefits is, to a large extent, as a political manifesto. Yet since law and politics are closely intertwined, international law reflects the reality of political agreements between States, which are usually informed by moral considerations. Therefore, despite the murky legal character with which the Declaration is endowed, its ultimate contribution to the evolution of space law rests strongly on its political and moral value.

¹²² Declaration on Space Benefits, *supra* note 42, at ¶ 2.

IV. THE MORAL AND POLITICAL VALUE OF THE DECLARATION ON SPACE BENEFITS

While the legal nature of United Nations General Assembly resolutions (and in particular, the Declaration on Space Benefits) is debatable and has been analyzed in the previous section of the present Article, the political nature of declarations of this sort is generally not disputed.¹²³ When Member States adopted the Declaration in the General Assembly, this action was the result of a political body exercising a political function, rather than a juridical one. States use resolutions to make a point,¹²⁴ rather than to legislate. Furthermore, because States know that resolutions are not legally binding, they may be more willing to enter into a compromise and to silence their objections.¹²⁵ Thus, the real question is not whether the Declaration is a political instrument, but rather the extent to which it exerts its influence.

The result of ten years of negotiations, the Declaration marked the end of the debate between States over the meaning and scope of international cooperation in space. The developing nations had lost their initial strong-arm attempt to establish mandatory technology transfers, and after their concessions in the Declaration, shifted their focus away from these demands.¹²⁶ In this way, they abandoned the claim that outer space, as the "common heritage of mankind," demanded the sharing of economic benefits that come from outer space activities,¹²⁷ and reaffirmed Article I(2) of the Outer Space Treaty, which provides for the free exploration and use of outer space. In return for the right to determine the nature and level of participation in coop-

¹²³ See, e.g., Terekhov, *supra* note 49, at 98.

¹²⁴ But see Schwebel, *supra* note 56, at 302 (stating the argument that Member States of the UN General Assembly "don't meaningfully support what a resolution says").

¹²⁵ Cf. Onuma Yasuaki, *Is the International Court of Justice an Emperor Without Clothes?*, 8 INT'L LEGAL THEORY 1, 16-17 (2002) (arguing that because States know that General Assembly resolutions "have only hortatory force, they vote in the affirmative when otherwise they would not").

¹²⁶ See TRONCHETTI, *supra* note 31, at 80 (describing this process as an abandonment of the "Common Heritage of Mankind" principle).

¹²⁷ *Id.*

erative ventures, however, the space powers reiterated their commitment to using space for the benefit of all countries through international cooperation, which while not obligatory as a legal duty, at least carries moral weight. This implies that the States that agree to the arrangement are making an earnest guarantee that they will work to modify state practice or effect national legislation on the issue. These political and moral obligations, while not binding,¹²⁸ can nonetheless be very strong, and are surely tied to a State's reputation in the larger realm of international relations.

The Declaration on Space Benefits also had important consequences in light of its effect on UNISPACE III. The focus of this international conference was "Space Benefits for Humanity in the Twenty-first Century."¹²⁹ Because the debate that had underscored the creation of the Declaration on Space Benefits was formally resolved, the discussion at UNISPACE III could focus on the substance of how to share those benefits for all of humanity,¹³⁰ rather than becoming mired again in ideological debates.¹³¹ In order to assist with the implementation of the recommendations it proposed, UNISPACE III established a new voluntary fund to support projects that "increase the level of awareness of space technology development and its impact on social and economic development."¹³² At the conclusion of UNISPACE III, the Committee adopted the "Space Millennium: Vienna Declaration on Space and Human Development,"¹³³

¹²⁸ Cf. Johnson, *supra* note 48, at 114–15 (concluding that "while Resolutions of the General Assembly may have 'political effect,' they do not give rise to political obligations").

¹²⁹ Its primary objectives were "(a) to promote effective means of using space technology to assist in the solution of problems of regional or global significance and (b) to strengthen the capabilities of Member States, in particular developing countries, to use the applications of space research for economic, social and cultural development." Comm. on the Peaceful Uses of Outer Space, Sci. & Tech. Subcomm., *Rep. on its 34th Sess., Feb. 17-28, 1997*, ¶ 18, U.N. Doc. A/AC.105/672, Annex II, (Mar. 10, 1997).

¹³⁰ See UNISPACE III, *supra* note 79, at ¶¶ 377–410.

¹³¹ UNISPACE I (1968) and II (1982) were marked by political conflicts over the distribution of resources that prevented substantive discussion of the benefits of space. See Marietta Benkő & Kai-Uwe Schroll, *Space Law at UNISPACE III (1999) and Beyond*, in 40TH PROC. COLLOQ. L. OUTER SPACE 157, 157–58 (1997).

¹³² UNISPACE III, *supra* note 79, at ¶ 396.

¹³³ Adopted by the Conference at its 10th plenary meeting on July 30, 1999.

which “[r]eaffirm[ed]” the Declaration on Space Benefits in its preamble and “[r]ecognize[d] that the promotion of bilateral, regional and international cooperation in the field of outer space must be guided by General Assembly resolution 51/122 [the Declaration on Space Benefits].”¹³⁴

At the same time that delegations in the Legal Subcommittee were working towards the finalization of the terms of the Declaration on Space Benefits, a consistent understanding of the essence of international cooperation permeated the entire work of COPUOS.¹³⁵ The Secretary-General issued a *note verbale* on August 4, 1995 and another on July 19, 1996 to all permanent representatives to the United Nations,¹³⁶ requesting that they submit information “about those space activities that were or could be the subject of greater international cooperation, with particular emphasis on the needs of the developing countries.”¹³⁷ These requests were made in the shadow of the debate in the Legal Subcommittee, and when the Declaration was finally adopted, it cemented the commitment of nations to consider existing issues related to international cooperation and to think about how to tackle new ones.

The political commitment expressed by States through the adoption of General Assembly declarations may also contribute to the development of international law by influencing the future law-making process.¹³⁸ The Declaration on Space Benefits expresses the political commitment of States to the principles of

¹³⁴ UNISPACE III, *supra* note 79, at Res. 1, pmb., and ¶ 5.

¹³⁵ In 1995, the Scientific and Technical Subcommittee re-established the Working Group of the Whole to Evaluate the Implementation of the Recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE 82). This Working Group recommended that COPUOS “should request all States, particularly those with major space or space-related capabilities, to continue to inform the Secretary-General annually, as appropriate, about those space activities that were or could be the subject of greater international cooperation, with particular emphasis on the needs of the developing countries.” Comm. on the Peaceful Uses of Outer Space, Sci. & Tech. Subcomm. *Rep. on its 32nd Sess., Feb. 6–16, 1995*, ¶ 9, U.N. Doc. A/AC.105/605, Annex II, (Feb. 24, 1995).

¹³⁶ International cooperation in the peaceful uses of outer space: activities of Member States, Note by the Secretariat, ¶ 3, U.N. Doc. A/AC.105/614 (Nov. 8, 1995); International cooperation in the peaceful uses of outer space: activities of Member States, Note by the Secretariat, ¶ 4, U.N. Doc. A/AC.105/661 (Dec. 5, 1996).

¹³⁷ U.N. Doc. A/AC.105/605, *supra* note 135, at Annex II, ¶ 9.

¹³⁸ See Terekhov, *supra* note 49, at 105.

mutual and equitable cooperation in space. Thus, as they already have on a bilateral basis,¹³⁹ the principles expressed in the Declaration are likely to be confirmed if a new multilateral treaty governing space activities is drafted in the Legal Subcommittee. Like the 1963 Declaration that underscored the Outer Space Treaty, the terms of the Declaration on Space Benefits are at the same time vague enough, yet comprehensive enough that they may serve as a backdrop to any future development in space law.

The Declaration on Space Benefits, like other resolutions that "guide States in situations where specific treaty norms have not yet been adopted or are too general[,] . . . contribute[s] to ensuring orderly and dispute-free interaction of States in various areas of human activities in outer space."¹⁴⁰ As has been noted, "[b]enefit sharing is part of space policy . . . Whether or not it is judicially enforceable is not as important as whether it is a good idea."¹⁴¹ Today, States, non-governmental, and inter-governmental organizations have the opportunity to present their activities in this area under the agenda item of "Ways and means of maintaining outer space for peaceful purposes."¹⁴² Although this reporting is voluntary, it can nonetheless serve as a metric for whether States are fulfilling the bargain of the Declaration on Space Benefits and can provide a forum for States to demonstrate their political promise to uphold the spirit of the Declaration.

More generally, the role of the Declaration in expressing and informing States' political commitment towards international cooperation in outer space is evidenced by the yearly United Nations General Assembly Resolution, "International

¹³⁹ See, e.g., Framework Agreement between the Government of the Federative Republic of Brazil and the Government of the People's Republic of China on Cooperation in the Peaceful Applications of Outer Space Science and Technology, Nov. 8, 1994, 2036 U.N.T.S. 35218.

¹⁴⁰ Terekhov, *supra* note 49, at 105.

¹⁴¹ Declan J. O'Donnell, *Benefit Sharing: The Municipal Model*, in 39TH PROC. COLLOQ. L. OUTER SPACE 151, 157 (1996).

¹⁴² See, e.g., Comm. on the Peaceful Uses of Outer Space, *Rep. on its 53rd Sess., June 9-18, 2010*, ¶ 32, U.N. Doc. A/65/20; GAOR, 65th Sess., Supp. No. 20 (2010).

cooperation in the peaceful uses of outer space,”¹⁴³ which recalls the Declaration on Space Benefits, and reiterates the importance of extending the benefits of outer space to developing countries.¹⁴⁴ The resolution goes on to note the achievement made in national and cooperative space projects and highlights the “importance of further developing the legal framework to strengthen international cooperation in this field.”¹⁴⁵ In addition, the resolution emphasizes “that regional and interregional cooperation in the field of space activities is essential to strengthen the peaceful uses of outer space [and to] assist States in the development of their space capabilities.”¹⁴⁶ This language is echoed in the 2010 COPUOS Report, where it states that the “Committee had made concrete efforts to promote regional and interregional cooperation and coordination in space activities for the benefit of all countries.”¹⁴⁷

It is apparent that international cooperation has increasingly developed according to the principles laid down in the Declaration on Space Benefits. Despite divergent views on the specific requirements of benefit sharing present during the negotiation of the Declaration and remaining to this day, States still provide access to the benefits of space technology, albeit in ways that mirror their understanding of the Declaration. The United States, for example, while opposed to the mandatory technology transfer that was first proposed by the developing countries, has nonetheless provided access to its remote sensing data from Landsat.¹⁴⁸ Similarly, the Chinese-Brazilian Earth Resources

¹⁴³ See, e.g., U.N. Doc. A/RES/65/97 (Jan. 20, 2011); U.N. Doc. A/RES/64/86 (Jan. 20, 2010); U.N. Doc. A/RES/63/90 (Dec. 18, 2008); U.N. Doc. A/RES/54/67 (Feb 11, 2000).

¹⁴⁴ U.N. Doc. A/RES/65/97 (Jan 20, 2011), at pmbll.

¹⁴⁵ *Id.*

¹⁴⁶ *Id.* at ¶ 18.

¹⁴⁷ U.N. Doc. A/65/20, *supra* note 142, at ¶ 32; see also U.N. Doc. A/AC.105/973, *supra* note 84 and accompanying text, at ¶ 36 (reiterating that States should act in accordance with the Declaration on Space Benefits when “building up national infrastructure to use space-derived geospatial data for sustainable development”).

¹⁴⁸ U.N. Doc. A/65/20, *supra* note 142, at ¶ 291; see also, *Annex of Early Achievements to the Report on Progress 2007: Cape Town Ministerial Summit*, in GROUP ON EARTH OBSERVATIONS, § 5 (Nov. 30, 2007), http://www.earthobservations.org/documents/geo_iv/30_20Annex%20of%20Early%20Achievements%20to%20the%20Report%20on%20Progress.pdf [hereinafter *Annex of Early Achievements*].

Satellite (CBERS), a joint venture between China and Brazil,¹⁴⁹ has resulted in the distribution of free satellite images to African countries.¹⁵⁰ The year before China announced this dissemination of Earth observations to African nations, a white paper describing the Chinese National Space Administration's activities in 2006, stated:

International space cooperation should adhere to the fundamental principles stated in the "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." China maintains that international space exchanges and cooperation should be strengthened on the basis of equality and mutual benefit, peaceful utilization and common development.¹⁵¹

In the next section of the white paper, the Chinese National Space Administration emphasized their policies toward developing international cooperation in space activities, including "[r]einforcing space cooperation with developing countries, and valuing space cooperation with developed countries."¹⁵²

V. CONCLUSIONS

In the fifteen years since the Declaration on Space Benefits was adopted, international cooperation in space activities among nations of all levels of technological development has increased. Although the Declaration has no practical *legal* relevance (regardless of whether one attributes legal effects to it), it has contributed to this development as a political instrument, serving to reinforce and delineate a common approach towards international cooperation in outer space. Moving forward, it remains to be seen whether the Declaration will continue to exert

¹⁴⁹ See *Cooperação Internacional*, AGÊNCIA ESPACIAL BRASILEIRA, http://www.aeb.gov.br/index.php?secao=cooperacao_internacional (last visited May 12, 2012).

¹⁵⁰ *Annex of Early Achievements*, *supra* note 148, § 4.

¹⁵¹ White Paper issued by the Information Office of China's State Council, *China's Space Activities in 2006*, (Oct. 12, 2006), available at http://www.cnsa.gov.cn/n615709/n620682/n639462/79381_2.html.

¹⁵² *Id.* at 1.

the same influence in light of future developments in the exploration and use of outer space.

In an era where more and more countries are becoming involved in the exploitation and use of outer space, principles of international cooperation begin to take on ever greater significance. In addition, the increasing global dependence on space activities and satellite data will continue to challenge the interpretation of using and exploring outer space for the benefit of all countries.

International cooperation will continue to grow in relevance, as space projects become increasingly far-reaching and ever more expensive. Budgets are tightening, and despite the spin-off benefits, the national prestige, and the scientific discoveries that come from space activities, even space powers like the United States are beginning to cut back their activities. Yet, as governments look for ways to share the costs of their space activities, continuing privatization and commercialization of many space activities mean that there will be a far greater role for governmental and non-governmental entities to work together in the coming years. This need was foreseen by the Declaration, which specifically mentions in paragraph 4, "governmental and non-governmental; commercial and non-commercial" as viable modes of cooperation that States are free to choose. In order to enjoy the benefits of space, regardless of whether that means in the purely technological or the economic sense, nations and private enterprise will need to work together.

Despite this attempt to address the need to cooperate, however, the Declaration has no binding force, and thus takes its value from the political willingness of States to determine that its principles are followed. In the face of this rapid expansion of activities in outer space, it would be useful to codify the principles embodied in the Declaration into formal treaty obligations. Any attempt at codification, however, brings with it its own questions and challenges: Can States agree on common definitions that are clear enough to overcome the shortcomings of the Declaration? Are States even ready to reach a binding compromise and end the soft law phase in space law making? Can any definition of international cooperation foresee further technological developments in space?

For these reasons, codification is unlikely now. As the Declaration has served fundamentally as a political and moral instrument over the last fifteen years, it will likely remain so, at least in the near future. One of the goals of the Declaration was to fill the legal gaps caused by technological developments;¹⁵³ with continued technological growth, this rift may soon widen to the point that States feel that further gap filling is necessary. The future remains uncertain, but even without formal codification of the principles of the Declaration, strong signals can be found that nations will continue to uphold the political commitment they made. For example, in the “Declaration on the Fiftieth Anniversary of Human Space Flight and the Fiftieth Anniversary of Committee on the Peaceful Uses of Outer Space”¹⁵⁴ from June 2011, COPUOS Member States stressed once again the fundamental principles of the Declaration on Space Benefits by “reaffirm[ing] the importance of international cooperation in developing the rule of law, including the relevant norms of space law, and of the widest possible adherence to the international treaties . . .”¹⁵⁵ and “emphasiz[ing] that regional and interregional cooperation in the field of space activities is essential to strengthen the peaceful uses of outer space, assist States in the development of their space capabilities and contribute to the achievement of the goals of the United Nations Millennium Declaration.”¹⁵⁶

¹⁵³ See U.N. Doc. A/AC.105/C.2/L.162, *supra* note 47 and accompanying text.

¹⁵⁴ U.N. Doc. A/AC.105/L.281/Add.2 (June 6, 2011).

¹⁵⁵ *Id.* at ¶ 10.

¹⁵⁶ *Id.* at ¶ 14.

RIGHTS OVER AREAS VS RESOURCES IN OUTER SPACE: WHAT'S THE USE OF ORBITAL SLOTS?

*Philip De Man*¹

INTRODUCTION

In 1995, Robert Jones identified the following issues as top priorities for optimising the use of orbits for space services during his tenure as head of the Radiocommunication Sector of the International Telecommunication Union (ITU):

The single most important issue [for the ITU] is the reservation of capacity without actual use Eliminating or minimizing the opportunity to acquire uncommitted resources could help alleviate the current orbital congestion. . . . Recent experience indicates that unrealistically long operational lifetimes are notified, leading to almost permanent occupation of orbital positions,²

The reservation of orbital capacity without actual use is frequently referred to as the 'paper satellite' problem,³ or as slot 'warehousing'.⁴ The issue has plagued the ITU for a number of years and has only recently started to be addressed, mainly through the adoption of administrative and financial due dili-

¹ PhD Fellow, Research Foundation – Flanders (Aspirant FWO – Vlaanderen); academic researcher at the Leuven Centre for Global Governance Studies and the Institute for International Law of the University of Leuven, Belgium.

² *ITU tries to solve new problems without interfering with national sovereignty*, SATELLITE WK. (May 29, 1995), available at 1995 WLNR 2939225.

³ Director Radiocommunication Bureau, *Report on Resolution 18 of the Plenipotentiary Conference Kyoto, 1995*, at 3 (on file with author). "Paper satellites" are defined as "satellite networks in coordination or recorded in the Master Register that are not in operation and will never be brought into use", see David M. Leive, *Rapporteur Group SC-4 Report to the Special Committee on Regulatory/Procedural Matters Devoted to Resolution 18 (Kyoto, 1994)*, Doc. SC-RG4/54 (Nov. 25, 1996), at 3 & 11 [hereinafter *Rapporteur Group SC-4 Report*].

⁴ See, e.g., Janata C. Thompson, *Space for Rent: the International Telecommunications Union, Space Law, and Orbit/Spectrum Leasing*, 62 J. AIR L. & COM. 279-331 (1996).

gence measures.⁵ The impact of these measures is not unequivocal. While ITU press releases are generally optimistic as to the progress achieved so far,⁶ other sources remind us that the problem has still not been overcome entirely.⁷ Regardless of the effectiveness of the measures, however, the strong reaction of the ITU to combat paper satellites highlights the need to actually use orbital slots that are registered for the use of satellite networks. The widespread qualification of such slots as 'limited natural resources'⁸ only underscores the apparent unlawfulness of their reservation without subsequent use. At the same time, however, the history of the ITU is replete with denunciations of the actual, prolonged use of slots by those States having the capacity to launch satellites into orbit around Earth. As indicated in the above statement, such practices of continued use are regularly denounced as an unlawful form of permanent occupation that precludes States currently lacking launching capabilities from optimally exercising their correspondent freedom to use these slots at a future point in time.

The perceived unlawfulness of two diametrically opposed practices that nevertheless originate in the same legal regime highlights the need to clarify the limits of the permissible types of use (and non-use) of orbital slots. The present article aims to contribute to this discussion by offering a thorough analysis of the applicable legal rules, in order to shed some light on the broader underlying philosophy of the free use of outer space. To

⁵ See *infra*, section III.D.2.

⁶ See, e.g., ITU, *Paper chase* (Sept. 30, 2009), <http://www.itu.int/newsroom/media-kit/ITU-R/story2.html> (in which it is argued that "[t]he system has proved an effective answer").

⁷ Francis LYALL & Paul B. LARSEN, *SPACE LAW: A TREATISE* 236 – 237 (London, Ashgate, 2009); Ram S. Jakhu, *Legal Issues Relating to the Global Public Interest in Outer Space*, 32 J. SPACE L. 74 – 76 (2006); Ram S. Jakhu, *Legal Issues of Satellite Telecommunications, the Geostationary Orbit and Space Debris*, 5 *Astropolitics* 133, 182 – 184 (2007); Patrick A. Salin, *Orbites, fréquences et astéroïdes à l'heure de la commercialisation des activités spatiales - vers une appropriation graduelle du patrimoine de l'espace?*, 26 ANN. AIR & SPACE L. 179, 183 (2001). ITU reports note that the member states are not always conscientious in paying their financial dues. See the various Statements of amounts owed in connection with invoices for the processing of satellite network filings on the ITU website, www.itu.int.

⁸ Constitution of the International Telecommunication Union, art. 44 (2), Dec. 22, 1992, entered into force July 1, 1994, 1825 U.N.T.S. 31251 [hereinafter ITU CS]. See further *infra* n.20 and accompanying text.

this end, the first section of the article will sketch out a general overview of the issues that have preliminary been identified in this introduction. The section will establish the relevance of both the Outer Space Treaty and the ITU regime for regulating the use of orbital slots. The second and third section will then in turn elaborate in detail on both prongs of said legal regime in an analysis that will call attention to the actual use of reserved orbital slots under both strands. A fourth section focuses on the limits of such actual slot usage, in particular with respect to purported temporal restrictions thereto. A fifth section of the article will then merge the lessons drawn from all previous sections in a general hypothesis on the use of orbital slots, based on their actual use as natural resources. The article will conclude with some pertinent final thoughts.

I. SETTING THE STAGE: THE LEGAL REGIME AND PRACTICE OF ORBITAL SLOT USAGE

A. *The Basic Legal Regime of Orbital Slots*

The use of orbital positions around Earth is governed, first of all, by the fundamental principles codified in the 1967 Outer Space Treaty.⁹ Despite earlier controversy, it is now uncontested that orbits form an intrinsic part of outer space.¹⁰ The funda-

⁹ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, *opened for signature* Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

¹⁰ S. Houston LAY and Howard J. TAUBENFELD, *THE LAW RELATING TO ACTIVITIES OF MAN IN SPACE: AN AMERICAN BAR FOUNDATION STUDY* 67 (Chicago, University of Chicago Press, 1970); K.G. Gibbons, *Orbital Saturation: the Necessity for International Regulation of Geosynchronous Orbits*, 9 CAL. W. INT'L L.J. 139, 149 (1979). The vehement reaction of the international community to the 1976 Bogotá Declaration (*see infra* nn.33-39 and accompanying text) and the manifold references to orbits in the UN space treaties are unequivocal in their confirmation of the applicability of the Outer Space Treaty to orbits. *See, e.g.*, Ram S. Jakhu, *The Legal Status of the Geostationary Orbit*, 7 ANN. AIR & SPACE L. 333 (1982). One authoritative strand in the delimitation discussion even rests on the premise that outer space begins at the lowest possible perigee of satellites. *See* John Cobb Cooper, *Fundamental Questions of Outer Space Law*, in Gbenga Oduntan, *The Never Ending Dispute: Legal Theories on the Spatial Demarcation Boundary Plane Between Airspace and Outer Space*, 1 HERTFORDSHIRE L.J., 64, 79 (2003); J.F. McMahon, *Legal Aspects of Outer Space*, 38 BRIT. YB. INT'L L. 339, 343 (1962); Lubos Perek, *Scientific Criteria for the Delimitation of Outer Space*, 5 J. SPACE L. 111,

mental provisions of the Outer Space Treaty on the use of outer space in general are therefore applicable to the specific use of orbital segments for positioning satellites. Article I, paragraph 2, Outer Space Treaty provides that

Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.

The main goal of the legal regime on orbital usage as defined by this provision is thus to guarantee the free use of orbital positions by all States, limited only by the correlative freedom of other States to act correspondingly. This free use of orbital positions is further circumscribed by article I, paragraph 1, Outer Space Treaty, requiring that outer space be used for the benefit and in the interests of all countries, by article II of the Outer Space Treaty, proscribing the national appropriation of outer space, and by article IX, establishing the principles of co-operation and mutual assistance as lodestars for the permissible uses of outer space (see further *infra* section II).

Space law does not operate in a legal vacuum. Article III of the Outer Space Treaty postulates the applicability of general international law to the activities of States in outer space. The lawful usage of orbital points in space is thus also curbed by other international provisions than by those contained in the UN space treaties, including, most importantly, the rules promulgated by the International Telecommunication Union.¹¹ To be sure, the ITU initially concerned itself only with the regulation

121 (1977); Vladimir Kopal, *The Question of Defining Outer Space*, 8 J. SPACE L. 154 (1980).

¹¹ Carl Q. Christol, *The Legal Status of the Geostationary Orbit in the Light of the 1985-1988 Activities of the ITU*, in 32 PROC. COLL. L. OUTER SPACE 215 (1989) [hereinafter *The Legal Status of the Geostationary Orbit*]; Ram S. Jakhu, *The Principle of Non-Appropriation of Outer Space and the Geostationary Orbit*, in 26 PROC. COLL. L. OUTER SPACE 21 (1983) [hereinafter *The Principle of Non-Appropriation of Outer Space*]; Adrian Copiz, *Scarcity in Space: the International Regulation of Satellites*, 10 COMM. L. CONSPPECTUS 207, 216 (2002); Joseph Wilson, *The International Telecommunication Union and the Geostationary Orbit: an Overview*, 23 ANN. AIR & SPACE L. 241, 262-263 (1998).

of pertinent uses of the radio-frequency spectrum (RFS). As the RFS cannot reasonably be deemed a natural resource or other element originating in outer space, the relevance of the ITU regime for determining the lawful uses of orbital slots as a space resource may appear questionable.¹² Nevertheless, the legal principles developed by the ITU with respect to the regulation of terrestrial radio services were transposed almost immediately and with relatively minor alterations to the regulation of space services as soon as States started to develop activities in outer space.¹³ As these early activities consisted almost solely of placing satellites into orbital positions, the pertinence of the ITU regime for regulating the use of orbital slots can hardly be ignored. Moreover, given the intrinsic linkage between the use of the radio spectrum and the use of orbital slots, the very applicability of the ITU regime to the regulation of the RFS in itself also shows its appositeness for the management of orbital slots. The assignment of any of both resources without the other would render the satellite useless for most practical purposes. While the regulation of orbital slots thus might be incidental to the regulation of radio frequencies, the rules applicable to the latter *ipso facto* also circumscribe the use of the former.¹⁴

¹² The RFS is arguably not even a natural resource *per se*, as it is not part of the natural environment and its existence does not entirely depend on nature as separate from human activity. Stull and Alexander therefore rightly point out that only certain electromagnetic waves can be considered part of the natural environment. See Mark A. Stull and George Alexander, *Passive Use of the Radio Spectrum for Scientific Purposes and the Frequency Allocation Process*, 43 J. AIR L. & COM. 459, 517–518 (1977). See also Milton L. SMITH, INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION 190 (Martinus Nijhoff, Dordrecht, 1990).

¹³ Marco G. MARCOFF, TRAITÉ DE DROIT INTERNATIONAL PUBLIC DE L'ESPACE 581 – 582 (Fribourg, Editions Universitaires Fribourg Suisse, 1973). See also Erik M. Valters, *Perspectives in the Emerging Law of Satellite Communication*, 5 STAN. J. INT'L STUD. 53, 76–77 (1970); David M. LEIVE, INTERNATIONAL TELECOMMUNICATIONS AND INTERNATIONAL LAW: THE REGULATION OF THE RADIO SPECTRUM 72–73 (Dobbs Ferry, Oceana, 1970) [hereinafter INTERNATIONAL TELECOMMUNICATIONS AND INTERNATIONAL LAW]. See further on the regulatory history of the ITU and its relevance for present-day space activities, George A. CODDING, THE INTERNATIONAL TELECOMMUNICATION UNION: AN EXPERIMENT IN INTERNATIONAL COOPERATION (Leiden, s.n., 1952); Anthony R. MICHAELIS & G. C. GROSS, FROM SEMAPHORE TO SATELLITE (Geneva, International Telecommunication Union, 1965); Francis LYALL, LAW AND SPACE TELECOMMUNICATIONS (Aldershot, Dartmouth, 1989).

¹⁴ The inseparability of slots and frequencies was stressed in an article by then-Deputy Secretary-General of the ITU, Richard Butler. See Richard E. Butler, *World*

The applicability of the ITU regime to the use of orbits has over time been formalized in the legal framework of the ITU. In 1971, Resolution Spa 2-1 for the first time linked the regulation of the frequency spectrum with the use of satellite orbits.¹⁵ In 1973, the powers of the ITU were expressly enlarged to include also the orderly management of orbital positions, in conjunction with the RFS.¹⁶ For understandable yet misguided fears of scarcity, the ITU rules were initially tailored only to the use of the geostationary satellite orbit (GSO).¹⁷ The regime is now indubitably applicable to space services operated by satellites placed in *any* orbit, and the jurisdiction of the ITU in relation to all orbits was finally formalized on the occasion of the 1998 Minneapolis Plenipotentiary Conference.¹⁸ The comprehensive scope of the ITU regime with relevance for the regulation of orbital usage clearly follows from the formulation of its main principles.

The main ITU principles with relevance for orbits focus on the need to avoid harmful interference between the activities of States in using orbital slots, the duty to implement the best

Administrative Radio Conference for Planning Broadcasting Satellite Service, 5 J. SPACE L. 93 (1977). See also Martin A. Rothblatt, *Satellite Communication and Spectrum Allocation*, 76 AM. J. INT'L L. 56 (1982).

¹⁵ Rita Laurie WHITE & Harold M. WHITE, *THE LAW AND REGULATION OF INTERNATIONAL SPACE COMMUNICATION* 148 (Boston, Artech House, 1988). See further *infra* note 260 and accompanying text.

¹⁶ Carl Q. CHRISTOL, *THE MODERN INTERNATIONAL LAW OF OUTER SPACE* 551 (New York, Pergamon Press, 1982). Even prior to these formalizations, the information to be provided to the ITU by a registering administration already included data on the orbital positions projected for use by the relevant satellite network. See Abram CHAYES ET AL., *SATELLITE BROADCASTING* 18 (London, Oxford University Press).

¹⁷ A geostationary satellite is a geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth. See International Telecommunication Union, World Administrative Radio Conference Radio Regulations, art. 1.189 (1979, 2008 ed.) [hereinafter ITU RR]. The perceived need to regulate the GSO was guided by fears of scarcity that have since turned out to be, if not entirely fictitious, severely overstated and non-specific for this orbit. See Stephen E. Doyle, *Space Law and the Geostationary Orbit: the ITU's WARC-ORB 85-88 Concluded*, 17 J. SPACE L. 13, 15 (1989) [hereinafter *Space Law and the Geostationary Orbit*]; W. R. Hinchman, *Issues in Spectrum Resource Management*, in TWENTIETH CENTURY FUND (ed.), *THE FUTURE OF SATELLITE COMMUNICATIONS, RESOURCE MANAGEMENT AND THE NEEDS OF NATIONS* 51 (1970). See also SPACE LAW: A TREATISE, *supra* note 7, at 256 (noting that "the legal status of the geostationary orbit cannot be different from that of any other part of space").

¹⁸ SPACE LAW: A TREATISE, *supra* note 7, at 234 (referring to ITU CS, *supra* note 8, at arts. 1.2, sub. a and b, 12.1.1 & 44.2).

technologies available to States in the use of these slots as soon as possible and the obligation to efficiently and economically use the orbits associated with all radio frequencies for the operation of space services.¹⁹ Most of these principles are codified in article 44, paragraph 2 of the ITU Constitution (ITU CS).²⁰ This fundamental provision on the use of orbital position provides that

In using frequency bands for radio services, Member States shall bear in mind that radio frequencies and any associated orbits, including the geostationary-satellite orbit, are limited natural resources and that they must be used rationally, efficiently and economically, in conformity with the provisions of the Radio Regulations, so that countries or groups of countries may have equitable access to those orbits and frequencies, taking into account the special needs of the developing countries and the geographical situation of particular countries.²¹

The original text of this provision only applied the qualification of 'limited natural resource' to the GSO, thus ostensibly limiting the scope of the concomitant principles of efficient use and equitable access to this orbit.²² The current provision, however, clarifies that the same guiding principles circumscribe the placement of satellites in non-geostationary orbits as are applicable to the use of the GSO.²³

¹⁹ *Id.* at 202; Donald J. Fleming et al., *State Sovereignty and the Effective Management of a Shared Universal Resource: Observations Drawn from Examining Developments in the International Regulation of Radiocommunication*, 10 ANN. AIR & SPACE L. 327, 332-336 (1985); Ram S. Jakhu, *The Evolution of the ITU's Regulatory Regime Governing Space Radiocommunication Services and the Geostationary Satellite Orbit*, 8 ANN. AIR & SPACE L. 381, 382-392 (1983) [hereinafter *The Evolution of the ITU's Regulatory Regime*].

²⁰ ITU CS, *supra* note 8, at art. 44, para. 2.

²¹ *Id.*

²² Convention of the International Telecommunication Union of 25 October 1973, at art. 33, para. 2, entered into force April 7, 1976, 28 U.S.T. 2495 [hereinafter 1973 ITU CV].

²³ To be sure, the corollary provision in the ITU Radio Regulations (art. 0.3 RR) again narrows the scope to the GSO, but the explicit reference in this rule to the concomitant provision in the ITU CS reveals that the omission of other orbits in art. 0.3 RR is likely due to a drafting error. Art. 0.3 RR states that, "[i]n using frequency bands for radio services, Members shall bear in mind that radio frequencies and the geostationary-satellite orbit are limited natural resources and that they must be used rationally, efficiently and economically, in conformity with the provisions of these Regulations, so that countries or groups of countries may have equitable access to both, taking into

The provisions of the ITU Constitution identifying the primary functions of the organisation also fail to discriminate on the basis of the type of orbit to be regulated. The main functions of the ITU are to

(a) effect allocation of bands of the radio-frequency spectrum, the allotment of radio frequencies and the registration of radio-frequency assignments and, for space services, of any associated orbital position in the geostationary-satellite orbit or of any associated characteristics of satellites in other orbits, in order to avoid harmful interference between radio stations of different countries; (b) coordinate efforts to eliminate harmful interference between radio stations of different countries and to improve the use made of the radio-frequency spectrum for radiocommunication services and of the geostationary-satellite and other satellite orbits (Article 2 ITU CS).²⁴

The comprehensive scope of this fundamental provision confirms that the legal regime of all orbital positions, while necessarily diverging on some points,²⁵ must essentially abide by the same fundamental principles, determined by their qualification as 'limited natural resources'. The responsibilities of the Director of the Radiocommunication Bureau and the Radio Regulations Board of the ITU are of similarly encompassing nature.²⁶ Moreover, the express association in these provisions between registered frequencies and related orbital points constitutes a

account the special needs of the developing countries and the geographical situation of particular countries (No. 196 of the Constitution)" (emphasis added). ITU RR, *supra* note 17, at art. 0.3. In any case, the Constitution prevails in case of inconsistency between one of its provisions and a provision of the Administrative Regulations. See ITU CS, *supra* note 8, at art. 4, para. 4.

²⁴ These criteria are replicated in the description of the functions of the IRU Radiocommunication Sector:

[t]he functions of the Radiocommunication Sector shall be . . . to fulfil the purposes of the Union, as stated in Article 1 of this Constitution, relating to radiocommunication . . . by ensuring the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including those using the geostationary-satellite or other satellite orbits, subject to the provisions of Article 44 of this Constitution. ITU CS, *supra* note 8, at art. 12.

²⁵ See ITU RR, *supra* note 17, at apps. 30, 30A & 30B, and *infra* section III.B.2.

²⁶ Convention of the International Telecommunication Union of 22 December 1992, art. 12, para. 2, sub. 2, indent e, and sub. 4, indent a, entered into force July 1, 1994, 1825 U.N.T.S. 31251 [hereinafter 1992 ITU CV].

legal expression of the abovementioned intrinsic linkage of the RFS and orbits in space.²⁷

B. Efficiency, Economy, Equity

Pursuant to the above provisions, the ITU regime requires that all orbital slots that are registered in combination with a given frequency band are used efficiently and economically, with a view to guaranteeing equitable access thereto. In and of themselves, the requirements of efficiency, economy, and equity are too vague to unequivocally determine the lawful uses of orbital points in every given situation, and their meaning, rank, and mutual compatibility has since long been subject to varying interpretations.²⁸ The literal phrasing of article 44, paragraph 2, ITU CS may offer some exegetical guidance, however, being as it is the codification of the most fundamental rules on the use of orbital points under the ITU regime. The provision, it is recalled, requires that frequencies and associated slots be used “efficiently and economically, . . . so that countries or groups of countries may have equitable access to those orbits” (emphasis added). The language of this provision appears to imply that the efficient and economic use of orbits is a prerequisite condition for attaining the ultimate yet necessarily subsequent goal of equitable access. This makes sense: after all, the efficient utilization of a ‘limited natural resource’ is likely to increase the chances of equitable access by decreasing the scarcity of the resource concerned. Conversely, an approach that would sacrifice efficiency for the sake of equity would, due to the inevitable waste of a scarce resource, never be able to attain either goal. Article 44, paragraph 2, ITU CS thus appears to require that, first, orbits be used actually and efficiently by those having the capacity to launch satellites, in order to guarantee equitable access to these resources for countries currently incapable of using them. Such stress on efficiency does not imply that the

²⁷ INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 62.

²⁸ Director Radiocommunication Bureau, *supra* note 3, at 3-4 (refers to the requirements of efficient utilization and equitable access as “two somewhat conflicting objectives”).

equity requirement should be ignored, but, on the contrary, is based on the understanding that the latter can only be attained through the former.²⁹

The requirements of efficiency, economy, and equity are thus not necessarily mutually exclusive, but can be interpreted as complementary conditions for circumscribing the allowable uses of orbits.³⁰ Even if one insists that the accurate interpretation of the guiding criteria on the use of orbital slots remains susceptible to divergent views among reasonable readers, this does not detract from the uncontested observation that, taken together, the criteria of efficiency, economy, and equity in fact set out the limits of lawful orbital usage. It follows that State practices and interpretations of these requirements cannot be condoned if they are incompatible with all three criteria, regardless of how they should be interpreted individually or in correlation with each other. As such, it is evident that administrations staking claims in orbital slots while lacking the capacity and the intention to actually use them, do not act in accordance with the overriding goals of efficiency and economy. Moreover, it is difficult to see how the mere act of claiming faraway slots can contribute to equitable access if the State concerned is not capable of accessing them.³¹ Such acts should therefore in principle be dismissed as a violation of both the letter and the spirit of the applicable ITU regime on the use of orbits. Nevertheless, past and present practices of telecommunications are riddled with

²⁹ This was also one of the general conclusions of the UNISPACE '82 conference. *see* Report of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space, U.N. Doc. A/CONF.101/10, at 70 (1982). *Compare* Copiz, *supra* note 11, at 222 ("Although the principle of efficient and economic operation and the principle of equitable access may not be in harmony, of the two principles, greater force ought to be given to the principles of efficient and economic operation").

³⁰ *See also* Martin L. Stern, *Communication Satellites and the Geostationary Orbit: Reconciling Equitable Access with Efficient Use*, 14 L. & POL'Y INT'L BUS 859, 882 (1982) ("ultimately, efficient utilization is not in conflict with equitable access; it is one means towards achieving that end"). This interpretation is in line with art. 44, para. 1, ITU CS, which only emphasizes the efficient use of slots. *See* ITU CS, *supra* note 8, at art. 44, para. 1.

³¹ *See also* Stern, *supra* note 30, at 880 ("equitable access does not guarantee access without the ability to launch a satellite"); Thompson, *supra* note 4, at 300 ("access' in terms of equitable access presupposes reaching the geostationary orbit, which thus requires space launch capability"), *citing* Stephen GOROVE, DEVELOPMENTS IN SPACE LAW: ISSUES AND POLICIES 59 (Dordrecht, Martinus Nijhoff, 1991).

apparent acts of slot warehousing and they have only intermittently been condemned by the international community as contravening the legal rules on orbit usage.³²

C. *Reservation of Orbital Capacity without Use*

The Bogotá Declaration arguably constitutes the most widely refuted instance of States staking claims in orbital positions without having the intention or capacity to actually use them.³³ In this declaration, eight equatorial States argued that the alleged territorial connection between their national territories and the corresponding segments of the GSO granted them full and permanent sovereignty over the natural resources of these segments, pursuant to pertinent resolutions of the United Nations General Assembly (UNGA) on the natural resources of developing countries.³⁴ The Declaration was largely premised on a presumed violation of current article 44, paragraph 2, ITU CS, as it was argued that "both the geostationary orbit and the frequencies have been used in a way that does not allow the equitable access of the developing countries that do not have the technical and financial means that the great powers have."³⁵

It is generally accepted that, while the concerns expressed by the equatorial countries regarding lack of access to orbital slots are legitimate and sensible, the actual claims made in the

³² Warehousing, whether under planned or unplanned bands, may very well violate the ITU rules in spirit, if not in practice, as it very possibly conflicts with the concepts of efficiency and equitable access. See Thompson, *supra* note 4, at 299. See also Glen O. Robinson, *Regulating International Airwaves: the 1979 WARC*, 21 VA. J. INT'L. L. 1, 45 (1980) (an unplanned assignment system would ensure better that all future needs would be met, because it would conserve over time more of the resource for distribution as needed and it is commonly accepted that warehousing acts serve no goal of the ITU/Outer Space Treaty regime on the use of the RFS or orbits).

³³ Declaration of the First Meeting of Equatorial Countries of 3 December 1976, ITU Doc. WARC-BS (1977) 81-E, available at http://www.jaxa.jp/library/space_law/chapter_2/2-2-1-2_e.html [hereinafter Bogotá Declaration].

³⁴ See Permanent Sovereignty over Natural Resources, G.A. Res. 1803 (XVII), 17 U.N. GAOR Supp. (No.17), at 15, U.N. Doc. A/5217 (1962); Permanent sovereignty over natural resources of developing countries and expansion of domestic sources of accumulation for economic development, UNGA Res. 2692 (XXV) (Dec. 1970); see also UNGA Res. 3281 (XXIX) (Dec. 12, 1974), at Charter of Economic Rights and Duties of States, at art. 2, sub. i.

³⁵ Bogotá Declaration, *supra* note 33, §1 (the geostationary orbit as a natural resource).

Bogotá Declaration were untenable from both a scientific and a legal perspective, as the claims of sovereignty ignored the basic laws of physics and violated the non-appropriation principle of article II of the Outer Space Treaty.³⁶ The Declaration should thus likely be interpreted as a policy document that gives expression to the fears generally prevalent among developing countries at the time that they would be pre-empted in their exploitation of the most valuable orbital positions by those States currently having the capacity to engage in such uses. To be sure, there is ample reason to assume that, given their geographical proximity, competition for orbital slots is more likely to arise among developing nations than between a developed country and a developing one,³⁷ and that many developing nations will often be better off by acting through a multi-user satellite organisation such as Intelsat.³⁸ Nevertheless, it has at times indeed proven particularly arduous for latecomers in outer space to use the slots of their interest due to prior usage by other States, given the prevalent features of the ITU registration procedure, which is often wrongly characterised as adopting a 'first-come, first-served' or a *a posteriori* approach (see *infra* section III.A).³⁹

³⁶ Thompson, *supra* note 4, at 307; Michel G. Bourély, *Quelques Réflexions au Sujet de l'Orbite Géostationnaire [Reflections on the Geostationary Orbit]*, 13 ANN. AIR & SPACE L. 229-245 (1988); Adrian Bückling, *Rechtsprobleme des Synchronkorridors [Legal problems of the Synchronous Corridor]*, 27 ZEIT. LUFT- & WELTRAUM 76-85 (1978); Thomas Gangale, *Who Owns the Geostationary Orbit?*, 31 ANN. AIR & SPACE L. 425-446 (2006); *The Legal Status of the Geostationary Orbit*, *supra* note 10, at 333-351.

³⁷ *Regulating International Airwaves: the 1979 WARC*, *supra* note 32, at 32-33. Compare Alex G. Vicas, *An Economic Assessment of CCIR's Five Methods for Assuring Guaranteed Access to the Orbit-Spectrum Resource*, 7 ANN. AIR & SPACE L. 431, 434-435 (1982).

³⁸ For an excellent analysis of this issue, see Steven A. Levy, *Institutional Perspectives on the Allocation of Space Orbital Resources: the ITU, Common User Satellite Systems and Beyond*, 16 CASE W. RES. J. INT'L L. 171-202 (1984). Smith also notes that, in the history of the regulation of orbital slots through the ITU, the developing country actors did not act as a homogeneous group, but were rather divided in two groups with different political motivations. See Milton L. Smith, *Space WARC 1985: the Quest for Equitable Access*, 3 BOSTON U. INT'L L.J. 229, 234-235, n.18 (1985) [hereinafter *Space WARC 1985*].

³⁹ The example of India, Indonesia, Pakistan and Vietnam spring to mind. See *Legal Issues of Satellite Telecommunications, the Geostationary Orbit and Space Debris*, *supra* note 7, at 187-188.

The ITU *a posteriori* system was not only alleged to prejudice the legal position of developing countries, it also purportedly caused States to hoard orbital slots they never had the intention of using. While these allegations again ignore the many subtleties of the ITU regime in force,⁴⁰ they are grounded in instances of warehousing slots that have actually occurred in practice. Most notoriously, in 1991 the tiny kingdom of Tonga in the South Pacific filed for an extravagant number of 31 slots, which it clearly did not intend to use and some of which it later even leased to other States.⁴¹ These actions outraged the international community, as the country evidently “lacked a genuine need”⁴² for so many slots, even though it was “apparently uncontested that Tonga properly followed the publishing procedure mandated by the ITU.”⁴³ It follows that, while practices of overfiling within the ITU are seemingly not in violation of any rule in particular, they are deemed, due to the lack of subsequent actual use of the slots claimed, to constitute a form of abuse. Indeed, overfiling is often cited as one of the root causes of paper satellites.⁴⁴ To be sure, some cases of overfiling are merely inspired by strategic motivations of States wishing to hedge against future concessions during the coordination phase with

⁴⁰ *Infra* section III.C.1.

⁴¹ See Jonathan Ira Ezor, *Costs Overhead: Tonga's Claiming of Sixteen Geostationary Orbital Sites and the Implications for U.S. Space Policy*, 24 L. & POL'Y INT'L BUS. 915-942 (1993); Don Riddick, *Why Does Tonga Own Outer Space?*, 19 AIR & SPACE L. 15-29 (1994); Albert N. Delzeit & Robert F. Beal, *The Vulnerability of the Pacific Rim Orbital Spectrum Under International Space Law*, 9 NY INT'L L. REV. 69-83 (1996); Lawrence D. Roberts, *A Lost Connection: Geostationary Satellite Networks and the International Telecommunication Union*, 15 BERK. TECH. L.J. 1095-1144 (2000). Other examples include Papua New Guinea and Gibraltar. See also *Legal Issues Relating to the Global Public Interest in Outer Space*, *supra* note 7, at 74-76 (noting that Intelsat, the US and Russia frequently engage in overfiling as well).

⁴² Delzeit, *supra* note 41, at 71.

⁴³ Ezor, *supra* note 41, at 933; Thompson, *supra* note 4, at 297.

