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A journal devoted to the legal problems arising
out of human activities in outer space

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FOREWORD

This year of 1998 marks the 25th Anniversary of the publication of the JOURNAL OF SPACE LAW. In anticipation of this momentous occasion, it gave me great pleasure during the 1997 Turin meeting of the Board of the International Institute of Space Law (IISL) to extend special invitations to all of its members to submit to the Journal an uncommitted contribution in the form of an article, comment, report or book review which had not been published or slated for publication in the IISL Proceedings or elsewhere. I indicated that contributions received before April 1, 1998, would have the advantage of early consideration in the editorial and printing process but that an effort would be made to accommodate papers received before the definitive deadline of September 1, 1998.

I was delighted at the overwhelmingly positive response and firm commitments that I received, both on the spot and later in writing, especially when a number of distinguished contributions arrived in ample time for this first issue to be printed.

As this time, I would like to record special thanks and a deep sense of appreciation on my and the Journal's behalf to all 25th Anniversary contributors who, as long time champions and leading authorities in the field of space law, have or are taking time out from their hard pressed duties to share their knowledge and insights into, what appears at the dawn of a new century to become, an ever expanding and vital legal discipline.

Stephen Gorove
Chairman, Editorial Board
Journal of Space Law
Professor Emeritus of Law
University of Mississipi

In Memoriam: Myres S. McDougal

As this 25th Anniversary issue of the Journal was being readied for press, it was with the deepest sorrow that this writer received the saddening news of the passing away of Myres S. McDougal, one of his former law professors at Yale, whose superior intellect and warm friendship he had the privilege of enjoying over a span of almost five decades.

Born in 1906 in Mississippi and a recipient of degrees from such leading academic institutions as Oxford and Yale, Professor McDougal taught briefly at Illinois before joining the Yale law faculty in 1934 where he achieved the highest academic recognition by becoming Sterling Professor in 1959, an honor which he held as an Emeritus after his retirement in 1975.

During the years of the Second World War, McDougal's early interest in international law and world affairs found a unique opportunity and challenge for assertion and practical application when he offered his services, first, as an Assistant General Counsel to the Lend-Lease Administration, and later, as a General Counsel to the Office of Relief and Rehabilitation Operations of the Department of State.

In light of what may be called a tenet of the social process in a nutshell, *i.e.*, 'people seeking values through institutions on resources,' he developed with his colleague, Harold D. Lasswell, an eminent social scientist, new insights into the understanding of the world political process of authoritative decision making. He continued to expand its ramifications further, with varied other associates, in a series of brilliant scholarly treatises dealing with crucial issues of world public order relating to the oceans, outer space, and human rights, within the broad framework of what he called "Jurisprudence For a Free Society."

Myres McDougal was not just another world authority but a giant among giants, a shining beacon pointing the way toward hitherto unchartered waters. He carried the intellectual fight for acceptance of what many regarded in the forties as a revolutionary scholarly endeavor, especially when viewed through the prism of Austinian tradition and the almost ironclad logic of Hans Kelsen's pure theory of law. In collaboration with his associates, several of them his former students, he applied his emerging policy oriented jurisprudence to vital contemporary problems of world public order by making use of the findings of modern physical and social science. His work aimed to offer a framework for decisions, a system not only to enhance minimum world public order but perhaps to attain an optimum public order that would be based upon and would grant the highest recognition to the dignity of man. His writings, which reflect a comprehensive survey of the world decision making process, rank among the finest original contributions to international legal scholarship.

As a member of the prestigious Institut de Droit International and, at times, president of many leading domestic and international associations, he was the recipient of innumerable honors and distinctions. One recent honor which he cherished with sincere affection was a Lifetime

Achievement Award from his undergraduate *Alma Mater,* the University of Mississippi, the very institution at which he had also served as a Teaching Fellow in the mid-twenties.

Mac, as he was affectionately known by many, always had time to see his students, lend them a helping hand and provide much needed guidance and advice. On appropriate occasions, he did this with a twinkle is his eyes accompanied by a witty remark. His warm human qualities and profound respect for human dignity were deeply embedded in his innate character and personality and were ever-present notwithstanding his relentless intellectual advocacy and defense of his school of thought. His presence, acumen, true friendship and humor will be sorely missed by this writer and this Law Journal which he honored with his membership on its Editorial Board; but his demise will remain above all a genuine loss to international legal scholars and jurisprudential thinkers all over the world.

Stephen Gorove
Chairman, Editorial Board
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Professor Emeritus of Law
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THE INSTITUTIONAL FRAMEWORK OF SPACE ACTIVITIES IN OUTER SPACE

Michel BOURÉLY*

Since the inception of space activities, States have been the initiators, be it either on an exclusive level as is the case in some countries, or on a partial level as is the case in other countries, where States nonetheless keep primary control in specified sectors (notably military or scientific) while sharing other sectors with private operators.

The role of States was predominant during the "Cold War Period", which was characterized by a rivalry between the USSR and the USA, on the level of prestige as much as on the level of military abilities. Nowadays, the competition between the two great powers in that sector no longer has the same reasons to exist, and one can see that a world-wide cooperation among States is being developed. Nonetheless in other sectors of activity, there is a fierce competition among the actors of the private sector.

States are, of course, free to organize within their national framework the implementation of obligations contracted under international agreements. From the actual world practice, we notice that a great variety of situations exist resulting from the diversity of solutions given to the obligation by the State.

It does not seem that this question has been the subject of very advanced studies from a legal standpoint. We must, however, mention a study that was done on this subject by the Center of Study and Research on Space Law (CERDE) of Paris (France), in cooperation with the European Center for Space Law (ECSL)[1].

We therefore think it might be useful to evoke this subject in this special issue of the *Journal of Space Law*, and we are happy to celebrate its 25th anniversary.

The present article will first recall the evolution of the role of States in the exercise of space activities (I), then will briefly set out the different ways which can be used by the States in order to comply with their obligations relative to the national organization of space activities in their respective countries (II). It will finally describe the conditions of the States' intervention in the exercise of these activities (III).

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* Docteur en Droit, Former Legal Adviser of the European Space Agency.

1 LE CADRE INSTITUTIONNEL DES ACTIVITES SPATIALES DES ETATS, collective work in French and English, under the supervision of Simone COURTEIX, with a foreword by Mr Hubert CURIEN (Editions A. Pedone, Paris 1997 - I.S.B.N. 2-233-00315-2).

Parts of this work can be found in the communication of Michel BOURELY and Simone COURTEIX in the Proceedings of Colloquium of the International Institute of Space Law held in China in 1996 which was published in 39 PROC. COLLOQ. L. OUTER SPACE 235 (Am. Inst. Aeronautics & Astronautics 1997).

I - The Evolution of the Role of States in the Exercise of Space Activities

Contrary to what happened in other high-tech sectors (like nuclear energy or computer science), it is the State's intervention, since the beginning, which has helped the creation and development of space activities.

Must we remind the reader that the first Sputnik was launched in 1957 during the very official International Geophysical Year and that the Americans wanted to reply quickly to this launch for reasons of national security, as much as for their concern of national prestige?

Must we also remind the reader that the big States had to define a national space policy, and thus develop space programs to implement this policy?

Must we finally remind the reader that the development of space techniques and their dual character has, in essence, inevitably brought States to abandon their initial state objectives and to go from purely military or scientific applications to other applications, and that in some countries, certain applications were later taken over in their entirety by the private sector?

The State's preponderance and its concern to serve the public's interest, have evolved with the years, not only following technical progress in the area of space, but also because of changes that eventually took place in political regimes, in constitutional institutions, and in foreign relations in different countries.

We must also not neglect the role played by the international community within the UN, which tried to fix rules for the exploration and use of outer space and to put them in writing in international agreements. It follows that States are now forced to conform to these rules and to ensure their implementation by the persons or entities for which they are responsible under international law.

The States' intervention in space activities is expressly foreseen by articles VI, VII and VIII of the 1967 Outer Space Treaty to which, it shall be recalled, nearly all the states of the world - including all the space powers - are parties.

As it is asserted in this text, it belongs to the States, and only to them, to:

> - bear, on one hand, international, political and legal responsibilities for all national space activities - whether they are carried out by private or public organisms - and to ensure that the provisions of the treaty are enforced;
> - on the other hand, to authorize and supervize the space activities of non-governmental entities placed under their jurisdiction;
> - finally, to make sure that the international organizations they are members of, comply with the provisions of the treaty.

Consequently, the parties to the 1967 Treaty, whatever their direct involvement in outer space is, must participate in the elaboration and the enforcement of international rules applicable to space activities, when their object is to govern the exercise of these activities. The State's

intervention may take various shapes. We need to emphasize however the fact that the organization of space activities is not linked to the existence or absence, in a given country, of a specific space legislation. Such a legislation does not exist in all space powers, and the State's intervention will thus be based on the existing general texts.

II - The Organization by States of their Space Activities

In some countries, we find that national specialized structures responsible for space activities are generally called "Agencies". They can take various legal shapes and have very diversified powers according to the kind of space activities undertaken by the State itself. In other countries, there are no agencies of this kind, and the State's responsibility is shared between the different existing national entities, which are most often departments of Ministries.

The choice between these two formulas depends first of all on the political regime of each country and, therefore, on the power of intervention given to the public authority. It also depends on the existence and vitality of the private sector, as well as on the degree of freedom granted to it by the State.

Various criteria may be used to describe the present state of national institutions responsible for space activities in the world: We may obviously choose a geographical criterion and make a list of all that exists in every country from all five continents on the Planet. But it would seem preferable to take a more legal approach and make the distinction between:

- countries that have a specific space legislation and that have created a specialized structure, which may or may not be called an Agency;
- countries that have a specific space legislation, but that did not create an Agency;
- countries that do not have a specific space legislation, nor an Agency, but that use the standard public affairs' administration mechanisms to execute, regulate and control space activities themselves. We need to take note of this last situation, but emphasize the fact that it does not mean that a specific national legislation would not be useful in these countries to either complement or modify the national legislation and try to make it more adapted to the exercise of space activities.

1/ Specialized structures

A specialized structure in space matters, generally called "Agency," exists in various countries.

The oldest and most renowned agency is NASA (USA), but we may also mention the CNES (France), BNSC (United Kingdom), NASDA (Japan), and more recently the ASI (Italy), DARA (Germany), RKA (Russia). Argentina, Australia, Brazil, Canada, India, and Indonesia also have structures similar to that of a Space Agency. China has both a National Civil Administration for space activities and an industrial company for the

marketing of launchers. Since the disintegration of the USSR, certain Eastern European States (such as Poland, Romania, Hungary, the Czech Republic and Ukraine) have created autonomous structures for their space activities.[2]

The creation of such specialized structures dates back to different times and was done using various methods. It may result from a legislator's text or a simple administrative decision. It can consist on the creation of a specific department in a Ministry, or a more or less autonomous public law entity, or even a commercial company.

The financing itself may take various forms: it may include public funds as well as private ones, but in different proportions depending on the country. However, the functions and objectives of these agencies are almost identical everywhere:

- on the one hand, exercising functions of reflection and coordination, by preparing the governments' decisions within the framework of the elaboration of a national space policy, by defining the opinion of their country in the international instances, and finally by insuring the promotion of the national space industry.
- on the other hand, supervising the national space effort, either by carrying out projects themselves, or by having the industry execute them under contract, or even by favoring the creation of subsidiary organisms in charge of commercializing the space activities.
- finally, ensuring certain functions in the space field itself: the delivery of licences, the supervision of beneficiaries, the registration of space objects.

2/ The general structures

The existence of general structures does not impede the intervention, sometimes very active, of State authorities in the exercise of space activities. Their powers in these matters depend on the type of political regime of every country and it is naturally stronger in a presidential regime than in a parliamentary one. This power is, of course, rarely exercised personally or directly by the heads of State; they usually act through several Councils, Agencies or Committees, more or less consulting. We find examples of these situations in the more important space powers, such as the USA and Russia.

In the countries that did not think it necessary to create an Agency, for example Belgium, Spain, Denmark or Switzerland in Europe, or where political authorities don't intervene in this area, it is the general administrative structures, in other words the Ministries, that manage the space activities.

In any case, in all the countries, whether there is an Agency or not, the many ministerial departments (such as defence, foreign affairs,

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2 Numerous details on these organisms can be found in the work cited above in note 1.

industry, research,...) are the ones involved in space activities, and they advise their governments through several consulting Committees.

III - The Conditions of the States' Intervention in the Exercise of Space Activities

Naturally, States will try for a long time, to keep under their direct control certain activities that are either related to their sovereignty, or whose nature does not interest the private sector, either through Departments or specialized Agencies. But the State has to keep control of certain space activities which have consequences on the common interest. Finally, there is the case when space activities are carried out by several States within the framework of an international cooperation.

1/ All activities linked to the sovereignty of the State, such as National Defence or the exploration of outer space policy in general, are under the State's responsibility, and not under the private sector's.

This is evident when it comes to military activities, which have moreover played a decisive role in the development of civil activities. The same can be said about activities that are related solely to the exploration of outer space, and not the use of it, in which the political element - for example the concern for the prestige of the nation - is predominant and therefore dictates certain choices. Finally, this is also the case for scientific activities which, at the stage of fundamental research, cannot be undertaken by the private sector because they are by definition foreign to the concept of profit.

All these activities are thus financed by public funds and receive a more or less high level of priority according to the political regimes.

2/ If we consider the activities which are, because of their nature, the private sector's responsibility, we have to remember that with the exception of, until a recent date, the USSR, almost all of the States thought that it was not only inevitable but highly desirable to have a private sector with commercial purposes, besides the public sector. This has been the case both in States that believe in the principle of free enterprise and in those who only wish to maintain the presence of the private sector in areas where the intervention of the public sector is not justified anymore.

Nonetheless, the private sector has benefited from the State's support, especially in the beginning, whether it be in the way of military orders or the encouragement of research and development, often subsidized by the State.

The economic and financial importance of space investments and the consequences of space activities on the international level are the reasons for which a few countries thought it necessary to establish a political and legal framework for private commercial space activities. This was the case in the US, with the Comsat Act, the Launch Service Act and the Remote Sensing Act.

National legislations applicable to the private sector were also enacted in the United Kingdom and Sweden.

In countries where such legislation does not yet exist, the general texts, or those relating to certain specified organisms, still allow the State to fulfill its obligations under the 1967 Treaty.

3/ Finally, some programs or projects may be above the technical and financial resources of a given State. In this case, the State must turn to

international cooperation. This cooperation may be informal or it can take place within the framework of institutions created especially for this purpose.

We know that the role of international cooperation in space activities was a decisive one since the beginning, due in part to the nature of these activities. This is why it is expressly recommended in article I of the Outer Space Treaty of 1967.

This cooperation is first of all carried out within the framework of bilateral or multilateral intergovernmental relations, through the conclusion of many agreements between Space Agencies, which sometimes give way to the creation of international structures. These forms of cooperation were often used at the beginning of space activities, and we can mention the numerous agreements between the US and the USSR, or between the US and some European countries.

Cooperation in space also permitted the conclusion of agreements for the execution of joint projects, such as the French and German project Symphonie and more recently the agreements on the Space Station between the US, Europe, Canada, Japan and Russia.

But it is mostly institutional cooperation that was developed in the form of the creation of a certain number of international intergovernmental organizations. Some have a specialized character, whether it be in global telecommunications (INTELSAT, INMARSAT, INTERSPUTNIK) or regional telecommunications (EUTELSAT, ARABSAT, PALAPA), meteorology (EUMETSAT) or scientific research (INTERCOSMOS).

Others have more general powers, like the European Space Agency (ESA), which is mainly competent for science, research and development.

International cooperation has also taken place in the private sector, through the conclusion of agreements between States, industries and commercial companies, as we have seen in Russia after 1991.

Conclusion

From the preceding text, we can draw three conclusions:

The first conclusion is that the institutional framework for the exercise of space activities is characterized by a great diversity. Indeed, it goes from a mere recourse to existing institutions, to the creation of agencies exclusively devoted to space matters. The status of these agencies - when they exist - is itself extremely diversified.

The second conclusion is that few countries have enacted a specific space legislation, and this for very different reasons. Moreover, we have recognized that such legislations do not have as their sole purpose the creation of an institutional framework, but also the completion of national existing legislation in order to take into account the legal specificities of space activities.

The third conclusion is that States are and remain the actors of the exploration and use of outer space, but their role, because of the emergence of private activities, is now becoming secondary. On the other hand, States are and remain bound by the 1967 Treaty for the authorization and the supervision of space activities carried out in outer space.

ARTICLE VI OF THE 1967 SPACE TREATY REVISITED: "INTERNATIONAL RESPONSIBILITY", "NATIONAL ACTIVITIES", AND "THE APPROPRIATE STATE"

Bin Cheng*

SUMMARY

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Appendix I: International Responsibility
Appendix II: State Jurisdiction

1. Introduction

Article VI of the 1967 Space Treaty[1] provides:

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

This article raises a number of questions of interpretation, in particular, the meaning of the following expressions:

* "international responsibility",
* "national activities",
* "the appropriate State Party."

Much has already been written on Article VI and on one or more of the above terms[2] but, in view of its practical importance, it may be useful

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1 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space including the Moon and other Celestial Bodies, London, Moscow and Washington, 27 Jan. 1967, 610 UNTS 205; UKTS No. 10 (1968), Cmnd. 3519; 18 UST 2410, TIAS No. 6347.

2 *See, e.g.*, R. K. Woetzel, *Responsibility for Activities in Outer Space with Special Reference to Article IV of the Outer Space Treaty of 1967*, 25 PROC. COLLOQ. L. OUTER SPACE 159 (1982); H. L. van Traa-Engelman, *Problems of State Responsibility in International Space Law*, 26 *id.* at 139 (1983); M. Menter, *Legal Responsibilities for Outer Space Activities*, 26 *id.* at 121 (1983); B. Cheng, *Space Activities, Responsibility and Liability For, in* R. Bernhardt (ed.), ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW, Instl. 11, 299-303 (1989); K.-H. Böckstiegel, *The Terms "Appropriate State" and "Launching State" in the Space Treaties -- Indicators of State Responsibility and Liability for State and Private Space Activities*, 33 PROC. COLLOQ. L. OUTER SPACE 93 (1990); B. A. Hurwitz, *Liability for Private Commercial Activities in Outer Space*, 33 *id.* at 37 (1990); K.-H. Böckstiegel, *The Terms 'Appropriate State' and 'Launching State' in the Space Treaties -- Indicators of State Responsibility and Liability for State and Private Space Activities*, 34 *id.* at 13 (1991); G. Silverstrov, *On the Notion of the "Appropriate" State in Article VI of the Outer Space Treaty*, 34 *id.* at 326 (1991); F. G. von der Dunk, *Liability Versus Responsibility in Space Law: Misconception or Misconstruction?*, 34 *id.* at 363 (1991); B. CHENG, STUDIES IN INTERNATIONAL SPACE LAW, Chs. 23-24, at 589-640 (Oxford: Clarendon, 1997).

to re-examine the subject again in the light of general international law, especially the rules of State responsibility and State jurisdiction, subsequent treaties on space law drawn up under the auspices of the United Nations, and the purpose of Article VI itself.