⁴⁴ See Carl Q. Christol, *Satellite Power System (SPS) International Agreements* 28 (U.S. Department of Energy White Paper, Contract No. EG-77-C-014024, Oct. 27, 1978), available at [http://www.nss.org/settlement/ssp/library/1978DOESPS-InternationalAgreements\(Christol\).pdf](http://www.nss.org/settlement/ssp/library/1978DOESPS-InternationalAgreements(Christol).pdf) [hereinafter *Satellite Power System*]; Director Radio-communication Bureau, *supra* note 3, at 4; SPACE LAW: A TREATISE, *supra* note 7, at 236; *Rapporteur Group SC-4 Report*, *supra* note 3, at 11.

other users.⁴⁵ To the extent that it amounts to cheap acts of profiteering, however, malicious overfiling should be combatted as it fails to contribute to any of the goals strived for by the ITU, much like the Bogotá Declaration.⁴⁶ Unlike this Declaration, however, acts of overfiling do not appear to violate any particular ITU rules and do not expressly amount to claims of sovereignty over segments of a particular orbit.⁴⁷ Therefore, despite their similar effects in practice, the reservation of capacity without subsequent use through overfiling has not been attacked with the same vigour as the Bogotá Declaration and has only been combatted through the adoption of soft administrative and financial due diligence measures. Nevertheless, some authors do consider them a violation of the Outer Space Treaty, amounting even to acts of sovereignty.⁴⁸

The above examples have shown that the reservation or orbital capacity without use is mainly inspired by the apparent need to redress the imbalance in equitable access to scarce orbital slots between space-resource States and those countries at present lacking the capacity to independently use outer space. The unilateral nature of the Bogotá Declaration and acts of slot warehousing, however, has provoked reactions denouncing these practices as unlawful either under the ITU or the Outer Space Treaty framework, or both. In the 1970s, non-spacefaring nations therefore set out to change the ITU regime from within,

⁴⁵ For example, Leive differentiates between pre-emptive, protective, safeguard, and obsolete paper satellites. See *Rapporteur Group SC-4 Report*, *supra* note 3, at 11-12, 29-30. See also Gibbons, *supra* note 10, at 153.

⁴⁶ See in general, Francis Lyall, *Paralysis by Phantom: Problems of the ITU Filing Procedures*, in 39 *PROC. COLL. L. OUTER SPACE* 187-193 (1996) [hereinafter *Paralysis by Phantom*].

⁴⁷ For example, INTELSAT argued that the actions of Tonga (only) contravened the spirit of Article 29 of the 1989 ITU Convention, Article 33 of the 1982 ITU Convention, and Resolutions 2 and 4 of the ITU 1979 WARC. See Second Letter on the issue of INTELSAT Director-General Dean Burch to the ITU International Frequency Registration Board, cited in relevant part in René Oosterlinck, *Tangible and Intangible Property in Outer Space*, in 39 *PROC. COLL. L. OUTER SPACE* 279 (1996).

⁴⁸ Thompson, *supra* note 4, at 282; Ezor, *supra* note 41, at 935; Riddick, *supra* note 41, at 21. Freeland and Jakhu consider the hoarding of slots through the registration of paper satellites with the ITU "at least a form of semi-appropriation", see Stephen Freeland and Ram S. Jakhu, *Article II*, in Stephen HOBE, Bernherd SCHMIDT-TEDD & Kai-Uwe SCHROGL (eds.), *COLOGNE COMMENTARY ON SPACE LAW*, 1: OUTER SPACE TREATY, at para. 72 (Cologne, Heymann, 2009); Copiz, *supra* note 11, at 223.

in order to adapt the system itself to better suit their needs. These efforts resulted in the adoption of a number of so-called *a priori* plans that allocate and assign frequencies and orbits to all States, regardless of their capacity to use them at present. As these plans expressly disconnect the reservation of orbits from their actual use, their practical impact is similar to that of other forms of paper satellites discussed in the paragraphs above. Indeed, when the 1974 ITU World Administrative Radio Conference (WARC) adopted an *a priori* plan for the regulation of maritime services, it resulted in a flood of unwelcome paper entries as every country systematically overstated its own requirements.⁴⁹ While the effects of *a priori* planning of frequency and slots usage are thus redolent of a number of practices that have been denounced as violations of the legal regime on orbital usage, their institutionalization through formal adoption by the ITU theoretically precludes them from being qualified as 'unlawful practices' that should be countered through remedial measures. Nevertheless, given the similarities in underlying motivations and practical effects between these plans and other forms of orbital reservation without actual use, some authors do consider them a violation of the spirit of the ITU regime and/or article II of the Outer Space Treaty.⁵⁰

The three cases of orbital reservation without subsequent use as described in this section have in common that their proclaimed goal of equitable access for all countries is negated by their wasteful inefficiencies. By sacrificing the goal of efficient and economic use of a limited natural resource, they reduce the potential for arriving at an equitable distribution of the access thereto. Despite these similarities in impact, however, the reac-

⁴⁹ Fleming, *supra* note 19, at 343.

⁵⁰ See, e.g., Perrine Delville, *Réflexions sur le Principe de Non Appropriation de l'Espace Extra Atmosphérique et des Corps Célestes* [Reflections on the Principle of Non-Appropriation of Outer Space and Celestial Bodies], 63 REV. FR. DR. AÉR. & SPATIAL 137, 149 (2009); Bourély, *supra* note 36, at 244; Susan Cahill, *Give Me My Space: Implications for Permitting National Appropriation of the Geostationary Orbit*, 19 WIS. INT'L L.J. 231, 246 (2001) (Cahill likens the wasteful inefficiencies of *a priori* plans to paper satellites); A.M. Rutkowski, *Six Ad-Hoc Two: the Third World Speaks its Mind*, 4 SATELLITE COMMUNICATIONS 22, 25 (1980) [hereinafter *Six Ad-Hoc Two*] (citing the views of the US delegate to the ITU WARC at the time); Oosterlinck, *supra* note 47, at 278; Gibbons, *supra* note 10, at 153.

tion of the international community to the above practices has proven rather inconsistent to say the least. The response ranged from outright dismissal of the Bogotá Declaration to actual institutionalisation of several *a priori* plans, while malicious overfiling is still treated almost solely as a mere management issue. Nevertheless, it is clear that, while diverging in some important respects, all three types of reservation of orbital capacity without actual use essentially amount to claims of legal rights over an area in outer space, qualified as a limited natural resource, by administrations that do not have the intention or capacity to actually use the segments claimed. These similarities are corroborated by the observation that scholars have raised legal issues regarding each of these practices, qualifying them as violations of the spirit of the ITU regime or even as acts of sovereignty barred by the Outer Space Treaty.

D. Continued Use as Sovereignty?

While it remains to be determined whether each of the practices described under the above section indeed amounts to a violation of the legal framework on orbital usage, the fundamental criteria underlying the ITU regime and the broadly formulated principle of free use of outer space in the Outer Space Treaty appear to warrant the general conclusion that, while non-use of claimed slots is unlawful, conversely any type of actual use of orbits reserved through the proper procedures amounts to a lawful exercise of rights granted under the respective regimes. This general conclusion, though tempting, fails to take into account, however, that instances of actual, continued use of orbits by States are frequently subjected to the same legal criticisms as practices of non-use. As such, immediately after the adoption of the Outer Space Treaty, the delegate of France, in a well-known intervention on the interpretation of article II of the Treaty, noted that

The rule of non-appropriation . . . in itself implies a limitation on the complete freedom of states in space. In fact, the very use of geostationary satellites can be regarded as an "appropriation" of the equatorial orbit, which is a privileged portion of space. In return for such a *de facto* appropriation, the State

responsible for the satellite should agree to submit to certain rules. The same applies to the use of a frequency band for broadcasting.⁵¹

Though it is doubtful that the GSO is indeed a 'privileged portion' of outer space as alleged by the delegate of France (see *supra* section I.A.), a non-spacefaring nation at the time of the statement, the concerns voiced are revealing for the far-reaching interpretation they offer of the non-appropriation principle of the Outer Space Treaty. Ultimately, the statement amounts to a denunciation of most uses of space as unlawful under the UN space law regime. The United States, one of the two space-resource States at the time, therefore countered this extravagant statement by arguing that

[T]he use of space or a celestial body for activities that are peaceful in character and compatible with the provisions of the Outer Space Treaty is, by definition, entirely legitimate. Using a favorable orbit for a legitimate activity cannot reasonably be classified as a prohibited national appropriation in the sense of Article II.

The point I wish to make is that using a favorable geostationary orbit is no more an 'appropriation' or 'de facto occupation' than using a particularly favorable area of the lunar surface . . . for a manned landing.⁵²

The fact that satellites had already been placed in orbit around Earth at the time of the negotiation and adoption of the Outer Space Treaty lends credence to the interpretation offered by the US delegate. It would be absurd to adopt a treaty based on the principle of free use of outer space while at the same time declaring the most common activity in this environment unlawful under the same regime. Some authors have therefore argued

⁵¹ Working Paper Submitted by France to the Second Session of the Working Group on Direct Broadcast Satellites, UN Doc. A/AC.105/62 (June 1969), at 3-4, referred to in *Satellite Power System*, *supra* note 44, at 84 and *The Principle of Non-Appropriation of Outer Space*, *supra* note 11, at 22.

⁵² *Satellite Power System*, *supra* note 44, at 84 (statement of the United States delegate to the second session of the Working group on direct broadcast satellites on 31 July 1969).

that the French declaration merely intended to denounce the *prolonged* or *continued* use of a particular orbital position. Such use would disproportionately limit the freedom of others to use the same slot, hence amounting to a *de facto* occupation of outer space in violation of article II of the Outer Space Treaty.⁵³

The reactions by States and scholars to the use and non-use of reserved orbital positions present the reader with a remarkable conundrum, as comparable legal problems are raised with respect to diametrically opposed practices, which are nevertheless based on the same legal rules and principles. While the reservation of capacity by administrations lacking the intention or capacity to use them is arguably an abuse of the ITU regime, the continued actual use of registered slots by those States *having* the capacity is equally lambasted for violating fundamental Outer Space Treaty provisions. An accurate assessment of the limits of lawful orbital usage thus necessitates an analysis of both the Outer Space Treaty and the ITU regime.

II. THE OUTER SPACE TREATY REGIME ON THE USE OF ORBITAL SLOTS⁵⁴

As noted earlier, the primary provisions with relevance for the use of outer space by States, including the placement of satellites in orbital positions, are codified in articles I, II, and IX of the Outer Space Treaty. Article I postulates the freedom to use outer space as the foundation of all activities of States beyond airspace. This freedom is qualified, *inter alia*, by the obligation to duly take into account the corresponding freedoms of other States. This principle of reciprocal equality is further elaborated upon in article IX of the Outer Space Treaty, which States that

In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty . . .

⁵³ See, *The Principle of Non-Appropriation of Outer Space*, *supra* note 11, at 22-23; J. Henry Glazer, *Domicile and Industry in Outer Space*, 17 COL. J. TRANSNAT'L L. 67, 81 (1978).

⁵⁴ This section summarizes and elaborates on the main findings of the author's talk at the 53rd annual IISL Colloquium on the law of outer space. See Philip De Man, *The Commercial Exploitation of Outer Space and Celestial Bodies – A Functional Solution to the Natural Resource Challenge*, in 53 PROC. COLL. L. OUTER SPACE (Sept. 28, 2010).

shall conduct all their activities . . . with due regard to the corresponding interests of all other States Parties to the Treaty.

To this effect, States are instructed to avoid harmful interference with the activities of others in the peaceful exploration and use of outer space, including orbital slots. Finally, the non-appropriation principle of article II of the Outer Space Treaty holds 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.

While it is clear that the provisions of article I and IX of the Outer Space Treaty impose limitations on the lawful uses of orbital positions by any particular State, the restrictive impact of the non-appropriation principle depends on whether article II of the Outer Space Treaty can be deemed applicable to orbits. This in turn hinges on the interpretation of such notions as 'outer space,' 'celestial bodies,' 'by means of use,' and 'appropriation.' The specific formulation of the scope of the Outer Space Treaty, referring to 'outer space, including the Moon and other celestial bodies,' reveals that the outer space concept in this treaty is an inclusive notion that covers both celestial bodies and the space in between, or 'outer space *sensu strictu*.'⁵⁵ Both outer space *sensu strictu* and celestial bodies are physical entities or 'areas' in space. At the same time, these entities and their constituent parts are commonly qualified as 'natural resources.' Regarding outer space *sensu strictu*, we have seen that article 44, paragraph 2, ITU CS qualifies the GSO and other orbits as natural resources. Further, the 1979 Moon Agreement notoriously stipulates that celestial bodies and their natural resources 'in place' shall not be subject to appropriation.⁵⁶ The legal categorisation

⁵⁵ Compare the notion "outer void space" as suggested by Cheng. See Bin Cheng, *Outer Void Space: the Reason for this Neologism in Space Law*, 1999 *Austl. Int'l L.J.* 1-8 (1999); Bin Cheng, *Introducing a New Term to Outer Space Law: "Outer Void Space"*, 11 *KOREAN J. AIR & SPACE L.* 321-327 (1999).

⁵⁶ Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, art. 11, para. 3, *opened for signature* Dec. 18, 1979, 1363 U.N.T.S. 21 [hereinafter *Moon Agreement*]. See *infra* notes 76 *et seq.* and accompanying text.

of spatial phenomena may thus occur along one of two lines, depending on whether they are qualified as areas or natural resources. A distinguishing criterion between the two categories is lacking and may well be impossible to find if one is determined to classify outer space and celestial bodies solely on the basis of their physical characteristics. One need only think of the possibility of a celestial body being 'exploited out of existence' through the extensive exploitation of its natural resources to grasp the complexities of the conceptual quandary.⁵⁷

The issue at hand is not merely a theoretical problem of classification, as it is oftentimes argued or implied that the legal regime applicable to the component particles of outer space at least partially depends on its categorisation as areas or as natural resources. In particular, it is commonly asserted that, while celestial bodies as such cannot be appropriated pursuant to article II of the Outer Space Treaty and the relevant provisions in the Moon Agreement, their natural resources escape this proscription.⁵⁸ The classification issue is even more pertinent when one tries to define the legal regime of orbital points in space, as these segments are, from a physical point of view, intrinsic parts of outer space *sensu strictu*. Contrary to mineral reserves on the Moon, orbits lack a clear material manifestation that would justify a distinction between their qualification as areas and as natural resources. It is apparently this practical difficulty of orbital delimitation that has inspired many authors to apply the same legal regime to orbital slots as natural resources and as areas in space. While the lawfulness of the appropriation of celestial body parts may depend on their classification as an

⁵⁷ See, in general, the writings of Ernst Fasan on this topic and its implications for the definition of the celestial body concept. Freeland and Jakhu argue that such exploitation would violate art. I of the Outer Space Treaty, but not the non-appropriation principle: Freeland & Jakhu, *supra* note 48, at para. 39.

⁵⁸ See, e.g., Eugene Brooks, *National Control of Natural Planetary Bodies - Preliminary Considerations*, 32 J. AIR L. & COM. 315, 323-324 (1966); R.V. Dekanozov, *Juridical Nature and Status of the Resources of the Moon and Other Celestial Bodies*, in 23 PROC. COLL. L. OUTER SPACE 5 (1980); Georg W. Rehm, *Das Aneignungsverbot [The Adoption Ban]*, in K.-H. BÖCKSTIEGEL (ED.), HANDBUCH DES WELTRAUMRECHTS [HANDBOOK OF SPACE LAW] 114 (Cologne, Heymann, 1991); VIRGILIU POP, WHO OWNS THE MOON? EXTRATERRESTRIAL ASPECTS OF LAND AND MINERAL RESOURCES OWNERSHIP 138-142 (Berlin, Springer, 2009), and cited references. SPACE LAW: A TREATISE, *supra* note 7, at 185.

area in space or a natural resource, orbits are therefore always considered non-appropriable.⁵⁹ Underlying this line of thought is a silent assumption that the natural resources of celestial bodies and of outer space *sensu strictu* should be subjected to a fundamentally different regime of appropriation, according to which only the former should be exempt from application of article II of the Outer Space Treaty. In turn, it is the alleged applicability of the non-appropriation principle to orbits that is thought to restrict the legitimate types of orbital use. It is not at all clear, however, that this should necessarily follow from the Outer Space Treaty.

A bifurcated approach to space resources as suggested above presupposes that it is both possible and necessary to define and distinguish between celestial bodies and other physical components of outer space, since the categorization of natural resources pursuant to this theory rests solely on the physical entities in which they originate. However, no satisfactory definition has ever been offered in either space law treaties or doctrine of either a celestial body or of outer space *sensu strictu*, on the basis of any criterion whatsoever, be it legal, physical or scientific.⁶⁰ The only legal provision that offers guidance as to the interpretation of the celestial body notion merely compounds the issue, as it states that the reference to celestial bodies should also comprise the orbits around or other trajectories to or around them, thus further conflating the outer space and celestial body concepts.⁶¹ Far from offering a workable solution, the

⁵⁹ A distinctly discriminatory approach to the appropriation of natural resources of celestial bodies and outer space *sensu strictu* underlies the analysis in, e.g., K.U. PRITZSCHE, NATÜRLICHE RESSOURCEN IM WELTRAUM - DAS RECHT IHRER WIRTSCHAFTLICHEN NUTZUNG [NATURAL RESOURCES IN SPACE - LAW PERTAINING TO THEIR ECONOMIC USE] 87-96 (Lang, Frankfurt am Main, 1989) [hereinafter NATURAL RESOURCES IN SPACE]; Oosterlinck, *supra* note 47, at 277.

⁶⁰ See, for example, the definitions and criteria suggested in G.P. Zhukov, *The Problem of the Definition of Outer Space*, in 10 PROC. COLL. L. OUTER SPACE 273 (1967); Gyula GÁL, SPACE LAW 186-187 (Leiden, Sijthoff, 1969); Michel S. Smirnov, *Fourth Report of the Working Group III of the International Institute of Space Law*, in 7 PROC. COLL. L. OUTER SPACE 352 (1964); R. FROHN, INTERNATIONALSISIERUNG VON HIMMELSKÖRPERN [INTERNATIONALIZATION OF CELESTIAL BODIES] 69 (Berlin, Verlag, 1969); MARCOFF, *supra* note 13, at 242. See further, in general, De Man, *supra* note 54, 44-51, with references (for an analysis of the celestial body notion).

⁶¹ Moon Agreement, *supra* note 56, at art. 1, para. 2.

provision thus only confirms that there is no satisfactory criterion for an *a priori* definition of 'celestial bodies' that would allow distinguishing them from the empty space in between, and, by extension, between the natural resources of either category.

This does not imply, however, that the issue must remain unresolved. A number of indications in the outer space treaties exist that appear to render the search for an *a priori* definition of the physical components of outer space wholly unnecessary, as the ambit of their provisions can be delineated on the basis of the activity regulated. The scope of the treaties and their main provisions can thus be defined from a functional point of view. An example may illustrate this point. Article XII of the Outer Space Treaty provides that

All stations, installations, equipment and space vehicles on the Moon and other celestial bodies shall be open to representatives of other States Parties to the Treaty on a basis of reciprocity.

Without having at our disposal a prior definition of 'celestial bodies,' it is clear from the activity regulated by this provision that it can only apply to land masses in space that by their nature allow for the settlement of such bases as are contemplated by the provision. Therefore, if a natural object in space is sufficiently large and solid to sustain a base, it should be considered a celestial body for the purpose of this provision. If it does not meet these requirements, the question of whether or not the object at issue constitutes a celestial body becomes irrelevant, as the provision cannot be deemed applicable.⁶² A functional approach to determining the scope of the space treaties avoids the need for a prior classification of material phenomena in space and has therefore been suggested by a number of authors in order to escape the definitional dilemma of the celestial body concept.⁶³ The approach is also in line with the principal

⁶² *Id.* at art. 8 (2) (allows states parties to the Agreement to land their space objects on celestial bodies).

⁶³ Imre Csabafi & Savita Rani, *The Law of Celestial Bodies*, 6 INDIAN J. INT'L L. 195, 196 (1966); A.S. PIRADOV, INTERNATIONAL SPACE LAW 114 (Honolulu, University Press of the Pacific, 2000); MARCOFF, *supra* note 13, at 240; GÁL, *supra* note 60, at 186-187; Elmar Vitt, *Begriffsdefinitionen [Definition of Terms]*, in K.-H. BÖCKSTIEGEL (ED.),

aim of the UN space treaties, which is to regulate the *activities* of states in outer space and on celestial bodies, rather than to determine the *legal status* of these areas as such. This clearly follows from the full titles of the Outer Space Treaty and the Moon Agreement.⁶⁴

The functional approach as suggested here implies, first, that if two provisions are applicable to 'celestial bodies,' their scope may differ in practice, should this be warranted by the relevant activities. For example, it was noted above that article XII of the Outer Space Treaty is only applicable to celestial bodies capable of supporting a space station or other installation of human fabrication. Other activities regulated by the space treaties, however, may warrant application to a larger category of natural space objects, such as the proscription of installing weapons of mass destruction on celestial bodies contained in article IV of the Outer Space Treaty. Secondly, it follows from the functional approach advocated here that a bifurcated approach to the application of a certain provision is unwarranted if the nature of the regulated activity does not provide any guidance as to the limits of such bifurcation. This is most pertinent for the application of provisions with inclusive scope, such as article II of the Outer Space Treaty, as they do not distinguish between outer space *sensu strictu* and celestial bodies and there is no accepted *a priori* definition of either concept. It follows that the non-appropriation provision should be applied indiscriminately to both categories. This in turn implies that, whatever the outcome of the discussion on the applicability of article II of the Outer Space Treaty on natural resources in general, the legal regime should be the same for resources of celestial bodies and of outer space *sensu stricto*, for they can only be defined by reference to the physical environment in which they are located.

HANDBUCH DES WELTRAUMRECHTS [HANDBOOK OF SPACE LAW] 51-54 (Heymann, Cologne, 1991).

⁶⁴ See Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, *opened for signature* Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty], and the Moon Agreement, *supra* note 56.

Now that we have clarified the conceptual implications of the outer space and celestial body notions in the non-appropriation principle, we can turn to the applicability of this provision to the natural resources of these categories, as opposed to their areal manifestation. Most authors limit the applicability of the proscription contained in article II of the Outer Space Treaty to the establishment of titles over territorial areas in outer space, without applying it to their qualification as natural resources.⁶⁵ The main purpose of this provision is to avoid territorial conflicts in outer space so as to guarantee the free exploration and use thereof in accordance with article I of the Outer Space Treaty. Article II of the Outer Space Treaty neither mentions nor excludes natural resources originating in the space environment and should thus be considered inapplicable thereto, as it is an exception to the general rule of freedom of activity in outer space. This is confirmed by the Moon Agreement, pursuant to which only natural resources 'in place' on the Moon and other celestial bodies cannot be appropriated. *A contrario*, the appropriation of natural resources should be lawful once removed from their place. The discussion on whether or not the Moon Agreement installed a moratorium on the exploitation of natural resources can only confirm this view.⁶⁶ Article 11, paragraph 5, of the Moon Agreement provides that

⁶⁵ See Bin Cheng, *The 1967 Space Treaty*, 95 J. DR. INT'L 564-568 (1968); MARCOFF, *supra* note 13, at 328; C. W. JENKS, *SPACE LAW* 202 (Stevens, London, 1965); C. Wilfred Jenks, *Property in Moon Samples and Things Left Upon the Moon*, in 12 PROC. COLL. L. OUTER SPACE 148 (1969); GÁL, *supra* note 60, at 200-201; Stephen Gorove, *Sovereignty and the Law of Outer Space Re-Examined*, 2 ANN. AIR & SPACE L. 311, 321 (1977); H.A. Wassenbergh, *Speculation on the Law Governing Space Resources*, 5 ANN. AIR & SPACE L. 616 (1980); Sylvia Maureen Williams, *The Law of Outer Space and Natural Resources*, 36 INT'L & COMP. L.Q. 146 (1987); D. Goedhuis, *Some Recent Trends in the Interpretation and the Implementation of the Rules of International Space Law*, 20 COLUM. J. TRANSNAT'L L. 213, 219 (1981); Wayne N. White, Jr., *Interpreting Article II of the Outer Space Treaty*, in 46 PROC. COLL. L. OUTER SPACE 175 (2003); Stephen Hobe, *Adequacy of the Current Framework Relating to the Extraction of Natural Resources in Outer Space*, 32 ANN. AIR & SPACE L. 115, 119 & 126 (2007) [hereinafter *Adequacy of the Current Framework*].

⁶⁶ Stephen GOROVE, *STUDIES IN SPACE LAW: ITS CHALLENGE AND PROSPECTS* 217 (Sijthoff, Leiden, 1977); *Sovereignty and the Law of Outer Space Re-Examined*, *supra* note 65, at 320-321; *Adequacy of the Current Framework*, *supra* note 65, at 124-125.

States Parties to this Agreement hereby undertake to establish an international regime . . . to govern the exploitation of the natural resources of the Moon as such exploitation is about to become feasible.

Regardless of the interpretation of this provision, the mere fact that it resulted in heated discussions on whether or not it installed a moratorium on the exploitation of Moon resources confirms the legality of this activity under the Outer Space Treaty, as a moratorium by definition implies the temporary prohibition of an activity that was previously allowed.⁶⁷

Given the express wish of the drafters of the Moon Agreement to respect the fundamental principles of the Outer Space Treaty,⁶⁸ and taking into account that article II of the Outer Space Treaty does not allow distinguishing between the natural resources of celestial bodies and other space resources (*supra*), it follows that no resources in outer space are *in se* non-appropriable, including orbits. The inapplicability of the non-appropriation principle to orbital positions also follows from the nature of the exploitation of these resources when compared to the excavation of mineral reserves on celestial bodies. While the latter activity takes the form of a permanent and irreversible destruction through consumption of a depletable natural resource, the exploitation of orbits merely amounts to the temporary use of a non-depletable resource that does not significantly deteriorate after intensive use. If it is accepted that article II of the Outer Space Treaty does not apply to the resources of celestial bodies, it should, *a fortiori*, be inapplicable to the use of orbital positions for the everyday usage of orbital positions that have so strenuously come under attack in recent years. Arguing that article II of the Outer Space Treaty is inapplicable to natu-

⁶⁷ See THE MODERN INTERNATIONAL LAW OF OUTER SPACE, *supra* note 16, at 298-303 (for the submissions of the US to the UN Committee on the Peaceful Uses of Outer Space (UN COPUOS) and the understanding adopted by the Committee itself in its 1979 report); Milton L. Smith, *The Commercial Exploitation of Mineral Resources in Outer Space*, in Tanja L. ZWAAN (ed.), SPACE LAW: VIEWS OF THE FUTURE 47 & 52 (Kluwer Law and Taxation, Deventer, 1988).

⁶⁸ See US/UN Press Release 107/79 (Nov. 1, 1979), at 5 ("The discussion in the Outer Space Committee confirmed the understanding that the Moon Treaty [sic] in no way derogates from or limits the provisions of the 1967 Outer Space Treaty").

ral resources of any type is not to say that orbits in space in their capacity of natural resource should necessarily be amenable to appropriation. It merely implies that there is no legal ground for *a priori* barring the appropriation of orbital points and other natural resources of outer space *sensu stricto* on the basis of article II of the Outer Space Treaty, if it is accepted that this provision does not proscribe the appropriation of mineral reserves on celestial bodies. The legal regime of orbits does not depend on the formulation of a physical criterion for distinguishing these resources from other types of space resources solely on the basis of their origin. Rather, it requires a criterion for differentiating celestial bodies and outer space *sensu strictu* as territorial areas, from such phenomena in their capacity as natural resources. This requires a closer look at the meaning of the natural resource concept in the context of space activities.

Like 'outer space' and 'celestial body', the notion 'natural resource' does not have a clearly defined meaning in international law. The Outer Space Treaty does not expressly address the issue and the only international space law instruments that contain explicit provisions on natural resources fail to define the concept in any way. Article 11 of the Moon Agreement is limited to declaring natural resources of celestial bodies 'the common heritage of mankind,' relinquishing the interpretation of this concept to the subjective evaluation of the States parties. The only other reference to natural resources in international space law is article 44, paragraph 2, ITU CS, which, as we have seen, merely obliges States to "bear in mind that radio frequencies and any associated orbits, including the geostationary-satellite orbit, are limited natural resources." While these provisions are hardly revelatory in their vagueness, the unqualified references to the general notion 'natural resources' in two instruments that regulate two physically disparate environments does confirm that the notion's meaning transcends categorisation and that there is no legal ground for distinguishing between the resources of celestial bodies and other space resources.⁶⁹ The pro-

⁶⁹ Compare Armand D. ROTH, LA PROHIBITION DE L'APPROPRIATION ET LES RÉGIMES D'ACCÈS AUX ESPACES EXTRA-TERRESTRES [THE BAN ON APPROPRIATION AND THE

visions also reveal that any legal definition of natural resources should not be limited to tangible resources alone. Definitions proffered in literature that focus on any particular material characteristics of space resources should thus be dismissed, for they would incorrectly result in the exclusion of orbital positions and radio frequencies, in manifest contradiction to the unequivocal language of article 44, paragraph 2, ITU CS.⁷⁰ Most authors therefore advance a broad definition of space resources, which comprises both tangible and intangible resources. For example, Pritzsche, in his intensive study of the legal regime of space resources, interpreted the notion as comprising

alle materiellen oder immateriellen Teile, Bestandteile und körperlich oder räumlich abgrenzbaren Erscheinungen des Weltraums einschließlich der Himmelskörper . . . , die Gegenstände wirtschaftlicher Nutzung sind oder sein können.⁷¹

Ultimately, it seems that any component particle of outer space can theoretically be considered a natural resource and, indeed, some authors have argued just this.⁷² Obviously, such an encompassing interpretation of the notion would deprive it of all

REGIMES ON ACCESS TO AREAS IN SPACE] 79 (Paris, Presses Universitaires de France, 1992).

⁷⁰ R.V. Dekanozov, *Weltraum, Himmelskörper, ihre Ressourcen und der Begriff 'Gemeinsame Erbe der Menschheit' [Space, Celestial Bodies, their Resources and the Term 'Common Heritage of Mankind']*, in WELTRAUM UND RECHT 19 (Institut für Staat und Recht der Akademie der Wissenschaften der UdSSR (ed.), Moscow, 1985) (for an example of the definition of "natural resources").

⁷¹ NATURAL RESOURCES IN SPACE, *supra* note 59, at 17; K. U. Pritzsche, *Die Nutzung Natürlicher Ressourcen [Use of Natural Resources]*, in K.-H. BÖCKSTIEGEL (ED.), HANDBUCH DES WELTRAUMRECHTS [HANDBOOK OF SPACE LAW] 560-561 (Cologne, Heymann, 1991). See also, e.g., Martin Will, SOLAR POWER SATELLITES UND VÖLKERRECHT: VÖLKERRECHTLICHE ASPEKTE VON GROBPROJEKTEN ZUR ENERGIEGEWINNUNG AUS WELTRAUMRESSOURCEN [SOLAR POWER SATELLITES AND INTERNATIONAL LAW: INTERNATIONAL LAW ASPECTS OF LARGE-SCALE PROJECTS ON THE EXTRACTION OF ENERGY FROM SPACE RESOURCES] (SOLAR POWER SATELLITES, LUNAR POWER SYSTEMS, HELIUM-3-PROJEKT) 59-60 (Stuttgart, Boorberg, 2000) (for the definition advanced by Will, who extends the notion to cover every material and immaterial object and phenomenon in outer space, including orbits, points, solar rays and radio frequencies).

⁷² Lubos Perek, *Outer Space as Natural Resource*, in René-Jean DUPUY (ed.), LE RÉGLEMENT DES DIFFÉRENDS SUR LES NOUVELLES RESSOURCES NATURELLES [THE SETTLEMENT OF DISPUTES ON NEW NATURAL RESOURCES], 222 (Martinus Nijhoff, The Hague, 1982).

practical and legal significance. Given the equally inclusive nature of the notion 'outer space' as a territorial concept, it would follow that every single particle in space could arbitrarily be categorised both as an area and as a natural resource. This would be untenable in light of the established inapplicability of article II of the Outer Space Treaty to natural resources *only*. The natural resource notion should thus be further circumscribed in order to be practically relevant. Most authors have chosen to concretize the notion by requiring that a particular phenomenon in space can *produce an economic value upon transformation through human use* in order to be considered a natural resource. As such, Roth specifies that "[p]ar ressource spatiale, on vise ici ce que la nature (l'espace) fournit à l'homme . . . en vue d'une utilisation directe ou après transformation."⁷³ The natural resource concept is traditionally circumscribed by similar criteria in general international law, which remains a useful tool for guiding the interpretation of space law pursuant to article III of the Outer Space Treaty.⁷⁴ Moreover, the qualification also corresponds to the definition of natural resources in most legal dictionaries.⁷⁵ It follows that space resources should be defined, not on the basis of any physical or material characteristics of the resource in question, but by virtue of their susceptibility to exploitation by human activity. After all, it is precisely because an orbital slot can only produce economic value when assigned in conjunction with radio frequencies that it is considered intrinsically linked with the frequency spectrum. A functional interpretation of the natural resource notion further supports the limitation of the scope of the non-appropriation principle to territorial areas, in light of the prohibition in article

⁷³ ROTH, *supra* note 69, at 79. See also, e.g., Marta Miklódy, *Einige Bemerkungen zur Frage der Eigentumsrechte an Mineralschätzen der Himmelskörper* [Some Remarks on the Question of Ownership of Mineral Resources of Celestial Bodies], in 22 PROC. COLL. L. OUTER SPACE 177 (1979) (referring to a similar criterion proposed by Vassilievskaja).

⁷⁴ S. PAQUEROT, *LE STATUT DES RESSOURCES VITALES EN DROIT INTERNATIONAL: ESSAI SUR LE CONCEPT DE PATRIMOINE COMMUN DE L'HUMANITÉ* (THE STATUS OF VITAL RESOURCES IN INTERNATIONAL LAW: AN ESSAY ON THE CONCEPT OF COMMON HERITAGE OF HUMANITY) 15 (Bruylant, Brussels, 2002).

⁷⁵ Black's Law Dictionary, for example, defines natural resources as "any material from nature having potential economic value". BLACK'S LAW DICTIONARY (9th ed. 2009).

II of the Outer Space Treaty to appropriate outer space 'by means of use.' Rendering this provision applicable to phenomena that exist only by virtue of their amenability to a certain type of use would be pointless and would unnecessarily curtail human activity in outer space.

Now that we have exhausted our analysis of the language of article II of the Outer Space Treaty, it becomes interesting to take a closer look at the exact wording of the non-appropriation principle in the Moon Agreement. The Moon Agreement elaborates on article II of the Outer Space Treaty, as repeated nearly *verbatim* in article 11, paragraph 2, Moon Agreement, by holding that

Neither the surface nor the subsurface of the Moon, nor any part thereof or natural resources in place, shall become property of any State, international intergovernmental or non-governmental organization, national organization or non-governmental entity or of any natural person.⁷⁶

The legal implications of this provision hinge on the interpretation of the phrase 'natural resources in place,' as it implies that natural resources no longer in place escape the proscription of appropriation. It is tempting to equate the moment in time when space resources are no longer in place with their removal from a location on the surface or subsurface of a celestial body. This might be too narrow an interpretation of this fundamental provision, however. In his landmark study of space law, Christol argued that the 'in place' criterion of article 11, paragraph 3, Moon Agreement should not be interpreted without taking into account the language of article 1 of the Moon Agreement.⁷⁷ Pursuant to this article, it is recalled, the celestial body notion also encompasses orbits around and trajectories to or around them. Hence, the qualification in article 11, paragraph 3, of the Moon Agreement, which *a contrario* allows the appropriation of natural resources when no longer 'in place', should be interpreted in such a way as to render it relevant for resources of orbits around these bodies as well. It is clear that orbits or segments of

⁷⁶ Moon Agreement, *supra* note 56, at art. 11, para. 3.

⁷⁷ THE MODERN INTERNATIONAL LAW OF OUTER SPACE, *supra* note 16, at 305-307.

orbits cannot as such be 'moved' from their location. Therefore, it can be assumed that the meaning of the in place criterion should extend beyond its mere locational connotation. To be sure, the ordinary meaning of the term 'in place' should repudiate this interpretation. It is a general rule of interpretation of treaty provisions, however, that the ordinary meaning of terms should be abandoned if it renders the significance of a provision manifestly absurd or unreasonable.⁷⁸ It is submitted that a locational interpretation of the in place criterion in article 11, paragraph 3, of the Moon Agreement could hardly contribute to a sensible reading of the provision. Natural resources are only of interest to States to the extent that they can harvest their economic potential. This is done through their exploitation, which in turn requires that they be removed from their location. The very act of exploiting natural resources, however, unleashes their economic potential and renders them susceptible to appropriation. It appears pointless to proscribe the appropriation of natural resources, defined as elements that can produce economic value upon their exploitation, if the proscription can be lifted by the very act of exploitation itself. Moreover, the notion of natural resources 'in place' has little significance if it is accepted that natural resources can only be defined by their exploitation. As long as they are 'in place,' 'natural resources' should be considered intrinsic parts of a territorial area. The in place criterion should thus be interpreted as referring to the act of exploitation, which determines the qualification of natural resources, hence rendering spatial phenomena appropriable. This approach would also allow extending the scope of article 11, paragraph 3, of the Moon Agreement to all natural resources covered by the Moon Agreement, *i.e.* including orbital positions around celestial bodies.

Article 11, paragraph 3, of the Moon Agreement, confirms that natural resources should be used in order to identify them as appropriable elements originating in a non-appropriable area. *Actual use* is a necessary precondition for identifying and, subsequently, establishing the lawfulness of exploiting natural

⁷⁸ Vienna Convention on the Law of Treaties, arts. 31-32, May 23, 1969, 1155 U.N.T.S. 331, 8 I.L.M. 679.

resources in space, as through this activity, they acquire economic value and are 'transformed' from an area into a natural resource. This is easily understood with respect to mineral reserves of celestial bodies, as these can be excavated and, in a way, 'separated' from their area. When it comes to orbital slots, however, things are a bit more complicated. Simply declaring orbital points as natural resources intrinsic portions of outer space *sensu strictu* and hence indistinguishable from their environment is unwarranted from a legal perspective. Rather, it follows from the above interpretation of all relevant provisions of the Outer Space Treaty, that, despite their immaterial manifestation, the actual use criterion is equally applicable to natural resources of outer space *sensu stricto*. This conclusion is corroborated by a detailed analysis of the ITU regime.

III. THE ITU REGIME ON THE USE OF ORBITAL SLOTS

A. 'First-come, First-served' vs. 'A Priori' Approaches

The history of the ITU regime on the use of orbital slots is often recounted as a politically charged battle between the developed, space-resource nations, who favoured an inflexible 'first-come, first-served' system granting quasi-permanent rights to the first to register the use of a certain orbital segment, and developing countries, who, lacking the capacity to actually use the freedoms granted by the Outer Space Treaty, advocated a rigid *a priori* planning regime that would equitably divide orbital slots among all nations.⁷⁹ Only a handful of ITU members ever adopted such extreme viewpoints, however, and most were willing to compromise in the interest of establishing a functional regime. Moreover, some countries radically changed their position over time, the most prominent example being the United States. This outspoken proponent of the current *a posteriori* regime originally strongly argued in favour of establishing an entirely engineered radio spectrum at the 1947 Atlantic City

⁷⁹ See in general, Fleming, *supra* note 19, at 332-345.

International Radio Conference.⁸⁰ It quickly became clear, however, that such an approach was unfeasible, as the recorded demands of all nations greatly exceeded the available spectrum.⁸¹ The goal of establishing an engineered spectrum was therefore sidelined at the first ever conference to formally address space services in 1959. The ITU system henceforth moved firmly towards an *a posteriori* regime, which was formalized in the final acts of the 1963 and 1971 space WARCs.⁸² However, the engineering goal was never completely abandoned, and it quickly remerged as a tool for equitable access to orbital positions for countries feeling 'left out' under the general ITU regime. In 1971, the International Frequency Registration Board (IFRB, currently the Radio Regulations Board) did not cease to point out the advantages of adopting worldwide *a priori* plans, and it stressed the principles of equity and justice as a counterbalance to ruthless efficiency.⁸³ During the 1970s, the steep increase in the ITU membership of developing nations without immediate access to outer space only strengthened the calls for alternative approaches that would 'guarantee in practice' equitable access

⁸⁰ See the Proposal for a Convention of the US delegation on 11 March 1947 at the Atlantic City International Radio Conference, Doc. No. 17 TR, <http://www.itu.int/en/history/plenipotentiaryconferences/Pages/1947AtlanticCity.aspx>.

⁸¹ INTERNATIONAL TELECOMMUNICATIONS AND INTERNATIONAL LAW, *supra* note 13, at 68, 71; *The Evolution of the ITU's Regulatory Regime*, *supra* note 19, at 396. The then Soviet Union also considered engineering a violation of their sovereignty, although this argument of course does not hold for orbital slots. See Fleming, *supra* note 19, at 339 (referring to George Arthur CODDING & A. M. RUTKOWSKI, *THE INTERNATIONAL TELECOMMUNICATION UNION IN A CHANGING WORLD* 119 (Artech House, Dedham, 1982)).

⁸² LAW AND SPACE TELECOMMUNICATIONS, *supra* note 13, at 350-352; Fleming, *supra* note 19, at 340; *The Evolution of the ITU's Regulatory Regime*, *supra* note 19, at 397-398 & 402; Thompson, *supra* note 4, at 290-292; E. D. DuCharme, et al., *The Genesis of the 1985/87 ITU World Administrative Radio Conference on the Use of Geostationary Satellite Orbit and the Planning of Space Services Utilizing It*, 7 ANN. AIR & SPACE L. 261, 265-266 (1982); Sigfried Wiessner, *The Public Order of the Geostationary Orbit: Blueprints for the Future*, 9 YALE J. WORLD. PUB. ORD. 230 (1983) (referring to Abram Chayes & Leonard Chazen, *Policy Problems in Direct Broadcasting from Satellites*, 5 STAN. J. INT'L STUD. 4, 18 (1970)).

⁸³ Final Acts of the 1963 Extraordinary Administrative Radio Conference to Allocate Frequency Bands for Space Radiocommunication Purposes (Space Radiocommunication Conference, Geneva, 1963), at International Frequency Registration Board Recommendation 10-A, see *Legal issues concerning the radio frequency spectrum and geostationary satellite orbit*, 1998 AUSTL. INT'L L.J. 50-51 (1998). See also Fleming, *supra* note 19, at 340-341; *The Evolution of the ITU's Regulatory Regime*, *supra* note 19, at 399-401.

to orbital slots for all nations.⁸⁴ These efforts eventually reaped the promulgation of a number of resolutions arguing for the adoption of veritable *a priori* plans that would enhance access to the geostationary orbit for broadcasting-satellite and fixed-satellite services.⁸⁵ The *a priori* plans established for these services and their guiding principles can be found in Appendices 30 and 30A, and Appendix 30B of the ITU Radio Regulations, respectively.⁸⁶ Even though these plans cover only a small percentage of all types of orbital usage, they nevertheless merit analysis for their ostensibly diametrically opposed starting point on the use of orbital slots (see further *infra* section III.B.2.).

A strict *a posteriori* approach as arrogated to the spacefaring countries would grant administrations permanent rights to the use of an orbital position through the mere registration of a frequency assignment. Hence, it would allow the reservation of orbital capacity without subsequent use, thereby depriving other States from exercising their freedom to actually use the same slot. Conversely, the very essence of the *a priori* approach imputed to the developing world is to grant non-spacefaring nations irrevocable rights to the future use of orbital points, thereby removing these slots from the reach of States currently having the capacity to use them. Both the *a priori* plans and the 'first-come, first-served' approach thus appear to institutionalize the creation of paper satellites. Any allegation of the purported unlawfulness of the reservation of orbital capacity without actual use thus requires a close analysis of the present ITU regime. This will reveal that, rather than leaning toward either

⁸⁴ Resolution No. 3 Relating to the Use of the Geostationary-Satellite Orbit and to the Planning of Space Services Utilizing It, in *Final acts of the World Administrative Radio Conference of 24 September through 6 December 1979* [hereinafter Resolution 3]. All other ITU resolutions referred to in this article can be found in ITU RR, *supra* note 17, at Vol. 3: resolutions and recommendations.

⁸⁵ Resolution 3, *supra* note 84. See further DuCharme, et al., *supra* note 82, at 267-269. A broadcasting-satellite service (BSS) is defined in the ITU Radio Regulations as a radiocommunication service in which signals transmitted or retransmitted by space stations are intended for direct reception by the general public. ITU RR, *supra* note 17, at art. 1.39. A fixed-satellite service (FSS) is defined as a radiocommunication service between earth stations at given positions, when one or more satellites are used. *Id.* at art. 1.21.

⁸⁶ See ITU RR, *supra* note 17, at Vol. 2, Apps.

the *a priori* of a *a posteriori* approach, a well-balanced, if slightly complicated, compromise solution was adopted that aims to limit the possibility that the limited orbital capacity remains unused.

B. How Is Protection of Orbital Use Acquired?

1. General Procedure

The procedure for acquiring international protection of the use of orbital slots is guided by general principles that, notwithstanding some differences, apply to all satellite networks placed in any orbital slot and operating in conjunction with radiofrequencies in any band.⁸⁷ It can be summarized as a process consisting of the following basic steps (articles 9 and 11 RR).

First, an administration⁸⁸ that wishes to obtain international recognition and protection of its use of a particular orbit should send a description of its projected satellite network or system to the Radiocommunication Bureau for advance publication in the International Frequency Information Circular (BR IFIC).⁸⁹ The information to be procured comprises the following data with relevance for the present analysis of the use of orbital points: the identity of the satellite network; the actual or projected date of bringing a new or modified frequency assignment into use; the period of validity of the frequency assignments;⁹⁰ the nominal geographical longitude on the geostationary-satellite orbit and orbital tolerances and the number of orbital planes for space stations onboard non-geostationary satellites, indicating thereby for each orbital plane, where the Earth is the reference body; the angle of inclination of the orbital plane with respect to the Earth's equatorial plane; the number of satellites

⁸⁷ Copiz, *supra* note 11, at 214.

⁸⁸ ITU procedures are initiated by "administrations" rather than member States. The annex to the ITU Constitution defines an administration as "[a]ny governmental department or service responsible for discharging the obligations undertaken in the Constitution of the International Telecommunication Union, in the Convention of the International Telecommunication Union and in the Administrative Regulations." ITU CS, *supra* note 8. See also ITU RR, *supra* note 17, at art. 1.2.

⁸⁹ See in general, ITU RR, *supra* note 17, at art. 9.1, 9.3 & 9.5B.

⁹⁰ See *infra* on Resolution 4 in section IV.C.2.

in the orbital plane; and the period and the altitude, in kilometers, of the apogee of the space station.⁹¹ If, on the basis of this information, an administration fears that its existing or planned satellite networks may be affected by the proposed system, it should indicate within a specified period of time that it wishes to be consulted by the registering administration. Subsequently, the registering administration and the Radiocommunication Bureau will then identify, on the basis of a number of objectives, technical criteria, and parameters, the administrations with which coordination is to be effected.⁹² Following this, the Bureau will publish the information provided in the BR IFIC, on the basis of which any administration believing that it should (not) have been included in the list of administrations shall again inform the relevant administration and the Bureau with the technical reasons for doing so. Administrations receiving a request for coordination will then promptly examine the matter with regard to the possibility of interference caused by their assignments. In case of a continuing dispute regarding harmful interference, the administrations involved shall enter into bilateral negotiations, assisted by the Bureau if needed.⁹³

After successful completion of the coordination phase, the registering administration will notify the Bureau in order to have its assignment registered in the Master International Frequency Register (Master Register, MIFR)⁹⁴. Any frequency assignment, including modifications to assignments already recorded in the Register, needs to be notified to the Bureau in the following circumstances: *a*) if the use of that assignment is capable of causing harmful interference to any service of another administration; *b*) if that assignment is to be used for international radiocommunication; *c*) if that assignment is subject to a world or regional frequency allotment or assignment plan which does not have its own notification procedure; *d*) if that assignment is subject to the coordination procedure described above or is involved in such a case; *e*) if it is desired to obtain interna-

⁹¹ See ITU RR, *supra* note 17, at app. 4, annex 2, arts. A.1, A.2 & A.4.

⁹² See in general, *id.* at arts. 9.27, 9.28, 9.34 & 9.41, and app. 5.

⁹³ See *id.* at arts. 9.50-9.65.

⁹⁴ *Id.* at art. 11.

tional recognition for that assignment; or *f*) if it is a non-conforming assignment that the administration wishes to have recorded for information.⁹⁵ The notice should contain the same data as is to be provided under the advance publication phase. The date of receipt of the complete notice will determine the order in which notices are examined.⁹⁶ It should be submitted no more than three years before the assignments are brought into use.⁹⁷ In the final phase, the Bureau will examine each submitted notice *a*) with respect to its conformity with the relevant provisions of the Radio Regulations; and *b*) with respect to its conformity with the procedures relating to coordination with other administrations applicable to the radiocommunication service and the frequency band concerned; or *c*) with respect to the probability of harmful interference that may be caused to or by assignments recorded with a favourable finding of the Bureau, for those cases for which the notifying administration States that the procedure for coordination could not be successfully completed; or *d*) where appropriate, with respect to its conformity with a world or regional allotment or assignment plan and the associated provisions.⁹⁸ In case of a favourable finding, the Bureau will record the requested assignment in the MIFR, thereby granting it international recognition and protection from other, competing uses. If the finding of the Bureau is unfavourable, the notice will be returned indicating the appropriate course of action.⁹⁹

2. Planned Bands

Even though the *a priori* plans were conceived as an alternative to the traditional *a posteriori* ITU regime, the procedures for acquiring international protection of slots for the use of space services operating in planned bands do not form a complete departure from the general procedure outlined above. As such, article 9 RR on the advance publication and coordination

⁹⁵ *Id.* at arts. 11.2-11.8.

⁹⁶ *Id.* at art. 11.28.

⁹⁷ *Id.* at arts. 11.15 & 11.25.

⁹⁸ *Id.* at arts. 11.30-11.34.

⁹⁹ *Id.* at arts. 11.36-11.39.

of satellite networks even expressly refers to Appendix 30B for its application to stations in a space radiocommunication service using frequency bands covered by the fixed-satellite service allotment plan.¹⁰⁰ Likewise, article 11 RR on the notification and recording of frequency assignments in the MIFR provides that Appendices 30, 30A, and 30B are 'also' applicable to assignments in the frequency bands covered by these plans.¹⁰¹ Finally, the 2003 World Radiocommunication Conference has added a reference to article 9 RR to the title pages of the appendices codifying the broadcasting-satellite service (BSS) plans, thus confirming the general applicability of the basic ITU procedures on orbital slot usage to assignments in these plans. The following subsections will therefore focus on those provisions in the *a priori* plans that deviate from the general procedure and are typical of the use of slots for services operating in planned bands.

a. Orbital Positions for Fixed-Satellite Services

The final acts of the 1979 WARC resolved that the ITU member States would convene a world conference in order to 'guarantee in practice' for all countries equitable access to the geostationary-satellite orbit.¹⁰² Pursuant to this resolution, an allotment plan was negotiated in 1985 and 1988 on the use of the GSO for the fixed-satellite service (FSS) in the frequency bands 4500-4800 MHz, 6725-7025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz, and 12.75-13.25 GHz.¹⁰³ The plan is codified in Appendix 30B. It entered into force on 16 March 1990 and remains in force until it is revised by a competent world radio-

¹⁰⁰ *Id.* at n. A.9.1.

¹⁰¹ *Id.* at n. A.11.1.

¹⁰² Resolution 3, *supra* note 84.

¹⁰³ ITU RR, *supra* note 17, at art. 3, app. 30B. See Milton L. Smith, *The Space WARC Concludes*, 83 AM. J. INT'L L. 596-599 (1989) (for a concise overview of the main decisions reached at the 1985-88 sessions); *Space Law and the Geostationary Orbit*, *supra* note 17; Nandasiri Jasentuliyana, *The International Regulatory Regime for Satellite Communication: the Meaning for Developing Countries*, 2 ASIAN YB. INT'L L. 49-59 (1992). See WHITE & WHITE, *supra* note 15 (for a more expansive coverage of the two sessions).

communication conference.¹⁰⁴ The FSS plan grants national allotments to States, consisting of a nominal orbital position in a predetermined arc, a bandwidth of 800 MHz (up-link and down-link) in the relevant frequency bands and a service area for national coverage.¹⁰⁵ An 'allotment' thus refers to an entry of a designated frequency channel and orbital position in a plan for use by one or more administrations for a space radiocommunication service under specified conditions.¹⁰⁶ If administration wishes to launch a satellite network into a slot of the GSO for a space service covered by the plan, it first has to convert its allotment into an assignment. An 'assignment' in this context refers to the authorisation given by an administration for a particular radio station to use a radio frequency and orbital position under specified conditions.¹⁰⁷ The procedure for converting an allotment into an assignment under the FSS plan is identical to the related procedures for introducing an additional system into the plan and for modifying the characteristics of an assignment already brought into use.¹⁰⁸

The conversion procedure strongly resembles the general procedure for bringing into use orbital positions in the unplanned bands as described above. First, an administration wishing to convert an allotment into an assignment has to submit a notice to the Bureau, providing therein information similar to the data in the advance publication phase for general slot usage. The Bureau will then examine the submitted notice with respect to its conformity with the relevant provisions of the Radio Regulations and with certain technical standards. If this examination results in a favourable finding, the requesting administration will proceed to obtain the agreement of the administrations whose allotments or assignments are considered

¹⁰⁴ ITU RR, *supra* note 17, at art. 11.2, app. 30B. 1988 Radio Regulations, in *Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing it of 29 August Through 5 October 1988*, at art. 69.

¹⁰⁵ ITU RR, *supra* note 17, at art. 2.3, app. 30B.

¹⁰⁶ *Id.* at art. 1.17.

¹⁰⁷ *Id.* at art. 1.18.

¹⁰⁸ *Id.* at art. 6, app. 30B.

affected by the proposed network.¹⁰⁹ Upon reaching agreement with these administrations, the requesting administration may ask the Bureau to have its assignment included in a so-called List of assignments, thereby indicating that it has successfully completed the conversion of allotment to assignment.¹¹⁰ The notice submitted for the purpose of completing this phase must contain the final characteristics of the assignment, which will again be examined by the Bureau as to their conformity with the relevant provisions of the ITU regulations. Following this examination, the Bureau will identify the administrations whose allotments and assignments appearing in the List might still be affected. If it is found upon this examination that the final characteristics of the assignment do not produce more interference than under the initially submitted characteristics, or if, in spite of increased interference, the other administrations are nevertheless considered unaffected, the Bureau will enter the proposed assignment in the List. Finally, the assignments on the List will be entered into the Master Register, upon further examination of the complete notice by the Bureau with respect to its conformity with the relevant provisions of the Radio Regulations and with the FSS plan.¹¹¹

b. Orbital Positions for Broadcasting-Satellite Services

Appendix 30 contains the provisions and associated plan for the BSS in the frequency bands 11.7-12.2 GHz (in Region 3), 11.7-12.5 GHz (in Region 1) and 12.2-12.7 GHz (in Region 2).¹¹² The BSS plan entered into force on 1 January 1979 and, like the FSS plan, remains in force until revision by a competent world radiocommunication conference.¹¹³ The plan was adopted at an earlier date than the FSS plan, as the reduced need for flexibility for BSS services considerably facilitated planning efforts for this type of service, which also helps to explain why the BSS

¹⁰⁹ *Id.* at arts. 6.5 & 6.8, app. 30B.

¹¹⁰ *Id.* at art. 2.2bis, app. 30B.

¹¹¹ *Id.* at art. 8.7-8.9, app. 30B.

¹¹² Provisions on feeder links for the BSS are codified in Appendix 30A of the ITU RR, which will not be discussed here. *Id.* at app. 30A.

¹¹³ *Id.* at art. 14.3, app. 30.

plan differs from the provisions in Appendix 30B. Most importantly, the broadcasting plan immediately confers assignments to States with predefined nominal orbital positions, rather than distributing national allotments with reference to an abstract orbital arc. It follows that an administration wishing to operationalise its satellite network for broadcasting goals does not have to convert its allotment into an assignment before it can register the relevant orbital slots. This in turn obviates the need to effect any coordination with affected administrations, as the plan is construed in such a way as to preclude harmful interference simply through conformity with the plan. However, coordination is still required when an administration proposes to include new or modified assignments that impact upon the BSS plan as such,¹¹⁴ or when its proposed assignments to stations in the FSS service may affect broadcasting stations.¹¹⁵ Finally, the BSS procedure for notifying, examining and recording assignments to space stations in the Master Register is similar to the procedures described above.¹¹⁶ Due to the rigidity of the plan, however, the examination phase focuses on the conformity of an assignment with the ITU Constitution, Convention, Radio Regulations, and the appropriate regional plan or List, while disregarding the date of receipt of the relevant notice.¹¹⁷

C. *When Is International Protection Acquired?*

1. General Procedure

a. Priority through Antecedence?

A basic notion of 'priority' is pivotal for any system wishing to effectively manage the use of a limited natural resource among multiple contenders with demands that are potentially incompatible. Without priority, it is *ipso facto* impossible to determine which use should be protected in case of conflict. The ITU system therefore relies on a number of criteria for deter-

¹¹⁴ *Id.* at art. 4, app. 30.

¹¹⁵ *Id.* at art. 6, app. 30.

¹¹⁶ *See id.* at art. 5, app. 30.

¹¹⁷ *Id.* at art. 5.2.1, app. 30. *See further infra* section III.C.2.

mining priority, among which the 'first in time' or 'antecedence' criterion features prominently.¹¹⁸ It is this criterion that has inspired the detractors of the general ITU regime to coin the 'first-come, first-served' slogan, implying that a registered use of orbital slots will automatically and permanently be granted priority over any other competing assignment that is later in time. More specifically, the legal origins of the slogan can be traced back to the provisions of current articles 8.1 and 11.28 of the Radio Regulations.¹¹⁹ Article 8.1 RR in relevant part provides that

The international rights and obligations of administrations in respect of their own and other administrations' frequency assignments shall be derived from the recording of those assignments in the Master International Frequency Register . . . or from their conformity, where appropriate, with a plan.

This provision identifies the entry of a frequency assignment into the Master Register as the relevant point in time when international rights attached to a frequency and associated orbital position are acquired. When read in conjunction with article 11.28 RR, pursuant to which submitted notices for entering assignments into the MIFR are examined in order of receipt (*supra*), it might be gathered from this provision that the international protection of orbital usage is determined by the date of receipt of complete registration notices.¹²⁰ In any case, it is necessarily only those administrations that have completed the ITU procedure resulting in the registration of their assignment in the MIFR that will obtain protection of their use of a particular orbital position. Hence, a basic rule might be inferred

¹¹⁸ The notion "antecedence" will be used throughout this article so as to avoid confusion between the concepts "prior in time" and "priority". It is preferred over the term "precedence" suggested by the Chairman of the 1947 ITU Working Group cited in *The Evolution of the ITU's Regulatory Regime*, *supra* note 19, at 395, as the latter notion is actually synonymous with "importance, priority".

¹¹⁹ See also, INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 161.

¹²⁰ Lyall notes that, for space services, the date of receipt of the notice virtually becomes the date of entry into the MIFR and that as such an element of priority is attached to said date of the notice. See LAW AND SPACE TELECOMMUNICATIONS, *supra* note 13, at 370.

that the first administration to register its projected use of an orbit is granted absolute priority over later arrivals. The impact of the antecedence rule is softened to a great extent, however, as will be revealed by a comprehensive reading of all relevant provisions of the ITU regime.¹²¹

b. Relative Relevance of Antecedence: Finality and Interplay with Other Principles

A careful reading of the basic ITU documents reveals a number of fundamental principles that guide the process of acquiring international protection of the use of an orbital position in outer space. Only one of these is the antecedence rule. The two other main principles are the need to avoid harmful interference with other users and the conformity with applicable rules of international law.¹²² The three principles are not necessarily on equal footing; they interlock and are at the same time means for achieving one another and goals in themselves. For example, the antecedence rule is largely a means of avoiding harmful interference, which in turn is a goal posited by various rules of international law. Ultimately, it is the harmful interference notion that will determine whether there is a conflict that needs to be settled by assessing priority. If no probability of harmful interference arises, then there is no conflict and *ipso facto* no need to resort to the principles for resolving said conflict. Harmful interference thus emerges as the main goal of the ITU regime on orbital usage, which is achieved predominantly through conformity and antecedence. The overriding importance of the goal of eliminating harmful interference is clear from the general procedure on acquiring international protection described above, as it requires administrations to consult with any other administration whose activities may suffer harmful interference. It is also in line with the objectives of the Outer Space

¹²¹ See, in general, INTERNATIONAL TELECOMMUNICATIONS AND INTERNATIONAL LAW, *supra* note 13 (for the excellent analysis of the ITU rules and procedures); David M. Leive, *Regulating the Use of the Radio Spectrum*, 5 STAN. J. INT'L STUD. 21-52 (1970). See also *Regulating International Airwaves: the 1979 WARC*, *supra* note 32, at 11.

¹²² INTERNATIONAL TELECOMMUNICATIONS AND INTERNATIONAL LAW, *supra* note 13, at 21-24.

Treaty regime. Article IX of this treaty provides that States are to undertake appropriate international consultations if one of its projected activities is liable to produce harmful interference with the activities of other users. The goal is also reflected in the main functions of the ITU, pursuant to which the organisation is to "coordinate efforts to eliminate harmful interference between radio stations of different countries."¹²³ Finally, the ITU Radio Regulations contain numerous provisions that are designed to avoid harmful interference. In particular, they require that new assignments and amendments to existing assignments be made in such a way as to avoid causing harmful interference to services rendered by stations using frequencies already assigned in accordance with other provisions of the regulations, whose characteristics are recorded in the Master Register.¹²⁴

The ancillary nature of the antecedence and conformity principles for attaining the objective of eliminating harmful interference should be well understood. It entails that ITU member States are only bound by the provisions of the Constitution, the Convention and the Administrative Regulations, including those positing the antecedence rule, in telecommunication offices and stations established or operated by them, that are capable of causing harmful interference to radio services of other countries.¹²⁵ Only if a station is capable of causing harmful interference to another station should member States thus conform to the applicable radio regulations, including those determining priority, such as the rule of antecedence.¹²⁶ Moreover, ITU rules are inapplicable to frequencies and orbital segments that are used solely for the operation of military radio installations.¹²⁷ Any purported principle of antecedence is thus wholly irrelevant

¹²³ ITU CS, *supra* note 8, at art. 2, sub. a & b.

¹²⁴ ITU RR, *supra* note 17, at art. 4.3.

¹²⁵ ITU CS, *supra* note 8, at art. 6. These rules are also applicable when administrations engage in international services.

¹²⁶ See ITU RR, *supra* note 17, at art. 4.2 ("Member States undertake that in assigning frequencies to stations which are capable of causing harmful interference to the services rendered by the stations of another country, such assignments are to be made in accordance with the Table of Frequency Allocations and other provisions of these Regulations" (emphasis added)).

¹²⁷ ITU CS, *supra* note 8, at arts. 6 and 48.

for the operation of military services, due to the inapplicability of the Radio Regulations.

Second, even if the Radio Regulations are applicable, antecedence is not always a relevant factor for determining the priority of a particular assignment, as its application can be rendered moot by the rule of conformity.¹²⁸ This is clear from the following provision, which is the codification of the fundamental obligation of all ITU member States to establish and operate all their stations

in such a manner as not to cause harmful interference to the radio services or communications of other Members or of recognized operating agencies, or of other duly authorized operating agencies which carry on a radio service, *and which operate in accordance with the provisions of these Regulations* [emphasis added].¹²⁹

Importantly, this provision does not distinguish between stations on the basis of antecedence. It requires that *all* stations refrain from causing harmful interference to any other station operated by other administrations, *to the extent these operate in accordance with the Radio Regulations*. It follows that only those assignments that are in conformity with the Radio Regulations can claim protection from harmful interference caused by other assignments. If, pursuant to these provisions, a station is subject to not causing harmful interference to another station in the same service, it can also not claim protection from such interference from that same station.¹³⁰ Strictly speaking, an orbiting radio station that interferes with another station that is not operating in accordance with the Radio Regulations, is not even engaging in harmful interference, as the criterion of conformity with the provisions of the Radio Regulations has been integrated in the definition of harmful interference:

¹²⁸ Some authors only refer to the principles of harmful interference and conformity with applicable international law as defining the rights of administrations in orbital positions and radio frequencies, wholly omitting the antecedence principle. See Levy, *supra* note 38, at 187.

¹²⁹ ITU CS, *supra* note 8, at art. 45, repeated in ITU RR, *supra* note 17, at art. 0.4.

¹³⁰ ITU RR, *supra* note 17, at arts. 5.43 & 5.43A.

[Harmful interference is interference] which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service *operating in accordance with the Radio Regulations* [emphasis added].¹³¹

Hence, it is only when harmful interference is caused to the reception of a station that has passed the examination of the Bureau by a station that has received an unfavourable finding, that the latter station must eliminate this harmful interference.¹³² Stations operating in accordance with the Regulations are thus protected from harmful interference by all other stations that fail to abide by these rules, regardless of their respective dates of receipt and examination. The primary means of achieving the overriding objective of eliminating harmful interference thus does not appear to be the rule of antecedence, but conformity with the applicable provisions of international law.

Third, the overarching nature of the goal of avoiding harmful interference implies that even if late registrants do not operate in accordance with the Radio Regulations, their use of a particular frequency and orbital segment may still be granted international recognition and protection on the sole condition that it does not cause harmful interference, in one of two ways. First, the registration of a station that fails to abide by the rules of the Radio Regulations can be noted for 'information purposes,' provided that it will not cause harmful interference to or claim protection from harmful interference from a station operating in accordance with the ITU Constitution, Convention, and Radio Regulations.¹³³ The penalty for not following the Radio Regulations is thus merely a downgrade in international recognition. Second, even if the examination of the Bureau yields an unfavourable finding as regards conformity with a previously registered assignment that has obeyed all relevant the Radio Regula-

¹³¹ ITU CS, *supra* note 8, at Annex (for the definition of certain terms used in this Constitution, the Convention and the Administrative Regulations of the International Telecommunication Union). This definition is repeated almost *verbatim* in ITU RR, *supra* note 17, at art. 1.169.

¹³² See ITU RR, *supra* note 17, at arts. 8.5, 11.31, 11.36 & 11.42.

¹³³ *Id.* at art. 8.4 & 4.4.

tions, the Bureau may enter it provisionally with an indication of the administrations whose assignments were the basis of the unfavourable finding if the requesting administration is adamant about the registration of its assignment. The provisional entry will be made definitive if all relevant assignments are in use for four months without any complaint of actual harmful interference.¹³⁴

Fourth, priority is at times determined without regard for either the criterion of antecedence or conformity, but pursuant to an analysis based solely on the type of service provided by the respective assignments. Before allotting and assigning specific frequencies to the various end-users, the entire radio spectrum is allocated among different services.¹³⁵ This division affects the priority discussion in a number of ways. First, allocation means that radio services can be of a primary or secondary nature.¹³⁶ Importantly, stations of a secondary service are not to cause harmful interference to stations of primary services "to which frequencies are already assigned or to which frequencies may be assigned at a later date." Conversely, such stations can also not claim protection from harmful interference from stations of a primary service, to which frequencies are already assigned or may be assigned at a later date.¹³⁷ Priority in this case is thus determined solely on the basis of the nature of the service rendered, irrespective of the point in time when either use was registered. The antecedence rule reemerges when priority conflicts are to be settled between two types of use in the same service category: in that case, stations of a secondary nature can claim protection from harmful interference from stations of the same or other secondary services to which frequencies may be assigned at a later date.¹³⁸ Second, international telecommunication services must give absolute priority to all telecommunica-

¹³⁴ *Id.* at art. 11.41.

¹³⁵ "Allocation" is defined as the entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more terrestrial or space radio-communication services or the radio astronomy service under specified conditions. The Table is contained in ITU RR, *supra* note 17, at art. 5.

¹³⁶ *See id.* at arts. 5.23-5.26.

¹³⁷ *Id.* at arts. 5.28-5.30.

¹³⁸ *Id.* at art. 5.31.

tions concerning safety of life at sea, on land, in the air or in outer space, as well as to epidemiological telecommunications of exceptional urgency of the World Health Organization.¹³⁹ As transmissions on distress and safety frequencies and frequencies used for the safety and regularity of flight require absolute international protection and the elimination of harmful interference to such transmissions is therefore imperative, administrations undertake to act immediately when their attention is drawn to any such harmful interference, regardless of the relative antecedence of either type of usage.¹⁴⁰ Likewise, government telecommunications shall in principle enjoy priority over other telecommunications as well, but only "to the extent practicable upon specific request by the originator."¹⁴¹

Fifth, the impact of the antecedence rule as determined by the point in time when the procedure for the recognition of slot usage is initiated is mitigated by the Rules of Procedure of the Bureau. As such, Rule H40 clarifies that "no administration enjoys any particular priority as a result of being the first to start either the advance publication procedure or to request coordination."¹⁴² The actual impact of this rule is unclear. If it were to imply, as it appears at first sight, that the mere initiation of a registration procedure under general ITU rules does not in and of itself grant any actual priority over other uses of the radio spectrum and associated orbits, it merely reiterates the provision of the Radio Regulations that renders the acquisition of international rights conditional upon the registration of an assignment into the MIFR.¹⁴³ Conversely, if the rule were intended to mitigate the impact of the antecedence rule wholesale, one would expect it to be phrased less ambiguously and with clear reference to the moment of actual registration. The fact that the provision stops short of referring to the notification

¹³⁹ ITU CS, *supra* note 8, at art. 40.

¹⁴⁰ ITU RR, *supra* note 17, at art. 15.28. *See also id.* at art. 31 & app. 27.

¹⁴¹ ITU CS, *supra* note 8, at art. 41.

¹⁴² Wilson, *supra* note 11, at 266. *See also* In re Telesat Canada Petitions for Reconsideration, F.C.C. 10-188 (Oct. 29, 2010) (the rule is also relied upon by the U.S. Federal Communications Commission (FCC)), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2010/db1101/FCC-10-188A1.txt.

¹⁴³ ITU RR, *supra* note 17, at art. 8.1.

phase, however, rather appears to confirm the general applicability of the antecedence rule.¹⁴⁴

Sixth, even if the antecedence rule should be taken into account, the rules of procedure in harmful interference conflicts make clear that it is but one of many factors that influence priority.¹⁴⁵ The consultations between administrations potentially affecting each other's activities in orbit should not be settled solely by reference to antecedence, but with due consideration of all factors involved, including the relevant technical and operating factors, such as the possibility of timesharing the slots and frequencies used.¹⁴⁶ This dovetails with what is generally understood by references to equity in domestic and international law: the requirement that conflicts are assessed on a case by case basis, taking into account all relevant factors, with a view of reaching a solution that is mutually acceptable to all parties involved.¹⁴⁷ Practice shows that this is also how most harmful interference conflicts are resolved: through a process of coordination

without strict regard for which station has the stronger legal claim. . . . [T]here is reluctance to rely on legalities to resolve disputes, particularly since for a wide range of disputes there are no applicable legal rules defining the respective rights and obligations of the parties.¹⁴⁸

Finally, even in those cases where priority is largely determined on the basis of antecedence, the reference point is amenable to change over time, thus allowing for a reassessment of said priority with respect to uses of orbital segments and frequencies that strictly speaking occur later in time. First, the priority obtained by virtue of antecedence on the basis of the

¹⁴⁴ See, however, *infra* n. 178.

¹⁴⁵ See in general, ITU RR, *supra* note 17, at art. 15, section VI.

¹⁴⁶ *Id.* at art. 15.23.

¹⁴⁷ Stephen GOROVE, *Principles of Equity in International Space Law*, in 26 PROC. COLL. L. OUTER SPACE 17 et seq. (1983) [hereinafter *Principles of Equity*] (for the notion of equity in space law); *Space WARC 1985*, *supra* note 38. See Anastasios Gourgourinis, *Delineating the Normativity of Equity in International Law*, 11 INT'L COMM. L. REV. 327-347 (2009) (for a recent appraisal of the equity notion in general international law).

¹⁴⁸ *Regulating the Use of the Radio Spectrum*, *supra* note 121, at 30.

date of notice can be lost if the basic characteristics of a registered assignment are changed in the process of notification and registration. Whenever one of the basic characteristics of an assignment is altered, the date of the notice shall be that of the latest change.¹⁴⁹ Second, any notice of change to an assignment already recorded must follow the same procedure as is required for registering a new assignment.¹⁵⁰ Only when an altered assignment is in conformity with the relevant provisions of the Radio Regulations and does not increase the likelihood of harmful interference with assignments already recorded shall it retain the original date of entry in the MIFR.¹⁵¹ Similar rules apply to the registration of satellites replacing old parts of an already recorded network using the same orbital position and assigned frequencies.¹⁵² Finally, any resubmitted notice received by the Bureau without respecting the relevant time limits shall be considered to be a new notification with a new date of receipt, or as a new notice of a change in the characteristics of an assignment already recorded with a new date of receipt.¹⁵³

Whatever the outcome of a specific conflict of priority among particular users, the above analysis of the ITU regime clearly repudiates the reproach that the mere initiation of a registration procedure will necessarily and irrevocably result in absolute priority over later uses of orbital segments and radio frequencies. The 'first-come, first-served' mantra has thus correctly been exposed as "merely as a popular slogan without legal significance," used and abused for political reasons by the leading satellite powers of the developing world.¹⁵⁴ Indeed, there are strong indications that no administration in the history of the ITU was ever actually denied access to orbit. It has therefore been suggested that the slogan for describing the general ITU

¹⁴⁹ See ITU RR, *supra* note 17, at app. 4. The basic characteristics referred to here are included in the information submitted for the advance publication phase of the registration procedure. See *supra*.

¹⁵⁰ ITU RR, *supra* note 17, at arts. 11.1 and 11.43A.

¹⁵¹ *Id.* at art. 11.43B.

¹⁵² See further *infra* on Resolution 4 in section IV.C.2.

¹⁵³ ITU RR, *supra* note 17, at art. 11.46.

¹⁵⁴ *The Legal Status of the Geostationary Orbit*, *supra* note 11, at 220-221. See also Levy, *supra* note 38, at 189.

procedure for acquiring international protection of orbital usage, if any, should be 'serve upon arrival',¹⁵⁵ 'everyone-come, everyone-served'¹⁵⁶ or even 'last-come, always served.'¹⁵⁷ To be sure, none of these slogans fully captures the complexities of the procedure described above and they may well understate some of the difficulties that may arise for those arriving late on the scene of orbital usage (see next subsection). Nevertheless, it is telling that, at the peak of the controversy surrounding the uses of the GSO, the then IFRB, commonly known as the ITU organ most receptive to the qualms of the developing world, issued a report citing only four countries to have indicated any actual difficulties in coordinating their geostationary communication satellite systems. The Bureau could thus rightly conclude that the general ITU procedure for unplanned systems "functioned rather effectively."¹⁵⁸

c. Antecedence Remerges: Mitigated Antecedence

Despite the highly qualified nature of the antecedence rule, prior registration of a particular use of frequencies and orbital segments does put an administration in a privileged position compared to later assignments having the same legal status that nevertheless remain liable to produce harmful interference. Mere conformity with the applicable rules of the ITU is not likely to resolve all disputes, as, for all their complexity, their

¹⁵⁵ Stephen E. Doyle, *Equitable Aspects of Access to and use of the Geostationary Satellite Orbit*, 17 ACTA ASTRONAUTICA 637-646 (1988).

¹⁵⁶ *Regulating International Airwaves: the 1979 WARC*, *supra* note 32, at 31 (referring in particular to the procedures for the high-frequency bands, noting that "the problem with the present scheme is not that it is first-come, first-served, but that it is 'everyone-come, everyone-served' until the band becomes overcrowded." *Id.*)

¹⁵⁷ INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 47 (address by Dean Burch on July 8, 1985). See also Alan Michael Solana, *The International Telecommunication Union and the Third World's Quest for Equitable Access to the Orbit/Spectrum Resource*, 4 BOST. COLL. THIRD WORLD L.J. 189, n. 49 (1984) (on the misleading nature of the "first-come, first-served" slogan); Levy, *supra* note 38, at 189 ("the existing regime is thus not a first-come, first-serve system that forecloses subsequent entry"). See also in general the writings of David Leive cited throughout this article.

¹⁵⁸ *Space WARC 1985*, *supra* note 38, at 234, n. 16 (referring to the 1985 IFRB Report).

scope remains relatively narrow.¹⁵⁹ A detailed system covering every type of use imaginable of the vast array of frequencies and orbital positions available would dramatically strain the potential for effective use of these limited natural resources. Therefore, if the conformity rule proves inadequate, antecedence re-merges as the most reliable and transparent means of settling priority disputes among intransigent administrations, as it unequivocally and transparently confers the strongest bargaining position to the administration first to have its projected use of a certain orbital slot protected in combination with a given frequency.¹⁶⁰ As we have seen, both the Outer Space Treaty and the ITU Radio Regulations require that States settle their harmful interference disputes regarding the use of a particular orbit through appropriate international consultations. While it is correct that these consultations are not determined by the level of legal protection attached to the conflicting activities, it stands to reason that the first to acquire such protection in line with the applicable regulations cannot be forced by a later user to halt the lawful exploitation of its registered slot.¹⁶¹ The relevant guidelines merely require that ITU member States exercise "the utmost goodwill and mutual assistance" in the application of the provisions on the settlement of harmful interference conflicts.¹⁶² Likewise, during the advance publication and coordination phases of the general registration procedure, administrations "shall" explore "all possible means of resolving conflicts."¹⁶³ The

¹⁵⁹ INTERNATIONAL TELECOMMUNICATIONS AND INTERNATIONAL LAW, *supra* note 13, at 21.

¹⁶⁰ See Alan H. Ickowitz, *The Role of the International Telecommunication Union in the Settlement of Harmful Interference Disputes*, 13 COL. J. TRANSNAT'L L. 87 (1974); *Satellite Power System*, *supra* note 44, at 35; Paula K. Speck, *Competition in International Satellite Telecommunications: Alternative Avenues*, 20 TEX. INT'L L.J. 524 (1985).

¹⁶¹ INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 172; *Satellite Power System*, *supra* note 44, at 30; SATELLITE BROADCASTING, *supra* note 16, at 18.

¹⁶² ITU RR, *supra* note 17, at art. 15.22.

¹⁶³ See *id.* at art 9.4 (for satellite networks and systems not subject to the coordination procedure of section II of art. 9 of the ITU RR. "In the case of difficulties, the administration responsible for the planned satellite network shall explore all possible means to resolve the difficulties without considering the possibility of adjustment to networks of other administrations. If no such means can be found, it may request the other administrations to explore all possible means to meet its requirements. The administrations concerned shall make every possible effort to resolve the difficulties by

essentially bilateral and voluntary nature of the coordination consultations is not altered by the fact that the Bureau and other administrations may be called in to assist the parties involved, since in the case of continuing disagreement the Bureau is still required to act according to the rules of the Radio Regulations, which ultimately favour the administration with the strongest legal position, in this case the first to register.¹⁶⁴ Perhaps it is in this context, however, that the aforementioned Rule H40 comes into effect. Indeed, it has been interpreted as enshrining

the principle of equal priority whereby the onus of resolving any difficulty is equally shared by the parties, including administrations which already co-ordinate and control satellite systems, or the administration proposing a new satellite network, and the affected administration.¹⁶⁵

Whatever the actual impact of Rule H40 in practice, the procedure for acquiring international recognition and protection of the use of unplanned bands and related orbital points can ultimately be qualified as a system of mitigated antecedence. The antecedence principle is not as rigid and determining a factor as might be gathered from the overly simplistic view summoned by the 'first-come, first-served slogan.' Many other rules and factors determine the outcome of harmful interference disputes under the general ITU procedure. Nevertheless, situations can arise where, despite the application of all other principles, prior registration of an assignment is in fact a determining factor for the use of a slot when a latecomer to the spectrum is faced with an intransigent first user. It is this particular imbalance in bargaining power that has sparked the calls of non-users of orbital slots for an alternative planning approach, safeguarding their future use of these resources.

means of mutually acceptable adjustments to their networks."). See also *id.* at art. 9.5B (if subject to section II of art. 9, "both administrations shall endeavour to cooperate in joint efforts to resolve any difficulties, with the assistance of the Bureau, if so requested by either of the parties, and shall exchange any additional relevant information that may be available").

¹⁶⁴ See *id.* at art. 9.60-9.65.

¹⁶⁵ Wilson, *supra* note 11, at 268.

2. *A Priori* Plans: Exception to the Rule?

The general ITU procedure for registering the use of a particular orbit relies for its initiation on a positive action to be undertaken by the requesting State pertaining to each planned satellite network or system. It is only after the successful conclusion of this procedure, resulting in the registration of the assignment in the Master Register, that international recognition and protection of the orbital use is acquired. Such an *a posteriori* procedure, regardless of the ultimate impact of the antecedence principle, mainly benefits the space-resource States, as they are by definition the only States liable to initiate a procedure that for its completion relies on the submission of detailed technical information of actual plans for launching a satellite network in the near future. Future uses of specific orbital segments by non-spacefaring nations can only be guaranteed at present through an alternative approach that would disconnect the acquisition of international rights to the use of these slots from their present capacity to actually use them. The proponents of this alternative therefore projected the adoption of veritable *a priori* plans, which would shift the moment of international recognition and protection of the use of slots from the registration of actual satellite networks to the entry into force of the plan.¹⁶⁶ As such a move would institutionalise the reservation of orbital capacity without subsequent use, thereby diminishing the already scarce supply of this 'limited natural resource', a thorough analysis of the lawfulness of practices such as slot warehousing and paper satellites must also scrutinize the actual *a priori* nature of the plans adopted by the ITU.

It is recalled that the fixed-satellite service plan distributes national allotments among administrations that require conversion into concrete assignments by a requesting administration in order to be granted international protection (*supra*). The allotment concept essentially allowed the drafters of the FSS plan to retain the antecedence rule in the framework of an *a priori* plan, as the conversion procedure borrows heavily from the gen-

¹⁶⁶ See INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 47.

eral procedure for unplanned bands, including coordination with affected administrations. Moreover, the subsequent procedure for notification and registration of the converted assignment explicitly retains the date of receipt of the complete notice as a reference point for examination by the Bureau.¹⁶⁷ Finally, Appendix 30B still requires that converted assignments be registered in the MIFR before the requesting administration can be granted rights of international protection and recognition over its use of the reserved orbital slots.¹⁶⁸ The FSS plan thus preserves a strong *a posteriori* aspect by putting off the acquisition of enforceable rights to a moment in time when the actual use of the reserved slots is actively contemplated by a requesting administration.¹⁶⁹

The allotment notion also precludes the distribution of actual rights over fixed orbital positions among individual nations from the mere entry into force of the plan, as it fails to identify any concrete orbital slots to which such rights could be attached. This is buttressed by the observation that the distribution of allotments in the FSS plan itself is amenable to modification. As such, an additional assignment can be granted for use by an administration that is already given an allotment in the original plan,¹⁷⁰ and allotments may be added in order to accommodate the needs of a new ITU member State.¹⁷¹ The procedure for incorporating additional assignments is identical to the procedure for converting an allotment, with the added requirement that the administration concerned should place the additional system, to the extent possible, in the same orbital slot, so as to avoid the use of multiple orbital locations to cover the same service area.¹⁷² This requirement is justified by reference

¹⁶⁷ See ITU RR, *supra* note 17, at art. 8.5, app. 30B.

¹⁶⁸ *Id.* at art. 8, app. 30B.

¹⁶⁹ LAW AND SPACE TELECOMMUNICATIONS, *supra* note 13, at 394; Thompson, *supra* note 4, at 296; Ram Jakhu, *Developments in the International Law of Telecommunications: Remarks*, 83 AM. SOC'Y INT'L L. PROC. 391 (1989). See ITU RR, *supra* note 17, at arts. 6.20, 6.24 & 8.15, app. 30B (the *a posteriori* aspects of the FSS coordination and examination phases are even subject to similar qualifications as the general procedure for the unplanned bands).

¹⁷⁰ ITU RR, *supra* note 17, at art. 2.6 & 6, app. 30B.

¹⁷¹ *Id.* at art. 7, app. 30B.

¹⁷² *Id.* at art. 2.6bis, app. 30B.

to the efficiency criterion in article 44 ITU CS. Finally, the addition of an allotment to accommodate the needs of a new ITU member should follow the same procedure as required when registering an assignment to the List, *i.e.* the requesting administration has to submit information on the orbital locations it has selected, after which the notice will be examined as to its conformity with the allotments and assignments already examined or included in the List.¹⁷³ This shall occur prior to the examination of any submission of a new assignment for which the Bureau has not yet started the identification of affected administrations under the procedure for inclusion in the List, thus also qualifying the effects of the antedecence rule within the allotment plan.¹⁷⁴ Upon a favourable finding, the allotment shall be entered into the FSS plan, after which the new member should initiate the general procedure for converting it into an assignment.¹⁷⁵

Unlike the FSS plan, the broadcasting service plan is based on assignments rather than allotments, as the technical parameters that dictated the need for flexibility in the regulation of fixed-satellite services were deemed less stringent for the BSS. This reduced need for flexibility allows the Bureau to rely solely on the principle of conformity with the applicable ITU rules and regional plans when examining the lawfulness of a particular assignment. Hence, if the Bureau reaches a favourable finding with respect to the conformity of the assignment with the ITU Constitution, Convention, Radio Regulations, and regional plans, it follows that

In relations between administrations, all frequency assignments brought into use in conformity with the appropriate Regional Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates of receipts entered in the Master Register for such frequency assignments.¹⁷⁶

¹⁷³ *Id.* at art. 7.5, app. 30B.

¹⁷⁴ *Id.* at art. 7.3, app. 30B.

¹⁷⁵ *Id.* at art. 7.6, app. 30B.

¹⁷⁶ *Id.* at art. 5.2.2, app. 30. *See also id.* at arts. 5.2.2.1 & 5.2.2.2.

While the antecedence principle is retained in the FSS plan through the introduction of the allotment concept, the rule is thus abandoned in the regulation of BSS services. To be sure, complete notices of assignments in BSS services are still examined by the Bureau 'in order of receipt.'¹⁷⁷ The nature of this examination, however, reveals the provision as being no more than an administrative rule rather than a factor for determining priority among competing assignments.¹⁷⁸

The qualification of the BSS plan as an allotment rather than an assignment plan does not only impact on the relevance of the antecedence rule. Contrary to the FSS plan, the immediate identification of nominal orbital positions in the broadcasting plan is also likely to limit the activities that may be developed with respect to these positions by other States as soon as the plan enters into force. Nevertheless, the acquisition of international rights of recognition and protection is still dependent on registration in the MIFR. Moreover, the initial distribution of assignments in the broadcasting-service satellite plan is amenable to modification as well.¹⁷⁹ An exceptional procedure is even provided for when accommodating an administration that lacks an assignment in the List when it is confronted with an administration that, already having two assignments in the List in the same channel and covering the same service area, nonetheless proposes to insert a new assignment in the same channel over the same service area. If, in that case, the former administration requires the agreement of the latter, both are required to make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks. If no agreement can be reached, the administration already having two assignments shall nevertheless be deemed to have given its accord, if it has failed to communicate certain information.¹⁸⁰ The same procedure can be applied by the administration of a

¹⁷⁷ *Id.* at art. 5.1.8, app. 30.

¹⁷⁸ The interplay between this provision and the explicit abolition of the antecedence rule may even cast new light on the interpretation of Rule H40, implying that the date of receipt is less decisive in the general procedure for unplanned bands as well. See *supra* footnotes 142-144 and accompanying text.

¹⁷⁹ ITU RR, *supra* note 17, at art. 4, app. 30.

¹⁸⁰ *Id.* at art. 4.1.25, app. 30.

new ITU member State wishing to include new assignments in the List.¹⁸¹ These exceptional rules are an immediate application of the general requirement of effectiveness concretized in the procedure for accommodating additional systems as described in the FSS plan.¹⁸² Furthermore, they are a clear example of how *a priori* plans can benefit States arriving late to the scene of orbital usage, by balancing the negotiation powers during the consultation phase, without, however, resorting to the distribution of legal rights to the use of slots among States unable to exercise them.

The proclaimed purpose of the ITU *a priori* plans was to safeguard the future needs of States currently lacking the capacity to use valuable space resources by reserving the use of orbits and frequencies through a plan that would equitably distribute rights over these resources upon its entry into force, regardless of their subsequent use. In reality, however, the plans adopted retain the registration of assignments into the MIFR as the ultimate reference point for the acquisition of international rights and obligations to orbital slots. Limited exceptions do appear to exist in the form of abstract rights granted by the identification of allotments and assignments in the BSS and FSS plans as such, although it is unclear to what extent the mere entry into force of these plans reinforces the legal position of individual States. In order to establish the legal value of these and other rights (*infra* section IV.A), it should first be determined if and when they can be lost, as this will impact upon their qualification.

D. Can Rights be Lost?

1. Notified vs. Actual Occupancy

In spite of the noted differences between the procedures for putting to use orbital slots in planned and unplanned bands, all assignments for the actual or projected use of satellite networks will be granted international recognition and protection upon

¹⁸¹ *Id.* at art. 4.1.26, app. 30.

¹⁸² *See id.* at art. 2.6bis, app. 30B.

their registration in the MIFR.¹⁸³ Such near automatic acquisition of rights through the fulfillment of a limited set of procedural requirements cannot prevent orbital capacity from going to waste. To be sure, the general ITU procedure is generally referred to as an *a posteriori* system, for the way in which it attaches international rights to slots and frequencies *after* the completion of a detailed registration procedure tailored to a specific satellite network. The need to submit detailed technical information to the Bureau, including a projected date of bringing the assignment into use, followed by a thorough examination of its conformity with the applicable rules of the ITU procedure, are decidedly measures aimed at verifying the intention and capability of a registering administration to actually use the slot covered. However, this does not detract from the fact that the assessment ultimately remains an *a priori* analysis, in that it attaches rights to an assignment before the relevant frequency bands and orbital positions are actually brought into use. Moreover, we have seen that certain hitherto unqualified rights may be attached to nominal orbital positions from the entry into force of the broadcasting-satellite service plan, thereby expressly disconnecting the acquisition of rights from any intention or capacity to actually use them. All of this has resulted in a Master Register that "reflects 'notified occupancy' rather than actual occupancy."¹⁸⁴

The lack of adequate information regarding the availability of orbital slots is one of the main causes and consequences of the paper satellite problem, as it places the Bureau in a difficult position to correctly assess the availability of an already scarce resource. A comprehensive answer to the paper satellite problem thus requires that the initial acquisition of international rights to the use of orbital positions, whether in connection with a planned or an unplanned frequency band, be rendered subject to a veritable *a posteriori* review. In other words, it requires that the registration of an assignment be subjected to conditions of which the fulfillment can be measured after the initial registration in the MIFR. Interesting in this respect is the language of

¹⁸³ *Id.* at art. 8.1.

¹⁸⁴ *Regulating the Use of the Radio Spectrum*, *supra* note 121, at 31.

article 8.1 of the Radio Regulations, cited above, which speaks not only of international rights, but also of international obligations attached to frequency assignments. Could the obligation to actually make use of a registered slot be one of those obligations?

2. Unplanned Bands: Date of Bringing into Use Decisive

The international protection of an assignment against harmful interference by other users hinges on its regulatory entry in the Master Register. It follows that the rights attached to the use of an orbital segment by a particular administration will lapse if the assignment is removed from the Register. The administration concerned will then no longer be able to claim protection from harmful interference, and must likewise refrain from causing such interference to other administrations.¹⁸⁵ The imposition of a veritable *a posteriori* test implies that an assignment that has been registered first through completion of the appropriate procedures is nevertheless liable to lose its priority status, thus further qualifying the intricate interplay between the antecedence rule and other principles for determining priority in harmful interference conflicts. The ITU Radio Regulations clearly posit the actual and continued use of registered assignments as such an *a posteriori* check on the reservation of orbital capacity.

As noted earlier, the information to be provided in advance by a requesting administration includes, *inter alia*, the projected date of bringing into use the planned satellite network (see *supra* section III.B.1). This date denotes

the date at which the frequency assignment is brought into regular operation to provide the published radiocommunication service with the technical parameters within the technical characteristics notified to the Bureau.

¹⁸⁵ ITU RR, *supra* note 17, at art. 5.43 & 5.43A.

Whenever the assignment is changed in any of its basic characteristics, . . . the date to be given shall be that of the latest change (actual or foreseen, as appropriate).¹⁸⁶

It stands to reason that this date is particularly vulnerable to change, as it is often impossible to determine in advance with definite certainty when a projected satellite network will actually be launched and when the corresponding orbital positions will be put to use. The notified date of bringing into use a space station should therefore not exceed seven years following the date of receipt by the Bureau of the relevant information (article 11.44 RR). Frequency assignments to space stations that are notified in advance of their being brought into use shall be entered provisionally into the MIFR. Any such frequency assignment "shall be brought into use no later than the end of the period provided under No. 11.44. Any other frequency assignment provisionally recorded under this provision shall be brought into use by the date specified in the notice."¹⁸⁷ The indication by the requesting administration of the date for bringing into use an assignment creates a proper and legally binding obligation. If a frequency assignment has not been brought into use in the specified period, the Bureau will cancel the entry after informing the administration at least three months before the expiry date.¹⁸⁸ If the assignment that was not timely brought into use was the basis of an unfavourable finding during the coordination phase for registering another assignment, it follows from the removal of the former assignment that the latter finding shall be reviewed accordingly.¹⁸⁹ When an assignment has been brought into use but the use has since been suspended for a period not exceeding eighteen months, the notifying administration shall, as soon as possible, inform the Bureau of the date on which such use was suspended and the date on which the as-

¹⁸⁶ *Id.* at app. 4, p. 68.

¹⁸⁷ *Id.* at art. 11.47.

¹⁸⁸ *Id.* at arts. 11.44 and 11.47-48.