2. *"International responsibility"*

2.1 Concepts of responsibility and liability clarified

Responsibility[3] means essentially answerability, answerability for one's acts and omissions, for their being in conformity with whichever system of norms, whether moral, legal, religious, political or any other, which may be applicable, as well as answerability for their consequences, whether beneficial or injurious. In law, it applies in particular to a person's answerability for compliance with his or her legal duties, and for any breaches thereof. Breaches of one's civil legal duties constitute civil wrongs or civil delicts, and involve an obligation to make integral reparation for any damage caused: restitutio in integrum.[4] Responsibility and breaches of obligation do not necessarily involve the payment of compensation, especially when no damage has been caused. This can occur, for instance, under Article VI of the 1967 Space Treaty, if a contracting State fails to subject its non-governmental entities carrying on space activities to authorization and continuing supervision, and no damage has occurred to any of the other contracting States or their nationals. Reparation can take many forms, such as for example assurances of non-repetition.[5] The other States may well just ask for such an assurance. In fact, if no damage or any other adverse effect has occurred to any of the other contracting Parties or their nationals, the other States may not even take the trouble of raising the issue, unless they see some national interests in doing so.

The term liability is often used specifically to denote the obligation to bear the consequences of a breach of a legal duty, in

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3 On the concept of responsibility, see B. CHENG, GENERAL PRINCIPLES OF LAW AS APPLIED BY INTERNATIONAL COURTS AND TRIBUNALS, Part III: General Principles of Law in the Concept of Responsibility, at 163-253 (Cambridge: Grotius, 1987); I. BROWNLIE, STATE RESPONSIBILITY (Oxford: Clarendon, 1983); International Law Commission's draft articles on State Responsibility, *in* U.N., *Report of the International Law Commission on the work of its forty-eighth session, 6 May-26 July 1996,* GAOR, 51st Sess. Supp. No. 10, U.N. Doc. A/51/10, at 125-170 (1996).

4 Permanent Court of International Justice (PCIJ): *Chorzów Factory* case (Merits), Series A, No. 17, at 29, and particularly 47 (1928) where the Court stated: "reparation must, as far as possible, wipe out all the consequences of the illegal act and re-establish the situation which would, in all probability, have existed if that act had not been committed"; see CHENG, *supra* note 3, Ch. 9: The Principle of Integral Reparation, at 233-240.

5 *Cf., e.g.,* International Law Commission's draft articles on State Responsibility, *supra* note 3, Art. 46, at 143.

particular the obligation to make reparation for any damage caused, especially in the form of monetary payment; for, as Grotius says, "money is the common measure of valuable things".[6] The term is often used more generally to denote a legal obligation to repair a loss irrespective of any culpability, especially in cases of assumed or imposed liability.[7] However, both terms responsibility and liability have derivative meanings, where they can assume slightly different connotations. Although responsibility is a broader concept than liability, the two terms are sometimes used interchangeably. In fact, in French and many other languages, no separate term is used for liability. The English text of the 1967 Space Treaty distinguishes between responsibility, which is dealt with in its Article VI, and liability, which is dealt with in Article VII. The latter provides:

> Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in airspace or in outer space, including the moon and other celestial bodies.

This means simply that each of the States Parties in question is internationally subject to a legal obligation to make reparation to, particularly to compensate, the victim State for the damage caused by the said space object, however the damage may have been caused. The Chinese, French, Russian and Spanish texts do not make such a distinction, and use the same term "responsible" or its equivalent as in Article VI.

In principle, a person is only responsible for his or her own acts -- the principle of individual responsibility.[8] However, a person may voluntarily agree to assume legal responsibility for the consequences of acts which are not unlawful as such, or are fortuitous events, or the acts, either lawful or unlawful, of others. Likewise, he or she may have such responsibility imposed on him or her by law, responsibility which would carry in turn liability. The same applies to States. Such responsibilities may respectively be called "assumed responsibility" and "imposed responsibility"[9], with corresponding "assumed liability" and "imposed

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6 DE JURE BELLI AC PACIS, II.17.xxii.

7 On "assumed" or "imposed" responsibility and liability, see further *infra*.

8 *See* CHENG, *supra* note 3, Ch. 7: The Principle of Individual Responsibility, at 108-17.

9 *See* CHENG, *supra* note 3, Ch. 6.A: Responsibility as a Juridical Concept, at 163-70. In fact, the problem of international liability for injurious consequences arising out of acts not prohibited by international law reduces itself to one of either assumed or imposed liability. In international law, it is a question of what liability in specific cases is either imposed by general international law or treaty or assumed by the subjects of international law. In reality, there can be no legal liability without a pre-existing legal obligation, whether the obligation is based on

liability" flowing from them. The circumstances that would trigger a person's responsibility and liability to make reparation would vary according to the terms of the contract, treaty or legislation. Liability can be made dependent on fault or irrespective of fault, and it can be subject to specific exceptions or no exception whatsoever.

Now, it is perfectly feasible for such assumed or imposed liability or the obligation to make reparation to be established by agreement or by legislation independently of the full concept of responsibility, even though the term responsibility may also be used. In fact Article VII of the Space Treaty can be said to be a typical example of liability assumed by consent. The contracting States voluntarily agree that all the four categories of States involved in the launching of a space object will incur the obligation (liability) to make reparation for the damage caused by such object or its component parts, irrespective of responsibility in the strict sense of the term, *i.e.*, irrespective of whether any of them has committed a breach of a rule of international law or a treaty obligation, or been the actual cause of the damage.

2.2 Direct and indirect state responsibility distinguished

International law distinguishes between direct State responsibility and the so-called indirect State responsibility.[10] Direct responsibility refers to a State's responsibility for its own acts, that is to say, acts of its officials acting in their official capacity, which are consequently imputable to it as its own acts.

The so-called indirect State responsibility refers to the responsibility of a State to protect foreign States and their nationals against violations of their rights committed by persons within its effective jurisdiction[10a], particularly by those whose acts are not imputable to it. In principle, even within a State's own territory, the State is not directly responsible for injuries caused to foreign States or their nationals by the

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the concept of responsibility for an internationally wrongful act, or imposed by general international law, or assumed by consent.

10 Cf. US-Mexican General Claims Commission (1923): *B E Chattin* case (1927), Opinions of Commissioners 422, at 425-426 (1927): ". . . a citizen of either country having been wrongfully damaged either by a private individual or by an executive official, the judicial authorities had failed to take proper steps against the person or persons who caused the loss or damage. A government liability proceeding from such a source is usually called 'indirect liability', though considered in connection with the alleged delinquency of the government itself, it is quite as direct as its liability for any other act of its officials . . . Distinct from this so-called indirect governmental liability is the *direct responsibility* incurred on account of acts of the government itself, or its officials, unconnected with any previous wrongful act of a citizen." *See* further CHENG, *supra* note 3, Ch. 6, § C: Imputability in International Law, at 180-207, and Ch. 7: The Principle of Individual Responsibility, at 208-217.

10a See *infra* note 13.

acts of private persons, whether nationals or non-nationals, and whatever their number, from single individuals through mobs and rioters to whole revolutionary forces for as long as they remain unsuccessful revolutionaries.[11] Their acts are not imputable to the State.[12] However, a State owes at all times a duty towards other States to use due diligence in accordance with the prevailing international standard to prevent, suppress and repress any violation of their rights, including those of their nationals, taking place in areas subject to its effective jurisdiction,[13] and by whomsoever committed, especially those by non-officials, since those by officials would already involve direct State responsibility. Failure by a State to fulfil this duty is said to involve its indirect responsibility, which is quite distinct from the initial wrong.[14] However, since the international wrong consists in reality in governmental officers failing to fulfil the State's international duty of protection and not in the initial acts of the individuals, the so-called indirect responsibility in the final analysis resolves itself into a case of direct State responsibility.[15]

3. State responsibility under Article VI of the Space Treaty

3.1 Specific responsibilities assumed

Contracting States to the Space Treaty, under its Article VI, assume international responsibility for complying with the following duties.

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11 On governmental functions and activities carried out by officials not affected by revolutionary changes in the higher echelons of the body politic in time of revolution, see U.S.-Mexican General Claims Commission: *Hopkins* case (1926), OPINIONS OF COMMISSIONERS 42, at 44 (1927); CHENG, *supra* note 3, at 191-192. On the position of successful revolutions, see *Aguilar-Amory and Royal Bank of Canada (Tinoco)* cases, 1 R.I.A.A. 369; CHENG, *supra* note 3, at 188-190.

12 On imputability, cf. an interesting case where a State official committed two acts of an almost identical nature, one while acting in his official capacity, albeit abusing his official power, the other while off-duty and purely as a private individual. The first act was imputable to the State, the second not. See US-Mexican General Claims Commission (1923), *Mállen* case, OPINIONS OF COMMISSIONERS 254 (1927); CHENG, *supra* note 3, at 200-201.

13 On the notion of effective jurisdiction, see *infra* § 4.2.3: Responsibility Related to Competence. Consult also Appendix II on State Jurisdiction annexed hereto.

14 *See, e.g.,* US-Mexican General Claims Commission (1923), *Janes* case, OPINIONS OF COMMISSIONERS 108 (1927). The Janes case has been much discussed and is sometimes criticized but is, in my opinion, perfectly sound and logical.

15 *See Chattin* case, *supra* note 10. Consult Appendix I on International Responsibility annexed hereto.

3.1.1 State activities in outer space to comply with Treaty

Under Article VI, the contracting States are not only reminded that they have to comply with the obligations they have assumed under the Treaty, but also to assure that their space activities in outer space, including the moon and other celestial bodies, are to be "carried out in conformity with the provisions set forth in the present Treaty". In respect of a State's own activities, the word "assure" probably adds nothing to its duty to observe its treaty obligations, though it does perhaps emphasize that States Parties should take special care to ensure strict observance.

3.1.2 Duty to assure that non-governmental national space activities comply with Treaty

The word "assure" acquires greater significance when applied to the States Parties' duty in respect of non-governmental national activities in outer space, including the moon and other celestial bodies. States frequently conclude treaties designed to control not only their own activities, but also those of individuals under their jurisdiction. Examples of such treaties include those on fishing, and on the protection of endangered species of flora or fauna, or of the environment. There would obviously be a loophole in the treaty if it does not include an express provision relating to actions by non-governmental entities under a State's effective jurisdiction, which is by no means limited to a State's territorial jurisdiction, as, for example, in the case of fishing on the high seas. However, there are two distinctive features in Article VI compared with the generality of such international treaties. First, how the contracting States ensure compliance by those under their authority with their international obligations is usually left to the States themselves. Article VI, in contrast, prescribes specifically the requirement of authorization and continuing supervision. Secondly, what is radically different in Article VI is, as we shall see in a moment, the assumption of international responsibility by the contracting States for "assuring" such compliance. The term "assuring" in the circumstances assumes an air of guarantee by the State of such compliance.

3.1.3 Duty to subject non-governmental space activities to authorization and continuing supervision

As mentioned above, Article VI specifically provides that "activities of non-governmental entities . . . shall require authorization and continuing supervision by the appropriate State Party . . .". However, it should be made clear that this requirement does not necessarily dispense with other measures which the contracting Parties may in the circumstances need to take in order to comply with its more general obligation to assure that such activities are carried on in conformity with the provisions of the Treaty. Nevertheless, failure to subject non-governmental national space activities to authorization and continuing

supervision would constitute an independent and separate cause of responsibility. Moreover, although the article speaks of authorization and continuing supervision "by the appropriate State", this does not mean that national States or space activities engaged in by their non-governmental entities can avoid their responsibility under Article VI simply by alleging that some other State Party is more appropriate to provide such authorization and continuing supervision. Although the question is still controversial, I submit, as we shall see in greater detail later, that every State Party concerned is an appropriate State, and while it is possible, when more than one State is involved, to arrange for one of them to carry out this function, it remains the responsibility of every contracting Party involved to see that it is in fact carried out by an appropriate State Party. Moreover, responsibility can attach to the choosing of an "inappropriate" State Party.

3.1.4 Assumption of direct State responsibility for non-governmental space activities

Although it is perhaps not absolutely impossible to interpret the international responsibility assumed by the States Parties to the 1967 Space Treaty in its Article VI for non-governmental space activities as consisting in no more than what is expressly laid down in the latter part of the article, namely: (i) assuring compliance with the terms of the Treaty, and (ii) subjecting such activities to authorization and continuing supervision, such an interpretation would run counter to the text to Article VI. The first sentence of Article VI has two parts, two separate clauses, linked by the conjunction "and". Such an interpretation would dispense with the first part of the sentence altogether. It would also be contrary to the history of the treaty.

In the negotiations leading to the conclusion of the Space Treaty, the Soviet Union had wanted to restrict space activities to States only, excluding private entities, whilst the United States wanted them to be open to private entities.[16] Article VI represents a compromise between these two positions. The result is that non-governmental national space activities are assimilated to governmental space activities.[17] This assimilation and consequently the assumption by the contracting States of direct States responsibility for non-governmental space activities is a fundamental innovation which the Treaty has introduced into international law.

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16 *See* W. B. Wirin, *Practical Implications of Launching State-Appropriate State Definitions*, 37 PROC. COLLOQ. L. OUTER SPACE 109, at 110 (1994).

17 *See* B. CHENG, STUDIES IN INTERNATIONAL SPACE LAW, Ch. 9: The Space Treaty 215, at 237 (Oxford: Clarendon, 1997).

3.2 Nature of international responsibility in respect of non-governmental national space activities

What is the effect of this assimilation and the nature of this responsibility under Article VI? Mention has already been made of the fact that in international law and relations, it is very common for States to enter international treaties which involve the contracting Parties in a duty to ensure compliance with the terms of the treaty by nationals or individuals within the Parties' jurisdiction. However, the duty in such cases is akin to that of States' indirect responsibility for acts of individuals within its jurisdiction violative of the rights of foreign States or their nationals.[18] Thus a State is required only to use due diligence in preventing, suppressing, and, by prosecution and punishment, repressing any such violations before, during and after their occurrence. A State does not become a guarantor of the actions of individuals not acting on behalf of the State, and its duty in complying its international obligation does not go beyond the bounds of possibility.[19]

This is where Article VI is not merely innovatory. It is almost revolutionary. Under it, it appears that States have assumed direct State responsibility for non-governmental national space activities. This means that every thing that is done by such non-governmental entities is deemed to be an act imputable to the State as if it were its own act, for which it bears directly responsibility. Thus a breach of whatever provision of the Space Treaty by such a non-governmental entity involves immediately the State's direct responsibility, as if it were a breach by the State itself. State responsibility occurs the moment the breach is committed, and not when the State is seen to have failed in its duty to prevent, suppress or repress such a breach. The State is immediately answerable in law internationally for the breach, and, if damage occurred, immediately liable to make integral reparation.[20] From this point of view, it is interesting to

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18 *See supra* § 2.2: Direct and indirect State responsibility distinguished.

19 *See* CHENG, *supra* note 3, at 223; *cf.* Art. 31 of the International Law Commission draft articles on State Responsibility, *supra* note 3.

20 The contracting States' responsibility under Art. VI of the Treaty and their liability under Art. VII are not in essence coincidental. The former relates primarily to compliance with the Treaty provisions and rules of international law (see further *infra* § 3.3); the latter is, as mentioned above, irrespective of the cause of the damage. They can be coincidental in case the damage results specifically from a breach of a Treaty provision or a rule of international law by the State Party held liable. Even in such a case, it is to be remembered that both provisions intend merely to make the victim whole again, neither poorer nor richer, and therefore there will be no duplicate reparation. *See* CHENG, *supra* note 3: Ch. 9: The Principle of Integral Reparation, at 233-240. Moreover, Art. VII does not duplicate Art. VI because even in such a case, Art. VII imposes liability on several other States Parties irrespective of responsibility in order to ensure that the victim will be fully compensated. Cf. some of the fears of F. G. von der Dunk,

find that under the 1972 Liability Convention[21], the local remedies rule does not apply to presentation of claims for damage caused by space objects.[22] Article XI(1) of the Liability Convention provides:

> Presentation of a claim to a launching State for compensation for damage under this Convention shall not require the prior exhaustion of any local remedies which may be available to a claimant State or to natural or juridical persons it represents.

3.3 Extent of contracting States' assumption of international responsibility

Now, the question is how far does the Treaty intend this assimilation of non-governmental national space activities to governmental activities and consequently the contracting States' direct responsibility for them to go. Various possibilities exist.

3.3.1 International responsibility in respect of rules and obligations of international law

Article VI has made it clear that the contracting States are internationally responsible for "assuring" that non-governmental national entities carry out their space activities in accordance with the 1967 Space Treaty. The use of the expression "assuring" instead of merely "ensuring" does suggest an intention to make the States Parties guarantors of such compliance. In addition, although non-governmental entities are not subjects of international law and consequently lack the legal capacity to commit breaches of international law, on account of Article III of the 1967 Space Treaty which provides that "States Parties to the Treaty shall carry on activities in the exploration and use of outer space . . . in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding", the contracting Parties are responsible for assuring that non-governmental national space activities are carried on accordingly.

Furthermore, since compliance with treaty obligations is a fundamental principle of international law, it would appear that through Article III of the Treaty, contracting States are also responsible for assuring that all non-governmental national activities are conducted in accordance with not only relevant rules of general international law, but

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Liability Versus Responsibility in Space Law. Misconception or Misconstruction?, 34 PROC. COLLOQ. L. OUTER SPACE 363 (1991).