¹⁸⁹ *Id.* at art. 11.41A.

signment is to be brought back into regular use; this date shall not exceed two years from the date of suspension.¹⁹⁰

The rights granted to administrations that have completed the registration procedure are thus rendered conditional upon the subsequent actual and continued use of the resources claimed. It may hence be argued that the definite acquisition of rights pertaining to orbital slots occurs at the occasion of their actual use rather than the formal completion of the registration

¹⁹⁰ *Id.* at art. 11.49. It is unclear why this period was fixed at two years. The current version of the Radio Regulations fail to clarify the consequences for exceeding this period, or, for that matter, what happens if a slot remains unused for more than eighteen months. Possibly, the period of two years mentioned in current art. 11.49 of the ITU RR is a remnant of a reference to an earlier provision of the Regulations that has been suppressed along the way, without art. 11.49 having been properly adapted to this evolution. Indeed, art. 9A, para. 639BS of the 1971 Radio Regulations provided that, when, following an examination of a notice with respect to current art. 11.31 RR, the Board reaches an unfavourable finding based on the probability of harmful interference to a recorded assignment for a space station which the Board has reason to believe may not be in regular use, the Board shall forthwith consult the administration responsible for the registered assignment. If it is established, after such consultation and on the basis of the information available, that the recorded assignment has not been in use for *two years*, it shall not be taken into account for the purposes of the examination in progress or any other further examination under art. 11.31 RR conducted before the date on which the assignment is brought back into use. Before the assignment is brought back into use, it shall be subject to further coordination and examination by the Board. The date on which the assignment is brought back into use shall then be entered in the Master Register. Thus, under the 1971 RR, if an assignment had not been not in use for more than two years, it was removed from the register and re-entered only when brought back into use, bearing then the new date of entry. The at first sight quite odd lapse from eighteen months to two years in current art. 11.49 RR may be explained by reference to the precursor of this provision, para. 639DM of the 1971 RR. This provision held that, when the use of an assignment is suspended for eighteen months, the registering state is obliged to notify the Board of the date when the use was suspended and when the assignment is to be brought back into regular use. This is still the case at present. However, the provision added that the Board may, in case of non-compliance by the registering state, inquire of said state when it will be brought back into regular use. If the state did not respond within 6 months (thus increasing the period to a maximum total of two years), the Board was to treat the assignment "as one which has been established as having been out of regular use for two years", once more referring to para. 639BS. Even though the current Radio Regulations do not explicitly attach this consequence to a lapse in use of more than two years, it would stand to reason that the Bureau now still has the power to cancel and disregard these entries when analyzing the probability of harmful interference with other assignments, due to the clear link established by the legislative history of current art. 11.49 RR. See further *infra* section V.C. on the powers of the Bureau to cancel entries. See also *Satellite Power System*, *supra* note 44, at 37 for a reconstruction of the text of para. 639BS before the 1979 Final Acts.

procedure.¹⁹¹ The duration of the rights is then determined by the continued use of these resources. It is hardly efficient, however, to postpone the assessment of the veracity of the intention and capacity of a requesting administration until after a nine-year waiting period has elapsed. In a first move to alleviate the administrative burden of paper satellites, the ITU has therefore reduced the time limit for putting to use frequency bands and orbital positions identified in a recorded assignment from an initial maximum of nine years to the current seven-year period.¹⁹² More drastic measures were called for, however, and the ITU therefore also introduced a number of administrative due diligence measures with a view to readily ascertaining the veracity of the intention and capacity of administrations to effectively use the natural resources reserved.¹⁹³ This goal is achieved partially by the initiation of the advance publication phase, as the early submission of detailed technical information is a compelling indicator of the actuality of orbital usage. If the notice submitted during this phase is incomplete, the Bureau shall immediately ask the requesting administration for clarification and additional information.¹⁹⁴ The Bureau may even cancel the incomplete information that has already been published if the notice is not completed in time.¹⁹⁵

The preliminary rights obtained by the initiation of the coordination and registration procedure are thus rendered subject

¹⁹¹ Christol notes that the claims that priority is acquired on the basis of the "first-come, first-served" principle have become less meaningful in light of the focus of the ITU rules on the need to actually use the registered assignments. See, *Satellite Power System*, *supra* note 44, at 64. *Contra*, *Legal Issues of Satellite Telecommunications, the Geostationary Orbit and Space Debris*, *supra* note 7, at 181. See Valters, *supra* note 13, at 76-77 (for the qualification of the antecedence principle, "first use, first served", rather than, "first-come, first served").

¹⁹² *Rapporteur Group SC-4 Report*, *supra* note 3, at 15-17; Director Radiocommunication Bureau, *supra* note 3, at 9.

¹⁹³ See Francis Lyall, *The Rational, Efficient and Economic Use of Space: Three Suggestions*, in Marietta BENKÖ & W. KROLL (eds.), *LUFT- UND WELTRAUMRECHT IM 21. JAHRHUNDERT: LIBER AMICORUM KARL-HEINZ BÖCKSTIEGEL* [AIR AND SPACE LAW IN THE 21ST CENTURY - LIBER AMICORUM KARL-HEINZ BÖCKSTIEGEL] 386-395 (Cologne, Heymann, 2001); H. Wong, *The Paper "Satellite" Chase: The ITU Prepares for its Final Exam in Resolution 18*, 63 J. AIR L. & COM. 849-879 (1998). See further, *Rapporteur Group SC-4 Report*, *supra* note 3.

¹⁹⁴ ITU RR, *supra* note 17, at arts. 9.2A & 9.40A.

¹⁹⁵ *Id.* at art. 9.5D.

to subsequent submission of the required due diligence information. These measures are likely to mitigate the administrative backlash of paper satellites to some extent, but not entirely. In order to more effectively combat the problem, it has been suggested that later-filed systems should not have to accommodate earlier-filed systems that have failed to supply the information required in a timely fashion – in other words: they should be moved back into the queue, cancelling out the antecedence principle.¹⁹⁶ Another and arguably more effective means of dissuading administrations from frivolously filing for orbital usage absent any veritable intention to actually use the reserved resources, is to render the registration of an assignment conditional upon the payment of certain charges in the early phases of the procedure. The ITU has therefore rendered all satellite network filings received by the Radiocommunication Bureau on or after 8 November 1998, concerning advance publication and their associated requests for coordination or agreement, subject to cost-recovery charges.¹⁹⁷ If the required payments are not received in accordance with the relevant provisions, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall then notify all administrations that they no longer have to take into account the cancelled network for their respective consultation proceedings.¹⁹⁸ Finally, in his report on suggested remedies for resolving the paper satellite problem of the ITU, Leive has noted that the same rules should be applied to the systems that have already been entered into the Register.¹⁹⁹

The requirement to actually use the resources claimed by the initiation of the general *a posteriori* procedure is a potent means of combatting the reservation of orbital capacity without subsequent use. The administrative and financial due diligence measures introduced by the ITU further this goal by allowing

¹⁹⁶ *Rapporteur Group SC-4 Report*, *supra* note 3, at 23.

¹⁹⁷ Decides 1 of Council Decision 482, available at <http://www.itu.int/ITU-R/go/space-cost-recovery/en> (last visited May 8, 2012). See also ITU RR, *supra* note 17, at Vol. 3: Resolutions 88 and 91.

¹⁹⁸ ITU RR, *supra* note 17, at nn.9.2B.1, 9.38.1 & A.11.6.

¹⁹⁹ *Rapporteur Group SC-4 Report*, *supra* note 3, at 24-25. See further *infra* section V.C. on these powers of the Bureau.

that rights attached to the use of slots be removed even before their actual acquisition through the proper completion of the registration procedure, as non-compliance with these measures is an early indicator that the requested orbits are reserved without the intention to use them.²⁰⁰ While these measures thus succeed in rendering the general procedure of the ITU genuinely '*a posteriori*,' the question remains whether the *a priori* plans adopted are susceptible to the same qualification.

3. Planned Bands: Entry into Force of Plan Not Decisive

The political calls for establishing *a priori* plans were mainly inspired by the heart-felt need of non-spacefaring nations to be able to exercise future rights regarding orbital positions they could not actually use at present. An *a priori* regime based on the disconnection of rights from subsequent use obviously does not lend itself to being conditioned by an *a posteriori* requirement of actual use:

The international protection enjoyed by an *a priori* Plan during its lifetime . . . is unequivocal and cannot be challenged irrespective of the date on which individual countries notify the frequencies or channels specified for their use in the *a priori* Plan. On the other hand, an assignment notified under the 'first-come, first-served' principle does not enjoy the same degree of 'security'.²⁰¹

The ITU plans currently in force pertaining to the use of orbital positions in connection with frequency bands for broadcast and fixed-satellite services are a far cry from the rigid aspirations of their originators, however. Rather than distributing from their inception fixed rights pertaining to preselected orbital segments among the member States of the ITU, the plans merely confer abstract rights to unidentified sets of orbital positions. These preliminary rights should be distinguished from the international right of recognition acquired when entering an assignment in the Master Register. An analysis of the purported

²⁰⁰ Director Radiocommunication Bureau, *supra* note 3, at 6-7.

²⁰¹ DuCharme, et al., *supra* note 82, at 271.

conditionality of the rights attached to the use of orbits for FSS or BSS services should take this distinction into account.

a. Entry in List or Register

The international recognition and protection received when entering a planned assignment into the Master Register is acquired upon completion of a procedure that is similar to the general procedure in force for unplanned bands. Hence, the acquisition and retention of these rights is subjected to similar conditions of actual and continued use of the natural resources identified in the notice. The intermediate step of entering the use of orbital slots into the List of approved assignments is likewise rendered conditional on their subsequent use in the projected period. The cancellation of entries in this List can then be interpreted as a precautionary measure anticipating non-use of the reserved resources.

Orbital positions assigned to an administration for use in combination with frequency bands for broadcasting-satellite services by an assignment entered into the List should be brought into use within eight years after the date of receipt by the Bureau of the complete information. This period may be extended once by not more than three years and only in case of launch failure, as an attempted launch is a concrete indication of the administration's intention to use the claimed resources. If the assignment is not brought into use, its entry will be removed from the List after the end of the next world radiocommunication conference.²⁰² The status of affected assignments that received an unfavourable review because of the cancelled assignment will be reviewed accordingly.²⁰³ Administrations are also required to immediately inform the Bureau if an assignment in the List is no longer required, which will then be deleted from the List.²⁰⁴ Rights acquired by entering an assignment into the MIFR shall lapse as well, if the entry is cancelled

²⁰² ITU RR, *supra* note 17, at arts. 4.1.3, 4.1.3bis, 4.1.13 & 4.1.27bis, app. 30.

²⁰³ *Id.* at art. 4.1.19, app. 30.

²⁰⁴ *Id.* at art. 4.1.23, app. 30. Similar rules are applicable for bringing into use projected modifications to the Region 2 plan for BSS. See *id.* at arts. 4.2.6, 4.2.6bis & 4.2.21C, app. 30.

due to failure to bring the projected satellite network into use by the date specified in the notice.²⁰⁵ Finally, if the use of a recorded frequency assignment is permanently discontinued, the notifying administration is to inform the Bureau within three months, whereupon the entry will be removed from the MIFR.²⁰⁶

Assignments for the use of orbital slots for fixed-satellite services should be submitted to the Bureau not earlier than eight years and not later than two years before the planned date of bringing into use.²⁰⁷ In exceptional circumstances, the date of bringing into use such assignments may be moved to no more than eight years from the date of receipt by the Bureau of the complete notice.²⁰⁸ If an assignment is not brought into use within this period, the status of other assignments that received an unfavourable review because of the former shall be reviewed accordingly.²⁰⁹ In particular, the Bureau shall cancel an assignment, reinstate the allotment in the FSS plan with the same orbital location and update the reference situation for allotments in the plan and assignments of the List, when

- i) an assignment is no longer required; or
- ii) an assignment recorded in the List and brought into use has been suspended for a period exceeding two years . . . ; or
- iii) an assignment recorded in the List has not been brought into use within the eight-year period following the receipt by the Bureau of the relevant complete information.²¹⁰

Furthermore, if the Bureau does not receive the notice of entry into the Master Register within the eight-year period for bringing into use an assignment on the List, it is to act as if the assignment has not properly been brought into use.²¹¹ All assignments notified before their bringing into use will be entered provisionally in the MIFR. They will be brought into use no

²⁰⁵ *Id.* at art. 5.3.1, app. 30.

²⁰⁶ *Id.* at art. 5.3.2, app. 30.

²⁰⁷ *Id.* at art. 6.1, app. 30B.

²⁰⁸ *Id.* at art. 6.31, app. 30B.

²⁰⁹ *Id.* at art. 6.28, app. 30B.

²¹⁰ *Id.* at art. 6.33, app. 30B.

²¹¹ *Id.* at art. 8.2, app. 30B.

later than this period, subject to cancellation from the Register.²¹² Where the use of a recorded assignment to a space station is suspended for a period not exceeding eighteen months, the notifying administration will, as soon as possible, inform the Bureau of the date on which such use was suspended and the date on which the assignment is to be brought back into regular use. As with unplanned assignments, this date shall not exceed two years from the date of suspension. If the assignment is not brought back into use within two years from the date of suspension, the Bureau is to cancel the assignment from the MIFR and update the reference situation for allotments in the plan and assignments of the List.²¹³

Finally, all satellite network filings concerning advance publication, their associated requests for coordination or agreement,²¹⁴ the use of the guardbands,²¹⁵ requests for modification of the space service plans and lists,²¹⁶ requests for the implementation of the fixed-satellite service plan,²¹⁷ and requests for the conversion of an allotment into an assignment with modification which is beyond the envelop characteristics of the initial allotment, the introduction of an additional system, modification of the characteristics of an assignment in the List of Appendix 30B to the Radio Regulations²¹⁸ are subject to cost-recovery charges if they have been received by the Radiocommunication Bureau on or after 8 November 1998.²¹⁹ The fact that the same financial due diligence measures have been introduced for the *a priori* plans as for combatting the reservation of capacity without use in the unplanned bands, confirms that the problem of warehous-

²¹² *Id.* at art. 8.16, app. 30B.

²¹³ *Id.* at art. 8.17, app. 30B.

²¹⁴ *Id.* at art. 7, apps. 30 & 30A.

²¹⁵ *Id.* at art. 2A, apps. 30 & 30A.

²¹⁶ *Id.* at art. 4, apps. 30 & 30A.

²¹⁷ ITU, World Administrative Radio Conference Radio Regulations, art. 6, app. 30B, sections IB and II, (1979, Nov. 16, 2007 ed.)

²¹⁸ ITU, World Administrative Radio Conference Radio Regulations, art. 6, app. 30B, (1979, Nov. 17, 2007 ed.).

²¹⁹ Decides 1 of Council Decision 482, *supra* note 197. See, e.g., ITU RR, *supra* note 17, at nn.7, 8, 16 & 17, app. 30, & n. 1, app. 30B (inclusion in List); n. 18, app. 30 & n. 11, app. 30B (entry into MIFR).

ing slots cannot be attributed to the prevalence of an antecedence rule specific to the unplanned regime.

b. 'Rights' Granted Upon Plan Entering into Force

In theory, the rights embedded in the FSS and BSS plans are conferred immediately upon their entry into force and until the revision of the plan itself by a competent future radiocommunication conference.²²⁰ Nevertheless, we have seen that the initial distribution of the natural resources covered by the plans can be modified by the introduction of additional allotments and assignments for existing users and through the initiation of procedures for accommodating new member States that have joined the ITU since the adoption of the plans (*supra* section III.C.2). Most notably, the fixed-satellite service plan allows that, until a State acts on its allotment, other States place satellites in the GSO slot to which its allotment is located.²²¹ In order to avoid that disproportionate additional uses of spacefaring nations would preclude the implementation of the allotments granted to non-space powers, thus neutralizing the very goal of *a priori* plans, the FSS plan of 1988 warned that

[Additional uses of planned bands] should be avoided if possible. Administrations are urged to use other available bands. . . . An administration, or one acting on behalf of a group of administrations, may apply the procedure . . . for an additional use . . . , provided that the proposed assignments have a maximum period of validity of 15 years and will not, except if agreed to by the administrations affected, require any displacement of the orbital position of an allotment in Part A of the Plan or the orbital position of an assignment in the List, nor be incompatible with: a) the allotments in the Plan; b) the assignments in the List; c) the assignments for which the

²²⁰ See ITU RR, *supra* note 17, at art. 11.2, app. 30B & art. 14.3, app. 30.

²²¹ SPACE LAW: A TREATISE, *supra* note 7, at 234. See also Jasentuliyana, *supra* note 103, at 57 (in which it is noted that additional use provisions were introduced so that unused planned allotments could still be utilized).

Board has previously received information in accordance with this Article.²²²

These limitations were considered too strict, however, and they have now been replaced with the general requirement that additional systems fully comply with article 44 ITU CS and do not use multiple orbital locations to cover the same service area.²²³ Other ITU provisions on the use of the radio spectrum for terrestrial radio services also allow for additional temporary uses of frequencies initially reserved by other administrations.²²⁴ As the rules concerning space services are heavily inspired by the provisions on terrestrial radiocommunication, they acquire special significance in the present context.²²⁵ In particular, it was noted that the *a priori* plan adopted at the 1974 Maritime WARC, as well as other plans, had to be corrected after their adoption in order to combat the resulting flood of paper entries. These amendments in particular allowed the then IFRB to delete allotments that were not used by the administration concerned within a given time period.²²⁶

The *a priori* plans for satellite services do not establish penalties that could 'strip' an administration from the rights attached to an unused allotment and assignment, because no

²²² ITU RR, *supra* note 17, at art. 6.56, app. 30B.

²²³ *Id.* at art. 2.6bis, app. 30B. See further, INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 168-169 & 173-174. The BSS plan, however, recently reintroduced the requirement that the lifetime of assignments in the feeder-link List of additional uses in Regions 1 and 3 be limited to 15 years (ITU RR, *supra* note 17, at art. 4.1.24, app. 30). See further *infra* n.269 and accompanying text.

²²⁴ See, for example, SPACE LAW: A TREATISE, *supra* note 7, at 233 (noting that planning efforts can include permitting others to use the reserved frequencies until a designated state wishes to use its allotment). See, *inter alia*, the 1961 Stockholm Agreement on the Planning of the BSS Service in the European Broadcasting Area, available at <http://www.itu.int/ITU-R/terrestrial/broadcast/plans/st61/index.html>, and ITU RR, *supra* note 17, at apps. 25, 26 & 27.

²²⁵ See *supra* note 13 and accompanying text.

²²⁶ Fleming, *supra* note 19, at 344. See further, *Six Ad-Hoc Two*, *supra* note 50, at 24-25. The US delegate at the FSS planning conferences warned, however, that it is not accurate to say that the unused orbital slots allotted to certain countries will be made available to other administrations, as "[a] plan necessarily ties a particular orbital position and frequency assignment to a specific coverage or service area. The interlocking nature of a plan would make it practically impossible for other countries to make use of unused assignments". *Id.* at 25. The nature of the FSS plan ultimately adopted was flexible enough, however, to assuage these concerns.

clear link allowing for such sanction can be established until the initiation of the procedure for actually using a particular slot. This is unfortunate, as it is difficult to reconcile with the basic philosophy of a regime that is aimed at managing and stimulating the actual use of a limited natural resource. Leive already noted in 1970 that any reservation of a frequency in an international plan should be contingent upon the commencement of operations within a specified period, and that all rights should be contingent on the regular, actual use of the frequency over a significant period of time.²²⁷ At the same time, however, the fact that harmful interference disputes are settled mainly on the basis of technical arguments and the possibility for States to use slots 'assigned' to other States that are currently not using them, do indicate that States that are capable of actually using the slots covered in the *a priori* plans will not be deprived of this freedom by the rights of those currently lacking such capacities.

*E. Interim Conclusion: Shift toward Actual Use
of Orbital Positions*

The above overview of the ITU regime for international recognition and protection of the use of orbits and frequencies reveals a subtle compromise solution that eludes the loopholes of a 'first-come, first-served' approach and the inflexibilities of a rigid *a priori* system. It is guided by the need to actually use the limited natural resources regulated, thus supporting a functional interpretation of the Outer Space Treaty. The general regime on the use of orbital slots for services in the unplanned frequency bands does not grant inalienable rights to the administration first to formally complete the registration procedure. Rather, the procedure balances present and future orbital usage by settling priority disputes on the basis of a varied number of principles. The rule of antecedence is only one of many factors for settling harmful interference disputes, albeit an important one, as the administration that is first in time will generally have a stronger bargaining position when coordinating with later entrants. The priority acquired is not permanent,

²²⁷ *Regulating the Use of the Radio Spectrum*, *supra* note 121, at 47-48.

however. Rights attached to the use of an assigned slot are subjected to a condition of actual use of the resources identified in the assignment and are retained only for the continued duration of this use. While an initial form of protection is thus acquired upon registration of an assignment, the subsequent assessment of the actual and continued use of the reserved slot will determine *post factum* whether the international rights were rightfully granted to the requesting administration. Moreover, recent changes to the ITU proceedings have partly shifted this *a posteriori* test to the initial stages of the proceedings through the adoption of measures aimed at assessing the veracity of the intention and capability of administrations to actually use the reserved resources.²²⁸

A priori plans were conceived as a potent alternative to the general ITU regime, allowing non-spacefaring nations to acquire rights over orbital slots absent any real intention and capacity to actually use them at present, thus institutionalizing slot warehousing in an admirable effort to increase equitable access for all nations to scarce resources. Despite these lofty aspirations, however, the broadcasting and fixed-satellite service plans that were ultimately adopted established little to no legal guarantees for future use of orbital segments. The rights granted by their entry into force remain ill-defined and unattached to any particular orbital slots or administrations until their actual use. Proper international protection of such use remains conditional upon the registration of individual assignments into the MIFR. Moreover, the acquisition and retention of these rights are sanctioned by similar conditions of actual and continued use, as are the rights attached to slots used with unplanned bands. Finally, this registration procedure is sanctioned by administrative and financial due diligence measures intended to limit the reservation of capacity without use, contrary to the proclaimed goal of the *a priori* plans.

²²⁸ These measures to some extent meet the need for amendments proposed by Leive, who argued in 1970 that any reservation of an assignment should be contingent upon the commencement of operations within a specified period of time, and that the retention of the right should depend on the actual regular use: INTERNATIONAL TELECOMMUNICATIONS AND INTERNATIONAL LAW, *supra* note 13, at 304, 306-308.

Separately, both the *a posteriori* and *a priori* regulations allow for paper satellites as they quasi automatically confer unconditional rights over orbital slots after the mere completion of a formal procedure or the adoption of a plan. Guided by the principles of efficient and economic use and the goal of equitable access, however, the member States of the ITU have melded these conflicting approaches into a complex whole through which the use of slots and frequencies is protected only after an *a priori* and *a posteriori* assessment of the intention and capacity of the requesting administration to actually and continually use the slots covered by the projected satellite network. It follows that any practice of warehousing particular orbital slots without subsequent use is contrary to the letter and spirit of the ITU regime. This regime requires that orbital slots reserved for use in conjunction with planned and unplanned radio frequency bands be used immediately and continually. If not, the assignment will lapse and the particular combination of a slot and frequency bands will be open for use by another administration. Moreover, other assignments that received an unfavourable finding because of the cancelled assignment will be reassessed.

IV. WHAT RIGHTS ARE ATTACHED TO ORBITAL SLOTS?

A. *Nature of International Rights under ITU Regime*

The previous section posited the need to actually use reserved orbital slots as a fundamental element of a workable ITU regime that is based on the principles of efficient and economic use guided by the ultimate goal of equitable access to a scarce natural resource. Moreover, the obligation of the Bureau to delete the registration of an assignment whose use is suspended for a specified period underscores the need to continually use the orbital positions identified in the notice submitted by the requesting administration. Even though the continued use of a particular orbital slot by a State is thus required by the general ITU procedure, such practice has frequently been qualified as a *de facto* 'occupation' of an area in outer space, allegedly violat-

ing article II of the Outer Space Treaty.²²⁹ Interestingly, similar accusations of sovereignty have been voiced over the *a priori* regime advocated by the non-spacefaring nations who lambasted the *a posteriori* regime for the exact same reason. The nature of the rights acquired through the ITU procedure for planned and unplanned bands should thus be analysed in order to determine whether they actually amount to the unlawful exercise of sovereignty in outer space.

The ITU itself has conceded that the rights associated with the protected use of orbital slots are nowhere clearly defined.²³⁰ Before the initiation of the space age, a suggestion that a 'right of priority' be granted to the earliest user of the radio spectrum was rejected in 1927. The provisions of the then in force Washington General Regulations established a system in which interference disputes between prior and later users were to be settled by consultation and, if these efforts failed, arbitration.²³¹ This was considered inconsistent with the imposition of a rigid system determined by 'rights of priority' granted to the first users and the suggestion was dismissed. States remained reluctant to specify the legal nature of the rights acquired during the subsequent Madrid Conference in 1932.²³² In 1947, European countries again attempted to codify a right of priority in the ITU Convention. This was strongly opposed by the United States, however, who deemed such a right inconsistent with its proclaimed goal of engineering the entire radio spectrum. Eventually a compromise was reached through the adoption of the term 'international recognition,' without any explicit reference to priority.²³³ This notion of recognition was included in all subsequent ITU instruments, even though the goal of the regime on orbital usage has since shifted to an *a posteriori* approach, establishing rights on a case-by-case basis rather than pursuant

²²⁹ See e.g., Salin, *supra* note 7, at 182-183 & 188-190.

²³⁰ See INTERNATIONAL TELECOMMUNICATIONS AND INTERNATIONAL LAW, *supra* note 13, at 22, referring to J.D. TOMLINSON, THE INTERNATIONAL CONTROL OF RADIOCOMMUNICATION 290-291 (Michigan, Edwards, 1945); LAW AND SPACE TELECOMMUNICATIONS, *supra* note 13, at 345.

²³¹ The Evolution of the ITU's Regulatory Regime, *supra* note 19, at 387.

²³² *Id.* at 389.

²³³ 1947 ITU Convention, art. 6.1, sub. A.

to an *a priori* engineered plan. In spite of the ambiguity surrounding the concept of international recognition, the legislative history of fierce opposition to the inclusion of any notion of priority for the first user of the spectrum strongly suggests that the fears of permanent occupation of orbital slots by space-resource States were largely unfounded.

While the ITU has never explicitly elucidated the nature of the international recognition of regular orbital use, it has conceded that the findings of the Radiocommunication Bureau do

confer certain rights on Administrations, the right to international protection, or at least the right to official international recognition, and place certain obligations on them, the obligation to respect the rights conferred on others. These rights and obligations are invoked by Administrations when they discuss cases of harmful international interference that have actually occurred in practice.²³⁴

Article 8 of the Radio Regulations clarifies in this respect that

Any frequency assignment recorded in the Master Register with a favourable finding under No. 11.31 [on conformity with the relevant Radio Regulations] shall have the right to international recognition. For such an assignment, this right means that other administrations shall take it into account when making their own assignments, in order to avoid harmful interference. In addition, frequency assignments in frequency bands subject to coordination or to a plan shall have a status derived from the application of the procedures relating to the coordination or associated with the plan.

The statement of the ITU and the cited radio regulation make clear that the rights attached to recorded assignments, be they in the planned or unplanned bands, acquire importance only in their relation with other assignments with whom a dispute of harmful interference may arise. This is wholly in line with the fundamental principles of the Outer Space Treaty regime, which define the freedom of States to use outer space

²³⁴ Statement of the ITU cited in MICHAELIS & GROSS, *supra* note 13, at 253.

largely by reference to the corresponding freedoms of other States, subject to consultation in case of a potential for harmful interference. Article 8 RR extends the relative nature of the rights attached to recorded assignments to all assignments that are pending coordination without having completed the registration procedure. The general procedure for unplanned bands requires that a requesting administration obtain the agreement of all administrations whose assignments are in the same frequency band as the planned assignment, which pertain to the same service or to another service to which the band is allocated with equal rights or a higher category of allocation, and which might affect or be affected, as appropriate, to the extent that they, in descending order, have been registered, have reached the coordination phase, or have successfully completed the advance publication of information phase.²³⁵ The rights attached to assignments involved in a harmful interference dispute are thus determined by their progress in the notification and registration procedure.

Whatever the outcome of the coordination phase for activities in the unplanned bands, administrations can only assert their rights to the extent that they have signalled their intention to use the natural resources reserved through initiating the registration procedure. At first sight, the same appears to hold for the *a priori* plans adopted by the ITU. As such, modifications to the BSS plan and conversions of allotments in the FSS plan require the agreement of those administrations whose assignments appear in the List or which have been previously examined by the Bureau after receiving complete advance information.²³⁶ However, the FSS plan also requires that coordination be effected with administrations whose *allotments* are deemed affected.²³⁷ Likewise, a specific provision in the general procedure for unplanned bands notes that coordination should also be effected with frequency assignments that have not been recorded in the MIFR, but which are "in conformity with a world or regional allotment or assignment plan and the associated provi-

²³⁵ ITU RR, *supra* note 17, at art. 1, sub. a-e, app. 5.

²³⁶ *Id.* at art. 4.1.1 & 4.2.3, app. 30 & art. 6.5, sub. b & c, app. 30B.

²³⁷ *Id.* at art. 6.5, sub. a, app. 30B.

sions.²³⁸ Finally, article 8.1 RR explicitly notes that the status of assignments in the planned bands is also derived from the application of the procedures 'associated with the plan.'

These provisions hint at the existence of certain rights attached to the allotments and assignments contained in the BSS and FSS plans prior to the expression of any intent on the part of the relevant administration to use the reserved slots and frequencies. The exact legal nature of these *a priori* rights is difficult to define. It is clear, however, that they do not rise to the level of international protection rights referred to in article 8.1 RR, as the assignments covered by the BSS and FSS plans still require registration in the MIFR to receive full international protection and recognition. Moreover, the BSS plan, generally considered the least flexible of both plans, stresses that, in case of continuing disagreement among administrations, the objecting administration shall state its *technical reasons* for withholding its agreement to the proposed assignment of the requesting administration.²³⁹ This requirement appears to presuppose that an administration that has not yet initiated the procedure for putting into use the orbital slots identified in the plan nevertheless has concrete plans for launching a satellite network in order to exercise its 'right' to object to a competing use by a requesting administration that has already initiated said procedure. For it is difficult to imagine a technical reason that is not linked to the imminent use of an orbital position that could justify the deferral of the actual use of this limited resource by another party having the intention and capability to do so. The relative nature of the rights attached to assignments confirms that any alleged rights conferred to administrations upon the entry into force of an *a priori* plan will have a very limited effect on the actual use of orbital slots by those administrations that have already initiated the notification and registration procedure. This is corroborated by the overarching focus of the ITU regime on the actual use of slots.

²³⁸ *Id.* at art. 1, sub. f, app. 5.

²³⁹ *Id.* at art. 4.1.16 & 4.2.20, app. 30.

B. Protection of Lawful Use vs. Property Right

The limited nature of the international protection rights attached to frequency assignments in conformity with the ITU *a priori* plans and to those assignments for which the notification and registration procedure has been initiated appears to contradict the characterisation of the lawful use of orbital slots by a particular State as an act of occupation of appropriation contrary to article II of the Outer Space Treaty. The article is one of the most contested provisions of the Outer Space Treaty. Among the criticisms most often voiced are those relating to its obscure terminology, which appears to conflate international public law and private commercial law by proscribing national *appropriation* through *sovereignty*, use, and other means.²⁴⁰ The equivocal nature of the provision has frustrated the discussion on when lawful slot usage turns into unlawful appropriation of an area in space. While the present article does not intend to settle this complex issue, or address it in an authoritative manner, some general observations can be made that may facilitate and encourage further discussion.²⁴¹ As such, it is uncontested that property rights can be characterized as a bundle of rights exercised by the holder with respect to a certain object or commodity, of which the most notable components are the right to use the commodity to which the property right is attached (*uti*), the right to 'exhaust' this commodity (*abuti*), the right to transfer it, and the right to exclude others in doing so.²⁴² An analysis of these component rights will confirm that the rights attached to a registered frequency assignment do not amount to property

²⁴⁰ On the relationship between property rights and international law, see R. BARNES, *PROPERTY RIGHTS AND NATURAL RESOURCES* 10-16 (Hart, Oxford, 2009).

²⁴¹ For a more thorough analysis of the terminology of article II of the Outer Space Treaty, see, e.g., S. Gorove, *Interpreting Article II of the Outer Space Treaty*, in 11 *PROC. COLL. L. OUTER SPACE* 40-44 (1968); Rehm, *supra* note 58; Freeland & Jakhu, *supra* note 48.

²⁴² John CHRISTMAN, *THE MYTH OF PROPERTY* 19-20 (Oxford University Press, Oxford, 1994); Delville, *supra* note 50, at 138. See further A.M. Honoré, *Ownership*, in A.G. GUEST (ed.), *OXFORD ESSAYS IN JURISPRUDENCE* 107 (Oxford University Press, London, 1961); F. Snare, *The Concept of Property*, 9 *AM. PHIL. Q.* 9 (1972); L. BECKER, *PROPERTY RIGHTS: PHILOSOPHIC FOUNDATIONS* Ch. 2 (Routledge, London, 1977); BARNES, *supra* note 240, at 23.

rights, but merely constitute internationally protected rights to use the reserved resources.²⁴³

The right to exclude others from using or occupying a commodity is the most important and most characteristic component of a property right.²⁴⁴ It is also intrinsically linked with the right to use the commodity concerned, as exclusivity ensures that the fruits of the good accrue to the holder of the property right in case of commercial competition. Its importance is especially great in the context of a legal regime regulating a commodity such as orbital slots and radio frequencies, as the proper use of these resources by one State can be affected by interference from other States having corresponding freedoms to use the same commodities. In this context, the right to exclude competitors becomes essential to safeguard the very right to use the commodity.²⁴⁵ The analyses of the Outer Space Treaty and ITU regimes have established the rights to the use of slots and frequencies through registration by a given administration as rights that acquire relevance only in their relationship with conflicting types of use of the same resources by others. It follows that these rights, whatever their exact legal classification, should comprise at least the first two components of property rights, as the productive use of orbits requires that a level of exclusivity be established. The 'right to international recognition' in the ITU documents thus amounts to an internationally protected right to the exclusive exploitation of a slot by one administration, so as to allow its effective use.

It is at this point that a fundamental difference arises between the use of natural resources of outer space *sensu strictu* and the use of mineral reserves on celestial bodies. The capability to exclude other users in the exploitation of orbits has been

²⁴³ *Regulating the Use of the Radio Spectrum*, *supra* note 121, at 35; INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 49; WHITE & WHITE, *supra* note 15, at 144.

²⁴⁴ S. MUNZER, A THEORY OF PROPERTY 22 (Cambridge University Press, Cambridge, 1990); J. PENNER, THE IDEA OF PROPERTY IN LAW Ch. 4 (Clarendon, Oxford, 1997); Kevin Gray, *Property in Thin Air*, 50 CAMBRIDGE L.J. 252 (1991); BARNES, *supra* note 240, at 15 & 24-29.

²⁴⁵ Martin A. Rothblatt, *The Impact of International Satellite Communications Law upon Access to the Geostationary Orbit and the Electromagnetic Spectrum*, 16 TEX. INT'L L.J. 224-225 (1981).

established as a *necessary precondition* for enabling the regulated use thereof, *given the inevitability of harmful interference*. Conversely, exclusivity in the use of depletable resources of celestial bodies should be *permissible, unless* their appropriation by one State would cause harmful interference with the activities of other parties.²⁴⁶ Exclusivity is an unavoidable consequence of the destructive nature of the exploitation of mineral reserves on celestial bodies, whereas the non-depletable nature of orbits and frequencies by definition precludes such deleterious effects. While the placement of satellites in a particular orbital slot may inhibit the deployment of similar activities in the same orbit by another State, the immaterial nature of these natural resources implies that their use can never amount to 'exhaustion,' in the sense of depletion of an economically valuable resource through termination of its physical existence. The legal notion of the *abuti* component of property rights does not only comprise the physical destruction of a commodity, however. It generally allows the holder of a property right to dispose of the commodity any way he sees fit. This is essentially what differentiates a property right from a right to use, as the right to 'abuse' also and by definition comprises the right *not* to use the good to which it is attached. This would be wholly antithetical to the goals of the ITU regime, however, and to the qualification of orbital slots and radio frequencies as limited natural resources. The subjection of the rights attached to recorded frequency assignments to conditions of actual and continued use thus not only entails the unlawful nature of the reservation of orbital capacity without use, it also negates the *abuti* component of property rights with respect to orbits. *A fortiori*, it dispels the idea that prior registration of an assignment establishes per-

²⁴⁶ In their seminal 1964 volume on space law and policy, McDougal, Lasswell and Vlasic mainly distinguish between the legal regime of natural resources on the basis of their depletable nature. See Myres S. McDougal, Harold D. Lasswell & Ivan A. Vlasic, *LAW AND PUBLIC ORDER IN SPACE* Ch. 7 (Yale University Press, New Haven, 1964). See Marcoff, *supra* note 13, at 334 (the depletable nature of natural resources is also taken into account as a determining factor); *SPACE LAW*, *supra* note 65, at 202 & 275; Stephen Gorove, *Interpreting Article II of the Outer Space Treaty*, 37 *FORDHAM L. REV.* 349 (1969); Delville, *supra* note 50, at 145-146.

manent priority over the use of a certain slot or frequency. As noted by Christol:

If first registration with the [Radio Regulations Board] establishes a preferred right, if not a permanent priority, to the use of a frequency, then the non-use could be considered to be a matter wholly at the discretion of the registrant. The registrant would be able to assert that a future use was contemplated. But, if first registration, or use, provides no basis for a claim of preference, priority, or exclusivity, then the 'dead-wood' situation could allow the Board to register the frequency for use by a different State.²⁴⁷

Any claim that the registration of an assignment in the MIFR results in the appropriation of orbital slots by the requesting administration therefore rests on very shaky legal ground.²⁴⁸ Strictly speaking, the successful completion of the ITU notification and registration procedure does not even grant the requesting administration any rights that were not already embodied in the general freedom to use outer space as codified in the Outer Space Treaty.²⁴⁹ This is clear from the qualification of the international rights attached to frequency assignments as rights to international 'recognition' in article 8 of the ITU Radio Regulations. Like the Outer Space Treaty, the ITU regime does not set out to regulate the status of orbital positions as such but rather protects the lawful uses of those resources that have been identified in recorded frequency assignments. Orbital usage that is not in conformity with the ITU rules is not proscribed by the Radio Regulations; the only sanction is that they will not receive international recognition and protection from harmful interference by others.

The obligation to use the reserved resources under the general ITU procedure precludes a legal identification of the rights acquired through registration as property rights, including the rights attached to the use of orbital slots for services in planned

²⁴⁷ *Satellite Power System*, *supra* note 44, at 40-41.

²⁴⁸ *Id.* at 107; INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 49; Copiz, *supra* note 11, at 215 and 218.

²⁴⁹ See also WHITE & WHITE, *supra* note 15, at 144 ("the ITU actually grants or confers no rights").

bands. The same does not hold for the rights that are established upon the entry into force of the *a priori* plans, however. Their ostensible disconnection from any requirement to subsequently use the reserved slots appears to validate the very right not to use the resources concerned. As these rights thus meet all first three components of property rights, they have been assailed for legitimizing sovereignty claims.²⁵⁰ It can indeed be argued that, whatever their exact legal nature, *a priori* plans go a step further in defining and distributing spectrum rights and rights to satellite orbit positions in advance of their specific utilization than a flexible *a posteriori* assignment system. The rights conferred by the mere establishment of the FSS and BSS plans cannot be transferred, however, and therefore lack the fourth and final determining characteristic of property rights.²⁵¹

The non-transferability of rights vested in orbital positions, through *a priori* plans or otherwise, is largely uncontested, even though, at first sight, it appears to run into some formidable arguments. It is generally acknowledged that requirements of economy and efficiency dictate that scarce resources can be transferred freely among all interested parties. As such, it is often suggested that the inefficiencies of *a priori* plans could be remedied by allowing the transferability of unused allotments and assignments on the free market.²⁵² Many countries even engage in auctions in which available radio spectrum is 'sold' to the 'highest bidder.'²⁵³ Moreover, we have seen that the ITU plan

²⁵⁰ Stern, *supra* note 30, at 881-882.

²⁵¹ *Regulating International Airwaves: the 1979 WARC*, *supra* note 32, at 47. See also F.C.C., Second notice of inquiry, 46 Fed. Reg. 18, 046, F.C.C. 80-398 (April 20, 1982) ("[n]o ITU plan [...] has to-date, explicitly conveyed property rights, in orbit or spectrum"). See also Clas G. Wihlborg, & Per Magnus Wijkman, *Outer Space Resources in Efficient and Equitable Use: New Frontiers for Old Principles*, 24 J.L. & Econ. 37-38 (1981).

²⁵² See, e.g., Wihlborg, & Wijkman, *supra* note 251, at 28-37; Solana, *supra* note 157, at 199; *Regulating International Airwaves: the 1979 WARC*, *supra* note 32, at 47-52.

²⁵³ See Note, *The Crisis in Electromagnetic Frequency Spectrum Allocation: Abatement through Market Distribution*, 53 IOWA L. REV. 437-479 (1967); Arthur S. De Vany et al., *A Property System for Market Allocation of the Electromagnetic Spectrum: a Legal-Economic-Engineering Study*, 21 STAN. L. REV. 1499-1561 (1969); Sara Anne Hook, *Allocation of the Radio Spectrum: is the Sky the Limit?*, 3 IND. INT'L & COMP. L. REV. 319-360 (1993); Ian Coe, *Legal Issues Surrounding Spectrum Auctions*, in 41 PROC. COLL. L. OUTER SPACE 194-204 (1998).

for fixed-satellite services allows for the temporary and conditional use of unused allotments by other States.²⁵⁴ This was even deemed a positive factor, in that it aligned the *a priori* plans with the legal requirement of actually and continually using scarce resources. Finally, it is not unusual for satellites to be transferred when already in orbit around Earth.

None of these arguments can support the transfer of rights in orbital positions *as such*, however. First, it was noted that orbital positions and radio frequencies have to be used in combination with one another so as to unlock the full economic potential of either resource. Countries engaging in the public sale of radio spectrum only auction off frequencies, and emphatically do not grant corresponding rights over orbital positions. It is recalled that radio frequencies have specifically been exempted from the qualification of space resource, thus putting the applicability of the Outer Space Treaty, including the non-appropriation provision, into doubt.²⁵⁵ Second, all recorded practices of countries leasing unused orbital capacity to other users have systematically been denounced by the international community. The case of Tonga clearly illustrates this. Third, the fact that the FSS plan allows administrations to use unused allotments of other ITU members does not imply that the latter State has been granted transferable property rights over any predefined orbital positions. Rather, it is testament to the weak and nondescript legal nature of the rights established by the entry into force of the plan, as they do not even empower the holder of the right to obstruct the use of valuable slots by withholding its agreement to such practice. Finally, the transfer of satellites in orbit should be clearly distinguished from the legality of transferring rights in orbital slots. The former concerns

²⁵⁴ *Supra* notes 221-224 and accompanying text.

²⁵⁵ The intrinsic linkage between the radio spectrum and orbital positions for space services casts some doubt on the assertion that frequency auctions are entirely disconnected from the leasing of orbital slots. *However, see* Sa'id Mosteshar, *Development of the Regime for the Low Earth Orbit and the Geostationary Orbit*, in Gabriel LAFFERRANDERIE & Daphné CROWTHER (EDS.), *OUTLOOK ON SPACE LAW OVER THE NEXT 30 YEARS: ESSAYS PUBLISHED FOR THE 30TH ANNIVERSARY OF THE OUTER SPACE TREATY 102-103* (Kluwer Law International, The Hague, 1997) [hereinafter *OUTLOOK ON SPACE LAW OVER THE NEXT 30 YEARS*].

the right to transfer the property of an artificial space object that has already been launched into outer space, thus testifying to the actual use of a predetermined orbital position. This is generally considered lawful, as the Outer Space Treaty expressly notes that "[o]wnership 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."²⁵⁶ The practice thus concerns, if anything, the transfer of a right to use a given orbital position, rather than a right over the slot itself. By consigning an alleged right over an orbital slot that has not been used, however, the transferring State expressly admits to the non-use of the slot concerned. It follows from all of the above that the transfer of rights over an orbital position that is not used by the transferring national authority and subject to its consent, would violate article II of the Outer Space Treaty.²⁵⁷

²⁵⁶ Outer Space Treaty, *supra* note 9, at art. VIII. See B. Schmidt-Tedd & S. Mick, *Article VIII*, in COLOGNE COMMENTARY ON SPACE LAW, 1: OUTER SPACE TREATY, *supra* note 48, at paras. 40 & 81-82. The authors note that, while the transfer of ownership of a satellite in orbit is not excluded, it does result in a weaker legal position for the acquiring party since the space object remains under the control and jurisdiction of the original launching state. Mosteshar notes that the main difference between the commonly accepted practice of leasing transponders on satellites and the actions of Tonga is that in the latter case the orbital positions themselves were leased. See S. Mosteshar, *supra* note 255, at 99-100.

²⁵⁷ For example, J.C. Thompson argues that a free market approach to slots would violate the non-appropriation principle. See Thompson, *supra* note 4, at 308-309. SPACE LAW: A TREATISE, *supra* note 7, at 242-243 (authors concede that spectrum auctions would be illegal if accompanied by orbital slots, as this would amount to an appropriation of space contrary to art. II of the Outer Space Treaty). See further Copiz, *supra* note 11, at 222 ("leasing allotments clearly contradicts the non-appropriation principle"). Finally, it is recalled that Butler even refused to classify the distribution of nominal orbital positions to States under the BSS plan as constituting appropriation of these slots. See Butler, *supra* note 14, at 98. See INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 54 (the BSS plan does not explicitly prohibit the sale of allotted orbital positions but that such action would be difficult to accomplish from a technical point of view).

C. *Duration of Use: Impact on Lawfulness under the Outer Space Treaty Regime?*

1. Continued Use vs. Unlawful Permanent Occupation

An assessment of the legal characteristics of the rights attached to the use of orbital slots under the ITU regime has revealed that the denunciation of these rights as amounting to property rights is not backed by convincing arguments. The rights acquired by the registration of assignments in the MIFR and through the adoption of the *a priori* plans merely protect the actual and continued use of the natural resources reserved. Nevertheless, the use of limited natural resources by a small group of countries under a regime that only protects their actual and continued use has instilled non-spacefaring nations with a fear of permanent exclusion through *de facto* appropriation, especially given the extended lifetime of satellites in orbit.²⁵⁸ This begs the question: if the ITU regime does not grant any rights that can legally be qualified as property rights, can the prolonged use of particular orbital slots nevertheless amount to an act of *de facto* appropriation or occupation that is contrary to the spirit of space law, in light of the unequivocal requirement of actual and continued use embedded in the ITU regime?

2. Legal Limits on Prolonged Orbital Use?

The 1920 draft Convention of the Universal Electrical Communications Union expressly noted that prior rights acquired through the procedures established by the Convention were not to be granted in perpetuity.²⁵⁹ While such explicit

²⁵⁸ "The associated procedures contained in this Appendix are intended to promote long-term flexibility of the Plan and to avoid monopolization of the planned bands and orbit by a country or a group of countries". ITU RR, *supra* note 17, at art. 3.3, app. 30.

²⁵⁹ See, *The Evolution of the ITU's Regulatory Regime*, *supra* note 19, at 385. Somewhat misleadingly, the draft Convention divided the prior rights granted by conferences into two categories: permanent and temporary. The tenure of a permanent prior right, however, was to extend only for ten years from the date on which it had been allowed by the relevant International Conference. Unless extended by a subsequent International Conference, the right would terminate automatically at the end of the initial period of ten years. The tenure of a temporary prior right would only extend from one Interna-

statements are lacking in the present ITU Radio Regulations, several resolutions have been adopted by delegations at various WARCs that appear to lend credence to the arguments of those opposing the prolonged usage of orbital slots by a select number of countries. Most important are current Resolutions 2 and 4 appended to the Radio Regulations, adopted in 1971 and 1979, respectively.²⁶⁰ These resolutions foreshadowed the discussions on the use of the GSO for fixed-satellite services in 1985 and 1988 that resulted in the FSS plan. Initially, the resolutions were therefore tailored only to the use of unplanned bands in the GSO. They have since been expanded, however, to cover all frequency assignments to space stations, regardless of the location of the orbital slot.²⁶¹ Regardless, Resolution 4 is not applicable to the frequency bands covered by the allotment plan of Appendix 30B.²⁶²

After considering that all countries have equal rights to the use of frequencies and slots, both of which are considered limited natural resources, Resolution 2 resolves

that the registration with the Radiocommunication Bureau of frequency assignments for space radiocommunication services and their use do not provide any permanent priority for any individual country or groups of countries and do not create an obstacle to the establishment of space systems by other countries²⁶³

tional Conference to the next, and unless then renewed would automatically terminate in eighteen months from the date of the second conference.

²⁶⁰ Resolution no. 2 relating to equitable use, by all countries, with equal rights, of the geostationary-satellite and other satellite orbits and of frequency bands for space radiocommunication services (ex Resolution Spa 2-1) and Resolution no. 4 relating to the period of validity of frequency assignments to space stations using the geostationary-satellite and other satellite orbits. See ITU RR, *supra* note 17, at Vol. 3: Resolutions 2 and 4.

²⁶¹ SPACE LAW: A TREATISE, *supra* note 7, at 238. Even though considering a) of Resolution 4 notes that "rational and efficient use must be made of the frequency spectrum and the geostationary-satellite orbit", the other provisions and the title of the resolution refer to all space stations using the geostationary-satellite and other satellite orbits.

²⁶² ITU RR, *supra* note 17, at Vol. 3: Resolution 4, n.1.

²⁶³ *Id.* at Resolution 2, Resolves 1. The original version of the resolution read that the registration of assignments *should* not grant rights in perpetuity. However, this phrasing was interpreted by Butler as meaning that registration *does* not grant such priority. UN Doc. A/AC.105/C.2/SR.258 (May 20, 1976), at 6 (advice of R. Butler to the Legal

[A]ccordingly, a country or a group of countries having registered with the Bureau frequencies for their space radiocommunication services need to take all practicable measures to facilitate the use of new space systems by other countries or groups of countries, in particular those of developing countries and least developed countries, so desiring.²⁶⁴

As the resolution specifies that the mere entry into the MIFR of an assignment does not grant permanent priority to the registering administration, it has been interpreted as a clear repudiation of the 'first-come, first-served' rule that purportedly paved the way for the appropriation of slots through prolonged use. The remedy suggested by the resolution, however, reveals that, far from being a call for abolishing the *a posteriori* regime wholesale, Resolution 2 was merely part of the ongoing effort to refine the prevailing system. In particular, it attempts to restore the negotiation balance between prior users and new entrants of orbital slots during consultations on harmful interference, as the strong legal position of an intransigent first user has been identified as the main source of concern for non-spacefaring countries with the general ITU procedure. Incidentally, the emphasis in the second part of the cited provision on the need for a first user to take all practical measures to accommodate new entrants would be wholly unnecessary if the former was indeed involved in an illegal activity of appropriation. Resolution 2 thus indirectly affirms the lawfulness of the prolonged use of orbital slots by states having such capacity, in keeping with the overall ITU regime.

Resolution 4 starts by considering that account should be taken of the provisions of Resolution 2 relating to the use by all countries, with equal rights and equitable access to the frequency bands and the associated satellite orbits for space radiocommunication services. Both resolutions should thus be read as a complement to one another. Resolution 4 repeats the fun-

Subcommittee of the UN COPUOS). The current language of Resolution 2 confirms this imperative interpretation.

²⁶⁴ ITU RR, *supra* note 17, at Vol. 3: Resolution 2, Resolves 2. These provisions should be taken into account by both the administrations and the Bureau in the resolution of harmful interference conflicts (resolves 3).

damental objectives of rational and efficient use, as well as equitable access to frequency bands and orbits. It notes that limiting the period of validity of a frequency assignment in the GSO and in other orbits is a valid means of attaining these goals. As the resolution acknowledges that identical periods cannot be imposed on all administrations, they are allowed to decide on the period of validity of assignments for themselves, taking into account the operational lifetime of the satellite systems and the type of service provided. Resolution 4 then resolves that, first and foremost, frequency assignments in the GSO and other orbits shall not be considered perpetual. In particular,

a frequency assignment to a space station shall be deemed definitively discontinued after the expiry of the period of operation shown on the assignment notice, reckoned from the date on which the assignment was brought into service. This period shall be limited to that for which the satellite network was designed. The Bureau shall then invite the notifying administration to take steps to cancel the assignment. If the Bureau receives no reply within three months following the expiry of the period of operation, it shall insert a symbol in the Remarks Column of the Master Register to indicate that the assignment is not in conformity with this Resolution.²⁶⁵

However, the resolution allows the operational period of an existing space station to be extended if all other basic characteristics of the assignment remain unaltered.²⁶⁶ Like Resolution 2, Resolution 4 thus acknowledges the prolonged use of orbital positions, which, pursuant to the requirement not to alter any basic characteristics of frequency assignments apart from the operational lifetime of the satellites, is not subject to change. Moreover, the resolution even allows that a new space station with different technical characteristics is launched in the same orbital position, with the same assigned frequency, provided that it is in conformity with the relevant Radio Regulations and does not increase the potential for harmful interference in rela-

²⁶⁵ *Id.* at Resolution 4, Resolves 1.1.

²⁶⁶ *Id.* at Resolution 4, Resolves 1.2.

tion to the previous assignment.²⁶⁷ Finally, we have already seen that the Radio Regulations allow for an administration to alter a basic characteristic of a recorded assignment that has already been brought into use if it follows the appropriate procedure.²⁶⁸

Resolution 4 is inapplicable to the frequency bands covered by the plan for fixed-satellite services. Nevertheless, the use of slots for these services is circumscribed substantially in light of the similarities of Appendix 30B to the general ITU procedure for unplanned bands. As to the operational lifetime of satellites launched into orbital slots used for broadcasting-satellite services, the BSS plan notes that "[n]o assignment in the List shall have a period of operation exceeding 15 years, counted from the date of bringing into use, or 2 June 2000, whichever is later. . . . this period may be extended by up to 15 years, on condition that all the characteristics of the assignment remain unchanged."²⁶⁹ Finally, Resolutions 2 and 4 do not mention the rights attached to allotments and unused assignments in the FSS and BSS bands. It was noted earlier, however, that due to their intrinsic linkage with the plan in which they originate, these rights will cease to exist upon cessation of the plan. Moreover, we have seen that the practical impact of the initial distribution of rights under the *a priori* plans is mitigated by a number of important provisions (see *supra* section D.3.).

3. *De Facto* Appropriation?

Despite proclaiming that frequency assignments in the GSO and other orbits do not provide the registering administration with permanent priority, the actual provisions of Resolutions 2 and 4 do very little to effectively limit the duration of the use of a particular slot by one State.²⁷⁰ Resolution 2 merely re-

²⁶⁷ *Id.* at Resolution 4, Resolves 1.3.

²⁶⁸ *Id.* at Resolution 4, Resolves 1.4, referring to art. 11.43A to 11.46 RR.

²⁶⁹ ITU RR, *supra* note 17, at art. 4.1.24, app. 30. The provision was included in the WRC-2000 at the request of the developing countries.

²⁷⁰ See Wiessner, *supra* note 82, at 257-259. INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 50-51 ("In principle, rights acquired in both planned and unplanned bands are without real limitation. True, Resolutions 2 and 4 for unplanned bands and time limits for planned bands (until revision), but in reality this hardly puts any cap on duration of use."); SPACE LAW: A TREATISE, *supra* note 7, at

peats the call in the Radio Regulations to use all reasonable measures to resolve disputes between first users and latecomers, while Resolution 4 actually establishes a procedure that institutionalizes the possibility to indefinitely prolong the use of an orbital slot.²⁷¹ If, as is suggested by these Resolutions, there are no specific legal limitations to the duration of the actual use of an orbital position, the question arises whether the prolonged placement of a satellite network in an orbit can nevertheless be considered a form of *de facto* appropriation contrary to the letter and spirit of article II of the Outer Space Treaty.²⁷²

Some authors argue that any use of an orbital position that is not temporary in nature constitutes a form of appropriation of outer space.²⁷³ As such, Lyall and Larsen in their seminal 2009 treatise on space law state that "certainly there is no question that the continued presence of a satellite in a particular orbit involves sovereign title."²⁷⁴ Less outspoken but equally condemning of the indefinite placement of satellites in orbit around Earth is Jakhu, who argues that the proscription of national appropriation by means of use in article II of the Outer Space Treaty requires that the use of orbital slots must be temporary in order to be lawful. In particular, the author notes that "it ap-

238 ("a state might in effect permanently retain the use of a particular orbit by the placement and replacement of a satellite, in spite of Resolution 4").

²⁷¹ Jasentuliyana, *supra* note 103, at 54.

²⁷² Jakhu has referred to the rights attached to orbital positions as a "right to perpetual use". Ram S. Jakhu, *A Legal Analysis of the 1985 ITU Space Conference Report*, in 29 PROC. COLL. L. OUTER SPACE 105 (1986).

²⁷³ Marcoff argued that even the temporary use of the GSO by the placement of a satellite constitutes a violation of art. I and II of the Outer Space Treaty. M. G. Marcoff, *Télediffusion par Satellites et Droit International [Satellite Broadcasting and International Law]*, in M. BODENSCHATZ (ED.), BEITRÄGE ZUM LUFT- UND WELTRAUMRECHT: FESTSCHRIFT ZU EHREN VON ALEX MEYER ANLÄSSLICH SEINES AUSSCHIEDENS ALS DIREKTOR DES VON IHM GEGRÜNDETEN INSTITUTS FÜR LUFTRECHT UND WELTRAUMRECHTSFRAGEN DER UNIVERSITÄT ZU KÖLN [CONTRIBUTIONS TO AIR AND SPACE LAW: COMPILATION IN HONOUR OF ALEX MEYER ON THE OCCASION OF HIS DEPARTURE AS DIRECTOR OF THE INSTITUTE OF QUESTIONS CONCERNING AIR AND SPACE LAW, FOUNDED BY HIM AT THE UNIVERSITY OF COLOGNE] 338-341 (Heymann, Cologne, 1975).

²⁷⁴ SPACE LAW: A TREATISE, *supra* note 7, at 238. Compare L. Ravillon, *Les Orbites et les Fréquences dans une UIT Mutante [Orbits and Frequencies in a Mutating ITU]*, in M. COUSTON (ED.), ORBITES ET FRÉQUENCES: STATUT, RÉPARTITION ET RÉGIME JURIDIQUE [ORBITS AND FREQUENCY: STATUS, DISTRIBUTION AND THE LEGAL SYSTEM] 33-35 (Pedone, Paris, 2006); Rehm, *supra* note 58, at 116.

pears that every use of the geostationary orbit is legitimate provided that it does not exclude others permanently from such use or impose undue restrictions.²⁷⁵ However, such restriction on the use of orbital positions already flows from the relative nature of the general freedom to explore and use outer space, and does not imply that the prolonged use of a single orbital position by one State should amount to an act of appropriation of an area in outer space contrary to article II of the Outer Space Treaty. Others qualify the impact of the duration of the presence of satellites in orbit by referring to the intention of the launching State. If the practice is not accompanied by an *animus occupandi*, it is argued, the prolonged use of an orbital position cannot amount to appropriation, even though the use may in fact be indefinite.²⁷⁶ However, in their discussion of factors indicating the *animus occupandi*, the authors concerned then reintroduce the duration of the actual use, which faintly smells of circular reasoning.²⁷⁷

Other scholars neutralise the impact of the duration of satellite presence in orbit and resolve the ensuing dilemma of *de facto* appropriation by focusing on the practical impossibility to satisfy at the same time the requirements of exclusivity and permanence with respect to a particular orbital slot. As such, Smith argues that, since satellites in orbit around Earth are constantly in motion, they do not occupy the same specific area of outer space for any significant period of time. He continues:

Occupation of that specific area, therefore, cannot be deemed appropriation of that area because its duration is very short; it is certainly not permanent, or even potentially permanent . . .

[To be sure, over] a period of time that is potentially permanent, a . . . satellite remains within a certain larger, but limited, area of outer space relative to Earth. One could assert that this larger area is appropriated since the use exercised

²⁷⁵ *The Principle of Non-Appropriation of Outer Space*, *supra* note 11, at 22-23.

²⁷⁶ Speck, *supra* note 160, at 522, n.35; Wiessner, *supra* note 82, at 250.

²⁷⁷ See, *Satellite Power System*, *supra* note 44, at 84-85, 88 (relying on a Princeton study of the political and legal implications of developing and operating a satellite power system of 15 August 1977. The author concludes that the "present" use of slots is lawful since there is no intent to appropriate. *Id.* at 106).

from that general area could exclude use by some other satellites. But this assertion fails because yet other satellites can operate within that same area of outer space. Consequently, although the permanency aspect of appropriation could arguably be established, the exclusivity required for appropriation would not. Therefore, appropriation of an area of outer space is not established.²⁷⁸

Since two of the constitutive components of property rights (*supra*) can never be established simultaneously, permanent use of an orbital position cannot, from a theoretical point of view, amount to appropriation. This argument dovetails with the observation that orbits are in essence legal fictions created by the passage of satellites through outer space, and do not actually constitute an area or a natural resource of outer space.²⁷⁹ Recent years have witnessed the rise of several practices that further discredit the argument of *de facto* appropriation by satellites of a particular point in space. Many mobile satellites currently in orbit are no longer positioned in a single static orbital slot but shift from one orbit to another.²⁸⁰ This further demonstrates the limits of a classification of the prolonged presence of satellites in outer space as a form of 'permanent appropriation' of an area in space.

The focus on the practicable attainability of permanent occupation and appropriation of orbital slots by satellites, while perhaps overly relying on technicalities, is revealing for its realistic approach to a divisive issue. While it is acknowledged that the fears for a permanent presence of satellites in orbits may never materialize in practice, it is argued here that this is not due to the physical nature of orbits, but to the subtle interplay between the fundamental principles of efficiency, economy, and

²⁷⁸ INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 189. See also Stephen GOROVE, *Major Legal Issues Arising from the Use of the Geostationary Orbit*, 5 MICH. YB. INT'L LEGAL STUD 5 (1984); Wiessner, *supra* note 82, at 250; THE MODERN INTERNATIONAL LAW OF OUTER SPACE, *supra* note 16, at 548.

²⁷⁹ See ITU RR, *supra* note 17, at art. 1.184 (an orbit is defined by the ITU RR as "[t]he path, relative to a specified frame of reference, described by the centre of mass of a satellite or other object in space subjected primarily to natural forces, mainly the force of gravity").

²⁸⁰ See ITU, *Paper Tigers: the Scramble for Space Spectrum*, July 15, 2003, http://www.itu.int/newsarchive/pp02/media_information/feature_satellite.html.

equity in the applicable rules of the ITU instruments. Article 44, paragraph 1, of the ITU Constitution requires that member States implement, as soon as possible, the latest technical advances, in an effort to limit the number of frequencies and orbits used to the minimum essential to provide the necessary services in a satisfactory manner.²⁸¹ The overarching obligation to use slots and frequencies efficiently thus entails that States cannot indefinitely maintain the presence of satellites in outer space, as the speed of technological innovation implies that their technology will be outdated soon after launch. To be sure, Resolution 4 in theory allows for an indefinite prolongation of the use of orbital slots through the replacement of satellites. However, such replacement with preservation of the original date of entry of the assignment into the MIFR is made conditional on the preservation of the initial technical characteristics (*supra*). Launching satellites that, in accordance with article 44 ITU CS, implement the latest technical advances, will therefore in principle require the initiation of a new notification and registration procedure, resulting in a new entry into the MIFR. It is only when the altered assignment is found to be in conformity with the relevant ITU Radio Regulations and does not increase the likelihood of harmful interference with other users, that the original date of entry will be maintained.²⁸² It follows that

[the term international recognition] indicates then, without the use of the word 'priority', that all the member countries of the Union formally recognize the priority right of a country to the use of a frequency through precedence [meaning antecedence]. . . ; but this priority right shall be maintained only as long as the country concerned does not modify the use made of the frequency in question, the idea of use being brought out by the words 'purpose and technical characteristics'.²⁸³

²⁸¹ INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 46 (requirement to implement these advances "as soon as possible" entails a more stringent obligation for developed countries than for developing ones).

²⁸² ITU RR, *supra* note 17, at art. 11.43A - 11.46.

²⁸³ Chairman Working Group 1947, cited in *The Evolution of the ITU's Regulatory Regime*, *supra* note 19, at 395; INTERNATIONAL TELECOMMUNICATIONS AND INTERNATIONAL LAW, *supra* note 13, at 59.

The obligation to implement the latest technological advances as soon as possible, in combination with the limited operational lifetime of satellites and the procedural subtleties balancing the rights of current users with the need to accommodate newcomers, entails that the much-feared permanent occupation of orbital slots through the presence of satellites will never be realized in practice. "[A]lthough a theoretical right to perpetual use exists in law," technology progresses so rapidly in practice that generations of satellites are continually being replaced with more advanced ones, subject to new obligations of coordination and registration.²⁸⁴ This goes to show how a provision that was at first instance geared merely towards enhancing the efficient utilization of frequencies and slots, may ultimately prove a pivotal instrument for guaranteeing equitable access to these limited natural resources, which for their economic value after all depend on the development and timely implementation of the technologies to exploit them.²⁸⁵

While fears of orbital slots being 'occupied *de facto*' may thus never materialize in practice, it is recalled that the applicable legal rules nowhere expressly proscribe the permanent presence of satellites in orbit around Earth. Resolutions 2 and 4 note that the registration of assignments does not entail permanent priority, yet they implicitly deny that continued actual use of slots should be categorized as a form of appropriation; they even institutionalise the procedures for prolonging such use. This at first sight incongruous conclusion is not necessarily the result of an overzealous attempt on the part of the drafters to compromise between conflicting views on the use of orbits and frequencies. The proclaimed proscription of permanent priority through *registration* is not necessarily at odds with a theoretically permanent *use* of slots if we keep in mind that the rights attached to assignments are rights to international recognition and protection, rendered conditional on the actual and contin-

²⁸⁴ INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 50-51.

²⁸⁵ See Stern, *supra* note 30, at 879; Rob Frieden, *Balancing Equity and Efficiency Issues in the Management of Shared Global Radiocommunication Resources*, 24 U. PA. J. INT'L ECON. L. 323 (2003).

ued use of the resources concerned. From this perspective, the resolutions support the view that registration cannot give rise to permanent rights over slots as an *area in outer space, if and only to the extent that they are used as a natural resource*, even if this use is permanent. This distinction between areas and resources and the relevance of the actual use criterion will be further highlighted in the next section.

V. THE ACTUAL USE CRITERION

Throughout this article, the actual and continued use of slots by registering administrations has been posited as an important criterion for circumscribing the freedom of States to use orbits in space. In the present section, this criterion will be further elaborated as a lodestar for addressing such divisive issues as the illegality of reserving capacity without use, the *in se* lawfulness of permanent use of slots, and the powers of the Bureau to remove deadwood assignments.

A. *Areas vs. Resources Redux*

It was suggested earlier that all component elements of outer space could in theory be qualified as an area or as a natural resource, depending on the activities deployed with respect to either category (*supra* section II.). In particular, the criterion of exploitation was put forward in order to avoid arbitrary acts of classification regarding their susceptibility to appropriation. While it is generally accepted that article II of the Outer Space Treaty is applicable to areas in space, it was argued that the appropriability of natural resources should not be determined by the rigidity of this provision, but by the specific characteristics of the resources concerned. As regards orbital slots, an authoritative study of experts conducted in 1965 noted that the most distinguishing characteristic determining the legal regime of this particular type of natural resource is that it is "used – not consumed; it is being wasted when it is not being used."²⁸⁶

²⁸⁶ Joint Technical Advisory Council of the Institute of Electrical and Electronics Engineers and Electronic Industries Association, *Radio spectrum utilization: a program*

Unlike mineral reserves on celestial bodies, the non-depletable nature of orbits thus encourages their use, despite their physical scarcity. This specific characteristic has dictated the interpretation of the Outer Space Treaty regime on the free use of space by all States through an ITU regime that renders any international protection of rights attached to slots conditional upon their actual and continued use.

The dichotomy of areas and natural resources in outer space, depending on their exploitation, implies that the non-appropriation principle cannot be violated by the continued presence of satellites in orbital slots as long as these slots are actually used as natural resources. As such, Gorove noted with respect to the projected placing of solar power satellites in orbit around Earth that

the keeping of a solar power satellite in geostationary orbit for a period of thirty years would not constitute appropriation. In point of fact, thirty years would probably satisfy the 'sense of permanence' requirement, unless the geostationary orbit were considered a natural resource as characterized by the International Telecommunication Convention of 1973 Authority exists to support the view that the ban on national appropriation of outer space does not relate to resources. In view of this and the additional fact that solar energy is an inexhaustible and unlimited resource, its utilization for transmission to earth by satellites does not appear to fall under the prohibition of article II of the 1967 Treaty.²⁸⁷

This statement is revealing for the bifurcated approach it adopts to the classification of orbital slots and the legal consequences attached thereto. If a slot is actually used by a State, it should legally be treated as a natural resource. Subsequently, international rights of recognition and protection can be ac-

for the administration of the radio spectrum, in *INTERNATIONAL TELECOMMUNICATIONS AND INTERNATIONAL LAW*, *supra* note 13, at 15-16.

²⁸⁷ *Major Legal Issues Arising from the Use of the Geostationary Orbit*, *supra* note 278, at 5-6. See also Stephen Gorove, *The Geostationary Orbit: Issues of Law and Policy*, 73 AM. J. INT'L L. 449-450 (1979). While the author limits the scope of this statement on the appropriability of natural resources to those originating in celestial bodies, he extends it to all space resources on the basis of the moratorium argument (*supra*). See further Speck, *supra* note 160, at 522.

quired with respect to this type of use. The protection attached to an assignment that is registered in the MIFR refers to the use of a reserved orbital position for an agreed service in a particular frequency band, not to the physical area in space itself.²⁸⁸ Absent actual use, however, any rights exercised by a State over an orbital slot cannot legally be qualified as international rights attached to a natural resource, as it is precisely the activity of exploitation that determines the classification justifying the exercise of these rights. In other words: rights pertaining to an orbital slot that is reserved but not used are rights attached to the spatial area covered by this slot. It follows that any reservation of orbital capacity without actual use cannot escape the proscription of article II of the Outer Space Treaty on the grounds that the slots should be qualified as natural resources. Conversely, any form of actual use of an orbital segment, though prolonged, cannot by virtue of article II of the Outer Space Treaty alone be considered unlawful, as natural resources are not covered by this provision. Further, it follows from the classification of rights acquired under the ITU regime as rights of use attached to orbital slots as natural resources, that such rights are only granted with respect to the present use of these slots by the registering State. The nexus requirement with actual use for the determination of the natural resource classification thus explains why registration in the ITU MIFR cannot grant permanent priority, as per Resolutions 2 and 4, since future non-use of the reserved slots will nullify their qualification as natural resources. While the use of slots can thus reveal itself as permanent *in retrospect*, no permanent rights can *a priori* be attached to the use of specific orbital positions.

The useful application of the exploitation criterion to the distinction between areas and natural resources in outer space presupposes that the applicable legal regimes proscribe the acquisition of rights over areas through the actual and continued use of natural resources contained therein.²⁸⁹ Such limitation

²⁸⁸ Wilson, *supra* note 11, at 270.

²⁸⁹ See Delville, *supra* note 50, at 152-153. *The Commercial Exploitation of Mineral Resources in Outer Space*, *supra* note 67, at 48-50 (Smith argues that usufructuary claims of exclusive rights to exploit certain mineral resources in a specified area on a

may well be implied by the reference to 'use' as a means of acquiring national appropriation prohibited by article II of the Outer Space Treaty.²⁹⁰ Indeed, the explicit mention of use as a proscribed form of acquisition of sovereignty in outer space is rooted in the assumption that the non-appropriation principle is applicable only to the areal aspects of phenomena in outer space, that their use as natural resources is lawful and encouraged and that the discriminating application of article II of the Outer Space Treaty is possible only on the basis of the actual use criterion. Otherwise, the reference to 'means of use' in article II of the Outer Space Treaty would result in the inescapable conclusion that natural resources cannot be appropriated 'through their use.' As natural resources exist only by virtue of their use, however, this interpretation would be either nonsensical or overly restrictive as it would essentially amount to a proscription of the very use of space resources (*supra* section II.). Therefore, the provision should rather be interpreted as clarifying that, while no property rights can be acquired in the territorial dimensions of outer space, including celestial bodies, the use of these areas cannot give rise to issues of appropriation, for it concerns the exercise of rights over natural resources. For celestial bodies, this rule is concretised in the Moon Agreement codification of the non-appropriation principle, which limits the applicability of the principle to natural resources 'in place.' At first sight, the immaterial and non-depletable nature of the resources of outer space *sensu stricto* clouds the applicability of this provision to orbital slots. However, it was argued that the 'in place' criterion can usefully be extended to immaterial and

celestial body do not amount to appropriation and are thus allowed by the Outer Space Treaty, as they constitute a valid exercise of the freedom to use outer space and there is no intent to appropriate). The *res communis* nature of the outer space environment is often raised as an argument favouring the appropriation of space resources without granting sovereignty over the area itself. See GÁL, *supra* note 60, at 200-201; *Satellite Communication and Spectrum Allocation*, *supra* note 14, at 68; Copiz, *supra* note 11, at 218 ("orbit-spectrum use within the GSO does not create an ownership right to the area of space. Instead, application of *res communis* allows for the exclusive exploitation of natural resources at that location and at that time") & 219 ("In the *a priori* system, nominal assignments of orbital positions would essentially give each country exclusive property rights to the GSO without the actual exploitation of the resource, which is necessary under *res communis*.").

²⁹⁰ See Freeland & Jakhu, *supra* note 48, at paras. 37 and 61.

inexhaustible resources as well.²⁹¹ Moreover, the Moon Agreement expressly provides that

The placement of personnel, space vehicles, equipment, facilities, stations and installations on or below the surface of the Moon, including structures connected with its surface or subsurface, shall not create a right of ownership over the surface or the subsurface of the Moon or any areas thereof.²⁹²

The operational lifetime of stations on the Moon and other celestial bodies, taking into account their purpose and the exorbitant costs that would accompany such undertaking, is likely to outlast even the sturdiest satellite. It follows that, if the limited surface area of celestial bodies can be used by a single State for an extended period of time, thereby excluding the use of the same location by other States, the actual and continued placement of satellites in orbit around Earth should, *a fortiori*, be lawful as well, under the sole condition that the registering administration cannot acquire rights over the area covered by the slot.²⁹³

The above-cited delegate of the United States already hinted at this analogy between the non-depletable uses of celestial bodies and of outer space *sensu strictu* in his reply to the French objection to the placement of satellites in orbit, by arguing that "using a favorable geostationary orbit is no more an 'appropriation' or 'de facto occupation' than using a particularly favorable area of the lunar surface . . . for a manned landing."²⁹⁴ Further analysis of the legal regime on the erection of stations on the Moon and other celestial bodies reveal other, striking similarities to the use of orbital slots under the ITU regime that support this analogous reasoning. As such, the Moon Agreement requires that States parties wishing to establish stations on celestial bodies use only that area which is required for the needs of the station and shall immediately inform the Secretary-

²⁹¹ See *supra* note 76 and accompanying text.

²⁹² Moon Agreement, *supra* note 56, at art. 11, para. 3.

²⁹³ Delville, *supra* note 50, at 146 (the use of a surface on a celestial body is equated with the exploitation of a natural resource).

²⁹⁴ See *supra* note 52 and accompanying text.

General of the United Nations of the location and purposes of that station. Subsequently, the State shall inform the Secretary-General at annual intervals whether the station continues in use and whether its purposes have changed.²⁹⁵ These requirements are more than slightly redolent of the ITU provisions calling upon registering administrations to efficiently and economically use orbits and frequencies, and of the condition to actually and continually use the reserved resources, subject to cancellation of the assignment in the MIFR. Further, the Moon Agreement requires that stations "be installed in such a manner that they do not impede the free access to all areas of the Moon of personnel, vehicles and equipment of other States Parties conducting activities on the Moon in accordance with the provisions of this Agreement or of article I of the [Outer Space Treaty]."²⁹⁶ This rule is reminiscent of the obligation to guarantee, in practice, equitable access to orbits for all States, underlying many provisions in the ITU instruments.²⁹⁷

While the UN treaties on space law do not sanction rights over areas in outer space and even expressly proscribe that such rights are acquired through the use of natural resources, this does not mean that any exercise of rights over a spatial area is considered unlawful. It follows that, even if the reservation of orbital capacity without subsequent use amounts to the exercise of rights over an area in outer space, their mere reservation should only be rejected if they contravene the express provisions of article I or II of the Outer Space Treaty. A cursory analysis of the rights established by the entry into force of the plans for broadcasting and fixed-satellite services has revealed that they do not amount to property rights, for they lack at least one of the four components of this compound right. The permanent presence of satellites in orbital slots does not amount to a violation of article II of the Outer Space Treaty for similar reasons set out above (*supra* section IV.B.). The non-appropriation principle is a corollary of article I of the Outer Space Treaty, how-

²⁹⁵ Moon Agreement, *supra* note 56, at art. 9, para. 1.

²⁹⁶ *Id.* at art. 9, para. 2.

²⁹⁷ See Delville, *supra* note 50, at 148 (for a general description of the rights acquired through the establishment of a station on celestial bodies).

ever, and both should be read as a whole in order to determine the legality of a given activity in outer space.²⁹⁸ In this context, it is undeniable that the continued use of orbital slots by one State may significantly constrain the freedom of other States to use like segments of outer space. Such limitation, however, is an unavoidable consequence of the exercise of relative rights that are primarily circumscribed by the lawful activities of others. The restriction of the freedom of other States to use outer space, caused by the actual use of orbital slots by one administration, is legitimate as long as it does not amount to the level of harmful interference. The mere *reservation* of orbital capacity, however, cannot be justified by reference to the relative nature of the freedom to *use* outer space. Claims made by States lacking the intention or capacity to use the reserved slots disproportionately limit the supply of an already limited natural resource for those countries having the capability to launch satellites. Such practices violate article I of the Outer Space Treaty, even if the mere act of reserving orbital slots may not be so severe as to amount to an act of appropriation. While the exact meaning of both provisions remains ambiguous, it is clear that, read as a whole, they proscribe the establishment of rights over an area for the benefit of an administration that does not engage in the actual exploitation thereof, thereby excluding the use by other administrations that do have such intention and capacity.

B. A Priori vs. a Posteriori Rights: A Sliding Scale

The paper satellite problem is typically attributed to the *a posteriori* approach adopted by the ITU, since it allows administrations to register slots in advance of their being brought into use.²⁹⁹ At the same time, the approach has been denounced for favouring spacefaring nations over those countries that currently do not have the capacities to launch their own satellite

²⁹⁸ Freeland & Jakhu, *supra* note 48, at para. 12; *Adequacy of the Current Framework*, *supra* note 65, at 123; Delville, *supra* note 50, at 142.

²⁹⁹ See, e.g., *Legal Issues of Satellite Telecommunications, the Geostationary Orbit and Space Debris*, *supra* note 7, at 181-184; Ram S. Jakhu & K. Singh, *Space Security and Competition for Radio Frequencies and Geostationary Slots*, 58 ZIT. LUFT- & WELTRAUM 82-83 (2009).

networks into orbit, because it is grounded in present demand rather than future needs, thus allegedly valuing efficiency and economy over equitable access. Detractors of the *a posteriori* approach have consistently raised the limited nature of orbital positions as the basis for these concerns. Whatever the exact nature of the measures needed for addressing these criticisms, it is clear that they should set out to preserve rather than diminish the supply of orbital slots. This clearly warrants against the institutionalisation of *a priori* plans, which in their effort to accommodate future users, further decrease the already limited availability of orbital positions for present use.³⁰⁰ By disconnecting the acquisition of rights over slots from their actual use, these plans diminish the efficient use of a scarce resource, without actively contributing to equitable access thereto for countries lacking the technical capacity to launch satellites. *A priori* plans thus fail to contribute to any of the three goals posited by the ITU and are even frequently denounced for violating the Outer Space Treaty.³⁰¹ How then, does one reconcile these plans with the fundamental goals of the present ITU and the Outer Space Treaty regime? The answer to this question has already been hinted at throughout this article: by interpreting the FSS and BSS plans not as fundamental departures of the *a posteriori* regime, but as a subtle correction to the real flaws of this system.

The above analysis of the general ITU regime on the use of slots has revealed the notification and registration procedure as an intricate process through which the freedom to use orbital slots in the Outer Space Treaty is strengthened until it gradually crystallizes into internationally recognized rights. The process continually takes into account the corresponding freedoms, interests, and rights of other States, so as to avoid harmful interference and secure the freedom of other users in outer

³⁰⁰ Sigfried Wiessner, comment, *Developments in the International Law of Telecommunications: Discussion*, 83 AM. SOC'Y INT'L L. PROC. 403-406 (1989) (for an interesting discussion on the legal differences between *a priori* and *a posteriori* plans). See also Riddick, *supra* note 41, at 19.

³⁰¹ Thompson, *supra* note 4, at 299, referring to *The Legal Status of the Geostationary Orbit*, *supra* note 11, at 215; Riddick, *supra* note 41, at 22-23. See further the references cited *supra* in footnote 50.

space. Pursuant to article I of the Outer Space Treaty, every State has an equal freedom to use outer space – including the freedom to use orbital positions through the placement of satellites – limited primarily by the corresponding freedom of other States to pursue like activities. This vaguely circumscribed freedom to use outer space does not carry with it the strength and enforceability of a right.³⁰² Rather, its general phrasing implies that it should be qualified as the expression of an equal *interest* of all States to use orbital slots. This interest can subsequently be concretized into an internationally recognized right that can be enforced *vis-à-vis* other States, by initiating the appropriate procedure under the ITU rules. The *a posteriori* procedure of registering an assignment through the early publication of detailed information, including the projected date of bringing into use an assignment, allows an administration to signal its intention to use a certain slot for a predetermined service in combination with a given frequency band. As this declaration of intent is concretized throughout the procedure, the rights of the requesting administration are strengthened commensurately. The coordination phase is instructive in this regard, as the requesting administration is required to consult only with those States that have already initiated the registration process themselves, thus rendering their interests ‘enforceable’ to some extent. The status acquired by an assignment in the coordination phase does not determine the outcome of the consultation phase, however, as the administrations involved are required to take all practical measures to resolve their differences. It is only when an assignment is entered into the Master Register that a veritable right of international recognition is acquired. This right is ‘enforceable’ to the extent that latecomers have to take into account the registered use of a particular orbital slot.

The *a priori* plans depart from this procedure by granting certain rights to unused allotments and assignments from the moment the plan enters into force. The impact of these rights is derived from the observation that requesting administrations

³⁰² See, e.g., Delville, *supra* note 50, at 145 (“le Traité de l’Espace consacre une liberté d’accès à l’EEA et non un droit d’accès à l’EEA”).

have to take into account all allotments and assignments included in the plan, even if the relevant State has not signalled its intention to actually use them, as is the case for orbital slots in the unplanned bands. The most appropriate way to characterize these rights, however, is not as elements to enforce a diametrically opposed take on the management of orbital usage, but as a mechanism designed to rectify the most glaring imbalance in the *a posteriori* procedure, *i.e.* the disadvantageous negotiating position of the latecomer during the bilateral coordination phase with a first entrant. Some authors have argued that this imbalance could be remedied by offering all States a guaranteed option to use certain orbital positions for a given period of time,³⁰³ or by limiting the effects of the *a priori* plans to the distribution of used orbital positions only.³⁰⁴ These solutions have already been embedded in the current FSS and BSS plans, however. They strengthen as it were the mere interests of article I of the Outer Space Treaty into an option for all States to use certain orbital positions, while stopping short of granting any actual rights that would impede the use of the distributed segments by States having the capacity and intention to do so, as the plans allow for additional uses of currently unused slots. Proper international protection and recognition is still reserved for those orbital positions whose actual use is sanctioned by their entry into the Master Register.

In the end, neither the *a posteriori* nor the *a priori* system, or even a compromise between both, can in and of itself fully attain the goals of the Outer Space Treaty and ITU regimes:

Workable regulations are simply those which satisfy existing needs. They transmogrify from time to time, as circumstances require

[M]ost workable regulations are those which . . . are founded upon the characteristic properties of a shared universal resource. . . .

³⁰³ See, e.g., *Regulating the Use of the Radio Spectrum*, *supra* note 121, at 44-48; Solana, *supra* note 157, at 200; Wiessner, *supra* note 82, at 269-273.

³⁰⁴ Riddick, *supra* note 41, at 22-23.

A regime based upon the characteristics of a shared universal resource does not deny legitimate claims of sovereignty. It merely rejects the misguided ones . . . [P]lanning – regardless of the methodology chosen – can only succeed if it is based upon the physical laws governing the resource as well as the legitimate needs of states wishing to use it.³⁰⁵

Any approach that is solely dependent on an *a priori* check of the intention and capacity to use a scarce natural resource is prone to abuse by States that feign such intention for their own gain. Ultimately, the proof in the pudding is, as always, in the eating. What is needed, therefore, is a veritable *a posteriori* check for matching the actual use made of the reserved slots with the proclaimed intention of the requesting administration. The condition of actual and continued use provides exactly such check. It is implemented by the administrative and financial due diligence measures that have been adopted by the ITU in order to combat paper satellites. An administration's progress in the procedure for granting rights under the ITU regime can be envisioned as a sliding scale from theoretical interests under the Outer Space Treaty to an internationally recognized right to use a slot and frequency band, sanctioned by the ITU, measured in terms of credibility of intent and probability of use, mitigated by options under *a priori* plans and retroactively sanctioned by the actuality of use. To top it off, the enforceability of this regime requires a central organ that has the necessary competences to implement the criterion of actual and continued use, and is endowed with the authority to remove deadwood assignments that do not fulfil this condition.³⁰⁶ This is the topic of the next and final subsection of this article.

C. *Sanctioning the Reservation of Capacity without Use*

Paper satellites refer to registered assignments that have not been brought into use or are no longer operational and

³⁰⁵ Fleming, *supra* note 19, at 345-346.

³⁰⁶ Wong notes that the lack of enforcement by the Bureau is the main reason why the adopted due diligence measures fail to remedy the paper satellite problem. See Wong, *supra* note 193, at 873-875.

hence exist only on paper. The realisation of the fundamental ITU goals of efficient use and equitable access hinges on the accuracy of the Radiocommunication Bureau's examination of the possibility of harmful interference between competing uses of orbital slots and frequencies, based on the information in the Master Register. For an accurate assessment it is thus pivotal that this register reflects actual use rather than notified occupancy (*supra* section III.D.1). The ITU has already adopted a number of financial and administrative due diligence measures that anticipate non-use of reserved slots. Moreover, several radio regulations provide that assignments will lapse if they are not brought into use after completion of the notification and registration procedure. The question remains, however, whether the Bureau can only recognize actual use of orbits and frequency bands, or if it is also competent to penalize non-use by removing deadwood assignments from the Master Register.

The Final Acts of the 1947 World Administrative Radio Conference in Washington contained clear rules on the powers of the then International Frequency Registration Board to cancel frequency assignments that were not brought into use within a predefined period, or that were no longer operational for a prolonged interval. As a general rule, the IFRB would take the initiative to cancel the recording of any assignment, after mere consultation with the notifying country, if it found that regular operation had not begun within two years following the date of its receipt of the notice, unless it found that the circumstances of the case warranted the retention of the notice, which in any case could not result in an additional period of more than one year.³⁰⁷ If the Board found that a recorded frequency assignment had been out of use for three years it would cancel the entry in

³⁰⁷ See 1947 RR, at art. 11, ch. IV, section YI, No. 347, § 14. The provision added that "[e]xceptionally, however, and only in the case of a frequency assigned to a working service for use during years of high or low sunspot activity if the frequency has not been brought into use when three years have elapsed from the date of receipt of the first notice, and the Board finds, after consultation with the notifying country, that the circumstances warrant the retention of the notice, the entry may be retained for not more than one further period of three years. . . . Frequencies assigned to a working service for use during years of high or low sunspot activity may be notified to the Board for any other service for use on an interim basis and without prejudice to the earlier frequency assignment."

the Register, in agreement with the notifying country.³⁰⁸ Moreover, the notifying country was under the obligation to inform the Board within three months of permanent discontinuance of any listed frequency, whereupon the entry would be removed from the Register.³⁰⁹ Finally, the Radio Regulations until recently provided that the IFRB was to request, at intervals not exceeding two years, confirmation from the notifying administration that its assignment had been and would continue to be in regular use in accordance with its recorded characteristics.³¹⁰

It is recalled that the ITU aimed for an entirely engineered radio spectrum in 1947.³¹¹ This engineering goal coincided with the introduction of a formal right of international recognition of assignments upon registration in the MIFR. The clear-cut powers of the Board to remove, *proprio motu*, assignments that were not brought into use, and the obligation of States to notify permanent discontinuance of recorded assignments can be seen as countermeasures to the increased form of legal protection. Though the right to international recognition was retained, the engineering goal was formally abandoned upon adoption of the first measures for space services in 1959 (*supra* section III.A.). With it, the power of the IFRB to cancel deadwood assignments without the consent of the registering State was deleted, as an *a posteriori* system was not thought to require a proactive Board.³¹² While the powers of the IFRB were partially restored in 1974 for planned maritime radio services, similar measures have not been adopted for other services.³¹³ This haphazard evolution has resulted in a regulatory regime that is based on the actual and continued use of frequency assignments, yet does not unequivocally empower the Radiocommunication Bureau to remove unused assignments without the consent of the notifying administration.

³⁰⁸ *Id.* at No. 351, § 16.

³⁰⁹ *Id.* at No. 350, § 15.

³¹⁰ 1979 RR, at No. 1569.

³¹¹ Fleming, *supra* note 19, at 339; *The Evolution of the ITU's Regulatory Regime*, *supra* note 19, at 396.

³¹² Fleming, *supra* note 19, at 340.

³¹³ *Id.* at 344.

Some authors argue that the powers of the 1947 IFRB were the strongest 'active' discretionary powers ever to be granted to a regulatory agency of the ITU,³¹⁴ suggesting that the present Bureau is at the mercy of the notifying States for 'cleaning' the Master Register of assignments that are not in use.³¹⁵ The present Radio Regulations argue for a more nuanced assessment, however. We have seen that administrations are still under the obligation to inform the Bureau of any discontinued use of slots for a period not exceeding eighteen months. They should indicate the moment of re-use, the failure of which to honour allows removal of the assignment (*supra* section III.D.2.). Moreover, the Bureau is still endowed with a general power to "review periodically the Master Register with the aim of maintaining or improving its accuracy, with particular emphasis on the review of the findings so as to adjust them to the changing allocation situation after each conference."³¹⁶ This has been interpreted to mean that,

whenever it appears from reliable information available that a recorded assignment has not been brought into regular operation . . . , the Bureau shall consult the notifying administration and, subject to its agreement or in the event of non-response after the dispatch of two consecutive reminders, each within a three-month period, shall either cancel, or suitably modify, or retain the basic characteristics of the entry. A decision of the Bureau to cancel the entry in the event of non-response shall be confirmed by the Board.³¹⁷

While the present Radio Regulations in our view thus not necessarily warrant the conclusion that the current Bureau has

³¹⁴ *Id.* at 338-339.

³¹⁵ For example, Leive notes that "an inactive entry must be retained unless an administration affirmatively takes action to cancel it": *Rapporteur Group SC-4 Report*, *supra* note 3, at 25. See also *Regulating the Use of the Radio Spectrum*, *supra* note 121, at 44 (arguing that the IFRB should be given broader powers to strip recorded assignments of their legal recognition). See further E. Pepin, *General Legal Problems in Space Telecommunications*, 38 *TELECOM. J.* 387 (1971); Ickowitz, *supra* note 160, at 85; *Satellite Power System*, *supra* note 44, at 38, 41; *The Evolution of the ITU's Regulatory Regime*, *supra* note 19, at 393; INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 49.

³¹⁶ ITU RR, *supra* note 17, at art. 11.50.

³¹⁷ *Id.* at art. 13.6.

less powers than the 1947 IFRB, they are less outspoken in their formulation of the Bureau's powers to remove inactive entries without the agreement of the notifying administration. This is illustrated by the inconclusive consequences attached to a failure of the notifying administration under Resolution 4 to cancel an assignment that is considered 'definitively discontinued' due to expiry of the period of operation shown on the assignment notice. Rather than cancelling the assignment, the resolution merely requires that the Bureau insert a symbol in the remarks column of the MIFR to indicate that the assignment is not in conformity with the resolution.³¹⁸

Finally, regardless of the equivocal language of the present Radio Regulations concerning the powers of the Bureau to unilaterally remove assignments that are not in conformity with the requirement of actual and continued use, it is clear that such powers are necessary for the Bureau to carry out its function. It is a generally accepted theory of international law that the powers of an international organisation are not limited to those expressly laid down in its constituent documents, but extend to the implied powers that are required to fulfil its function.³¹⁹ One of the principal goals of the ITU is to allocate, allot, and register assignments using orbital slots and frequency bands so as to avoid harmful interference, by improving efficiency in the use of these resources and guaranteeing equitable access thereto.³²⁰ This goal cannot be attained but on the basis of a register that accurately reflects the use of the radio spectrum and the orbits around Earth.³²¹ Therefore, it stands to reason that the Bureau, by virtue of the implied powers doctrine, should also have the power to cancel the international protection attached to assignments that have, after verification by the notifying administration, been proven to be deadwood. If a State fails to live up to its obligations under the ITU and Outer Space Treaty regime, and, despite the recent administrative and fi-

³¹⁸ *Id.* at Resolution 4, Resolves 1.1.

³¹⁹ *Reparations for Injuries Suffered in the Service of the United Nations*, Advisory Opinion, 1949 I.C.J. Rep. 174, 182.

³²⁰ ITU CS, *supra* note 8, at arts. 2 and 44.

³²¹ See also the recommendations on how to make the ITU process more accurately reflect actual spectrum use in *Rapporteur Group SC-4 Report*, *supra* note 3, at 18-30.

nancial due diligence measures, continues to reserve orbital capacity without subsequently using these resources, the ITU is empowered to act on its own accord and cancel the procedure. Lyall notes that the ITU has already acted in accordance with these implied powers in its reaction to the blatant abuse of the registration procedure by Tonga and encourages the further implementation of this theory to combat paper satellites.³²² In addition, not only does the ITU *have* the power to cancel unused slots because it is necessary to carry out its function of ensuring efficient use of and equitable access to orbits in space, it decidedly *does not* have the power to grant or protect rights of States over areas in space, which would be the case if it allowed reserved slots to remain unused. Empowering the Radiocommunication Bureau to remove deadwood is thus not only necessary to fulfil its duties, it is also imperative to protect the freedom of States to use orbital slots. The freedom to *use* is by no means furthered by authorizing States to exercise rights over slots *absent their use*.

CONCLUDING REMARKS: EFFICIENT USE AND EQUITABLE ACCESS

The analysis in this article is based on a comprehensive reading of the applicable UN space law treaties and ITU documents, in an effort to distil a consistent regime on the use of orbital slots by States. The Radio Regulations occupy a central place in this analysis. To be sure, these Regulations, apart from being notoriously under-researched, are of a bewildering complexity and do not necessarily form a coherent whole.³²³ Nevertheless, their interpretation is framed by the overarching goals of the ITU as an organisation that oversees the rational, efficient and economic use of frequency bands and associated orbital positions, so as to improve the equitable access thereto for

³²² *Paralysis by Phantom*, *supra* note 46, at 191-192; Francis Lyall, *The Role of the International Telecommunication Union*, in *OUTLOOK ON SPACE LAW OVER THE NEXT 30 YEARS*, *supra* note 255, at 262.