21 Convention on International Liability for Damage Caused by Space Objects, London, Moscow and Washington, 29 March 1972, 961 UNTS 187; UKTS No. 16 (1974), Cmnd. 5551; 24 UST 2389; TIAS 7762.

22 *See* CHENG, *supra* note 3, Ch. 11: The 1972 Liability Convention, § XD: Local remedies, at 345-346; on the role of the local remedies rule, *see* CHENG, *supra* note 3, at 177-180..

also with all treaty obligations incumbent upon them, including naturally all those in treaties relating specifically to space and space activities.

3.3.2 Compliance with private law?

More difficult is the question whether the international responsibility of the States Parties extends to non-governmental entities' failures to comply with rules of private law, including contractual obligations, such as for example those relating to intellectual or industrial property.[23] Is such responsibility precluded by the qualification that the States Parties have assumed only international responsibility, and therefore not responsibility under municipal law? Or does the qualification international, on the contrary, only makes it clear that the contracting States are responsible directly to one another in respect of their non-governmental activities, under both international law and municipal law? And, if the State is responsible under Article VI, does this responsibility arise the moment the breach occurs under municipal law, or only after the exhaustion of local remedies not only against the private entity concerned, but also against the State allegedly responsible? One may wonder whether Article VI intends to go as far as making the contracting States directly responsible for all breaches of private law and private law obligations by their non-governmental entities. However, the wording does not preclude this, and this is a point which is worthy of attention in any review of the 1967 Space Treaty, bearing in mind particularly the phenomenal development in private space activities since the beginning of the space age.

3.3.3. Compliance with criminal law?

One can go a step further and ask whether what has just been said applies equally to breaches of criminal law. What happens, for instance, if an astronaut of a non-governmental moon station were to assault an astronaut from another moon station belonging to another contracting State, or a privately operated moon station were to sabotage the moon station of another State Party? Is the State only responsible for any failure to deal with the offenders in accordance with law and with applicable international standards, which would be the ordinary position under

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23 Thus one of the two issues which divided those which were for and those, including in particular the United States, which were against the 10 Dec. 1982 UNGA Res. 37/92 on Principles Governing the Use by States of Artificial Satellites for International Direct Television Broadcasting (U.N. Doc. A/RES/37/92, 22 INT'L LEGAL MATERIALS 451 (1983)) was precisely whether States should be responsible for the contents of broadcasts (*see* UN Doc. A/SPC/37/SR.34, at 10 (22 Nov. 1982); CHENG, *supra* note 17, at 154 n. 14). The resolution was adopted by a majority vote, and not by consensus, the latter being the normal procedure in the U.N. Committee on the Peaceful Uses of Outer Space.

international law as cases of indirect State responsibility[24], or has Article VI the effect of transforming all the cases of what would otherwise be cases of indirect State responsibility into ones of direct State responsibility? It is quite possible that Article VI may have this effect, in the sense that even any criminal activities in outer space committed by any non-governmental national entities would be considered as having been committed by agents and servants of the State, hence imputable to the State and involving that State's direct responsibility the moment such offences were committed.

3.4 Residual indirect responsibility for non-governmental space activities

To the extent to which Article VI of the Space Treaty can be said not to have the effect of rendering the contracting States directly responsible vis-à-vis one another for breaches of rules of municipal law, whether civil or criminal, by their non-governmental entities engaged in national space activities, and this proposition is by no means certain, there would still remain for them, in such cases, their indirect responsibility under general international law for acts of private entities under their effective jurisdiction, especially within their national territory. They would thus still have a duty to protect foreign States and foreign nationals, as well as their property, in accordance with the prevailing international standard in the treatment of aliens[25], and also to ensure that their territories are not knowingly to them used in such a way as to cause harm to another State[26].

In addition to this duty of general international law, it may be worthwhile pointing out that, under Article VI, the contracting States have an express duty to keep non-governmental national space activities under "continuing supervision". It may well be argued that the diligence due in such cases entails extra vigilance, the lack of which involves the State's direct responsibility.

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24 *Cf., e.g., Janes* case (1926), *supra* note 14, esp. at 115. *See also* CHENG, *supra* note 3, at 175-176. The Court spoke of "every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States."

25 *Cf.* B. Cheng, *The Contribution of International Courts and Tribunals to the Protection of Human Rights under International Customary Law, in* A. Eide and A. Schou (eds.): INTERNATIONAL PROTECTION OF HUMAN RIGHTS 167-175 (Nobel Symposium 7. Stockholm: Almqvist & Wiksell, 1967).

26 *Trail Smelter* case (1941) 3 R.I.A.A. 1911, at 1963: "A State owes at all times a duty to protect other States against injurious acts by individuals from within its jurisdiction"; ICJ: *Corfu Channel* case (Merits) (1949), 1949 I.C.J.4, at 22: The Court spoke of "every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States."

3.5 Temporal, cosmographical and material scope of States Parties' responsibility

States Parties are responsible under Article VI for "activities in outer space, including the moon and other celestial bodies". Article VII of the Space Treaty on the international liability of the Parties for damage caused by their space objects speaks of such damage to third parties "on the Earth, in airspace or in outer space". Their liability, therefore, clearly covers damage caused by the space object both prior to its entering into outer space, and after its re-entry to Earth. This would seem to suggest that the notion of "activities in outer space" in relation to contracting States' responsibility is a generic one and not necessarily restricted geographically or rather cosmographically to only what occurs in outer space, including the moon and other celestial bodies. This would mean that the international responsibility of States Parties under Article VI would include all the concomitant activities associated with what actually occurs in outer space, both before and after. Launching itself would seem indubitably included. Does it extend also to the effects or events which follow what actually occurs in outer space, such as, for example, the terms and conditions set by a private remote sensing entity for the distribution of its primary or processed data? If the UN General Assembly's resolution on Principles Relating to Remote Sensing of the Earth from Outer Space [27] is any guide, the answer appears to be in the affirmative. Thus Principle I clearly includes "activities in processing, interpreting and disseminating the processed data" in the definition of "remote sensing activities", whilst Principle XIV expressly recalls Article VI of the 1967 Space Treaty. It is true that the language of Principle XIV is somewhat ambiguous when it speaks of "States operating remote sensing satellites", and then goes on to say "irrespective of whether such activities are carried out by governmental or non-governmental entities . . .". It is arguable that the phrase "States operating remote sensing satellites" means solely satellites operated by the State whether directly or through non-governmental entities, but it is more likely that the word "State" has the same connotation as "national" in the phrase "national activities" in Article VI of the Space Treaty. In other words, the phrase should be understood as meaning: "States whose governmental agencies or non-governmental entities operate remote sensing satellites". If so, this would confirm that Principle XIV merely reaffirms Article VI of the Space Treaty, and indicate that the responsibility of the States Parties extends to at least the immediate effects or results of activities in space even when such effects or results take place on Earth. In other words, Article VI contains no a priori temporal, cosmographical or material limits, as long as the subject-matter is "national activities in outer space, including the moon and other celestial bodies".

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27 U.N.G.A. Res. 41/65 of 3 Dec. 1986.

4. The meaning of "national activities"

Equally open to diverse interpretation is the phrase "national activities" in Article VI. Just as with the word "State" in the phrase "States operating remote sensing satellites" in Principle XIV of the remote sensing resolution that we have just discussed, "national" here cannot mean solely official State space activities, whether operated by governmental agencies or through non-governmental entities. Yet, without being confined to State activities, the phrase "national activities" must refer to activities that have some special connection with the nation, alias the State, whether they are carried on, as the article itself clearly says, by the State itself through governmental agencies or by non-governmental entities for their own account, in order to qualify as "national" activities.

4.1 Government agencies

National activities obviously include those by the State itself through its own agencies. The point to be made is that this is without geographical or cosmographical limits. In other words, State responsibility would attach wherever the activities may have originated from, or may be taking, or may have taken place, as long as they qualify as "activities in outer space, including the moon and other celestial bodies" in the sense described above. Article XIII of the Space Treaty deals with space activities carried on "jointly with other States, including cases where they are carried on within the framework of international intergovernmental organizations." A State would obviously be responsible for a joint launching with other States which takes place elsewhere than within its own territory.

4.2 Non-governmental entities

The difficult question is the activities of which non-governmental entities constitute "national activities". Several possibilities exist.

4.2.1 State of registry?

Article VIII of the Space Treaty envisages that space objects are to be registered with States, which "shall retain jurisdiction and control over such object[s]". When such space objects are registered with a State by a non-governmental entity, it seems that the activities of that space object in space should be considered as that State's "national activities", for which that State becomes internationally responsible under Article VI. However, the Space Treaty makes no provision for the registration of space objects. This criterion, while in itself valid, can at best only be one of the connecting factors; but not the sole connecting factor; for it fails to cover

some of the most obvious cases.[28] Thus no State would be responsible simply because the non-governmental entity has not registered its space object with any State, or not yet registered the object with any State.