³²³ The paper satellite problem can even be attributed in part to the lack of understanding of the Radio Regulations by the requesting administrations. See ITU, *Satellite Backlog Action Group Meeting* (Jan. 27, 2003) SATBAG-03/7(Rev.3)-E, <http://www.itu.int/itudoc/itu-r/archives/sat-bag/docs/2003/7-r3.html> (referring to ITU Council Resolution 1182 of 2001).

all countries. Moreover, to the extent that the Regulations oversee the use of natural space resources, the general principles of the Outer Space Treaty and other relevant provisions of international space law further facilitate this exercise in interpretation.

A thorough analysis of the applicable rules has revealed that, despite the sloganesque representation of some vexing legal issues, the rights attached to orbital slots are *in se* rights attached to natural resources subject to the condition of actual and continued usage. Whatever form they may assume, be it a claim of sovereignty over areas in outer space, malicious overfilling, or the adoption of a plan disconnecting rights from subsequent use, acts of reserving orbital capacity without subsequent use, even if not in express violation of any specific space law provisions, run counter to the very aims and spirit of the legal regimes of both the UN and the ITU. The distribution of rights over natural resources that are not exploited is tantamount to the exercise of rights over the area in which they are located. The ensuing limitation on the proper use of limited natural resources by States presently having the capacity to launch satellites, in favour of undetermined future uses by those lacking such capacity, is in clear violation of the philosophy underlying article I of the Outer Space Treaty, which circumscribes the freedom to use outer space only by reference to the corresponding freedoms of others. Reducing the availability of orbital slots through practices other than their actual and continued use is antithetical to their very characterization of limited natural resources and fails to contribute to the fundamental goals of efficient and economic use. Moreover, by unnecessarily limiting the current supply of orbital positions, it is difficult to imagine how the reservation of orbital capacity, even if originally conceived for the benefit of future use by those States presently incapable of using them, can contribute, in and of itself, to the goal of equitable access. After all, an undeniable element of equitable access to an area for the purpose of exploitation is the capacity to use the natural resources located therein.³²⁴

³²⁴ INTERNATIONAL REGULATION OF SATELLITE COMMUNICATION, *supra* note 12, at 82.

A denouncement of the reservation of orbital slots without use should by no means amount to a denial of the needs of non-spacefaring nations, however. Article I of the Outer Space Treaty merely establishes a *legal* equality among all States to use outer space, including orbits around Earth.³²⁵ Even the most progressive interpretations of this provision, correctly rejecting the view that it is too general to have any legal relevance,³²⁶ acknowledge that the means for turning this legal equality into practice must not lie in article I itself, but in the realisation of the manifold calls for international cooperation contained in the UN space treaties and ITU documents.³²⁷ If claims to unused orbital slots are to be condemned, it is not because the future needs of non-space powers should be ignored, but because it recognizes that the actualization of the legal equality in article I of the Outer Space Treaty is furthered by the preservation and maximization of the availability of a limited natural resource. This goal should be pursued through a regime that stimulates the efficient use of orbits and frequencies, so as to guarantee in practice equitable access to these resources for all States, on the basis of actual technical and organisational international cooperation.³²⁸ The goal cannot be achieved, however, by converting the current regulatory regime into a system that disconnects the acquisition of rights over resources from their subsequent use: "[t]he rights of States not so fortunately endowed should not

³²⁵ Wulf Von Kries, *The Legal Status of the Geostationary Orbit: Introductory Report*, in 18 PROC. COLL. L. OUTER SPACE 29 (1975); Delzeit, *supra* note 41, at 75; Copiz, *supra* note 11, at 219.

³²⁶ See, e.g., *The Geostationary Orbit: Issues of Law and Policy*, *supra* note 287, at 448-449; *The 1967 Space Treaty*, *supra* note 65, at 578.

³²⁷ See MARCOFF, *supra* note 13, at 330-332, 335 & 347-355. See also the interpretation of the expression "on a basis of equality" in article I of the Outer Space Treaty by Jenks, who correctly noted that "[t]he expression postulates equality of opportunity for states with the economic and technological capacity to take advantage of opportunities in space; it neither can nor does create or give any right to the economic and technological capacity necessary to take advantage of such opportunities by one's own action". SPACE LAW, *supra* note 65, at 197.

³²⁸ See also THE MODERN INTERNATIONAL LAW OF OUTER SPACE, *supra* note 16, at 583 ("The inequality that the legal regime identified was an inequality of scientific and technical competence. It was not a legal inequality").

prevent the former from engaging in constructive activities because of the broad equitable rights of the latter.³²⁹

The requirement of equitable access for all States is for satellite services, not for orbital locations *per se*. Actual use requires actual capacity.³³⁰ The article has shown that such actual use is not only vital for ensuring an efficient and equitable management of a limited natural resource under the ITU regime. Above all, it is an essential prerequisite for the very qualification of a space phenomenon as a natural resource as distinct from a spatial area. This functional criterion in turn dictates the limits of the lawful uses of orbital slots, in particular their susceptibility to appropriation under the Outer Space Treaty. The characterization of acts of orbital reservation without subsequent use as an unlawful claim over areas in space, rather than as the exercise of rights over natural resources, provides a legal basis for discouraging such practices as malicious overfiling and other forms of paper satellites that is stronger than the current set of financial and administrative due diligence measures.

³²⁹ *The Legal Status of the Geostationary Orbit*, *supra* note 11, at 217. See also, *Satellite Power System*, *supra* note 44, at 89 ("Although States by reason of their development do not have equal space capabilities, nonetheless the space resource States are not to be denied by the non-space resource States the right to free use."); Thompson, *supra* note 4, at 300.

³³⁰ Levy, *supra* note 38, at 183; Thompson, *supra* note 4, at 300; *Principles of Equity*, *supra* note 147, at 18 ("ability must be at the disposal of a country which wishes to take advantage of its guaranteed access"); *Major Legal Issues Arising from the Use of the Geostationary Orbit*, *supra* note 278, at 7 ("countries must actually be able to use the geostationary orbit and not just merely assert a claim in order to avail themselves of the guarantee of equitable access").

THE MEXICAN SPACE AGENCY

*J. H. Castro Villalobos**

INTRODUCTION

After a silence of more than 35 years, the Government of Mexico has taken an important step in resuming Mexican national space policy. On July 30, 2010, the Government published The Act Establishing the Mexican Space Agency,¹ which created the Mexican Space Agency (MSA). The Government published the General Lines of Space Policy of Mexico (GLSP) on July 13, 2011.² With this, the lack of an official national space policy has finally ended. In 1977, the National Commission of Outer Space, which was created in 1962,³ ceased operating.

THE LEGAL FRAMEWORK OF OUTER SPACE IN MEXICO

Mexico's Constitution does not refer explicitly to the legal framework governing outer space, nor does it contain provisions that clarify its legal accuracy. The Constitution states: "The national territory comprises the space above the national territory, to the extent and modalities that may be established in international law."⁴ This provision only covers matters concerning Mexican national air space and constitutes a forwarding norm

* Member of the Mexican Foreign Service. Former Professor of International Law at the University of Iberoamericana. Member of the International Institute of Space Law. The author and Editor-in-Chief would like to acknowledge and thank Sr. Sergio Camacho for his translation assistance.

¹ Decreto por el que se expide la Ley que crea la Agencia Espacial Mexicana [Decree through which the Law that creates the Mexican Space Agency is issued], Diario Oficial de la Federación [DO], 30 de Junio de 2010 [hereinafter MSA Act].

² Líneas Generales de la Política Espacial de México [General Lines of Space Policy of Mexico], Diario Oficial de la Federación [DO], 13 de Julio de 2011.

³ RUTH GALL, LAS ACTIVIDADES ESPACIALES EN MÉXICO: UNA VISIÓN CRÍTICA⁷⁴ (FCE, México, 2nd ed. 1991).

⁴ Constitución Política de los Estados Unidos Mexicanos [C.P.], *as amended*, art. 27, §VI, Diario Oficial de la Federación [DO], el 5 de Febrero de 1917 (Mex.) [hereinafter Constitución]

as it refers to another legal regulation, in this case international law.

Bearing in mind that Mexico is a Federal Republic, and therefore has the duality of federal and local law, it becomes necessary to determine which level of government should regulate the actions of the Mexican State for outer space. According to the principle that that which is not expressly reserved to the Federation is conferred to the individual Federal States,⁵ it would appear to give local authorities the power to act in this area. However, there is also another applicable principle. That is, to always interpret a provision as in agreement with other relevant rules.⁶ Applying this principle, it must be accepted that the power to act corresponds solely to the Federal Executive.⁷ Based on the foregoing, according to Article 117, Section I of the Mexican Constitution,⁸ it is clear that the individual Federal States lack international character. Furthermore, Article 89 of the Mexican Constitution authorizes the Federal Executive to preside over the Nation's international relations.⁹ Consequently, although the Constitution does not expressly recognize the power of the Federation to act in the area of outer space, it must be understood as there are several correlated provisions that are applicable, as may be seen upon examining other Federal provisions. It is obvious that operating in outer space is an international activity, so its treatment corresponds to international law and thus, it is within the scope of the powers of the Federation.¹⁰

Article 3 of the National Property Act determines what constitutes national property: "II. The goods of common use referred to in article 7 of this act."¹¹ In turn, Article 7, paragraph I of the National Property Act states that "the airspace located

⁵ *Id.* at art. 24.

⁶ Código Civil Federal, el 26 de Mayo de 1928, at art. 1854.

⁷ Constitución, *supra* note 4, at art. 124.

⁸ *Id.* at art. 117, §I.

⁹ *Id.* at art. 89, §X.

¹⁰ *Id.* at art. 27, §VI.

¹¹ Nueva Ley General de Bienes Nacionales [National Property Act], Diario Oficial de la Federación [DO], el 20 de Mayo de 2004, at art. 3.

over the national territory, with the extension and modalities that the international law sets out"¹² are goods of common use.

Article 36 of the Organic Law of Federal Public Administration contains the powers of the Ministry of Communications and Transport.¹³ One of these powers is to grant concessions and permits to establish telecommunications and satellites systems (section III).¹⁴ This is the only reference of an activity clearly associated with outer space.

In summary, activities related to outer space fall within Federal legislation and it is up to Congress to legislate in this area. The Federal Executive is responsible for implementing and executing the corresponding policies.

THE MEXICAN SPACE AGENCY

The MSA has the legal character of a decentralized public agency with its own legal disposition and technical and managerial autonomy (Art. 1).¹⁵ It stands out that the MSA is a public organization but with its autonomy restricted to technical and administrative matters.¹⁶

Under the Law that creates the Mexican Space Agency, the MSA is directed to formulate and propose the General Lines of the Mexican Space Policy and the National Programme of Space Activities (Art.2.I);¹⁷ to develop scientific-technological competence (Art.2.IV);¹⁸ to promote the development of space systems (Art.2. V.);¹⁹ to serve as an instrument of the authority of the

¹² *Id.* at art. 7

¹³ *Ley Orgánica de la Administración Pública Federal* [Organic Law of the Federal Civil Service], *Diario Oficial de la Federación* [DO], el 29 de Diciembre de 1976, at art. 36.

¹⁴ *Id.*

¹⁵ MSA Act, *supra* note 1, at art. 1.

¹⁶ L. L. Cahuich Campos, *Agencia Espacial Mexicana* [Mexican Space Agency], in RAUL ALVA GARCÍA, ET AL., 50 AÑOS DE CIENCIAS Y TECNOLOGÍA AEROESPACIAL 27 (Universidad Autónoma Metropolitana, México, Mar. 21, 2009); Norma Ávila Jiménez, *La Agencia Espacial Mexicana* [The Mexican Space Agency], LA JORNADA SEMANAL [LA JORNADA SUNDAY EDITION] 12 (Oct. 8, 2006).

¹⁷ MSA Act, *supra* note 1, at art. 2.1.

¹⁸ *Id.* at art.2(IV).

¹⁹ *Id.* at art.2(V).

State in this sector (Art. 2. VIII);²⁰ and to ensure and preserve public interest and the protection of the population in matters of development, security, peace and the prevention of national security problems (Art. 2. X).²¹

Under Article 2.I the MSA will be responsible for formulating and proposing to the Ministry of Communications and Transport the General Lines of Mexican Space Policy and the National Programme of Space Activities.²² This means that the two most important instruments of the MSA, the General Lines of Space Policy and the space programme are to be submitted to the authority of the Government for approval. This implies, of course, that the MSA cannot establish policies or programmes unless the Government endorses them.

The provisions of paragraph Art. 2. VIII which refer to the fact that the MSA will serve "as an instrument of authority of the State" in the space sector²³ reaffirms the tendency of increased participation by the private sector as is also seen in the case of the space powers. Article 3 of the Act Establishing the MSA refers to the instruments of Space Policy of Mexico.²⁴ Among them, number 3. IV stands out for its importance and refers to "negotiations, agreements and international treaties" in matters related to outer space.²⁵ This means that Mexico will now, by law, place a greater significance on international agreements that will be signed as a form of international cooperation to strengthen Mexico's development in the field.

Article 4 of the same law, indicates the main functions of the MSA.²⁶ Among the more important to be noted are promoting the development of space activities to broaden the Nation's competence in space matters as well as in the aviation industry, telecommunications, as well as space science and technology applications.²⁷ Reference is also made to the "promotion of sign-

²⁰ *Id.* at art.2(VIII).

²¹ *Id.* at art.2(X).

²² *Id.* at art.2(I).

²³ *Id.* at art.2(VIII).

²⁴ *Id.* at art.3.

²⁵ *Id.* at art.3(IV).

²⁶ *Id.* at art. 4.

²⁷ *Id.* at art.4(III).

ing bilateral and multilateral international treaties"²⁸ as well as to the important role of advising the Federal Government on its implementation and interpretation of related international documents on outer space.²⁹ Providing treaty advice and interpretation of international documents is among the most important legal functions of the MSA. Other legal functions of the MSA are those relating to conducting investigations and giving legal opinions on the subject of outer space.³⁰

Article 5 of the same law sets out the powers of the MSA.³¹ Notable among these are the ones relating to disseminating provisions contained in the Constitution, in the Law that created the MSA and in international treaties already ratified by Mexico regarding outer space.³² Additional powers include providing advice and resolving queries regarding concessions, permits, and authorizations for using, developing, and applying space technologies.³³ The MSA is also responsible for establishing the Mexican position on space matters.³⁴

ORGANIZATION AND OPERATION

Article 6 states that the MSA will have the following components: (a) an Executive Board; (b) a General Directorate, (c) an Oversight body and (d) technical and administrative departments.³⁵

The governing body of the MSA is the Governing Board that is comprised of 15 members, the majority being officials from the Federal Government.³⁶ Accordingly, the President of the Board shall be the Minister of Communications and Transport and will include members from six other ministries at the rank of Under Secretary (Internal Affairs, Foreign Affairs, Public Education, Finance and Public Credit, National Defense, and

²⁸ *Id.* at art.4(VI).

²⁹ *Id.*

³⁰ *Id.* at art.4(X).

³¹ *Id.* at art. 5.

³² *Id.* at art.5(II).

³³ *Id.* at art.5(V).

³⁴ *Id.* at art.5(VII).

³⁵ *Id.* at art.6.

³⁶ *Id.* at art.7.

Navy) and the National Institute of Statistics and Geography. Other members belong to educational and academic institutions: the National Council for Science and Technology, the National Autonomous University of Mexico, the National Polytechnic Institute, the Mexican Academy of Sciences, the Academy of Engineering, the National Academy of Medicine, the National Association of Universities, and the National Institute of Statistics and Geography.³⁷

It is noteworthy that the Executive Board does not contain any member from the related industrial sectors in the fields with which the MSA will deal, particularly bearing in mind that the projects to be undertaken are to be carried out to some extent with funds from the private sector. Such is happening in the case of the current space powers. Similarly, among the great omissions is the Institute of Geophysics of the National University. In the past, this was one of the few Mexican institutions that maintained activities and research in matters of outer space.

Among the functions of the Governing Board referred to in Article 9, are proposing actions that ensure compliance with treaties, international conventions, and agreements signed and ratified by Mexico regarding outer space.³⁸ Another significant function is to approve the reports of the Director General.³⁹

IV. THE DIRECTOR

The Director of the MSA shall be appointed by the Federal Executive and shall hold office for four years and may be re-elected only once.⁴⁰ Among the requirements to be Director is experience in technical and space matters and having held posts of "high-level decision-making" for at least five years.⁴¹ The most important function of the Director General relates to de-

³⁷ *Id.*

³⁸ *Id.* at art.9(IV).

³⁹ *Id.* at art.9(VI).

⁴⁰ *Id.* at art.10.

⁴¹ *Id.* at art.10(II).

veloping the National Programme of Space Activities and submitting it for the approval of the Governing Board.⁴²

Finally, the MSA will administer its property in accordance with the applicable legal provisions and the programmes and budgets that it develops annually and are approved by the Governing Board.⁴³ In accordance with the Third Transitional Article, the Governing Board will formulate the General Lines of the Space Policy of Mexico that the MSA will develop.⁴⁴

V. GENERAL LINES OF SPACE POLICY

With the adoption of the General Lines of Space Policy it is intended that space policy will be a State policy and therefore not subject to changes in the government administrations. In the past, changes in Mexican governments have resulted in changes in all institutional policies.

The General Lines of Space Policy will pay attention to public interest and will seek to conform outer space programmes intended to address areas such as information, science, and technology.⁴⁵ The MSA will be called to develop projects, train technical and scientific staff, and to create the infrastructure necessary for space exploration on an institutional basis and with a multidisciplinary nature.⁴⁶ Moreover, the participation of the industrial sector in the creation of the projects that are developed must be taken into account. In this regard, the MSA must prioritize its activities in coordinating functions in the fields of science, technology, and industry in the development of initiatives that have been created.⁴⁷

Articulating the relationship of the public and private sectors in the areas of outer space activities will be a focal point of the MSA's work. Its resources will have to come, to a great extent from the private sector and to the extent that the private sector will receive the benefits that an intelligently conceived

⁴² *Id.* at art.12(I).

⁴³ *Id.* at art.16.

⁴⁴ *Id.* at Third Transitional, p. 7.

⁴⁵ General Lines of Space Policy of Mexico, *supra* note 2, at 3.

⁴⁶ *Id.* at 5.

⁴⁷ *Id.*

space policy brings with its development. To make MSA activities solely depend on Government funds, there will have to be a determination that its work is limited to the ability to successfully establish a national outer space activity. Another objective of the MSA will be to stimulate a self-sustaining space industry with a competitive technological capacity.

There will be considerable resources to support scientific and technological research in universities and educational centers. In this sense, the MSA will serve as an agent in order that the resources flow to the learning centers. Establishing the benefits of an adequate space policy will entail curricula reforms at all levels. Another objective will be to prioritize national space policy in accord with human development, peace, and international security. This principle has already been applied to the regulation of Mexico's actions in international outer space organizations.

Finally, strengthening the policy of international cooperation with the main space investigation centers world-wide will result in establishing an actual State policy. This will surely take years but it is an important step in the right direction. The existence of a Mexican space policy and the Mexican Space Agency (MSA) will also encourage the study of legal issues regarding outer space.⁴⁸

⁴⁸ The Mexican legal doctrine has been interested in Outer Space for many years. See *e.g.*, MODESTO SEARA VÁZQUEZ, INTRODUCCIÓN AL DERECHO INTERNACIONAL CÓSMICO [INTRODUCTION TO INTERNATIONAL COSMIC LAW] (Escuela Nacional de Ciencias Políticas y Sociales México, 1961); MIGUEL ALEMÁN, LOS SECRETOS Y LAS LEYES EN EL ESPACIO [SECRETS AND LAWS IN SPACE] (Editorial Helio-México, 1962); ABELARDO ROJAS ROLDAN, NOTAS SOBRE DERECHO ESPACIAL [NOTES ON SPACE LAW] (Lex, México 1969); ANTONIO FRANCOZ RIGALT, DERECHO AEROSPAECIAL [AIR AND SPACE LAW] (Editorial Porrúa, México, 1981); JOSÉ LUIS ÁLVAREZ HERNÁNDEZ, DERECHO ESPACIAL [SPACE LAW] (México, 2006); and MODESTO SEARA VÁZQUEZ, DERECHO Y POLÍTICA EN EL ESPACIO CÓSMICO [LAW AND POLICY IN THE COSMIC SPACE] (2nd ed., México, 1986).

**DECREE THROUGH WHICH THE LAW
THAT CREATES THE MEXICAN
SPACE AGENCY IS ISSUED¹**

On the margin a seal with the National Emblem that says:
United Mexican States. Presidency of the Republic.

FELIPE DE JESÚS CALDERÓN HINOJOSA, President
of the United Mexican States, to its inhabitants let it be known:

That the Honorable Congress of the Union has addressed to
me the following

DECREE

“The General Congress of the United Mexican States
decrees:

The Law that creates the Mexican Space Agency is issued.

SINGLE ARTICLE. The Law that creates the Mexican
Space Agency is issued.

CHAPTER I

General Dispositions

Article 1. The Mexican Space Agency is created as a decentralised public organisation with a legal disposition and its own property and with technical and managerial autonomy to fulfill its mandate, objectives and goals.

The agency will be part of the sector coordinated by the Ministry of Communications and Transport. Its legal quarters shall be in Mexico City, Distrito Federal, without prejudice to establishing offices and conventional quarters in any part of the country.

Article 2. The Mexican Space Agency shall have the following objectives:

¹ Decreto por el que se expide la Ley que crea la Agencia Espacial Mexicana [Decree through which the Law that creates the Mexican Space Agency is issued], Diario Oficial de la Federación [DO], 30 de Junio de 2010. This is an Unofficial Translation. It is offered to the readership of the *Journal of Space Law* as a convenience.

I. To develop and propose to the Minister of the Ministry of Communications and Transport the outlines of Space Policy of Mexico, as well as the National Program of Space Activities;

II. To execute the Space Policy of Mexico, through the development and application of the National Program of Space Activities;

III. To promote the effective development of space activities to expand the country's capabilities in the educational, industrial, scientific and technological fields of space;

IV. To develop the scientific - technological capacity of the country through the articulation of the sectors involved in all fields of space activity that enable their performance within a framework of national autonomy in the matter;

V. To promote the development of space systems and media, technology and infrastructure needed for the consolidation and autonomy of this sector in Mexico;

VI. To facilitate the incorporation of areas related to this policy and in particular the participation of the productive sector in order to gain competitiveness in the market of space goods and services;

VII. To promote active international cooperation through agreements which benefit space activities and allow the active integration of Mexico to the International Space Community;

VIII. To serve as an instrument of governance of the State in this sector, to strengthen sovereignty;

IX. Ensuring national security and interest, through a strategy that integrates scientific and technological knowledge, efficiency, experience and coordination ability among public agencies of the Federal Public Administration;

X. To ensure and preserve public interest and the protection of the population, as fundamentals of the development, security, peace and prevention of national security issues in Mexico,

XI. Receive proposals and comments from the public, private and social agencies in the special area for its study and consideration.

Article 3. Tools of Mexican Space Policy:

I. The selection of technological alternatives to solve national problems;

II. The development of specific solutions for specific problems;

III. The use of information and technology generated in space and related areas that are of interest and for the benefit of the Mexican society;

IV. Negotiations, agreements and international treaties in matters relating to space activities;

V. Research in space and the formation of high-level human resources and infrastructure necessary for that purpose;

VI. The recognition of the importance that development, appropriation and use of scientific knowledge and technological developments associated with space research have to the economy, education, culture and social life;

VII. The academic exchange among national and foreign institutions of scientific and technological research;

VIII. The scientific and technological exchange and collaboration with other space agencies;

IX. The participation of Mexican companies with the technological capability to provide equipment, materials, supplies, and services that its projects or agencies require with which have protocols for exchange and collaboration, and

X. The adequacy of the national productive sector to participate and acquire competitiveness in markets for space goods and services.

Article 4. For the fulfillment of its objective, the Agency shall have the following functions:

I. Foster studies and development of scientific and technological research in the field, and priority attention areas as defined in the National Program of Space Activities;

II. Establish and develop activities to link with national academic, technological and professional institutions, dedicated to studies of specialties related to the subject;

III. Promote the development of space activities to expand the capabilities of the country, in this area as well as in the aviation industry, telecommunications and all its applications related to space science and technology;

IV. Support the adequacy of the sectors related to space policy, particularly the productive, so that it is incorporated and

participates competitively in the markets for space goods and services;

V. Promote training, the rapprochement and collaboration among institutions, national public and private agencies, foreign or international, that carry out activities in space, as well as the development of space systems and media, technology, infrastructure and training of human resources required for the consolidation and autonomy of this sector in Mexico;

VI. Promote the signing of international bilateral and multilateral treaties, and to advise the Federal Government on the implementation of same, as well as on the interpretation of relevant international texts;

VII. Design strategies and tools for the development of knowledge, dissemination and application of science and technologies associated with space research, in coordination with units of the three orders of government, as well as with the instances of private initiative and interested civil society organizations;

VIII. Define and promote programs, projects and actions to strengthen the knowledge and development of space research, its influence on everyday life and its potential as a factor in economic development;

IX. Promote research through institutions of basic and applied research and/or specialized firms, as well as the dissemination of their results and applications.

X. Conduct research, works, expert work and issue technical, scientific and legal opinions on the subject;

XI. Promote the training of specialists in space and its related disciplines, by linking activities and bachelor's degree, postgraduate studies and graduate programs and specialization courses, updating and training;

XII. Formulate and carry out educational projects of dissemination on the subject, as well as develop and promote the production of materials for diffusion;

XIII. Create and operate a system of information and consultation on the matter; maintain the national registry of activities and promote the development and formal space education, as well as the dissemination of studies on space research, and

XIV. Others that are derived from legal and administrative systems applicable to the subject

Article 5. These are functions of the Mexican Space Agency:

I. Coordinate the development of standardization, accreditation and certification systems in the field, in collaboration with the public agencies and competent foreign and international organizations;

II. Disseminate the provisions of the Constitution, this Law and the international treaties ratified by Mexico on the matter, in order to take advantage of development opportunities that will enable the latter and to issue to the three levels of government, recommendations pertinent to its development and utilization;

III. Promote and support the creation and operation of related bodies in the states and municipalities, in accordance with the laws applicable in federal entities and, according to their realities, needs and capacities of involvement in projects;

IV. Formulation of the National Program of Space Activities, to manage and implement the budget necessary for realization of its goals, as well as to seek alternative sources of funding;

V. Advise and resolve queries posed by institutions and organizations of different levels and arms of government, on problems relating to concessions, permits and authorizations for the use, development and technological applications in outer space;

VI. Perform scientific events and technology in space, where members of the Agency and invited national and foreign specialists participate;

VII. Propose the designation of representatives of the country to the international bodies in space of which Mexico is a part and establish the national position based on its competence;

VIII. Carry out and participate in actions and scientific and technological space events, in order to increase the national scientific technical competence and

IX. Carry out all the other similar acts that involve the realization of its functions.

CHAPTER II
Organization and Operation

Article 6. The Agency will have the following bodies of administration and government:

- I. Board of Governors;
- II. General Direction;
- III. Supervising Body and
- IV. Technical and administrative structures to be established in the Ordinary Statute

Article 7. The Board of Governors of the Space Agency Mexican will comprise 15 members, which will be:

- I. The Minister of Communications and Transport, who shall preside over it;
- II. A representative of the Ministry of Home Affairs that must have a level of assistant secretary;
- III. A representative of the Ministry of Foreign Affairs that must have the level of assistant secretary;
- IV. A representative of the Ministry of Public Education that must have the level of assistant secretary;
- V. A representative of the Ministry of Finance and Public Credit that must have the level of assistant secretary;
- VI. A representative of the Ministry of National Defense that must have the level of assistant secretary;
- VII. A representative of the Naval Ministry that must have the level of assistant secretary;
- VIII. The head of the National Council of Science and Technology;
- IX. The Rector of the National Autonomous University of Mexico;
- X. The Director General of the National Polytechnic Institute;
- XI. The President of the Mexican Academy of Sciences;
- XII. The President of the Academy of Engineering;
- XIII. The President of the National Academy of Medicine;
- XIV. A representative of the National Association of Universities and Institutions of Higher Education, and

XV. The head of the National Institute of Statistics and Geography

For each member of the Board of Governors there will be a representative designated by the Minister, who, in this case must have the level of director general or the equivalent. The representative will have the same powers as their title-holders and may attend, with voice and vote, meetings of the Board, when the respective member does not attend.

Article 8. The Board of Governors shall meet at least four times a year and the meetings can be ordinary and extraordinary.

It will convene validly with the attendance of at least eight of its members; and its resolutions shall be valid when they are taken by a majority of those present. Only in the case of a tie, the president of the Board of Governors shall decide with a casting vote.

The Board of Governors shall have a Technical Secretary and Deputy Secretary, who shall be responsible for preparing that which is necessary for its meetings, combining the basic portfolios and to following up on the agreements.

Article 9. The Board of Governors shall have the following indelegable powers:

I. Develop and propose to the Minister of Communications and Transport the general lines of the national space policy of Mexico and, as well as the National Program of Space Activities;

II. Define priorities, to identify and approve projects and programs of the Agency;

III. Approve recommendations, guidelines and policy agreements and actions in space;

IV. Propose and approve actions to ensure compliance with treaties, international conventions and agreements signed and ratified by Mexico on the subject;

V. Approve policies in the field of evaluation, monitoring, advocacy and guidance of the Agency's programs;

VI. Know and in its case approve the reports of the Director General;

VII. Authorize programs and the draft budget of the Agency, as well as the modifications to its implementation;

VIII. Know and in its case approve the financial statements of the Agency and to authorize its publication;

IX. Approve agreements, bases of coordination and collaboration agreements with authorities and agencies associated with the subject, academic institutions, research and partnerships;

X. Set the criteria and bases for coordination, participation and collaboration with authorities and institutions, individuals and social groups and autonomous institutions;

XI. Establish criteria and bases to create or develop similar local associated agencies;

XII. Analyze and in its case approve the By-law, Organic Statute, Organization Manual, Manual of Procedures and Manual of Agency Services, and

XIII. The others that are highlighted in this Law and other legislation

Article 10. The Director General of the Agency shall be appointed and removed by the Mexican President. The appointment shall be for a period of four years with the possibility of an additional period.

In order to be the Director General the following requirements must be fulfilled:

I. A Mexican citizen by birth, more than 30 years of age and be in full enjoyment and exercise of their civil and political rights;

II. Held positions of high level decision-making and with knowledge and experience in technical and space subjects for at least five years, and

III. Excluding any of the impediments that are established in the Federal Law of Public Entities, or the Federal Law on the Responsibilities of Public Officers.

Article 11. They are the causes for the removal of the Director General, those that are stated in the Federal Law of Responsibilities of Public Servants and the applicable legal framework.

Article 12. The Director General is responsible for the conduct, administration and good progress of the Agency, and shall have the following powers:

I. Development of the National Program of Space Activities and submitting it for the approval of the Board of Governors;

II. Holding and granting all kinds of acts and documents inherent to its objective;

III. Exercise the greatest powers of command, administration and litigation and payment, even those that require special authorization, according to other legal or regulatory provisions in accordance with the law;

IV. Issue, endorse and negotiate claims;

V. Make complaints and grant pardon;

VI. Exercise and desist from legal actions, including the defense trial;

VII. Negotiate matters in arbitration and conclude transactions;

VIII. Grant general and special powers of attorney with the authority that is incumbent upon it, including those that require authorization or a special clause;

IX. Inform the Board of Governors of its activities;

X. Develop the draft Internal Regulation, Natural Statute, the Manual of General Organization, the Procedures and the Agency's Services to the Public

XI. Substitute and revoke general or special powers of attorney;

XII. To follow up and implement the agreements of the Governing Board, and

XIII. The others that are outlined in the Natural Statute, the present Law and other legislation.

Article 13. Monitoring of the agency will be the responsibility of the Federal Government, through a Public Commissioner member and a substitute appointed by the Ministry of Public Service; the former shall be without prejudice to its own internal bodies of control that are an integral part of the organization's structure.

The Commissioner shall attend public, with voice but without vote, in meetings of the Board of Governors.

Article 14. The Public Commissioner must assess the global performance and through areas of the organisation, its level of efficiency, and adherence to the legal provisions, as well as the management of their income and expenditure, and may request, and the agency is under an obligation to provide all the information that may be required for carrying out its functions.

It will be responsible for the powers conferred upon it by the corresponding articles of the Federal Law of the Public Entities, as well as those of the Internal Regulation of the Agency and other applicable legal provisions.

Article 15. Labor relations between the Mexican Space Agency and its employees shall be governed by the provisions of Paragraph B of article 123 of the Constitution of the United Mexican States, the Federal Labor Law and other competent laws and regulations.

CHAPTER III

Budget and Property

Article 16. The Agency will manage its property in accordance with the applicable legal provisions and the programs and budgets that are formulated annually and approved by its Board of Governors.

Article 17. The conventions of the Agency will be integrated with:

- I. The mobile and immobile property that is intended for its service;
- II. The amount allocated in the Expenditure Budget of the Federation for its operation;
- III. The income it receives for services rendered;
- IV. Donations and bequests to be granted in its favor;
- V. The other property, rights and resources to acquire by any other legal title;
- VI. The Agency's revenue generated by services, contributions, donations, or any other concept from its own activities or from institutions or agencies public or private, local or foreign, will not have to be concentrated in the Treasury of the Federation for reallocation to the Agency, and

VII. The resources that are deposited into the Agency by the concepts identified in the preceding paragraph shall be applied specifically for the purposes, programs and projects that are approved by the Board of Directors.

Transitions Rules

First Article. This Decree shall enter into force on the day following its publication in the Official Gazette of the Federation.

Second Article. The Board of Governors shall be installed in a period no greater than 45 calendar days following the entry into force of this Decree.

Third Article. Once installed the Board of Governors, will be organized and will convene forums and permanent working tables to ensure that in a period of no more than one hundred and eighty days, space specialists, national as well as foreign, as well as Institutions of Higher Education and Public Research Centres, could discuss and formulate general lines of Space Policy of Mexico that will be developed by the Mexican Space Agency.

Fourth Article. After completion of the forums and the permanent working tables, the President of the Board of Governors shall issue the call for the appointment of the Director General of the Mexican Space Agency, who shall be appointed for a period of no more than 30 calendar days from the issuance of the call and in accordance with the provisions of this Decree.

Fifth Article. The Director General of the Agency will have a term of 90 calendar days from his appointment to prepare and present the National Program of Space Activities, the draft Internal Regulation, as well as the draft Natural Statute which would enable the Agency fulfill its functions, which shall be approved by the Board of Governors in a period no greater than 90 calendar days from the date of its presentation.

AN INTRODUCTION TO THE PCA'S OPTIONAL RULES FOR ARBITRATION OF DISPUTES RELATING TO OUTER SPACE ACTIVITIES

*Judge Fausto Pocar**

I. INTRODUCTION

On December 6, 2011, the Administrative Council of the Permanent Court of Arbitration (PCA) adopted the *Optional Rules for Arbitration of Disputes Relating to Outer Space Activities* (Outer Space Rules).¹ In an effort to address fundamental *lacunae* in the existing dispute resolution mechanisms of international space law, the Outer Space Rules were created to provide a means of voluntary and binding dispute resolution available to all parties engaged in outer space activities and tailored to the particularities of this unique area of economic activity. In the few months since their completion, they have already attracted attention from legal practitioners representing actors in outer space activities.

The Outer Space Rules are the product of over two years of dedicated work by a group of international experts, in conjunction with the International Bureau of the PCA. Having had the pleasure to chair the expert group throughout, I propose to introduce the Outer Space Rules to the academic community by

* Professor of International Law, University of Milan; Appeals Judge and Former President, ICTY; Former Delegate to the UNCOPUOS and its Legal Subcommittee. I wish to express my deep gratitude to Ms. Evgeniya Goriatcheva, assistant legal counsel at the Permanent Court of Arbitration, for her valuable contribution to drafting this paper.

¹ Optional Rules for Arbitration of Disputes Relating to Outer Space Activities, Dec. 6, 2011, available at <http://www.pca-cpa.org/upload/files/Outer%20Space%20Rules.pdf>.

providing insight into the factual and intellectual processes of their development.²

II. THE INITIAL STAGES

The initiative for the development of a set of specialized arbitral rules for disputes that arise in the space sector came from the PCA, an intergovernmental organization counting 115 member states.³ One of the PCA's principal functions is to facilitate dispute resolution, including arbitration, between various combinations of states, state entities, intergovernmental organizations, and private parties. The PCA's secretariat, the International Bureau, headed by the PCA Secretary-General, provides full registry services and legal and administrative support to arbitral tribunals and commissions. Most significantly for our purposes, since 1992 the PCA has adopted eight sets of party and sector-specific rules of procedure for arbitration or conciliation developed by expert groups. In 2009, inspired by these experiences and suspecting the lack of an adequate dispute resolution mechanism for space-related disputes, the Administrative Council of the PCA approved the establishment of an Advisory Group of legal experts ("Advisory Group"), with a mandate to:

... firstly ... assess generally the need for a final and binding dispute-settlement mechanism for disputes involving the use of outer space by states, intergovernmental organizations and private entities and, specifically, ... highlight the benefits of arbitration in this regard. Secondly, the Advisory Group will draw up optional rules to this end for inclusion in the PCA's set of arbitration rules.⁴

² In parallel to this text, another introduction to the Outer Space Rules by Dr. Stephen Hobe is being published (in English) in the 1 *Zeitschrift für Luft- und Weltraumrecht* (German Journal of Air and Space Law) (2012).

³ As of June 2012. See Permanent Court of Arbitration, *Member States*, http://www.pca-cpa.org/showpage.asp?pag_id=1038 (last visited June 3, 2012).

⁴ Letter from the PCA Secretary-General to the members of the PCA Administrative Council (May 29, 2009) (on file with the PCA).

The then Secretary-General of the PCA, Mr. Christiaan M.J. Kröner, officially invited me to chair the Advisory Group on November 17, 2009.

My first mission as Chair was to compose an Advisory Group on the basis of the highest internationally acknowledged professional qualifications, with due regard given to achieving a broad geo-political representation, reflective of the PCA's wide state membership. The Advisory Group's substantive knowledge of space law, including its dispute resolution aspect, was to complement the PCA International Bureau's extensive practical experience in the use of various sets of procedural rules in arbitral proceedings. Accordingly, the members of the Advisory Group were: Dr. Tare Brisibe (Nigeria), Prof. Frans von der Dunk (Netherlands), Prof. Joanne Gabrynowicz (United States), Prof. Dr. Stephan Hobe (Germany), Dr. Ram Jakhu (Canada), Prof. Armel Kerrest (France), Mrs. Justine Limpitlaw (South Africa), Prof. Dr. Francis Lyall (United Kingdom), Prof. V.S. Mani (India), Mr. Jose Montserrat Filho (Brasil), Prof. Dr. Maureen Williams (United Kingdom/Argentina), and Prof. Haifeng Zhao (China).

III. ARBITRATION AS A SECTORIALIZED DISPUTE RESOLUTION MECHANISM FOR SPACE LAW

Upon constitution, the Advisory Group directly embarked on fulfilling the first part of its mandate: to consider the desirability of, or need for, arbitration rules specifically targeted at the resolution of space-related disputes. This phase was conducted through questionnaires, multiple rounds of comments, and a survey of existing outer space related instruments that either contained or could have contained provisions for dispute resolution through arbitration. When these documents revealed a general consensus in support of arbitration among the Advisory Group, I resolved to take advantage of the highly specialized expertise of the Advisory Group members, and invited those members who were willing to submit discussion papers on the dispute resolution needs of particular areas of space law.

Five discussion papers were submitted and circulated within the Advisory Group.⁵

The Advisory Group's starting-point for these discussions was that in the last twenty-five years a relatively firm consensus seems to have emerged in academia affirming the need for a sectorialized dispute resolution mechanism for disputes relating to outer space activities. Proposals have been made for a variety of solutions, including the establishment of a new international court for space law.⁶ Given the existing scholarship on this subject, we chose not to dwell on all aspects of dispute resolution in space law, but to focus on: (1) noting the relevant contemporary characteristics of outer space activities, (2) evaluating whether arbitration could provide an effective means for dispute resolution in an area possessing such characteristics, and (3) devising how existing procedural rules for arbitration could be modified to better fit the particularities of space-related disputes.

We first noted that the past few decades have seen a steady rise in space-related activity, primarily due to an increase in the commercial uses of outer space, especially in the sectors of satellite communications, launching services, and remote sensing.⁷ It seems reasonable to suppose that this increase in activity augments the risk of disputes.⁸

⁵ Ram S. Jakhu, *Dispute Resolution under the ITU Agreements* (Advisory Group Discussion Paper, 2010); Frans G. von der Dunk, *Private Commercial Manned Spaceflight and Dispute Settlement* (Advisory Group Discussion Paper, 2010) [hereinafter von der Dunk, Discussion Paper]; Maureen Williams, *Satellite Data and its value as evidence in international litigation* (Advisory Group Discussion Paper, 2010) [hereinafter Williams, Discussion Paper]; Tare Brisibe, *Alternative Dispute Resolution of International Investment Disputes in Public-Private Space Projects* (Advisory Group Discussion Paper, 2010) [hereinafter Brisibe, Discussion Paper]; Joanne Irene Gabrynowicz, *Remote Sensing and Potential Optional Rules for Arbitration of Disputes Relating to Outer Space* (Advisory Group Discussion Paper, 2010) [hereinafter Gabrynowicz, Discussion Paper] (on file with the PCA).

⁶ See e.g., Final Draft of the Revised Convention on the Settlement of Disputes Related to Space Activities, at art. 37, as amended in REPORT OF THE SIXTY-EIGHTH CONFERENCE OF THE ILA (Taipei, 1998) (hereinafter 1998 TAIPEI CONFERENCE REPORT).

⁷ Chia-Jui Cheng, *International Arbitration System as Mechanism for the Settlement of Disputes Arising in Relation to Space Commercialization*, 5 SINGAPORE J. INT'L & COMP. L. 167 (2001).

⁸ Maureen Williams, Rapporteur, *Space Committee of the International Law Association*, in 1998 TAIPEI CONFERENCE REPORT, *supra* note 6, at 241. A tendency toward dispute avoidance in the space sector must however be noted (Brisibe, Discussion Paper, *supra* note 5, at 11).

There has likewise been an increase in the number and variety of the actors involved in space activities. In a field long dominated by the U.S.A. and the former U.S.S.R., there are now over thirty countries possessing significant space industries.⁹ Moreover, there has been a notable relaxation of government control on space activities.¹⁰ This factor, coupled with an increase in the possible commercial uses of outer space, has led to the influx of a variety of non-state actors onto the stage of space law. Space-related disputes can now arise between states, state agencies, intergovernmental regional or international organizations, and private entities, such as national and multinational corporations.¹¹ With the advent of space tourism, even private persons may become entangled in disputes relating to outer space activities.¹²

Further, due to the high level of financial and scientific investment required by most uses of outer space, the space sector exhibits a high level of international cooperation, both between states and private entities of various nationalities.¹³ Thus a great number of space-related disputes are likely to arise at an international level.

An effective dispute resolution mechanism in space law would therefore be international, accessible to a variety of public and private parties, and capable of responding to potentially high demand for dispute resolution. In this regard, the Advisory Group noted that existing dispute resolution mechanisms in international space law present several *lacunae*, some of which merit mention.

In particular, numerous existing dispute resolution mechanisms are limited either in their personal or material scope. Thus, many mechanisms are not available to private parties.

⁹ GERARDINE MEISHAN GOH, *DISPUTE SETTLEMENT IN INTERNATIONAL SPACE LAW: A MULTI-DOOR COURTHOUSE FOR OUTER SPACE* 164 (Leiden, Boston, Martinus Nijhoff, 2007).

¹⁰ *Id.* at 157.

¹¹ Frans G. von der Dunk, *Space for Dispute Settlement Mechanisms – Dispute Resolution Mechanisms for Space? A few legal considerations* (2001) in *SPACE AND TELECOMMUNICATIONS LAW PROGRAM FACULTY PUBLICATIONS* (2001), <http://digitalcommons.unl.edu/spacelaw/38>.

¹² von der Dunk, Discussion Paper, *supra* note 5, at 6-7.

¹³ GOH, *supra* note 9, at 149-152.

International space law being initially conceptualized as a branch of public international law, dispute resolution was envisaged only as between states.¹⁴ Moreover, even the most elaborate dispute resolution procedures for state-to-state disputes, found in the 1972 *Convention on International Liability for Damage Caused by Space Objects* (Liability Convention), suffer from a limited material scope (covering only claims for compensation for damage caused by space objects), – and a lack of binding power in the absence of specific agreement by the parties.¹⁵ None of the other fundamental space law treaties provide any specific guidance as to dispute resolution. The founding convention of the European Space Agency (ESA) provides for arbitration between two or more member States, or between States and the agency, but of course only for disputes related to its interpretation and implementation.¹⁶ The instruments of the International Telecommunications Union also provide for arbitration, but only as regards certain subject matters, such as harmful interference to registered radio frequencies.¹⁷ In the absence of a specialized dispute resolution mechanism, States can rely on general mechanisms of dispute resolution available in public international law, for instance diplomatic negotiation or adjudication before the International Court of Justice.¹⁸ However, these methods and venues are not available to private parties.

¹⁴ Cheng, *supra* note 7, at 165-66.

¹⁵ Convention on International Liability for Damage Caused by Space Objects, *opened for signature* Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187; GOH, *supra* note 9, at 76.

¹⁶ Convention for the Establishment of a European Space Agency, art. XVII, May 30, 1975, 14 I.L.M. 864. The ESA also includes arbitration clauses in all its external contracts. *Id.* at art. XXV.

¹⁷ Constitution of the International Telecommunication Union, Dec. 22, 1992, 1825 U.N.T.S. 31251; Final Acts of the Additional plenipotentiary Conference, APP-92, at 71 (1992), *available at* <http://www.itu.int/pub/S-CONF-ACTF-1992>; Optional Protocol on the Compulsory Settlement of Disputes Relating to the Constitution of the International Telecommunication Union, to the Convention of the International Telecommunication Union and to the Administrative Regulations (1992), *available at* <http://www.itu.int/net/about/basic-texts/optional-protocol.aspx>.

¹⁸ See Statute of the International Court of Justice, art. 34(1). June 26, 1945, 156 U.N.T.S. 77; 59 Stat. 1031.

Private parties may be inclined to resort to international commercial arbitration.¹⁹ At the moment, international space law arbitration agreements between private parties generally provide for arbitration under the United Nations Commission on International Trade Law Arbitration Rules (UNCITRAL Rules) or the procedural rules of private arbitration institutions.²⁰ These rules, however, praised for being applicable to “the circumstances of various types of disputes and procedures,” are not necessarily adapted to space-related disputes.²¹

Having considered the contemporary characteristics of outer space activities, the Advisory Group concluded that international arbitration has multiple advantages for the resolution of space-related disputes. First, arbitration is a method of dispute resolution open to all parties active in the field. The PCA, for instance, administers arbitrations that involve states, state-controlled entities, intergovernmental organizations, and private parties.

Second, arbitration is a voluntary mechanism, premised only on the consent of the parties.²² This consent can be provided before a dispute arises by insertion of an arbitration clause in the legal instrument that defines the parties’ relationship. In space law, this instrument can be an inter-State treaty, an agreement between a State and the space industry, or a commercial space contract between private enterprises or a private enterprise and a State agency.²³ The voluntary – or, as expressed in the title of the Outer Space Rules – “optional” aspect of arbitration is important where States are involved, as they may be more willing to agree to binding dispute resolution under discrete agreements than to enter into a new significant

¹⁹ FRANCIS LYALL & PAUL B. LARSEN, *SPACE LAW: A TREATISE* (Farnham, Ashgate, 2009); Brisibe, Discussion Paper, *supra* note 5, at 7.

²⁰ See International Chamber of Commerce Rules of Arbitration (2012), available at <http://www.iccwbo.org/court/arbitration/id4199/index.html>; or the London Court of International Arbitration Rules (1998), available at http://www.lcia.org/Dispute_Resolution_Services/LCIA_Arbitration_Rules.aspx; see Brisibe, Discussion Paper, *supra* note 5, at 11.

²¹ THOMAS H. WEBSTER, *HANDBOOK OF UNCITRAL ARBITRATION* 4 (London, Sweet & Maxwell, 2010).

²² See Outer Space Rules, *supra* note 1, at art. 1.

²³ Cheng, *supra* note 7, at 166.

multilateral treaty to the effect that all space-related disputes are to be dealt with in one way, be it, for example, through the establishment of an international court for space law, or the creation of an additional chamber to the International Court of Justice.²⁴

Third, arbitration results in final and binding decisions.²⁵ This contrasts with the recommendatory nature of decisions under the Liability Convention. In arbitration, no appeals are possible and only limited grounds for challenge are available.²⁶ This can be of great importance given that space activities often operate on precise and fixed schedules, especially as regards the time windows for landing, atmospheric re-entry, descent and landing, and orbit insertion.²⁷ In these situations, only swiftly-obtained final decisions are of any value. In addition, dispute settlement clauses calling for final and binding decisions may have a dissuasive effect on the parties, as suggested, for example, by the dearth of disputes arbitrated under the ESA's arbitration provisions.²⁸

Fourth, arbitral awards are internationally recognized and enforceable in all signatory states of the New York Convention, presently one hundred and forty-six.

Fifth, arbitral procedure is flexible and can be modified by agreement of the parties.²⁹ This may be of great use in the rapidly-evolving field of space activities.

Sixth, parties to arbitration choose their own decision-makers. Unlike in a court, where the only expertise parties can expect from the judge or judges assigned to their case is legal,

²⁴ This proposal was made in the Final Draft of the Revised Convention on the Settlement of Disputes Related to Space Activities, *supra* note 6.

²⁵ See Outer Space Rules, *supra* note 1, at art. 34(2).

²⁶ See New York United Nations Convention on the Recognition and Enforcement of Foreign Arbitral Awards, art. V, June 7, 1959, 330 U.N.T.S. 38, 21 U.S.T. 2517, Article V [hereinafter New York Convention].

²⁷ GOH, *supra* note 9, at 116.

²⁸ Brisibe, Discussion Paper, *supra* note 5, at 6, citing André Farand, *The European Space Agency's Experience with Mechanisms for the Settlement of Disputes*, in INTERNATIONAL BUREAU OF THE PCA (ED.), ARBITRATION IN AIR, SPACE AND TELECOMMUNICATIONS LAW: ENFORCING REGULATORY MEASURES, THE PCA/PEACE PALACE PAPERS 145 (Kluwer Law International, 2002).

²⁹ See Outer Space Rules, *supra* note 1, at art. 1(1); WEBSTER, *supra* note 21, at 48-51.

parties in arbitration have the option of selecting arbitrators with specialized competences in the relevant fields. This is especially useful given the interdisciplinary nature of space activities, involving fields as diverse as economics, cutting-edge technology, and a tangle of scientific branches. On occasion, outer space technology such as remote sensing, may have legal or evidentiary limitations that are not immediately apparent to most adjudicators.³⁰

Finally, arbitration can serve to preserve the confidentiality of sensitive information. Hearings need not be public and awards need not be published.³¹ This is important for space-related disputes, as they may involve information concerning major state contracts and novel high technology, potentially treading the fine line between civil and military applications. The confidentiality of some of this information may be crucial to national security interests. For example, many states may insist on the sensitivity of remote sensing imagery.³²

The Advisory Group, in drafting the Outer Space Rules, sought to further enhance many of these general features of international arbitration, as described below.

IV. DRAFTING THE RULES

A. *General Considerations*

The second part of the Advisory Group's mandate was the drafting of the Outer Space Rules. Here too, our methodology involved questionnaires and rounds of comments. This phase was marked by a higher degree of involvement by the PCA's International Bureau, and featured an in-person meeting of the Advisory Group in the Hague.

It is also worth mentioning that the work of the Advisory Group was punctuated by regular reports to the PCA Administrative Council, which keenly followed our progress. The initial draft of the Outer Space Rules was submitted for consideration

³⁰ Williams, Discussion Paper, *supra* note 5, at 4-5.

³¹ See Outer Space Rules, *supra* note 1, at arts. 28(3) & 34(5).

³² Gabrynowicz, Discussion Paper, *supra* note 5, at 6-7.

by the PCA member states in May 2011. Throughout the summer of 2011, the member States sent us in depth commentary, which assisted us in ensuring that the Outer Space Rules would reflect, among others, the concerns of States and intergovernmental organizations. At the end of the process, the Administrative Council of the PCA adopted the Outer Space Rules by consensus.

Our strategy was to rely for the basis of our work on the 2010 UNCITRAL Rules, as well as on multiple sets of PCA procedural rules. The UNCITRAL Rules are the most widely used set of procedural rules in international commercial arbitration. They are an attractive model because their provisions have generated, since the adoption of their first version in 1976 by the UNCITRAL, an amount of case law and academic commentary much larger than that inspired by any other set of procedural rules for arbitration. By relying on the phrasing of the UNCITRAL Rules – whenever a departure from their provisions was not called for by some unique aspect of space-related disputes – we tapped into a wealth of precedent, thus enhancing the degree of predictability in the interpretation and application of the Outer Space Rules. Moreover, a new version of the UNCITRAL Rules was adopted in 2010, after protracted provision-by-provision revision discussions within the UNCITRAL Working Group II (Arbitration and Conciliation), taking into account many of the lessons learnt from thirty-four years of usage of the UNCITRAL Rules. We considered that the Outer Space Rules should benefit from these lessons. We did, however, find it equally beneficial to draw from other sources. Given the high proportion of participation by States, State agencies, and regional and international organizations in space activities, we found it most useful to seriously analyze the PCA rules of procedure tailored to use by such parties: the *PCA Optional Rules of Procedure for Arbitrating Disputes between Two States* (1992), the *PCA Optional Rules for Arbitrating Disputes between Two Parties of Which Only One is a State* (1993), the *PCA Optional Rules for Arbitration between International Organizations and States* (1996), and the *PCA Optional Rules for Arbitration of Disputes between International Organizations and Private Parties* (1996). Precious ideas and drafting were also borrowed from

the PCA's first set of sector specific rules, the PCA *Optional Rules for Arbitration of Disputes Relating to Natural Resources and/or the Environment*, aimed at the resolution of disputes concerning a subject matter – environment and natural resources – that shares momentous traits with outer space activities: among other, a high level of technical complexity and the sensitivity or confidentiality of information pertinent to the arbitral proceedings.

The result of the Advisory Group's efforts to adapt these models to the specificities of space-related disputes may best be illustrated by drawing attention to a few salient aspects of the Outer Space Rules.

B. Specific Provisions

In contrast to other dispute resolution instruments in international space law, the Outer Space Rules' scope of application is maximally broad. As is apparent from Article 1(1), the Outer Space Rules can be adopted by consent as the rules of procedure between any parties, whatever their nature. The final sentence of Article 1(1), providing that "the characterization of the dispute as relating to outer space is not necessary for jurisdiction," serves to manage the factual ambiguity that may arise over whether the dispute between the parties relates closely enough to "outer space."³³ While the Advisory Group considered drafting a test for determining whether or not a particular dispute was related to outer space, it was decided that where parties to a contract or other legal relationship agree to use the Outer Space Rules, the geographic, technological or other factual particularities of the dispute should not frustrate the parties' stated intent to proceed to arbitration.³⁴ The *ratione materiae* jurisdiction of the Outer Space Rules thus depends solely on the will of the parties and in no way on any conception of "outer space." Articles 3(3)(d) and 4(3)(d) further broaden the scope of the Outer Space Rules by enumerating among the documents

³³ von der Dunk, Discussion Paper, *supra* note 5, at 2.

³⁴ Comments from Frans G. von der Dunk (Mar. 24, 2010) to the letter of Judge Pocar (Mar. 20, 2010) (on file with PCA).

which must be identified in a Notice of Arbitration or a Response to the Notice of Arbitration the panoply of instruments to which space disputes may be related: “rule, decision, agreement, contract, convention, treaty, constituent instrument of an organization or agency.” This language goes beyond that of the UNCITRAL Rules, in recognition of the variety of sources of law and the important role of States in space law.³⁵

The involvement of States in space activities is further taken into account in Article 1(2) of the Outer Space Rules, which stipulates that agreement to arbitrate under the Outer Space Rules amounts to “a waiver of any right of immunity to jurisdiction.” It is generally understood that consent to arbitration constitutes a waiver of immunity to jurisdiction.³⁶ This principle is made explicit in this article both as concerns the sovereign immunity of states and any immunity to jurisdiction that intergovernmental organizations may have.

The Outer Space Rules tackle the potential technical and scientific complexity of disputes relating to outer space activities from a variety of angles. As mentioned above, the possibility for parties to choose their decision-makers renders arbitration more attractive than adjudication for the settlement of space-related disputes. To enhance this advantage, Article 10(4) of the Outer Space Rules assists parties in their choice of arbitrators by mandating the Secretary-General of the PCA to compile a standing list of arbitrators with an expertise in space-related matters. The use of this list is optional. The qualifications of arbitrators are ensured because they are nominated by PCA member states and proposed by the Secretary-General, in consultation with the legal community in the relevant field.³⁷ Where its technical and scientific knowledge proves insufficient, the

³⁵ See e.g. Frans G. von der Dunk, Response to First Questionnaire (Feb. 19, 2010); Ram Jakhu, Comments and Suggestions to First Questionnaire (Feb. 28, 2010); Joanne Gabrynowicz, Response to CP-OS 31655 and its Attached Annex (Feb. 28, 2010) (on file with the PCA).

³⁶ NIGEL BLACKABY, CONSTANTINE PARTASIDES ET AL., REDFERN AND HUNTER ON INTERNATIONAL ARBITRATION (Oxford, Oxford University Press, 5th ed., 2009), at para. 11.138.

³⁷ The list is currently being compiled and, once complete, will be made available on the PCA website at www.pca-cpa.org.

arbitral tribunal may appoint experts to assist it. Pursuant to Article 28(7) of the Outer Space Rules, the Secretary-General compiles a list of technical and scientific experts to facilitate the tribunal's choice of experts. As with the list of specially-qualified arbitrators, the use of this list is optional, leaving parties the option of selecting experts from such sources as the membership directory of the International Academy of Astronautics, which elects by secret ballot over a thousand leading experts in space and space-related science and technology.³⁸ Moreover, pursuant to Article 27(4) of the Outer Space Rules, the arbitral tribunal may enhance its understanding of technical issues by requesting the parties to provide a "non-technical document summarizing and explaining the background to any scientific, technical or other specialized information which the arbitral tribunal considers to be necessary to understand fully the matters in dispute." This type of document may assist the tribunal in assessing evidence and in determining whether experts need to be consulted. The provision for the possibility of a five-member tribunal, found at Article 9(1) of the Outer Space Rules, also anticipates the possibility of highly complex, high stake arbitrations, potentially involving crucial national State interests and large amounts in dispute.

Given the need for heightened confidentiality in space-related matters identified by the Advisory Group, the usual arbitral protections were expanded in the Outer Space Rules. Most significantly, Article 17(8) provides for the appointment of a "confidentiality adviser," whose role is to report to the tribunal on an issue on the basis of confidential information, without revealing the confidential content of the document to the tribunal or the other party. The technical justification for this mechanism is that the confidential information might be of such a technical nature that it would not mean much to the arbitrators, but would be meaningful to a confidentiality advisor who is also a technical expert.³⁹ The ethical justification for the confidenti-

³⁸ See INTERNATIONAL ACADEMY OF ASTRONAUTICS, <http://iaaweb.org> (last visited June 15, 2012).

³⁹ Marc Blessing, *Arbitrability of Intellectual Property Disputes*, in 12:2 ARBITRATION INTERNATIONAL 191, 215 (Kluwer Law International, 1996).

ality advisor mechanism is that there may be times where the party would not wish the arbitrators to acquire knowledge of the confidential information, in particular "because of the fear that one party-nominated arbitrator might be an unscrupulous arbitrator who might be the source of a leak."⁴⁰

The PCA has an active role under the Outer Space Rules. Article 1(3) provides for registry services and secretarial support by the PCA International Bureau. The PCA, because of its unique status as an intergovernmental organization with broad membership and its extensive experience managing arbitrations involving States or State entities,⁴¹ is better positioned than private arbitral institutions to manage arbitrations involving the entire range of parties expected to be involved in outer space activities. Article 6(1) identifies the Secretary-General of the PCA as the default appointing authority under the Outer Space Rules. On this basis, the PCA Secretary-General has the responsibility, upon request by a party, to appoint, replace, and decide challenges against arbitrators.⁴² While the option of naming the PCA Secretary-General as default appointing authority was extensively considered by the UNCITRAL Working Group charged with the drafting of the UNCITRAL Rules, it was not adopted, the PCA Secretary-General receiving instead the role of designating authority, charged with designating an appointing authority where none is agreed by the parties.⁴³ In contrast, by naming a specific appointing authority, the Outer Space Rules avoid potential delays in the constitution of the tribunal or during subsequent challenges to arbitrators for parties who have not previously agreed on the identity of an appointing authority.

⁴⁰ *Id.*

⁴¹ As of March 15, 2012, the PCA's docket includes 58 cases to which at least one party was a state or state entity.

⁴² Outer Space Rules, *supra* note 1, at arts. 8(1), 9(2), 9(3), 10(3), 13(4), & 14(1).

⁴³ United Nations Commission on International Trade Law Arbitration Rules, at art. 6(1), Dec. 15, 1976, 15 I.L.M. 701; Report of the Working Group on Arbitration and Conciliation on the work of its forty-sixth Session, A/CN.9/619 at paras.71 & ff, (New York, Feb. 5-9, 2007).

V. CONCLUSION

In developing the Outer Space Rules, the Permanent Court of Arbitration and the Advisory Group sought to fill some of the fundamental *lacunae* in existing dispute resolution mechanisms of international space law. The rules provide a comprehensive voluntary dispute resolution procedure specifically tailored to the peculiarities of disputes relating to outer space activities. Their success depends entirely on how much confidence they can inspire in the international community. I am certain that the work and thought invested into the Outer Space Rules by the Advisory Group and the PCA International Bureau, described in this introduction, and the detail of the Rules' provisions, which I now invite you to explore, will inspire such confidence.



PERMANENT COURT OF ARBITRATION

**OPTIONAL RULES
FOR ARBITRATION OF DISPUTES
RELATING TO OUTER SPACE ACTIVITIES**

Effective December 6, 2011

TABLE OF CONTENTS

Introduction.....	4
Section I. Introductory rules.....	5
Scope of application	
Article 1.....	5
Notice and calculation of periods of time	
Article 2.....	5
Notice of arbitration	
Article 3.....	6
Response to the notice of arbitration	
Article 4.....	7
Representation and assistance	
Article 5.....	7
Appointing authority	
Article 6.....	7
Section II. Composition of the arbitral tribunal.....	8
Number of arbitrators	
Article 7.....	8
Appointment of arbitrators	
Article 8.....	8
Article 9.....	9
Article 10.....	9
Disclosures by and challenge of arbitrators	
Article 11.....	9
Article 12.....	10
Article 13.....	10
Replacement of an arbitrator	
Article 14.....	11
Repetition of hearings in the event of the replacement of an arbitrator	
Article 15.....	11
Exclusion of liability	
Article 16.....	11
Section III. Arbitral proceedings.....	11
General provisions	
Article 17.....	11
Place of arbitration	
Article 18.....	12
Language	
Article 19.....	13
Statement of claim	
Article 20.....	13
Statement of defence	
Article 21.....	13
Amendments to the claim or defence	
Article 22.....	14
Pleas as to the jurisdiction of the arbitral tribunal	
Article 23.....	14

Further written statements	15
Article 24.....	15
Periods of time	15
Article 25.....	15
Interim measures	15
Article 26.....	15
Evidence	16
Article 27.....	16
Hearings	16
Article 28.....	16
Experts appointed by the arbitral tribunal	17
Article 29.....	17
Default	18
Article 30.....	18
Closure of hearings	18
Article 31.....	18
Waiver of right to object	18
Article 32.....	18
Section IV. The award	18
Decisions	19
Article 33.....	19
Form and effect of the award	19
Article 34.....	19
Applicable law, <i>amiable compositeur</i>	19
Article 35.....	19
Settlement or other grounds for termination	20
Article 36.....	20
Interpretation of the award	20
Article 37.....	20
Correction of the award	20
Article 38.....	20
Additional award	21
Article 39.....	21
Definition of costs	21
Article 40.....	21
Fees and expenses of arbitrators	22
Article 41.....	22
Allocation of costs	22
Article 42.....	22
Deposit of costs	23
Article 43.....	23
Annex	24
Model arbitration clause for contracts	
Possible waiver statement	
Model statements of independence pursuant to article 11 of the Rules	

Introduction

These Rules are based on the 2010 UNCITRAL Arbitration Rules with changes in order to:

- (i) reflect the particular characteristics of disputes having an outer space component involving the use of outer space by States, international organizations and private entities;
- (ii) reflect the public international law element that pertains to disputes that may involve States and the use of outer space, and international practice appropriate to such disputes;
- (iii) indicate the role of the Secretary-General and the International Bureau of the Permanent Court of Arbitration (PCA) at The Hague;
- (iv) provide freedom for the parties to choose to have an arbitral tribunal of one, three or five persons;
- (v) provide for establishment of a specialized list of arbitrators mentioned in article 10 and a list of scientific and technical experts mentioned in article 29 of these Rules; and
- (vi) provide suggestions for establishing procedures aimed at ensuring confidentiality.

The Rules are optional and emphasize flexibility and party autonomy. For example:

- (i) The Rules, and the services of the Secretary-General and the International Bureau of the PCA, are available to States, international organizations, and private parties; and
- (ii) The Rules may be used, *inter alia*, in relation to disputes between two or more States parties to a multilateral agreement relating to the use of or access to outer space concerning the interpretation or application of that agreement.

Where arbitrations deal with technical questions, provision is made in article 27 for the submission to the arbitral tribunal of a document agreed to by the parties, summarizing and providing background to any scientific or technical issues that the parties may wish to raise in their memorials or at oral hearings.

A model clause that parties may consider inserting in treaties or other agreements to provide for arbitration of future disputes, and a model clause for arbitration of existing disputes are set forth in the annex to these Rules.

Section I. Introductory rules**Scope of application*****Article 1**

1. Where parties have agreed that disputes between them in respect of a defined legal relationship, whether contractual or not, shall be referred to arbitration under the Permanent Court of Arbitration Optional Rules for Arbitration of Disputes Relating to Outer Space Activities, then such disputes shall be settled in accordance with these Rules subject to such modification as the parties may agree. The characterization of the dispute as relating to outer space is not necessary for jurisdiction where parties have agreed to settle a specific dispute under these Rules.
2. Agreement by a party to arbitration under these Rules constitutes a waiver of any right of immunity from jurisdiction, in respect of the dispute in question, to which such party might otherwise be entitled. A waiver of immunity relating to the execution of an arbitral award must be explicitly expressed.
3. The International Bureau of the Permanent Court of Arbitration (the 'International Bureau') shall serve as registry for the proceedings and provide secretariat services.

* A model arbitration clause for contracts can be found in the annex to the Rules.

Notice and calculation of periods of time**Article 2**

1. A notice, including a notification, communication or proposal, may be transmitted by any means of communication that provides or allows for a record of its transmission.
2. If an address has been designated by a party specifically for this purpose or authorized by the arbitral tribunal any notice shall be delivered to that party at that address and if so delivered shall be deemed to have been received. Delivery by electronic means such as facsimile or email may only be made to an address so designated or authorized.
3. In the absence of such designation or authorization, a notice is:
 - (a) received if it is physically delivered to the addressee; or
 - (b) deemed to have been received if it is delivered at the place of business, habitual residence or mailing address of the addressee.
4. If, after reasonable efforts, delivery cannot be effected in accordance with paragraphs 2 or 3, a notice is deemed to have been received if it is sent to the addressee's last-known place of business, habitual residence or mailing address by registered letter or any other means that provides a record of delivery or of attempted delivery.
5. A notice shall be deemed to have been received on the day it is delivered in accordance with paragraphs 2, 3 or 4, or attempted to be delivered in accordance with paragraph 4. A notice transmitted by electronic means is deemed to have been received on the day it is sent, except that a

notice of arbitration so transmitted is only deemed to have been received on the day when it reaches the addressee's electronic address.

6. For the purpose of calculating a period of time under these Rules, such period shall begin to run on the day following the day when a notice is received. If the last day of such period is an official holiday or a non-business day at the residence or place of business of the addressee, the period is extended until the first business day which follows. Official holidays or non-business days occurring during the running of the period of time are included in calculating the period.

Notice of arbitration

Article 3

1. The party or parties initiating recourse to arbitration (hereinafter called the "claimant") shall communicate to the other party or parties (hereinafter called the "respondent") and the International Bureau a notice of arbitration.
2. Arbitral proceedings shall be deemed to commence on the date on which the notice of arbitration is received by the respondent.
3. The notice of arbitration shall include the following:
 - (a) A demand that the dispute be referred to arbitration;
 - (b) The names and contact details of the parties;
 - (c) Identification of the arbitration agreement that is invoked;
 - (d) Identification of any rule, decision, agreement, contract, convention, treaty, constituent instrument of an organization or agency, or relationship out of, or in relation to which, the dispute arises;
 - (e) A brief description of the claim and an indication of the amount involved, if any;
 - (f) The relief or remedy sought;
 - (g) A proposal as to the number of arbitrators, language and place of arbitration, if the parties have not previously agreed thereon.
4. The notice of arbitration may also include:
 - (a) A proposal for the appointment of a sole arbitrator referred to in article 8, paragraph 1;
 - (b) Notification of the appointment of an arbitrator referred to in articles 9 or 10.
5. The constitution of the arbitral tribunal shall not be hindered by any controversy with respect to the sufficiency of the notice of arbitration, which shall be finally resolved by the arbitral tribunal.

Response to the notice of arbitration**Article 4**

1. Within 30 days of the receipt of the notice of arbitration, the respondent shall communicate to the claimant and the International Bureau a response to the notice of arbitration, which shall include:
 - (a) The name and contact details of each respondent;
 - (b) A response to the information set forth in the notice of arbitration, pursuant to article 3, paragraphs 3 (c) to (g).
2. The response to the notice of arbitration may also include:
 - (a) Any plea that an arbitral tribunal to be constituted under these Rules lacks jurisdiction;
 - (b) A proposal for the appointment of a sole arbitrator referred to in article 8, paragraph 1;
 - (c) Notification of the appointment of an arbitrator referred to in articles 9 or 10;
 - (d) A brief description of counterclaims or claims for the purpose of a set-off, if any, including where relevant, an indication of the amounts involved, and the relief or remedy sought;
 - (e) A notice of arbitration in accordance with article 3 in case the respondent formulates a claim against a party to the arbitration agreement other than the claimant.
3. The constitution of the arbitral tribunal shall not be hindered by any controversy with respect to the respondent's failure to communicate a response to the notice of arbitration, or an incomplete or late response to the notice of arbitration, which shall be finally resolved by the arbitral tribunal.

Representation and assistance**Article 5**

Each party may be represented or assisted by persons chosen by it. The names and addresses of such persons must be communicated to all parties, to the International Bureau and to the arbitral tribunal. Such communication must specify whether the appointment is being made for purposes of representation or assistance. Where a person is to act as a representative of a party, the arbitral tribunal, on its own initiative or at the request of any party, may at any time require proof of authority granted to the representative in such a form as the arbitral tribunal may determine.

Appointing authority**Article 6**

1. The Secretary-General of the PCA shall serve as appointing authority.
2. In exercising its functions under these Rules, the appointing authority may require from any party and the arbitrators the information it deems necessary and it shall give the parties and, where appropriate, the arbitrators, an opportunity to present their views in any manner it considers

appropriate. All such communications to and from the appointing authority shall also be provided by the sender to all other parties.

3. The appointing authority shall have regard to such considerations as are likely to secure the appointment of an independent and impartial arbitrator and shall take into account the advisability of appointing an arbitrator of a nationality other than the nationalities of the parties.

Section II. Composition of the arbitral tribunal

Number of arbitrators

Article 7

1. If the parties have not previously agreed on the number of arbitrators, and if within 30 days after the receipt by the respondent of the notice of arbitration the parties have not agreed that there shall be only one arbitrator, three arbitrators shall be appointed.
2. Notwithstanding paragraph 1, if no other parties have responded to a party's proposal to appoint a sole arbitrator within the time limit provided for in paragraph 1 and the party or parties concerned have failed to appoint a second arbitrator in accordance with articles 9 or 10, the appointing authority may, at the request of a party, appoint a sole arbitrator pursuant to the procedure provided for in article 8, paragraph 2 if it determines that, in view of the circumstances of the case, this is more appropriate.

Appointment of arbitrators (articles 8 to 10)

Article 8

1. If the parties have agreed that a sole arbitrator is to be appointed and if within 30 days after receipt by all other parties of a proposal for the appointment of a sole arbitrator the parties have not reached agreement thereon, a sole arbitrator shall, at the request of a party, be appointed by the appointing authority.
2. The appointing authority shall appoint the sole arbitrator as promptly as possible. In making the appointment, the appointing authority shall use the following list-procedure, unless the parties agree that the list-procedure should not be used or unless the appointing authority determines in its discretion that the use of the list-procedure is not appropriate for the case:
 - (a) The appointing authority shall communicate to each of the parties an identical list containing at least three names;
 - (b) Within 15 days after the receipt of this list, each party may return the list to the appointing authority after having deleted the name or names to which it objects and numbered the remaining names on the list in the order of its preference;
 - (c) After the expiration of the above period of time the appointing authority shall appoint the sole arbitrator from among the names approved on the lists returned to it and in accordance with the order of preference indicated by the parties;
 - (d) If for any reason the appointment cannot be made according to this procedure, the appointing authority may exercise its discretion in appointing the sole arbitrator.

Article 9

1. If three arbitrators are to be appointed, each party shall appoint one arbitrator. The two arbitrators thus appointed shall choose the third arbitrator who will act as the presiding arbitrator of the arbitral tribunal. If five arbitrators are to be appointed, the two party-appointed arbitrators shall choose the remaining three arbitrators and designate one of those three as the presiding arbitrator of the tribunal.
2. If within 30 days after the receipt of a party's notification of the appointment of an arbitrator the other party has not notified the first party of the arbitrator it has appointed, the first party may request the appointing authority to appoint the second arbitrator.
3. If within 30 days after the appointment of the second arbitrator the two arbitrators have not agreed on the choice of the remaining arbitrators and/or the presiding arbitrator, the remaining arbitrators and/or the presiding arbitrator shall be appointed by the appointing authority in the same way as a sole arbitrator would be appointed under article 8.

Article 10

1. For the purposes of article 9, paragraph 1, where three or five arbitrators are to be appointed and there are multiple parties as claimant or as respondent, unless the parties have agreed to another method of appointment of arbitrators, the multiple parties jointly, whether as claimant or as respondent, shall appoint an arbitrator.
2. If the parties have agreed that the arbitral tribunal is to be composed of a number of arbitrators other than one, three, or five, the arbitrators shall be appointed according to the method agreed upon by the parties.
3. In the event of any failure to constitute the arbitral tribunal under these Rules, the appointing authority shall, at the request of any party, constitute the arbitral tribunal and, in doing so, may revoke any appointment already made and appoint or reappoint each of the arbitrators and designate one of them as the presiding arbitrator.
4. In appointing arbitrators pursuant to these Rules, the parties and the appointing authority are free to designate persons who are not Members of the Permanent Court of Arbitration at The Hague. For the purpose of assisting the parties the Secretary-General will make available a list of persons considered to have expertise in the subject matters of the dispute at hand for which these Rules have been designed.

Disclosures by and challenge of arbitrators (articles 11 to 13)****Article 11**

When a person is approached in connection with his or her possible appointment as an arbitrator, he or she shall disclose any circumstances likely to give rise to justifiable doubts as to his or her impartiality or independence. An arbitrator, from the time of his or her appointment and throughout the arbitral proceedings, shall without delay disclose any such circumstances to the parties and the other arbitrators unless they have already been informed by him or her of these circumstances.

** Model statements of independence pursuant to article 11 can be found in the annex to the Rules.

Article 12

1. Any arbitrator may be challenged if circumstances exist that give rise to justifiable doubts as to the arbitrator's impartiality or independence or if he or she does not have the qualifications agreed by the parties in their arbitration agreement.
2. A party may challenge the arbitrator appointed by it only for reasons of which it becomes aware after the appointment has been made.
3. In the event that an arbitrator fails to act or in the event of the *de jure* or *de facto* impossibility of his or her performing his or her functions, the procedure in respect of the challenge of an arbitrator as provided in article 13 shall apply.
4. If an arbitrator on a three- or five-person tribunal fails to participate in the arbitration, the other arbitrators shall, unless the parties agree otherwise, have the power in their sole discretion to continue the arbitration and to make any decision, ruling or award, notwithstanding the failure of one arbitrator to participate. In determining whether to continue the arbitration or to render any decision, ruling or award without the participation of an arbitrator, the other arbitrators shall take into account the stage of the arbitration, the reason, if any, expressed by the arbitrator for such non-participation, and such other matters as they consider appropriate in the circumstances of the case. In the event that the other arbitrators determine not to continue the arbitration without the non-participating arbitrator, the arbitral tribunal shall declare the office vacant, and, subject to article 14(2), a substitute arbitrator shall be appointed pursuant to the provisions of articles 8 to 11.

Article 13

1. A party that intends to challenge an arbitrator shall send notice of its challenge within 30 days after it has been notified of the appointment of the challenged arbitrator, or within 30 days after the circumstances mentioned in articles 11 and 12 became known to that party.
2. The notice of challenge shall be communicated to all other parties, to the arbitrator who is challenged and to the other arbitrators. The notice of challenge shall state the reasons for the challenge.
3. When an arbitrator has been challenged by a party, all parties may agree to the challenge. The arbitrator may also, after the challenge, withdraw from his or her office. In neither case does this imply acceptance of the validity of the grounds for the challenge.
4. If, within 15 days from the date of the notice of challenge, all parties do not agree to the challenge or the challenged arbitrator does not withdraw, the party making the challenge may elect to pursue it. In that case, within 30 days from the date of the notice of challenge, it shall seek a decision on the challenge by the appointing authority.

Replacement of an arbitrator**Article 14**

1. Subject to paragraph 2, in any event where an arbitrator has to be replaced during the course of the arbitral proceedings, a substitute arbitrator shall be appointed or chosen pursuant to the procedure provided for in articles 8 to 11 that was applicable to the appointment or choice of the arbitrator being replaced. This procedure shall apply even if during the process of appointing the arbitrator to be replaced, a party had failed to exercise its right to appoint or to participate in the appointment.
2. If, at the request of a party, the appointing authority determines that, in view of the exceptional circumstances of the case, it would be justified for a party to be deprived of its right to appoint a substitute arbitrator, the appointing authority may, after giving an opportunity to the parties and the remaining arbitrators to express their views, appoint the substitute arbitrator.

Repetition of hearings in the event of the replacement of an arbitrator**Article 15**

If an arbitrator is replaced, the proceedings shall resume at the stage where the arbitrator who was replaced ceased to perform his or her functions, unless the arbitral tribunal decides otherwise.

Exclusion of liability**Article 16**

The parties waive, to the fullest extent permitted under the applicable law, any claim against the arbitrators and any person appointed by the arbitral tribunal based on any act or omission in connection with the arbitration.

Section III. Arbitral proceedings**General provisions****Article 17**

1. Subject to these Rules, the arbitral tribunal may conduct the arbitration in such manner as it considers appropriate, provided that the parties are treated with equality and that at an appropriate stage of the proceedings each party is given a reasonable opportunity of presenting its case. The arbitral tribunal, in exercising its discretion, shall conduct the proceedings so as to avoid unnecessary delay and expense and to provide a fair and efficient process for resolving the parties' dispute.
2. As soon as practicable after its constitution and after inviting the parties to express their views, the arbitral tribunal shall establish the provisional timetable of the arbitration. The arbitral tribunal may, at any time, after inviting the parties to express their views, extend or abridge any period of time prescribed under these Rules or agreed by the parties.
3. If at an appropriate stage of the proceedings any party so requests, the arbitral tribunal shall hold hearings for the presentation of evidence by witnesses, including expert witnesses, or for oral argument. In the absence of such a request, the arbitral tribunal shall decide whether to hold such

hearings or whether the proceedings shall be conducted on the basis of documents and other materials.

4. All communications to the arbitral tribunal by one party shall be communicated by that party to all other parties and the International Bureau. Such communications shall be made at the same time, except as otherwise permitted by the arbitral tribunal if it may do so under applicable law.
5. The arbitral tribunal may, at the request of any party, allow one or more third persons to be joined in the arbitration as a party provided such person is a party to the arbitration agreement, unless the arbitral tribunal finds, after giving all parties, including the person or persons to be joined, the opportunity to be heard, that joinder should not be permitted because of prejudice to any of those parties. The arbitral tribunal may make a single award or several awards in respect of all parties so involved in the arbitration.
6. A party invoking the confidentiality of any information it wishes or is required to submit in the arbitration, including to an expert appointed by the arbitral tribunal, shall make an application to have the information classified as confidential by notice containing the reasons for which it considers the information confidential to the arbitral tribunal, with a copy to the other party and the International Bureau.
7. The arbitral tribunal shall determine whether the information is to be classified as confidential and of such a nature that the absence of special measures of protection in the proceedings would be likely to cause serious harm to the party or parties invoking its confidentiality. If the arbitral tribunal so determines, it shall decide and communicate in writing to the parties and the International Bureau under what conditions and to whom the confidential information may in part or in whole be disclosed and shall require any person to whom the confidential information is to be disclosed to sign an appropriate confidentiality undertaking.
8. The arbitral tribunal may also, at the request of a party or on its own motion, appoint a confidentiality adviser as an expert in accordance with article 29 in order to report to it on the basis of the confidential information on specific issues designated by the arbitral tribunal without disclosing the confidential information either to the party from whom the confidential information does not originate or to the arbitral tribunal.

Place of arbitration

Article 18

1. If the parties have not previously agreed on the place of arbitration, the place of arbitration shall be determined by the arbitral tribunal having regard to the circumstances of the case. The award shall be deemed to have been made at the place of arbitration.
2. The arbitral tribunal may meet at any location it considers appropriate for deliberations. Unless otherwise agreed by the parties, the arbitral tribunal may also meet at any location it considers appropriate for any other purpose, including hearings.

Language**Article 19**

1. Subject to an agreement by the parties, the arbitral tribunal shall, promptly after its appointment, determine the language or languages to be used in the proceedings. This determination shall apply to the statement of claim, the statement of defence, and any further written statements and, if oral hearings take place, to the language or languages to be used in such hearings.
2. The arbitral tribunal may order that any documents annexed to the statement of claim or statement of defence, and any supplementary documents or exhibits submitted in the course of the proceedings, delivered in their original language, shall be accompanied by a translation into the language or languages agreed upon by the parties or determined by the arbitral tribunal.

Statement of claim**Article 20**

1. The claimant shall communicate its statement of claim in writing to the respondent, to the International Bureau, and to each of the arbitrators within a period of time to be determined by the arbitral tribunal. The claimant may elect to treat its notice of arbitration referred to in article 3 as a statement of claim, provided that the notice of arbitration also complies with the requirements of paragraphs 2 to 4 of this article.
2. The statement of claim shall include the following particulars:
 - (a) The names and contact details of the parties;
 - (b) A statement of the facts supporting the claim;
 - (c) The points at issue;
 - (d) The relief or remedy sought;
 - (e) The legal grounds or arguments supporting the claim.
3. A copy of any rule, decision, agreement, contract, convention, treaty, constituent instrument of an organization or agency, or relationship out of, or in relation to which, the dispute arises and of the arbitration agreement shall be annexed to the statement of claim.
4. The statement of claim should, as far as possible, be accompanied by all documents and other evidence relied upon by the claimant, or contain references to them.

Statement of defence**Article 21**

1. The respondent shall communicate its statement of defence in writing to the claimant, to the International Bureau, and to each of the arbitrators within a period of time to be determined by the arbitral tribunal. The respondent may elect to treat its response to the notice of arbitration referred to

in article 4 as a statement of defence, provided that the response to the notice of arbitration also complies with the requirements of paragraph 2 of this article.

2. The statement of defence shall reply to the particulars (b) to (e) of the statement of claim (article 20, paragraph 2). The statement of defence should, as far as possible, be accompanied by all documents and other evidence relied upon by the respondent, or contain references to them.
3. In its statement of defence, or at a later stage in the arbitral proceedings if the arbitral tribunal decides that the delay was justified under the circumstances, the respondent may make a counterclaim or rely on a claim for the purpose of a set-off provided that the arbitral tribunal has jurisdiction over it.
4. The provisions of article 20, paragraphs 2 to 4 shall apply to a counterclaim, a claim under article 4, paragraph (2)(e) and a claim relied on for the purpose of a set-off.

Amendments to the claim or defence

Article 22

During the course of the arbitral proceedings, a party may amend or supplement its claim or defence, including a counterclaim or a claim for the purpose of a set-off, unless the arbitral tribunal considers it inappropriate to allow such amendment or supplement having regard to the delay in making it or prejudice to other parties or any other circumstances. However, a claim or defence, including a counterclaim or a claim for the purpose of a set-off, may not be amended or supplemented in such a manner that the amended or supplemented claim or defence falls outside the jurisdiction of the arbitral tribunal.

Pleas as to the jurisdiction of the arbitral tribunal

Article 23

1. The arbitral tribunal shall have the power to rule on its own jurisdiction, including any objections with respect to the existence or validity of the arbitration agreement. For that purpose, an arbitration clause that forms part of a contract shall be treated as an agreement independent of the other terms of the contract. A decision by the arbitral tribunal that the contract is null shall not entail automatically the invalidity of the arbitration clause.
2. A plea that the arbitral tribunal does not have jurisdiction shall be raised no later than in the statement of defence or, with respect to a counterclaim or a claim for the purpose of a set-off, in the reply to the counterclaim or to the claim for the purpose of a set-off. A party is not precluded from raising such a plea by the fact that it has appointed, or participated in the appointment of, an arbitrator. A plea that the arbitral tribunal is exceeding the scope of its authority shall be raised as soon as the matter alleged to be beyond the scope of its authority is raised during the arbitral proceedings. The arbitral tribunal may, in either case, admit a later plea if it considers the delay justified.
3. The arbitral tribunal may rule on a plea referred to in paragraph 2 either as a preliminary question or in an award on the merits. The arbitral tribunal may continue the arbitral proceedings and make an award, notwithstanding any pending challenge to its jurisdiction before a court.

Further written statements**Article 24**

The arbitral tribunal shall decide which further written statements, in addition to the statement of claim and the statement of defence, shall be required from the parties or may be presented by them and shall fix the periods of time for communicating such statements.

Periods of time**Article 25**

The periods of time fixed by the arbitral tribunal for the communication of written statements (including the statement of claim and statement of defence) should not exceed 45 days. However, the arbitral tribunal may extend the time limits if it concludes that an extension is justified.

Interim measures**Article 26**

1. The arbitral tribunal may, at the request of a party, grant interim measures.
2. An interim measure is any temporary measure by which, at any time prior to the issuance of the award by which the dispute is finally decided, the arbitral tribunal orders a party, for example and without limitation, to:
 - (a) Maintain or restore the status quo pending determination of the dispute;
 - (b) Take action that would prevent, or refrain from taking action that is likely to cause, (i) current or imminent harm or (ii) prejudice to the arbitral process itself;
 - (c) Provide a means of preserving assets out of which a subsequent award may be satisfied; or
 - (d) Preserve evidence that may be relevant and material to the resolution of the dispute.
3. The party requesting an interim measure under paragraphs 2 (a) to (c) shall satisfy the arbitral tribunal that:
 - (a) Harm not adequately reparable by an award of damages is likely to result if the measure is not ordered, and such harm substantially outweighs the harm that is likely to result to the party against whom the measure is directed if the measure is granted; and
 - (b) There is a reasonable possibility that the requesting party will succeed on the merits of the claim. The determination on this possibility shall not affect the discretion of the arbitral tribunal in making any subsequent determination.
4. With regard to a request for an interim measure under paragraph 2 (d), the requirements in paragraphs 3 (a) and (b) shall apply only to the extent the arbitral tribunal considers appropriate.

5. The arbitral tribunal may modify, suspend or terminate an interim measure it has granted, upon application of any party or, in exceptional circumstances and upon prior notice to the parties, on the arbitral tribunal's own initiative.
6. The arbitral tribunal may require the party requesting an interim measure to provide appropriate security in connection with the measure.
7. The arbitral tribunal may require any party promptly to disclose any material change in the circumstances on the basis of which the interim measure was requested or granted.
8. The party requesting an interim measure may be liable for any costs and damages caused by the measure to any party if the arbitral tribunal later determines that, in the circumstances then prevailing, the measure should not have been granted. The arbitral tribunal may award such costs and damages at any point during the proceedings.
9. A request for interim measures addressed by any party to a judicial authority shall not be deemed incompatible with the agreement to arbitrate, or as a waiver of that agreement.

Evidence

Article 27

1. Each party shall have the burden of proving the facts relied on to support its claim or defence.
2. Witnesses, including expert witnesses, who are presented by the parties to testify to the arbitral tribunal on any issue of fact or expertise may be any individual, notwithstanding that the individual is a party to the arbitration or in any way related to a party. Unless otherwise directed by the arbitral tribunal, statements by witnesses, including expert witnesses, may be presented in writing and signed by them.
3. At any time during the arbitral proceedings the arbitral tribunal may require the parties to produce documents, exhibits or other evidence within such a period of time as the arbitral tribunal shall determine.
4. The arbitral tribunal may request the parties jointly or separately to provide a non-technical document summarizing and explaining the background to any scientific, technical or other specialized information which the arbitral tribunal considers to be necessary to understand fully the matters in dispute.
5. The arbitral tribunal shall determine the admissibility, relevance, materiality and weight of the evidence offered.

Hearings

Article 28

1. In the event of an oral hearing, the arbitral tribunal shall give the parties adequate advance notice of the date, time and place thereof.
2. Witnesses, including expert witnesses, may be heard under the conditions and examined in the manner set by the arbitral tribunal.

3. Hearings shall be held *in camera* unless the parties agree otherwise. The arbitral tribunal may require the retirement of any witness or witnesses, including expert witnesses, during the testimony of such other witnesses, except that a witness, including an expert witness, who is a party to the arbitration shall not, in principle, be asked to retire.
4. The arbitral tribunal may direct that witnesses, including expert witnesses, be examined through means of telecommunication that do not require their physical presence at the hearing (such as videoconference).

Experts appointed by the arbitral tribunal

Article 29

1. After consultation with the parties, the arbitral tribunal may appoint one or more independent experts to report to it, in writing, on specific issues to be determined by the arbitral tribunal. A copy of the expert's terms of reference, established by the arbitral tribunal, shall be communicated to the parties.
2. The expert shall, in principle before accepting appointment, submit to the arbitral tribunal and to the parties a description of his or her qualifications and a statement of his or her impartiality and independence. Within the time ordered by the arbitral tribunal, the parties shall inform the arbitral tribunal whether they have any objections as to the expert's qualifications, impartiality or independence. The arbitral tribunal shall decide promptly whether to accept any such objections.
3. After an expert's appointment, a party may object to the expert's qualifications, impartiality or independence only if the objection is for reasons of which the party becomes aware after the appointment has been made. The arbitral tribunal shall decide promptly what, if any, action to take.
4. The parties shall give the expert any relevant information or produce for his or her inspection any relevant documents or goods that he or she may require of them, subject to the provisions for confidentiality in article 17, paragraphs 6 to 8. Any dispute between a party and such expert as to the relevance of the required information or production shall be referred to the arbitral tribunal for decision.
5. Upon receipt of the expert's report, the arbitral tribunal shall communicate a copy of the report to the parties, which shall be given the opportunity to express, in writing, their opinion on the report. A party shall be entitled to examine any document on which the expert has relied in his or her report, subject to the provisions for confidentiality in article 17, paragraphs 6 and 7.
6. At the request of any party, the expert, after delivery of the report, may be heard at a hearing where the parties shall have the opportunity to be present and to interrogate the expert. At this hearing, any party may present expert witnesses in order to testify on the points at issue. The provisions of article 28 shall be applicable to such proceedings.
7. The Secretary-General will provide an indicative list of persons considered to have expertise in the scientific or technical matters in respect of which these Rules might be relied upon. In appointing one or more experts pursuant to paragraph 1 above, the arbitral tribunal shall not be limited in its choice to any person or persons appearing on the indicative list of experts.

Default**Article 30**

1. If, within the period of time fixed by these Rules or the arbitral tribunal, without showing sufficient cause:
 - (a) The claimant has failed to communicate its statement of claim, the arbitral tribunal shall issue an order for the termination of the arbitral proceedings, unless there are remaining matters that may need to be decided and the arbitral tribunal considers it appropriate to do so;
 - (b) The respondent has failed to communicate its response to the notice of arbitration or its statement of defence, the arbitral tribunal shall order that the proceedings continue, without treating such failure in itself as an admission of the claimant's allegations; the provisions of this subparagraph also apply to a claimant's failure to submit a defence to a counterclaim or to a claim for the purpose of a set-off.
2. If a party, duly notified under these Rules, fails to appear at a hearing, without showing sufficient cause for such failure, the arbitral tribunal may proceed with the arbitration.
3. If a party, duly invited by the arbitral tribunal to produce documents, exhibits or other evidence, fails to do so within the established period of time, without showing sufficient cause for such failure, the arbitral tribunal may make the award on the evidence before it.

Closure of hearings**Article 31**

1. The arbitral tribunal may inquire of the parties if they have any further proof to offer or witnesses to be heard or submissions to make and, if there are none, it may declare the hearings closed.
2. The arbitral tribunal may, if it considers it necessary owing to exceptional circumstances, decide, on its own initiative or upon application of a party, to reopen the hearings at any time before the award is made.

Waiver of right to object**Article 32**

A failure by any party to object promptly to any noncompliance with these Rules or with any requirement of the arbitration agreement shall be deemed to be a waiver of the right of such party to make such an objection, unless such party can show that, under the circumstances, its failure to object was justified.

Section IV. The award

Decisions**Article 33**

1. When there is more than one arbitrator, any award or other decision of the arbitral tribunal shall be made by a majority of the arbitrators.
2. In the case of questions of procedure, when there is no majority or when the arbitral tribunal so authorizes, the presiding arbitrator may decide alone, subject to revision, if any, by the arbitral tribunal.