After all, it was not until the subsequent conclusion of the 1975 Registration Convention[29] that contracting States to that Treaty bind themselves, when they fall under the definition of launching States under Article I of the Convention, to register objects launched into earth orbit or beyond. According to this article, in any given launching of a space object, there can be four launching States or four groups of launching States, namely,

* the State which launches a space object,
* the State which procures the launching,
* the State from whose territory a space object is launched, and
* the State from whose facility a space object is launched.[30]

The Registration Convention makes no direct reference to space objects launched by or on behalf of non-governmental entities having to be registered. However, for parties to the Space Treaty, States whose non-governmental entities launch, or procure the launching of a space object, or own and operate a facility from which a space object is launched have, under Article VI, assumed direct responsibility for such activities, with the result that they are under a duty either directly to register the space object, or to make sure that the space object is registered by the non-governmental entity. The problem, however, is that in many a space activity, a number of States can be involved, either directly or through their non-governmental entities.

Article II(2) of the Registration Convention provides that "[w]here there are two or more launching States in respect of any such space object, they shall jointly determine which one of them shall register the object ..." If international responsibility depends solely on registration, there are two obvious drawbacks. First, since the space object needs to be registered only in one of the launching States, the other launching States, not being the States of registry, would not be internationally responsible for the activities of the space object, which may well have been launched by, or belong to, or is operated by their non-governmental entities. This would obviously not be what Article VI has in mind. Secondly, Article II(2) can

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28 *Cf.* B. Cheng, *Space Objects and Their Various Connecting Factors, in* Gabriel Lafferranderie and Daphné Crowther (eds.), OUTLOOK ON SPACE LAW OVER THE NEXT 30 YEARS 203-215 (The Hague: Kluwer, 1997).

29 Convention on Registration of Objects Launched into Outer Space, New York, 14 Jan. 1975, 1023 UNTS 15; UKTS No. 70 (1978), Cmnd. 7271; 28 UST 695; TIAS 8480.

30 Wirin, *supra* note 16 at 111, conflates territory with facility, and reduces the number of categories to three. But territory and facility can belong to two different States. A privately owned and operated launching port in Australia could use, for instance, Russian State-owned and operated facilities. In that case, both Australia and Russia would be launching States.

easily enable the States concerned to create a "registry of convenience" in some half-bankrupt State and evade their responsibility.[31] This is a further reason why, whilst the State of registry should be among the States bearing international responsibility under Article VI for the space activities of a non-governmental entity, registration cannot be the only criterion.

4.2 State of the nationality of the persons involved?

Some writers have, in reliance on Article IX of the Space Treaty, which refers to "activity or experiment planned by it *or its nationals* in outer space" (italics added), taken the view that a contracting Party to the 1967 Space Treaty is internationally responsible under Article VI for the space activities of all its nationals, whether individual or corporate, and must consequently subject them -- and them alone -- to authorization and continuing supervision, wherever they may be, even outside the territorial jurisdiction of the State. The United Kingdom in its Outer Space Act[32] appears to be of the same opinion in limiting its application to United Kingdom nationals, whether individual or corporate. However, this criterion again has its shortcomings. First, the application of the term "national activities" to nationals wherever they may be without qualification, even when they are, for example, in some foreign State, may mean that a State is made to assume responsibility over persons and activities that are beyond its effective jurisdiction. Secondly, whilst the nationality of the participants in a space activity may well bring the activity within the concept of "national activity", to rely on it alone seems patently inadequate. It leaves out, for instance, space activities by non-nationals within a State's territory, or on board, or from on board, ships or aircraft of its nationality, which it could not have been the intention of the Space Treaty to exclude from those for which the contracting States have pledged their international responsibility.[33]

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31 *See* CHENG, *supra* note 17, Ch. 24: International Responsibility and Liability of States for National Activities in Outer Space, Especially by Non-Governmental Entities, § II.H: Jurisdiction under the 1975 Registration Convention, at 626-7.

32 1986, c. 38, s. 2. *See* further B. Cheng, *Whose Parking Space is It Anyway?* THE TIMES HIGHER EDUCATION SUPP. 14, cols. 3-5 (30 May 1986).

33 *See e.g.* US Commercial Space Launch Act, 1984, as amended in 1988, 49 USCS App. § 2605. On the Russian and South Africa space laws, Law of the Russian Federation on Space Activities, and Space Affairs Act respectively, both of 1993, see F. G. von der Dunk, *Two New National Space Laws: Russia and South Africa*, 38 COLLOQ. L. OUTER SPACE 251-261, §§ 2.4 and 2.5: Responsibility and Liability, at 253-254 (1995).

4.2.3 Responsibility related to competence.

It is submitted that the proper interpretation of what constitutes "national activities" in Article VI should have regard to the function and purpose of the article itself. The intention is obviously to ensure that all space activities wheresoever carried on, whether by governmental agencies or by non-governmental entities, shall become the direct responsibility of one State or another. From this point of view, it is to be borne in mind that responsibility is normally related to the legal powers or competence of the person or party concerned. Otherwise, a person could be asked to do or not to do certain things, which are not within his or her legal power or competence to do or not to do. It would be asking the impossible.

Now, under Article VI, what is intended no doubt is that every State Party should be directly responsibility for any space activity that is within its legal power or competence to control, whether by governmental agencies or by non-governmental entities. It is interesting, in this connection, to note that in Article 14(1) of the Moon Treaty[34], which is a provision parallel to Article VI of the Space Treaty, in its second sentence, specifically refers to non-governmental entities under the "jurisdiction" of the States Parties.[35]

According to my reckoning, we know that international law recognises that a State enjoys three types of jurisdiction: (i) territorial over its own territory, (ii) quasi-territorial over ships and aircraft of its nationality, and spacecraft of its registry[36], and (iii) personal over persons, whether individual or corporate, of its nationality.[37] Quasi-territorial and personal jurisdictions would follow those subject to these jurisdictions wherever they may be, even in foreign territories or in outer space. However, what is not generally realized, State jurisdiction in

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34 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, New York, 18 Dec. 1979, 1363 UNTS 3; 18 INT'L LEGAL MATERIALS 1434 (1979); see CHENG, *supra* note 17, Ch. 12: The Moon Treeaty.

35 Quoted *infra* § 5. Cf. also the 1993 Law of the Russian Federation on Space Activities which applies to "the space activities of organizations and citizens of the Russian Federation or the space activities of foreign organizations and citizens under the *jurisdiction* of the Russian Federation" (Art. 9(2); italics added), as cited in von der Dunk, *supra* note 33, at 253.

36 F. G. von der Dunk is not quite correct when he says that the reference to Russian jurisdiction in Art. 9(2) of the Russian space law "can logically only mean 'territorial jurisdiction'" (*supra* note 33, at 253), as foreign organizations and citizens on board Russian ships, aircraft and spacecraft would also be "under the jurisdiction of the Russian Federation", the Federation's quasi-territorial jurisdiction.

37 On the subject of State jurisdiction, see CHENG, *supra* note 17, Ch. 5: The Extraterrestrial Application of International Law, esp. §§ II.A and II.B. on respectively Types and Elements of State Jurisdiction, at 72-80; and Appendix II on State Jurisdiction annexed hereto.

international law is also divisible into two separate elements: jurisfaction and jurisaction. Jurisfaction is a normative power, the internationally recognized competence of a State to enact laws, make judicial pronouncements and adopt other decisions with legally binding force. Jurisaction is the internationally recognized competence of a State concretely to set up machinery to make, implement and enforce, and physically to make, implement and enforce laws, judicial pronouncements and other legally binding decisions; in other words, physically to exercise the functions of a State.

Whereas, in most cases, all three types of a State's jurisfaction are without territorial limits and there is no order of precedence among different States' concurrent jurisfactions, there is a clear-cut hierarchy between the different types of jurisactions. Territorial jurisaction overrides both quasi-territorial and personal jurisactions, whilst quasi-territorial jurisaction overrides personal jurisaction. Thus if Alex. a notorious terrorist and a national of State A is believed to be travelling on board a ship flying the flag of State B, and the ship has docked in State C, all three States have not only jurisfaction over him, and may issue warrants for his arrest but also jurisaction. However, while the ship is in State C, State C's territorial jurisaction overrides the quasi-territorial jurisaction of State B and the personal jurisaction of State A, and it alone is in international law entitled to arrest Alex, or to put him on trial. Once the ship has left State C and is on the high seas, State B's quasi-territorial jurisaction comes to its own. In turn it overrides that of State A, and State B alone is entitled to arrest Alex or to put him on trial. And if Alex finally finds himself on a desert island belonging to no State, State A's personal jurisaction becomes operative, and State A is quite free to arrest him there and even to set up a court to try him. Effective jurisdiction is when and where a State's jurisaction is not overridden by that of any other State, and may actually be exercised.

It is submitted that, for the purpose of Article VI of the Space Treaty, whenever and wherever a space activity is being carried on by a governmental agency or a non-governmental entity that is within a State's jurisaction, whether territorial, quasi-territorial or personal, that activity qualifies as that State's "national activity". In principle, therefore, "national activity" would include the following, although insofar as responsibility under Article VI is concerned, responsibility is subject to the persons performing such activity being within the State's effective jurisdiction, or capable of being brought within its effective jurisdiction through extradition or international comity:

(i) Space activities carried on by anyone, including governmental agencies, national or foreign, and non-governmental entities, whether individual or corporate, national or foreign, including stateless individuals, from or within its territory, and consequently under its overriding territorial jurisaction;

(ii) Space activities carried on by anyone, including governmental agencies, national or foreign, and non-governmental entities, whether individual or corporate, national or foreign, including stateless

individuals, from, on board or by means of ships and aircraft of a State's nationality, or spacecraft of its registration, wherever such ships, aircraft, or spacecraft may be at the time, since such ships, aircraft, and spacecraft remain at all times subject to the quasi-territorial jurisaction of the State[38];

(iii) Space activities carried on by a State's nationals, whether individual or corporate, wherever they may be, since they remain at all times subject to the personal jurisaction of the State.

Since territorial jurisaction overrides both quasi-territorial and personal jurisactions, the territorial State in (i) will in principle always enjoy effective jurisdiction, and will consequently be always responsible for all such activities under Article VI. Insofar as situations (ii) and (iii) are concerned, the quasi-territorial jurisaction of the flag-State in situation (ii) may be overridden by the territorial jurisaction of another State if the craft or the persons involved happen to be in that State, whilst the personal jurisaction of the national State in situation (iii) may be overridden by either the territorial jurisaction of the territorial State, or the quasi-territorial jurisaction of the flag-State of the craft involved, if the persons involved, whether individual or corporate, happen to be in the territory of another State or on the craft of another State. In such cases, the State concerned remains in principle responsible under Article VI, and it will be up to it to use all the powers it has under international law and all the means that may be available to it to try, in a genuine effort and in good faith, to bring those concerned back under its own effective jurisaction in order to assure that the national space activities with which they are involved are carried on in conformity with Article VI, unless the other State is effectively doing so. Usual methods would be extradition or, thanks to friendly international co-operation in criminal matters, upon request, expulsion of the individuals concerned by the State they are in to the home State or the State where they are wanted. Where genuine efforts in good faith fail, international law does not require States to do the impossible. *Ad impossibile nemo tenetur,* as it is said, and the State would not be held responsible.[39] However, the impossibility here must not be self-made or self-induced, and refers only to impossibility under international law, or recognized by international law. As the Tribunal in the *Alabama* Arbitration (1872) held, this rule does not apply to alleged

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38 There is a slight difference in the position of spacecraft compared with that of ships and aircraft, because the various UN treaties on space eschew the concept of nationality for spacecraft, and the 1967 Space Treaty in its Art. VIII lays down specific rules on jurisdiction which may or may not be intended to coincide totally with those applicable to ships and aircraft. However, because of the confusion and complications which are likely to arise if they do not, in practice they might well be interpreted and applied as if they do. It seems desirable that space law should follow the same rules as maritime and air law on the subject, and simply confer nationality on spacecraft. See further CHENG, *supra* note 17, Ch. 17: Nationality for Spacecraft?, at 475-491, esp. 486-491.

39 See CHENG, *supra* note 3, Ch. 8: The Principle of Fault, at 218-232.

insufficiency of governmental powers under a State's own laws.[40] A fortiori, this precludes States from conniving in their nationals operating space activities under so-to-speak flags of convenience in foreign havens.

5. The "appropriate State Party"

Article VI specifically lays down that non-governmental space activities "shall require authorization and continuing supervision by the appropriate State Party . . ." On account of the use of the definite article "the" when referring to the "appropriate State", and the fact that "appropriate State" is in the singular, there has been much discussion as to whether there must always be only a single "appropriate State", or there can be a number of States carrying out the function of authorization and continuing supervision. If we look at the second sentence of Article 14(1) of the Moon Treaty, we find that it says:

> States Parties shall ensure that non-governmental entities under their jurisdiction shall engage in activities on the moon only under the authority and continuing supervision of the appropriate State Party.

Both provisions seem to imply that there is some clear, objective and definite criterion for determining the "appropriate State Party". But we have just seen, when seeking to determine the meaning of "national activities", that even in a straightforward and basic activity in space, such as the launching of a space object, there can be a good number of States that are involved and which may be held internationally responsible for that activity, and liable for any damage that may be caused by the space object employed. It does not appear possible to point to any of the States that may be involved as being a priori the most appropriate State to carry out the function of authorization and supervision.

Moreover, in view of the responsibility and liability that all the other States involved may have to bear, there is also the question whether they would be happy to leave the authorization and supervision to some self-appointed "appropriate" State, without prior agreement on how the supervision is to be exercised, and without prior arrangement concerning the apportionment of responsibility and of liability. Suppose, for instance, a rather sinister international consortium formed by persons from a number of non-governmental entities of States A, B, and C, establishes itself in Erewhon, a most backward, inefficient and corrupt country which is nevertheless a party to both the Space Treaty and Moon Treaty, and has obtained authorization from the Erewhon government to engage in space activities on the moon. Is Erewhon the "appropriate State" envisaged by the Space Treaty and the Moon Treaty? On the basis that the individuals concerned are nationals of States A, B and C, and following the test suggested above, the activities of this consortium would rank also as the national space activities of States A, B and C. If so, States A, B and C will

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40 J. B. MOORE, 1 INTERNATIONAL ARBITRATIONS 495, at 656 (1898).

still bear international responsibility for such activities, and for assuring that they comply with the 1967 Treaty and the Moon Treaty. Would it be wise for them not to require such activities to be also authorized and placed under continuing supervision by them and just leave everything to Erewhon? If not, would there be four separate "appropriate States"? Is there any legal impediment to having more than one "appropriate State", each requiring the same activity to be authorized and supervised by it?

Article II of the 1972 Registration Convention provides that where two or more States jointly launch a space object, "they shall jointly determine which *one* of them shall register the object . . . without prejudice to appropriate agreements . . . on jurisdiction and control . . ." (italics added). The use of the imperative "shall" raises the question whether Article II is obligatory. However, even if it were, it only means that the Convention does not allow joint registration or multiple registration in the case of a joint launching of a space object. It does not prejudice the question whether there can be several "appropriate States" each requiring the activity to be authorized and supervised by it. This is particularly so in view of the fact that, notwithstanding the lip service paid by Article II(2) of the Registration Convention to Article VIII of the Space Treaty, Article II(2) more or less expressly allow the States in question to make freely any arrangements they like regarding "jurisdiction and control". It would thus appear that under Article II(2), in such situations, the States Parties concerned can freely choose one State to register the space object, and come to more or less any arrangement they wish to determine among them the problem of jurisdiction and control over the space object and over any personnel thereof, including possibly the designation of more than one State -- which need not necessarily include the State of registry -- to do so, resulting thus in more than one "appropriate State"[41], and a departure from Article VIII of the Space Treaty, divorcing registration from jurisdiction and control.

From this point of view it may not be without interest to point out that what is now designated as the "appropriate State" in Article VI of the Space Treaty was in the corresponding provision in paragraph 5 of the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space[42], the prototype of the Space Treaty, described as "the State concerned". The change may not be entirely apt.

The point is that, as we have just seen, even in a fairly straightforward case, there can be a number of States that are internationally responsible. There can similarly be a number of States that can be held liable for any damage caused by a single space object under Article VII of the Space Treaty or the 1972 Liability Convention.

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41 See CHENG, *supra* note 17 Ch. 24, § II.I: Art. II(2) of the Registration Convention, at 627-630, especially the letter of 19 Sept. 1975 from the Legal Counsel of the United Nations to the European Space Agency, *id.* at 629 (text to n. 13).

42 U.N.G.A. Res. 1962 (XVIII) of 13 Dec. 1963.

Furthermore, under Article V(1) of the 1972 Liability Convention, such liability is joint and several. Consequently they all qualify as "States concerned". In principle, there seems to be no reason why every State Party that may be held responsible under Articles VI or VII of the Space Treaty should not be entitled, or even under a duty, to subject its national activities in space to its authorization and continuing supervision. They would thus all become "appropriate States". In this sense, the use of the word "concerned" may appear more accurate than the description "appropriate" and there may be good reason for construing the singular as not precluding a plurality of "appropriate States".

It is of course appreciated that should there be more than one State exercising the power of authorization and control over a given activity, on the one hand complications can easily arise in the relations between the States concerned, and on the other hand the prospect of being subject simultaneously to the authorization and control of several States, possibly with different policies and standards, can be more than daunting to non-governmental entities that wish to engage in space activities.

Naturally, there is nothing to prevent the States "concerned", by informal arrangements or formal agreements, either to coordinate their control and supervision, or, just as what the Registration Convention envisages for registration, to entrust the task of authorization and control to one of them.[43] In the latter case, what obviously has to be remembered is that, while the function of control may be delegated to another State, the State's responsibility and liability under Articles VI and VII of the Space Treaty or the 1972 Liability Convention cannot. Consequently, even where a State has absolute confidence in the State designated to discharge this task, and however watertight the hold-harmless clauses in the agreement may appear to be, in practice, it may not be entirely wise for it no longer to concern itself with the matter.

Furthermore, with the plethora of States that may be deemed to be national States of a space activity, it may well happen that a State can sometimes not be aware that it is among the States responsible under Article VI of the Space Treaty. For instance, one of its nationals has in a foreign country unbeknown to it procured the launching of a space object. That activity may remain without formal authorization and any supervision, if that foreign State is very lax in such matters. That is almost certain to be the case if that foreign State is not a contracting State to the Space Treaty, and is consequently not bound by Article VI at all. The national State can thus become *the* "appropriate State" by default, and be held internationally responsible, unless it can successfully plead that it was in fact impossible for it to subject the persons concerned to its effective jurisdiction.

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43 The United Kingdom Outer Space Act 1986 envisages this possibility in its s. 3(2)(b). See also US Commercial Space Launch Act, 1984, as amended in 1988, 49 USCS app. § 2605(a)(3)(A).