Form and effect of the award**Article 34**

1. The arbitral tribunal may make separate awards on different issues at different times.
2. All awards shall be made in writing and shall be final and binding on the parties. The parties shall carry out all awards without delay.
3. The arbitral tribunal shall state the reasons upon which the award is based, unless the parties have agreed that no reasons are to be given.
4. An award shall be signed by the arbitrators and it shall contain the date on which the award was made and indicate the place of arbitration. Where there is more than one arbitrator and any of them fails to sign, the award shall state the reason for the absence of the signature.
5. An award may be made public with the consent of all parties or where and to the extent disclosure is required of a party by legal duty, to protect or pursue a legal right or in relation to legal proceedings before a court or other competent authority.
6. Copies of the award signed by the arbitrators shall be communicated to the parties by the International Bureau.
7. Separate or dissenting opinions (if any) shall be in writing and signed by the dissenting arbitrator or arbitrators.

Applicable law, *amiable compositeur***Article 35**

1. In resolving the dispute, the arbitral tribunal shall apply the law or rules of law designated by the parties as applicable to the substance of the dispute. Failing such designation by the parties, the arbitral tribunal shall apply the national and/or international law and rules of law it determines to be appropriate.
2. The arbitral tribunal shall decide as *amiable compositeur* or *ex aequo et bono* only if the parties have expressly authorized the arbitral tribunal to do so.

3. In all cases, the arbitral tribunal shall decide in accordance with the terms of the contract, if any, and shall take into account any usage of trade applicable to the transaction.

Settlement or other grounds for termination

Article 36

1. If, before the award is made, the parties agree on a settlement of the dispute, the arbitral tribunal shall either issue an order for the termination of the arbitral proceedings or, if requested by the parties and accepted by the arbitral tribunal, record the settlement in the form of an arbitral award on agreed terms. The arbitral tribunal is not obliged to give reasons for such an award.
2. If, before the award is made, the continuation of the arbitral proceedings becomes unnecessary or impossible for any reason not mentioned in paragraph 1, the arbitral tribunal shall inform the parties of its intention to issue an order for the termination of the proceedings. The arbitral tribunal shall have the power to issue such an order unless there are remaining matters that may need to be decided and the arbitral tribunal considers it appropriate to do so.
3. Copies of the order for termination of the arbitral proceedings or of the arbitral award on agreed terms, signed by the arbitrators, shall be communicated by the arbitral tribunal to the parties. Where an arbitral award on agreed terms is made, the provisions of article 34, paragraphs 2, 4 and 5 shall apply.

Interpretation of the award

Article 37

1. Within 30 days after the receipt of the award, a party, with notice to the other parties and the International Bureau, may request that the arbitral tribunal give an interpretation of the award.
2. The interpretation shall be given in writing within 45 days after the receipt of the request. The interpretation shall form part of the award and the provisions of article 34, paragraphs 2 to 6, shall apply.

Correction of the award

Article 38

1. Within 30 days after the receipt of the award, a party, with notice to the other parties and the International Bureau, may request the arbitral tribunal to correct in the award any error in computation, any clerical or typographical error, or any error or omission of a similar nature. If the arbitral tribunal considers that the request is justified, it shall make the correction within 45 days of receipt of the request.
2. The arbitral tribunal may within 30 days after the communication of the award make such corrections on its own initiative.
3. Such corrections shall be in writing and shall form part of the award. The provisions of article 34, paragraphs 2 to 6, shall apply.

Additional award**Article 39**

1. Within 30 days after the receipt of the termination order or the award, a party, with notice to the other parties and the International Bureau, may request the arbitral tribunal to make an award or an additional award as to claims presented in the arbitral proceedings but not decided by the arbitral tribunal.
2. If the arbitral tribunal considers the request for an award or additional award to be justified, it shall render or complete its award within 60 days after the receipt of the request. The arbitral tribunal may extend, if necessary, the period of time within which it shall make the award.
3. When such an award or additional award is made, the provisions of article 34, paragraphs 2 to 6, shall apply.

Definition of costs**Article 40**

1. The arbitral tribunal shall fix the costs of arbitration in the final award and, if it deems appropriate, in another decision.
2. The term "costs" includes only:
 - (a) The fees of the arbitral tribunal to be stated separately as to each arbitrator and to be fixed by the tribunal itself in accordance with article 41;
 - (b) The reasonable travel and other expenses incurred by the arbitrators;
 - (c) The reasonable costs of expert advice and of other assistance required by the arbitral tribunal;
 - (d) The reasonable travel and other expenses of witnesses to the extent such expenses are approved by the arbitral tribunal;
 - (e) The legal and other costs incurred by the parties in relation to the arbitration to the extent that the arbitral tribunal determines that the amount of such costs is reasonable;
 - (f) The fees and expenses of the International Bureau, including the fees and expenses of the appointing authority.
3. In relation to interpretation, correction or completion of any award under articles 37 to 39, the arbitral tribunal may charge the costs referred to in paragraphs 2 (b) to (f), but no additional fees.

Fees and expenses of arbitrators**Article 41**

1. The fees and expenses of the arbitrators shall be reasonable in amount, taking into account the amount in dispute, the complexity of the subject matter, the time spent by the arbitrators and any other relevant circumstances of the case.
2. Promptly after its constitution, the arbitral tribunal shall inform the parties as to how it proposes to determine its fees and expenses, including any rates it intends to apply. Within 15 days of receiving that proposal, any party may refer the proposal to the appointing authority for review. If, within 45 days of receipt of such a referral, the appointing authority finds that the proposal of the arbitral tribunal is inconsistent with paragraph 1, it shall make any necessary adjustments thereto, which shall be binding upon the arbitral tribunal.
3.
 - (a) When informing the parties of the arbitrators' fees and expenses that have been fixed pursuant to article 40, paragraphs 2 (a) and (b), the arbitral tribunal shall also explain the manner in which the corresponding amounts have been calculated;
 - (b) Within 15 days of receiving the arbitral tribunal's determination of fees and expenses, any party may refer for review such determination to the appointing authority;
 - (c) If the appointing authority finds that the arbitral tribunal's determination is inconsistent with the arbitral tribunal's proposal (and any adjustment thereto) under paragraph 2 or is otherwise manifestly excessive, it shall, within 45 days of receiving such a referral, make any adjustments to the arbitral tribunal's determination that are necessary to satisfy the criteria in paragraph 1. Any such adjustments shall be binding upon the arbitral tribunal;
 - (d) Any such adjustments shall either be included by the arbitral tribunal in its award or, if the award has already been issued, be implemented in a correction to the award, to which the procedure of article 38, paragraph 3 shall apply.
4. Throughout the procedure under paragraphs 2 and 3, the arbitral tribunal shall proceed with the arbitration, in accordance with article 17, paragraph 1.
5. A referral under paragraph 3 shall not affect any determination in the award other than the arbitral tribunal's fees and expenses; nor shall it delay the recognition and enforcement of all parts of the award other than those relating to the determination of the arbitral tribunal's fees and expenses.

Allocation of costs**Article 42**

1. The costs of the arbitration shall in principle be borne by the unsuccessful party or parties. However, the arbitral tribunal may apportion each of such costs between the parties if it determines that apportionment is reasonable, taking into account the circumstances of the case.

2. The arbitral tribunal shall in the final award or, if it deems appropriate, in any other award, determine any amount that a party may have to pay to another party as a result of the decision on allocation of costs.

Deposit of costs

Article 43

1. The International Bureau, following the commencement of the arbitration, may request the parties to deposit an equal amount as an advance for the costs referred to in article 40, paragraphs 2(a), (b), (c), and (f). All amounts deposited by the parties pursuant to this paragraph 1 and paragraph 2 of this article shall be directed to the International Bureau, and disbursed by it for such costs, including, *inter alia*, fees to the arbitrators, the appointing authority, and the International Bureau.
2. Security for the costs of interim measures shall be directed to the International Bureau and disbursed by it upon order from the arbitral tribunal.
3. During the course of the arbitral proceedings the International Bureau may request supplementary deposits from the parties.
4. If the requested deposits are not paid in full within 60 days after the receipt of the request, the International Bureau shall so inform the parties in order that one or more of them may make the required payment. If such payment is not made, the arbitral tribunal may order the suspension or termination of the arbitral proceedings.
5. After a termination order or final award has been made, the International Bureau shall render an accounting to the parties of the deposits received and return any unexpended balance to the parties.

Annex**Model arbitration clause for contracts**

Any dispute, controversy or claim arising out of or relating to this contract, or the breach, termination or invalidity thereof, shall be settled by arbitration in accordance with the PCA Optional Rules for Arbitration of Disputes Relating to Outer Space Activities.

Note — Parties should consider adding:

- (a) The number of arbitrators shall be ... (one, three or five);
- (b) The place of arbitration shall be ... (town and country);
- (c) The language to be used in the arbitral proceedings shall be ...

Possible waiver statement

Note — If the parties wish to exclude recourse against the arbitral award that may be available under the applicable law, they may consider adding a provision to that effect as suggested below, considering, however, that the effectiveness and conditions of such an exclusion depend on the applicable law.

Waiver: The parties hereby waive their right to any form of recourse against an award to any court or other competent authority, insofar as such waiver can validly be made under the applicable law.

Model statements of independence pursuant to article 11 of the Rules

No circumstances to disclose: I am impartial and independent of each of the parties and intend to remain so. To the best of my knowledge, there are no circumstances, past or present, likely to give rise to justifiable doubts as to my impartiality or independence. I shall promptly notify the parties and the other arbitrators of any such circumstances that may subsequently come to my attention during this arbitration.

Circumstances to disclose: I am impartial and independent of each of the parties and intend to remain so. Attached is a statement made pursuant to article 11 of the PCA Optional Rules for Arbitration of Disputes Relating to Outer Space Activities of (a) my past and present professional, business and other relationships with the parties and (b) any other relevant circumstances. [Include statement] I confirm that those circumstances do not affect my independence and impartiality. I shall promptly notify the parties and the other arbitrators of any such further relationships or circumstances that may subsequently come to my attention during this arbitration.

Note — Any party may consider requesting from the arbitrator the following addition to the statement of independence:

I confirm, on the basis of the information presently available to me, that I can devote the time necessary to conduct this arbitration diligently, efficiently and in accordance with the time limits in the Rules.

BIBLIOGRAPHY

AVIATION AND SPACE LAW: RELEVANT PUBLICATIONS

*By P.J. Blount**

AVIATION LAW

Cases

Lopez & Medina Corp. v. Marsh USA, Inc., 667 F.3d 58 (1st Cir. 2012).

Oxford Aviation, Inc. v. Global Aero., Inc., 680 F.3d 85 (1st Cir. 2012).

Lopez v. Jet Blue Airways, 662 F.3d 593 (2d Cir. 2011).

Holbrook v. United States, 673 F.3d 341 (4th Cir. 2012).

United States v. Wynn, No. 11-4859, 2012 U.S. App. LEXIS 13346 (4th Cir. 2012).

United States v. Fofana, 666 F.3d 985 (6th Cir. 2012).

BP Group, Inc. v. Kloeber, 664 F.3d 1235 (8th Cir. 2012).

Ibrahim v. Dep't of Homeland Sec., 669 F.3d 983 (9th Cir. 2012).

United States v. Russell, 664 F.3d 1279 (9th Cir. 2012).

United States v. Cope, 676 F.3d 1219 (10th Cir. 2012).

Corey Airport Servs. v. Clear Channel Outdoor, Inc., No. 11-10579, No. 11-10580, 2012 U.S. App. LEXIS 11234 (11th Cir. 2012).

Am. Airlines, Inc. v. Transp. Sec. Admin., 665 F.3d 170 (D.C. Cir. 2011).

Republic Airline Inc. v. United States DOT, 669 F.3d 296 (D.C. Cir. 2012).

* P.J. Blount is Research Counsel and Instructor of Law at the National Center for Remote Sensing, Air, and Space Law, University of Mississippi School of Law.

Shell Offshore Inc. v. Greenpeace, Inc., Case No. 3:12-cv-00042-SLG, 2012 U.S. Dist. LEXIS 74387 (D. Ala. 2012).

Dole Air, Inc. v. City of Texarkana, CASE NO.: 4:10-CV-04147-SOH, 2012 U.S. Dist. LEXIS 50668 (W.D. Ark. 2012).

Mt. Home Flight Serv. v. Baxter County, Case No. 3:12-CV-03027, 2012 U.S. Dist. LEXIS 84471 (W.D. Ark. 2012).

Garza Aviation Servs., LLC v. County of Yuma, No. CV11-1762-PHX-DGC, 2011 U.S. Dist. LEXIS 139136 (D. Ariz. 2011).

Estate of Sesay v. Hawker Beechcraft Corp., No. 2:11-cv-04637-JHN-CWx, 2011 U.S. Dist. LEXIS 150978 (C.D. Cal. 2011).

Reger v. Mt. Lifeflight Inc., Case No. 2:11-CV-03301-JAM-DAD, 2012 U.S. Dist. LEXIS 54092 (E.D. Cal. 2012).

Janke v. Brooks, Civil Action No. 11-cv-00837-REB-BNB, 2012 U.S. Dist. LEXIS 57660 (D. Col. 2012).

JetAway Aviation, LLC v. Bd. of County Comm'rs of Montrose, Civil Action No. 07-cv-02563-RPM, 2012 U.S. Dist. LEXIS 42377 (D. Col. 2012).

R.E. Monks Constr. Co., LLC v. Telluride Reg'l Airport Auth., Civil Action No. 11-CV-01658-WJM-MEH, 2012 U.S. Dist. LEXIS 61157 (D. Col. 2012).

Laugelle v. Bell Helicopter Textron, Inc., Civ. A. No. 10-1080 (GMS), 2012 U.S. Dist. LEXIS 12907 (D. Del. 2012).

Enpat, Inc. v. Shannon, Case No. 6:11-cv-00084-GAP-KRS, 2011 U.S. Dist. LEXIS 137751 (M.D. Fla. 2011).

Mann v. Airline Pilots Ass'n, Case No. 6:11-cv-1200-Orl-28DAB, 2012 U.S. Dist. LEXIS 58278 (M.D. Fla. 2012).

Vrooman v. United States, CASE NO. 5:11-cv-227-RS-EMT, 2011 U.S. Dist. LEXIS 136919 (N.D. Fla. 2011).

Garcia v. Wells Fargo Bank Northwest, N.A., CASE NO. 10-20383-CV-KING, 2011 U.S. Dist. LEXIS 143900 (S.D. Fla. 2011).

In re Air Crash near Rio Grande P.R., CASE NO. 10-cv-81551, CASE NO. 11-cv-80059, CASE NO. 11-md-02246-KAM, 2012 U.S. Dist. LEXIS 46330 (S.D. Fla. 2012).

In Flight Leasing Group, LLC v. Bizjet Int'l Sales & Support, Inc., CASE NO. 11-62044-CIV-SEITZ/SIMONTON, 2012 U.S. Dist. LEXIS 3420 (S.D. Fla. 2012).

- Miller v. Delta Air Lines, Inc., CASE NO. 4:11-CV-10099-JLK, 2012 U.S. Dist. LEXIS 48294 (S.D. Fla. 2012).
- BMK, Civ. No. 10-00696 BMK (CONSOLIDATED), 2012 U.S. Dist. LEXIS 58458 (D. Haw. 2012).
- United States v. McCarty, CR. NO. 08-00513 JMS, 2011 U.S. Dist. LEXIS 143220 (D. Haw. 2011).
- Richardson v. Air Serv, Case No. 2:11-cv-207-CWD, 2012 U.S. Dist. LEXIS 48553 (D. Ida. 2012).
- Convergence Aviation, Ltd. v. United Techs. Corp., No. 10 c 2021, 2012 U.S. Dist. LEXIS 26830 (N.D. Ill. 2012).
- Bullar v. Archway Skydiving Ctr., Inc., No. 11-cv-0468-MJR, 2012 U.S. Dist. LEXIS 61103 (S.D. Ill. 2012).
- Stanton v. Fort Wayne-Allen County, NO.: 1:11-CV-30-TLS, 2011 U.S. Dist. LEXIS 139625 (N.D. Ind. 2011).
- Gill v. JetBlue Airways Corp., Civil Action No. 10-11454-FDS, 2011 U.S. Dist. LEXIS 143861 (D. Mass. 2011).
- Sanchez v. Northwest Airlines, Inc., Case No. 08-CV-5997 (PJS/FLN), 2012 U.S. Dist. LEXIS 60430 (D. Minn. 2012).
- United States v. Rosales, Case No. 10-CR-0339 (PJS/JJK), 2011 U.S. Dist. LEXIS 143264 (D. Minn. 2011).
- Ricks v. City of Winona, CIVIL ACTION NO. 3:11-CV-00039-GHD-JMV, 2012 U.S. Dist. LEXIS 32984 (N.D. Miss. 2012).
- Pissed Away N6VC, LLC v. Stricker, Case No. 2:11-cv-04278-NKL, 2012 U.S. Dist. LEXIS 14049 (W.D. Mo. 2012).
- Edick v. Allegiant Air, LLC, 2:11-CV-259 JCM (GWF), 2012 U.S. Dist. LEXIS 58924 (D. Nev. 2012).
- Farace v. Am. Airlines Inc., Case No. 2:10-cv-00724, 2012 U.S. Dist. LEXIS 85864 (D. Nev. 2012).
- Brauner v. British Airways PLC, No. 12-CV-343 (JG) (JO), 2012 U.S. Dist. LEXIS 51802 (E.D.N.Y. 2012).
- Chavarria v. N.Y. Airport Serv., LLC, 10-CV-1930 (MDG), 2012 U.S. Dist. LEXIS 87876 (E.D.N.Y. 2012).
- Hunter v. Deutsche Lufthansa AG, No. 09 CV 3166 (RJD) (JMA), 2012 U.S. Dist. LEXIS 42995 (E.D.N.Y. 2012).
- Spinrad v. Comair, Inc., 09-CV-4111, 825 F. Supp. 2d 397 (E.D.N.Y. 2011).
- Tex. 1845 LLC v. Wu Air Corp., No. 11-CV-1825 (JS)(ETB), 2012 U.S. Dist. LEXIS 14979 (E.D.N.Y. 2012).

Vumbaca v. Terminal One Group Ass'n, L.P., No. 11-CV-5535, 2012 U.S. Dist. LEXIS 55542 (E.D.N.Y. 2012).

Moffitt v. JetBlue Airways Corp., No. 5:11-CV-1387 (TJM/ATB), 2012 U.S. Dist. LEXIS 50974 (N.D.N.Y. 2012).

Ovesen v. Mitsubishi Heavy Indus. of Am., Inc., 04 Civ. 2849 (JGK), 2012 U.S. Dist. LEXIS 64043 (S.D.N.Y. 2012).

Kipple v. Monroe County, 09-CV-6494 CJS, 2012 U.S. Dist. LEXIS 5075 (W.D.N.Y. 2012).

Prichard Enters. v. Adkins, No. 5:10-CV-274-D, 2012 U.S. Dist. LEXIS 34180 (E.D.N.C. 2012).

Raffile v. Exec. Aircraft Maint., No. CIV 11-0459 JB/WPL, 831 F. Supp. 2d 1261 (D.N.M. 2011).

Leahy v. Signature Engines, Inc., Case No. 1:10-cv-070, 2012 U.S. Dist. LEXIS 56968 (S.D. Ohio 2012).

Smith v. United States, Case No. 3:95cv445, 2012 U.S. Dist. LEXIS 58623 (S.D. Ohio 2012).

Herold v. ASII, Inc., CASE NO. 1:11-CV-1690, 2012 U.S. Dist. LEXIS 7273 (N.D. Ohio 2012).

SH Aktive Unternehmensbeteiligungen GmbH & Co. KG v. Insured Aircraft Title Serv., Case No. CIV-12-3-L, 2012 U.S. Dist. LEXIS 72387 (D. Okla. 2012).

Schiewe v. Cessna Aircraft Co., Case No. 11-CV-560-JHP-FHM, 2012 U.S. Dist. LEXIS 28495 (N.D. Okla. 2012).

Spirit Bank Corp. v. Warner Aviation, Ltd., Case No. 11-CV-81-TCK-FHM, 2012 U.S. Dist. LEXIS 11967 (N.D. Okla. 2012).

Young v. Addison, Case No. CIV-10-608-D, 2011 U.S. Dist. LEXIS 153044 (W.D. Okla. 2011).

Osborne v. City of Burns, Civ. No. 2:11-cv-00080-SU, 2012 U.S. Dist. LEXIS 36523 (D. Ore. 2012).

Pellegrino v. United States Transp. Sec. Admin., CIVIL ACTION NO. 09-5505, 2012 U.S. Dist. LEXIS 25980 (E.D. Penn. 2012).

Shulick v. United Airlines & US Airways, CIVIL ACTION NO. 11-1350, 2012 U.S. Dist. LEXIS 13013 (E.D. Penn. 2012).

Turturro v. United States, CIVIL ACTION NO. 10-2460, CIVIL ACTION NO. 10-3063, 2012 U.S. Dist. LEXIS 68849 (E.D. Penn. 2012).

Yellen v. Teledne Cont'l Motors, Inc., CIVIL ACTION NO. 11-3325, 2011 U.S. Dist. LEXIS 140338 (E.D. Penn. 2011).

Pease v. Lycoming Engines, CIVIL ACTION NO. 4:10-CV-00843, 2011 U.S. Dist. LEXIS 145344 (M.D. Penn. 2011).

Press v. United Airlines, Inc., CIVIL ACTION NO. 3:11-CV-2265, 2012 U.S. Dist. LEXIS 62031, (M.D. Penn. 2012).

Bringuier v. Avco Corp., CIVIL NO.: 09-2140 (ADC), CIVIL NO.: 10-1211 (ADC), 2011 U.S. Dist. LEXIS 146598 (D.P.R. 2011).

Diaz Aviation Corp. v. P.R. Ports Auth., CIVIL NO. 09-1583 (CVR), 2012 U.S. Dist. LEXIS 29625 (D.P.R. 2012).

Echevarria v. Caribbean Aviation Maint. Corp., Civil No. 09-2034 (GAG), Civil No. 09-2142 (GAG), Civil No. 09-2158 (GAG), Civil No. 09-2160 (GAG), 2012 U.S. Dist. LEXIS 5046 (D.P.R. 2012).

Santiago v. Am. Airlines, Inc., Civil No. 11-1646 (DRD), 2012 U.S. Dist. LEXIS 4173 (D.P.R. 2012).

Krivitsky v. United States, C.A. No. 010-219-ML, 2011 U.S. Dist. LEXIS 145529 (D.R.I. 2011).

Wilson v. United States, No. CA 11-117 S, 2011 U.S. Dist. LEXIS 147432 (D.R.I. 2011).

Randolph M. James, P.C. v. Oconee County Aero. Comm'n, C.A. No. 8:11-1855-HMH, 2011 U.S. Dist. LEXIS 136301 (D.S.C. 2011).

Smith v. Teledyne Cont'l Motors, Inc., Nos. 9:10cv2152, 9:10cv2546, 2012 U.S. Dist. LEXIS 595 (D.S.C. 2012).

Morris v. Cessna Aircraft Co., No. 3:05-cv-0015-M, 2011 U.S. Dist. LEXIS 137837 (N.D. Tex. 2011).

Adamore v. Southwest Airlines Corp., CIVIL ACTION NO. H-11-0564, 2011 U.S. Dist. LEXIS 144758 (S.D. Tex. 2011).

Booker v. John Bean Techs. Corp., CIVIL ACTION NO. H-10-3512, 2011 U.S. Dist. LEXIS 143441 (S.D. Tex. 2011).

Teamer v. Napolitano, CIVIL ACTION H-11-1808, 2012 U.S. Dist. LEXIS 60833 (S.D. Tex. 2012).

Melland v. Napolitano, No. 10-cv-804-bbc, 2012 U.S. Dist. LEXIS 65729 (W.D. Wis. 2012).

Sundance Helicopters, Inc. v. United States, No. 09-420T, 2012 U.S. Claims LEXIS 91 (Fed. Cl. 2012).

GE Capital Aviation Servs. v. Pemco World Air Servs., Nos. 1090350, 2012 Ala. LEXIS 36 (Ala. 2012).

NetJets Aviation, Inc. v. Guillory, Nos. G044970, G044980, 2012 Cal. App. LEXIS 725 (Cal. App. 2012).

Sierra Pacific Holdings, Inc. v. County of Ventura, 138 Cal. Rptr. 3d 865 (Cal. App. 2012).

US Acquisition, LLC v. Tabas, Freedman, Soloff, Miller & Brown, P.A., Nos. 4D10-3635 and 4D11-715, 2012 Fla. App. LEXIS 8261 (Fla. Ct. App. 2012).

Town of Zionsville v. Hamilton County Airport Auth., No. 49A05-1107-PL-374, 2012 Ind. App. LEXIS 291 (Ct. App. Ind. 2012).

Lavine v. Am. Airlines, Inc., No. 2917, 2011 Md. App. LEXIS 158 (Ct. Sp. App. Md. 2011).

Articles

Md. Tanveer Ahmad, *One passenger, one fare: A policy which neither benefits the air carriers nor the disabled population*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Christopher Andrews & Vernon Nase, *Psychiatric injury in aviation accidents under the Warsaw and Montreal Conventions: the interface between medicine and law*, 76 J. AIR L. & COMM. 3 (2011).

Duncan P. Blake & Ian S. Henderson, *Military use of civil-registered aircraft*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Laurie R. Blank, *After "Top Gun": How Drone Strikes Impact the Law Of War*, 33 U. PENN. J. INT'L L., 675 (2012).

M. Ryan Calo, *The Drone as Privacy Catalyst*, 64 STAN. L. REV. ONLINE 29 (2011).

Harold Caplan, *Fulfilling the contract of carriage: How a new European regulation could help airlines and their passengers*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Elena Carpanelli, *The "Siberian Overflights" Issue*, 11 ISSUES IN AVIATION L. & POL'Y __ (Fall 2011).

Paul S. Dempsey, *All along the watchtower: forum non conveniens in international aviation*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Natalie N. DuBose, *Twombly and parallel conduct—how the Sixth Circuit grounded In re Travel Agent Commission Antitrust Litigation*, 76 J. AIR L. & COMM. 111 (2011).

David Timothy Duval & Niven Winchester, *Cost sharing in air-service provision*, 76 J. AIR L. & COMM. 77-96 (2011).

Francesco Fiorilli, *Ensuring Global Competitiveness in the Airline Industry*, 11 ISSUES IN AVIATION L. & POL'Y __ (Fall 2011).

P. Paul Fitzgerald, *In defense of the nationality of aircraft*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Francesco Gaspari, *Slot mobility in the European Community*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Moses George, *Aerodrome Certification and Airport Privatisation in India: A Critical Study/ Zur Zertifizierung und Privatisierung von Flughäfen in Indien/ La certification et la privatisation des aéroports*, 2012 ZLW 129 (2012).

Francis Hane, *Aeronautics and Interjurisdictional Immunity in Canada*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Andreas Hardeman, *Reframing the aviation climate change politics and policies*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Birgit Haslinger, *Review of the Community Guidelines on Financing of Airports and Start-up Aid to Airlines Departing from Regional Airports*, 10 EUR. STATE AID L. Q. 611 (2011).

Brian F. Havel & Gabriel S. Sanchez, *Do We Need a New Chicago Convention?*, 11 ISSUES IN AVIATION L. & POL'Y __ (Fall 2011).

Auguste J. Hocking, *Ownership and control in Australia's air services agreements: further reform needed for genuine commercial freedom?*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Frances L. Kern, *Property: Not Everything is Relative Any-more: A New Rule but Little Guidance in Airport Zoning Regulation Takings Claims--Decook V. Rochester Int'l Airport Joint Zoning Bd.*, 38 WM. MITCHELL L. REV. 527 (2011).

Laura McKenery, *The First Amendment—determining whether a total ban on newspaper racks in a public airport's terminals raises a genuine issue of material fact concerning its constitutionality*, 76 J. AIR L. & COMM. 119 (2011).

R.J. Parthoff, *Ripe, Riper, Ripest? The Ninth Circuit's decision in Addington v. U.S. Airline Pilots Association sets a mis-*

guided ripeness standard for duty of fair representation claims, 76 J. Air L. & Comm. (2011).

Jacqueline Peel, Lee Godden, Rodney J. Keenan & Kati Kulovesi, *'Make your own special song, even if nobody else sings along': International aviation emissions and the EU Emissions Trading Scheme*, 2 CLIMATE L. 535 (2011).

Malgorzata Polkowska, *State sovereignty in the airspace: An old notion in a new reality*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Scott Lars Roger, *Pilots denied relief—by narrowly construing “prevailing parties” under the EAJA, the D.C. Circuit allows the FAA to run amok*, 76 J. AIR L. & COMM. 135 (2011).

Carlos Ruiz, *Pulling Back the Throttle in the Exercise of Personal Jurisdiction over Air Carriers*, 11 ISSUES IN AVIATION L. & POL’Y __ (Fall 2011).

Vanja-Ivan Savić, *Responsibility in the Cockpit or Downtown? How Legal Theory Determines if an Airline Is to be Treated as a Criminal*, 11 ISSUES IN AVIATION L. & POL’Y __ (Fall 2011).

Charles E. Schlumberger & Sebastian Stolorz, *A presidential crash: operational and regulatory aspects of an accident involving a high level delegation on a state aircraft*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Francis P. Schubert, *Air navigation and volcanic ash contamination: A legal analysis*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Noel Sharkey, *The Automation and Proliferation of Military Drones and the Protection of Civilians*, 3 L., INNOVATION & TECH. 229 (2012).

Paul E. Stinson, *Implied Field Preemption of the Aviation Claims Under the Federal Aviation Act: How the Landscape is Changing*, 11 ISSUES IN AVIATION L. & POL’Y __ (Fall 2011).

Isabella Maria Vasilogeorgi, *Delimitation of ICAO-IMO search and rescue regions: A case of jurisdictional compilation and complication*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Mathieu Vaugeois, *Les accords «ciel-ouvert»et l’union européenne: de la compétence étatique à la compétence communautaire*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Joseph C. Wheeler, *ICAO guidance on volcanic ash: from risk aversion to risk management*, 36 ANNALS OF AIR & SPACE L. — (2011).

Books and Documents

I.H. PH. DIEDERIKS VERSCHOOR, AN INTRODUCTION TO AIR LAW, NINTH REVISED EDITION (Revised by Pablo Mendes de Leon, 2012).

JERRY A. EICHENBERGER, GENERAL AVIATION LAW (2012).

LATEST NATIONAL REGULATIONS ON UNMANNED AIRCRAFT SYSTEMS IN MILITARY AND CIVIL AVIATION IN POLAND (ESPI Perspective No. 60, 2012).

PAUL B. LARSEN, JOHN E. GILLICK & JOSEPH C. SWEENEY, AVIATION LAW: CASES AND RELATED SOURCES (2012).

MICHAEL MILDE, INTERNATIONAL AIR LAW AND ICAO (2012).

SPACE LAW

Laws

Austria

Bundesgesetz über die Genehmigung von Weltraumaktivitäten und die Einrichtung eines Weltraumregisters (Weltraum-gesetz) [Outer Space Act], No. 132/2011 (Dec. 6, 2011).

Cases

United States

Jones v. U.S., No. 10-1259 (U.S. 2012)

Townsel v. DISH Network L.L.C., No. 11-2827, 668 F.3d 967 (7th Cir. 2012).

Zuffa, LLC v. Taapken, CASE NO. 3:11-CV-210-WKW [WO], 2012 U.S. Dist. LEXIS 44373 (M.D. Ala. 2012).

Swift Transp. Co. of Arizona, LLC v. Angulo, No. 4:10CV01516 SWW, 2012 U.S. Dist. LEXIS 1161 (E.D. Ark. 2012).

Dish Network L.L.C. v. Sanchez, CASE NO. 1:11-cv-01485-AWI-SKO, 2012 U.S. Dist. LEXIS 79932 (E.D. Cal. 2012).

J & J Sports Prods. v. Curtis, No. CIV 10-cv-1053-JAM-JFM, 2012 U.S. Dist. LEXIS 46475 (E.D. Cal. 2012).

Dish Network LLC v. Dillion, Case No. 12cv157 BTM(NLS), 2012 U.S. Dist. LEXIS 13277 (S.D. Cal. 2012).

Dish Network, L.L.C. v. Sonicview USA, Inc., Civil No. 09-cv-1553-L(WVG), 2012 U.S. Dist. LEXIS 75663 (S.D. Cal. 2012).

J&J Sports Prods. v. Twiss, Civil Action No. 11-cv-01559-WJM-KLM, 2012 U.S. Dist. LEXIS 43306 (D. Col. 2012).

ITT Mfg. Enters., LLC v. Celco P'ship, C.A. No. 1:09-cv-190-LPS, 2011 U.S. Dist. LEXIS 153065 (D. Del. 2011).

Dish Network L.L.C. v. Tab Whitehead, Case No. 3:09-cv-532-J-32JRK, 2011 U.S. Dist. LEXIS 143346 (M.D. Fla. 2011).

Joe Hand Promotions, Inc. v. Sorota, CASE NO. 11-80985-CIV-MARRA, 2012 U.S. Dist. LEXIS 88462 (S.D. Fla. 2012).

United States v. Rodriguez, CASE NO. 11-20338-CR-MIDDLEBROOKS/GARBER, 2012 U.S. Dist. LEXIS 58078 (S.D. Fla. 2012).

USA Satellite & Cable, Inc. v. N. Am. Cable Equip., Inc., No. 09 C 2067, 2012 U.S. Dist. LEXIS 5418 (N.D. Ill. 2012).

J & J Sports Prods. v. Mumford, Civil Action No. DKC 10-2967, 2012 U.S. Dist. LEXIS 55836 (D. Md. 2012).

Joe Hand Promotions, Inc. v. Dock St. Enters., Civil Action No. WMN-11-1973, 2011 U.S. Dist. LEXIS 141242 (D. Md. 2011).

Semtek Int'l, Inc. v. Info. Satellite Sys., CIVIL ACTION NO. 09-10183-RWZ, 2012 U.S. Dist. LEXIS 31593 (D. Mass. 2012).

Zuffa, LLC v. Parker, Civil File No. 11-3451 (MJD/SER), 2012 U.S. Dist. LEXIS 58834 (D. Minn. 2012).

Padberg v. Dish Network LLC, Case No. 11-04035-CV-C-NKL, 2012 U.S. Dist. LEXIS 80543 (W.D. Mo. 2012).

Dish Network L.L.C. v. Thomas, Civil No.No. 11-5549, 2011 U.S. Dist. LEXIS 147340 (D.N.J. 2011).

J & J Sports Prods. v. Bambu Lounge Corp., No. CV 2011-1053 (RJD)(MDG), 2012 U.S. Dist. LEXIS 61649 (E.D.N.Y. 2012).

Premium Sports, Inc. v. Connell, 10 Civ. 3753 (KBF), 2012 U.S. Dist. LEXIS 28721 (S.D.N.Y. 2012).

Tom v. S.B., Inc., No. CV 10-1257 LH/WPL, 2012 U.S. Dist. LEXIS 24910 (D.N.M. 2012).

Dish Network LLC v. Dimarco, No. 2:11-cv-01962-RCJ-PAL, 2012 U.S. Dist. LEXIS 33889 (D. Nev. 2012).

Dish Network LLC v. Parsons, CASE NO. 5:11-CV-00140-RLV-DSC, 2012 U.S. Dist. LEXIS 75386 (W.D.N.C. 2012).

Joe Hand Promotions, Inc. v. WCI, Inc., Case No. 3:10-cv-422, 2011 U.S. Dist. LEXIS 147843 (S.D. Ohio 2011).

Dish Network, L.L.C. v. Rounds, Civil Action No. 11-241 Erie, 2012 U.S. Dist. LEXIS 48892 (W.D. Penn. 2012).

Zuffa, LLC v. Black Diamond, Inc., No. 10-02844, 2011 U.S. Dist. LEXIS 144279 (W.D. Tenn. 2011).

Joe Hand Promotions v. That Place, Case No. 11-CV-931, 2012 U.S. Dist. LEXIS 90536 (E.D. Wis. 2012).

Boeing Satellite Sys. Int'l v. Ico Global Communs., No. B214659, 2012 Cal. App. Unpub. LEXIS 2787 (Cal. Ct. App. 2012).

Reid v. Siniscalchi, C.A. No. 2874-VCN, 2012 Del. Ch. LEXIS 112 (Del. Chancery Ct. 2012).

Butrick v. Peterbilt of Springfield, Inc., No. SD31251, 2012 Mo. App. LEXIS 109 (Mo. Ct. App. 2012).

State v. Sprouse, 719 S.E.2d 234 (N.C. Ct. App. 2011).

Dickerson v. Miller's TLC, Inc., No. 96995, 2012 Ohio App. LEXIS 2203 (Ct. App. Ohio 2012).

State v. Dykes, No. 27124, 2012 S.C. LEXIS 103 (S.C. 2012).

Articles

Setsuko Aoki, *Japanese Space Activities Act in the Making / Die Vorbereitungen für ein neues japanisches Weltraumgesetz / Le nouveau droit japonais des activités spatiales en préparation*, 2012 ZLW 111 (2012).

Jeff Foust, *Renewed hope for export control reform*, THE SPACE REVIEW, May 29, 2012, <http://www.thespacereview.com/article/2087/1>.

Steven Freeland, *For better or for worse? The use of 'soft law' within the international legal regulation of outer space*, 36 ANNALS OF AIR & SPACE L. __ (2011).

Steven Freeland, *Reshaping Australia's Space Policy and Regulation – Recent Developments/ Weltraumrecht und Weltraumpolitik in Australien/ Droit spatial et politique en Australie*, 2012 ZLW 99 (2012).

Jace C. Gatewood, *Warrantless GPS Surveillance: Search and Seizure-Using the Right to Exclude to Address the Constitutionality of GPS Tracking Systems Under the Fourth Amendment*, 42 U. MEMPHIS L.R. 303 (2011).

Surya Gablin Gunasekara, *Mutually Assured Destruction: Space Weapons, Orbital Debris, and the Deterrence Theory for Environmental Sustainability*, 2012 AIR & SPACE L. 141 (2012).

Lenese C. Herbert, *Challenging The (Un)constitutionality of Governmental GPS Surveillance*, 29 GPSOLO (2012).

Stephan Hobe, *The Permanent Court of Arbitration Adopts Optional Rules for Arbitration of Disputes Relating to Outer Space Activities/ Der Ständige Schiedsgerichtshof verabschiedet Optionales Protokoll über Schiedsregeln für Weltraumstreitigkeiten/ Adoption du règlement facultatif pour l'arbitrage des différends relatifs aux activités liées à l'espace extra-atmosphérique par la Cour Permanente d'Arbitrage*, 2012 ZLW 4 (2012).

Matthew Kleiman and Sonia McNeil, *Red lines in outer space*, THE SPACE REVIEW, Mar. 5, 2012, <http://www.thespacereview.com/article/2038/1>.

Michael Listner, *Code of Conduct: corrections, updates, and thoughts going forward*, THE SPACE REVIEW, June 18, 2012, <http://www.thespacereview.com/article/2101/1>.

Michael Listner, *Congressional opposition to a Code of Conduct for space*, THE SPACE REVIEW, Feb. 6, 2012, <http://www.thespacereview.com/article/2018/1>.

Michael Listner, *EU Code of Conduct: commentary on Indian concerns and their effects*, THE SPACE REVIEW, Nov. 28, 2011, <http://www.thespacereview.com/article/1977/1>.

Michael Listner, *A first look at Austria's new domestic space law*, THE SPACE REVIEW, Dec. 12, 2011, <http://www.thespacereview.com/article/1988/1>.

Michael Listner, *A new paradigm for arbitrating disputes in outer space*, THE SPACE REVIEW, Jan. 9, 2012, <http://www.thespacereview.com/article/2002/1>.

Michael Listner, *The Moon Treaty: it isn't dead yet*, The Space Review, Mar. 19, 2012, <http://www.thespacereview.com/article/2047/1>.

Michael Listner, *Phobos-Grunt: a legal analysis of potential liability and options for mitigation*, THE SPACE REVIEW, Nov. 14, 2011, <http://www.thespacereview.com/article/1968/1>.

Michael Listner, *US rebuffs current draft of EU Code of Conduct: is there something waiting in the wings?*, THE SPACE REVIEW, Jan. 16, 2012, <http://www.thespacereview.com/article/2006/1>.

Irmgard Marboe, *The New Austrian Outer Space Act/ Das neue österreichische Weltraumgesetz/ La nouvelle législation spatiale en Autriche*, 2012 ZLW 26 (2012).

Christopher C. Miller, note, *To the Moon & Beyond: The United States and the Future of International Space Law*, 35 SUFFOLK TRANSNAT'L L. REV. 121 (2012).

Juan Javier Negri, *Security Arrangements for the Financing of Communications Satellites*, 44 UNIFORM COMM. CODE L.J. 151 (2012).

Benjamin Perlman, *Grounding U.S. Commercial Space Regulation in the Constitution*, 100 GEO. L.J. 929 (2012).

Dan St. John, *Boldly Going Together? How Developing States Are Left Out of Space Activities*, DENV. U.L. REV. ONLINE, Nov. 25, 2011, <http://www.denverlawreview.org/students-comments/2011/11/25/boldly-going-together-how-developing-states-are-left-out-of.html>.

George S. Robinson, *Space law: Addressing the legal status of evolving "envoys of mankind"*, 36 ANNALS OF AIR & SPACE L. — (2011).

Richard Sadowski, *Insuring Commercial Space Travel: Seeking Solutions to a Futuristic Problem/ Versicherungsfragen bei kommerziellen Weltraumreisen/ Questions de l'assurance des voyages commerciaux en espace*, 2012 ZLW 79 (2012).

Julio Daniel Carbajal Smith, *Mexico: New Developments in Space Law and Policy/ Mexiko: Neue Entwicklungen in Weltraumrecht und Weltraumpolitik/ Mexique: Nouveaux*

développements en droit et en politique spatiale, 2012 ZLW 95 (2012).

Lesley Jane Smith, *Legislating for Outer Space: The Example of Germany: Considerations on a National Space Law / Überlegungen zur Nationalen Weltraumgesetzgebung am Beispiel Deutschlands / Considerations sur législations nationales concernant des activités spatiales à l'exemple de l'Allemagne*, 2012 ZLW 62 (2012).

Brian Andrew Suslak, *GPS Tracking, Police Intrusion, and the Diverging Paths of State and Federal Judiciaries*, 45 SUFFOLK U.L.R. 193 (2011).

Peter Swire, *A Reasonableness Approach to Searches After the Jones GPS Tracking Case*, 64 STAN. L. REV. ONLINE 57 (2012).

Thomas D. Taverney, *Working towards a space code of conduct*, THE SPACE REVIEW, Apr. 16, 2012, <http://www.thespacereview.com/article/2066/1>.

Justin P. Webb, *Car-ving Out Notions of Privacy: The Impact of GPS Tracking and Why Maynard is a Move in the Right Direction*, 95 MARQ. L.R. 751 (2012).

Paula L. Wegman, *Recent Developments in Aviation and Space Law*, 46 TORT TRIAL & INS. PRACTICE L.J. 225 (2011).

Brian Wessel, *The Rule of Law in Outer Space: The Effects of Treaties and Nonbinding Agreements on International Space Law*, 35 HASTINGS INT'L & COMP. L.R. 289 (2012).

Books and Documents

NAYEF R. F. AL-RODHAN, *META-GEOPOLITICS OF OUTER SPACE* (2012).

GOV'T ACCOUNTABILITY OFFICE, OFFICE OF SCIENCE AND TECHNOLOGY POLICY: VIOLATION OF THE ANTIDEFICIENCY ACT, GAO-12-200T (Nov. 2, 2011).

ARVIND GUPTA, AMITAV MALLIK, AND AJEY LELE, *SPACE SECURITY: NEED FOR GLOBAL CONVERGENCE* (Pentagon Press 2012).

Information on the activities of international intergovernmental and non-governmental organizations relating to space law: Information provided by the International Institute of

Space Law, U.N. Doc. No. A/AC.105/C.2/2012/CRP.18 (Mar. 20, 2012).

International cooperation in the peaceful uses of outer space: activities of Member States, UN Doc. No. A/AC.105/1008 (Nov. 30, 2011).

RAM S. JAKHU, TOMMASO SGOBBA & PAUL STEPHEN DEMPSEY, THE NEED FOR AN INTEGRATED REGULATORY REGIME FOR AVIATION AND SPACE: ICAO FOR SPACE? (2012).

RICKY J. LEE, LAW AND REGULATION OF COMMERCIAL MINING OF MINERALS IN OUTER SPACE (2012).

MICHAEL C MINEIRO, SPACE TECHNOLOGY EXPORT CONTROLS AND INTERNATIONAL COOPERATION IN OUTER SPACE (2012).

National research on space debris, safety of space objects with nuclear power sources on board and problems relating to their collision with space debris, UN Doc. No. A/AC.105/C.1/101 (Dec. 9, 2011).

GBENGA ODUNTAN, SOVEREIGNTY AND JURISDICTION IN THE AIRSPACE AND OUTER SPACE: LEGAL CRITERIA FOR SPATIAL DELIMITATION (2012).

Report of the Scientific and Technical Subcommittee on its forty-ninth session, held in Vienna from 6 to 17 February 2012, U.N. Doc. No. A/AC.105/1001 (Feb. 28, 2012).

RAND SIMBERG, HOMESTEADING THE FINAL FRONTIER: A PRACTICAL PROPOSAL FOR SECURING PROPERTY RIGHTS IN SPACE (Competitive Enterprise Institute 2012).

RICHARD M. THOMPSON II, UNITED STATES V. JONES: GPS MONITORING, PROPERTY, AND PRIVACY (Congressional Research Service 2012).

MICHAEL SHEEHAN & NATALIE BORMANN, SECURING OUTER SPACE: INTERNATIONAL RELATIONS THEORY AND THE POLITICS OF SPACE (2012).

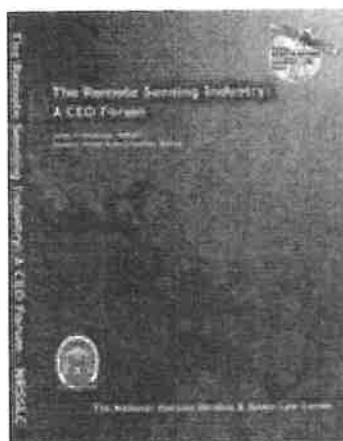
SOFT LAW IN OUTER SPACE: THE FUNCTION OF NON-BINDING NORMS IN INTERNATIONAL SPACE LAW (ed. Irmgard Marboe, 2012).

EDYTHE WEEKS, OUTER SPACE DEVELOPMENT, INTERNATIONAL RELATIONS AND SPACE LAW: A METHOD FOR ELUCIDATING SEEDS (2012).

The NATIONAL CENTER FOR REMOTE SENSING, AIR, AND SPACE LAW has the following books available for purchase. For book descriptions and ordering information, please visit our website at: <http://www.spacelaw.olemiss.edu/>



Remote Sensing, Air, and Space Law International Bibliography 1930-2007: A Special Publication of the JOURNAL OF SPACE LAW - includes a searchable CD-ROM \$70.00



The Remote Sensing Industry: A CEO Forum \$45.00



LandSat 7: Past, Present, and Future \$50.00



The UN Principles related to Remote Sensing of Earth from Space \$45.00



Proceedings, The First International Conference on the State of Remote Sensing Law \$80.00