All in all "the appropriate State" appears thus to be a rather elusive notion. In practice there may well be more than one "appropriate State", *de facto* or even *de jure.*

6. Conclusion

In sum, under Article VI of the Space Treaty, the contracting States undertake direct responsibility vis-à-vis one another not only for their own activities in outer space, including actions associated directly with such activities, but also "national activities" in outer space carried on by non-governmental entities. Such activities are assimilated to their own insofar as compliance with the Treaty and with rules of international law is concerned, although arguably this assimilation applies also to compliance with rules of private law and criminal law. This is a point which needs urgently to be clarified in view of the phenomenal development in private space activity since the beginning of the space age. Naturally, whatever the answer, the contracting States' so-called indirect responsibility for the acts of non-governmental entities under its effective jurisdiction remains.

Under Article VI, the term "national activities" in outer space denotes not only a State's own activities, but also activities of non-governmental entities that are under its jurisaction, whether territorial, quasi-territorial or personal, although in practice the responsibility assumed by the contracting States in Article VI of the Space Treaty probably extends only to those national activities that are actually under its effective jurisdiction (i.e., under its jurisaction with no overriding jurisaction of other States), or where the persons concerned can legally and in practice be brought back under its effective jurisdiction. The aim is to ensure that all space activities that in international law can be controlled by one or more of the contracting parties to the Treaty are made the object of their direct responsibility and accountability in order to ensure full compliance with the Treaty's provisions by all concerned, without any loophole. However, where a non-governmental entity not under a State's effective jurisdiction cannot be brought under a State's effective jurisdiction, notwithstanding all efforts in good faith to do so, the State should not be held responsible. The jurisactional link is a more accurate criterion of "national activities" than either registration or the nationality of the persons involved.

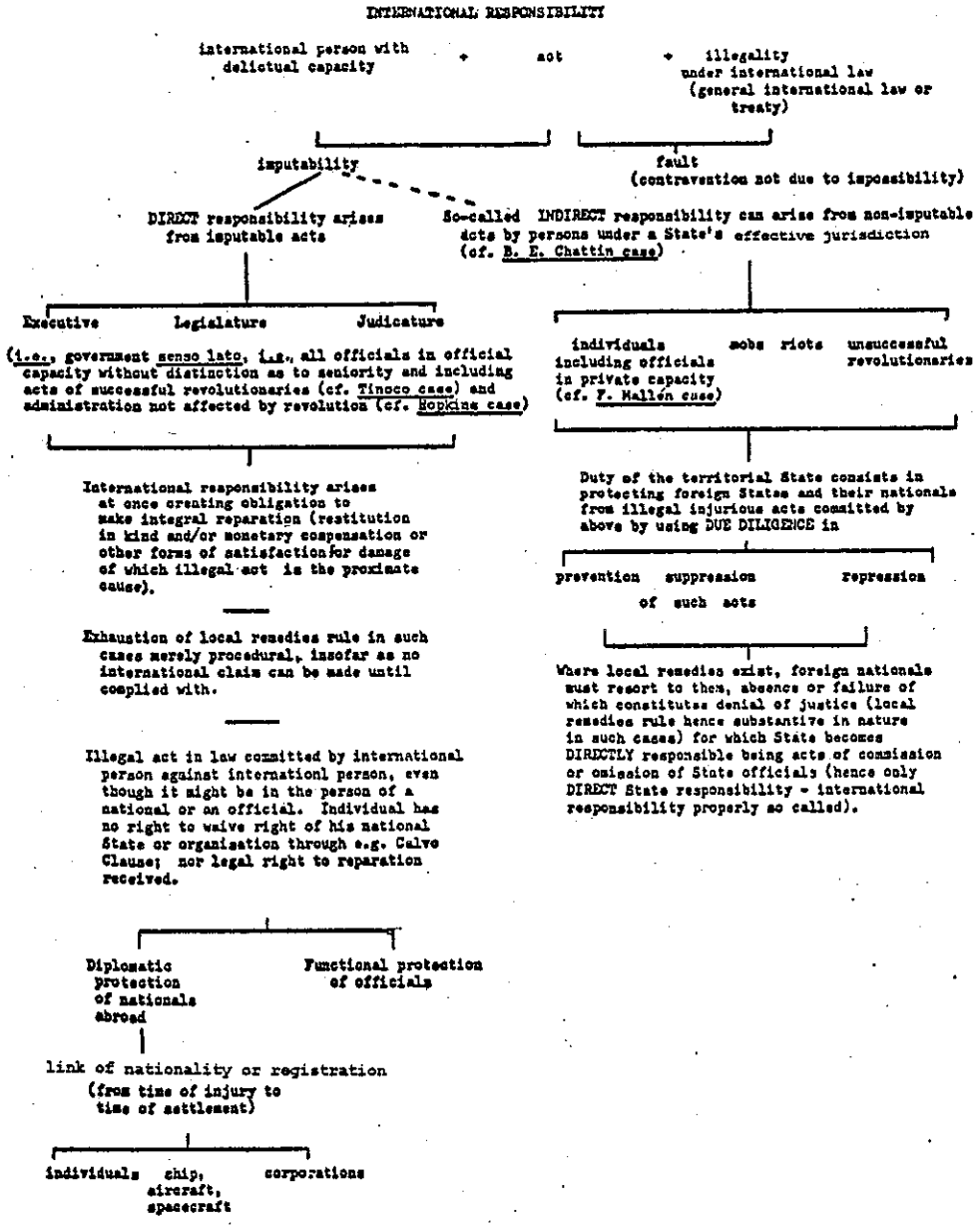
Whilst non-governmental space activities should be subject to the authorization and continuing supervision of the States Parties responsible, it appears permissible for them, when a number of States are involved whether by design or not, by agreement to entrust this task to one of them. However, all the States concerned remain internationally responsible under the Treaty. Moreover, if any of them qualifies as one of launching States in the launching of a space object, it would, in all probability under Article VII of the Space Treaty and definitely under Article V(1) of the 1972 Liability Convention, be jointly and severally liable for any damage caused by the space object. Consequently, it seems that, where two or more States, or non-governmental entities of more than one State, are carrying on

activities in outer space, all the States concerned would be well advised individually to take measures to ensure that they are effectively discharging their responsibility under Article VI, and that all necessary precautions have been taken to avoid damage being caused, thus involving their liability under Article VII of the Space Treaty, notwithstanding any arrangement to entrust the authorization and continuing supervision of such activities to one of them. The result is that in terms of Article VI of the Space Treaty, there may be either one "appropriate State", or a number of "appropriate States"; for there does not appear to be a duty to agree to a single State to perform the function of authorization and continuing supervision. One of the many problems is that sometimes it may be uncertain which other States are involved so that attempts to coordinate all the States concerned may prove difficult. It can also happen that some States realise that they are involved only too late. Nevertheless, it is obvious that whilst States must take adequate measures in order to ensure that space activities by non-governmental entities under their jurisdiction are so conducted that all the international rules governing the exploration and use of outer space are strictly observed, they also have the task of making sure that, in both the international and domestic regulation of the space activities of non-governmental entities, the duties and responsibilities of each individual State and also of all the States involved are so arranged and coordinated that they avoid to the greatest extent feasible, on the one hand, the Scylla of failure by any of the contracting parties to meet its responsibilities thus incurring its liability, and, on the other hand, the Charybdis of stunting the development of future space activities by non-governmental entities. This is the challenge in the years to come.

APPENDICES
APPENDIX I
INTERNATIONAL RESPONSIBILITY
[Please see next page]

APPENDIX II
STATE JURISDICTION
[Please see page following next page]

APPENDIX I


INTERNATIONAL RESPONSIBILITY
international person with delictual capacity
+ act
+ illegality under international law (general international law or treaty)
imputability
fault (contravention not due to impossibility)
DIRECT responsibility arises from imputable acts
So-called acts by persons under a State's effective jurisdiction
INDIRECT responsibility can arise from non-imputable
(cf. B. E. Chattin case)
Executive
Legislature
Judicature
(i.e., government senso lato, i.e., all officials in official capacity without distinction as to seniority and including acts of successful revolutionaries (cf. Tinoco case) and administration not affected by revolution (cf. Hopkins case)
individuals including officials in private capacity (cf. F. Mallén case)
mobs
riots
unsuccessful revolutionaries
International responsibility arises at once creating obligation to make integral reparation (restitution in kind and/or monetary compensation or other forms of satisfaction for damage of which illegal act is the proximate cause).
Duty of the territorial State consists in protecting foreign States and their nationals from illegal injurious acts committed by above by using DUE DILIGENCE in
prevention
suppression
repression
of such acts
Exhaustion of local remedies rule in such cases merely procedural, insofar as no international claim can be made until complied with.
Where local remedies exist, foreign nationals must resort to them, absence or failure of which constitutes denial of justice (local remedies rule hence substantive in nature in such cases) for which State becomes DIRECTLY responsible being acts of commission or omission of State officials (hence only DIRECT State responsibility - international responsibility properly so called).
Illegal act in law committed by international person against internationl person, even though it might be in the person of a national or an official. Individual has no right to waive right of his national State or organization through e.g. Calvo Clause; nor legal right to reparation received.
Diplomatic protection of nationals abroad
Functional protection of officials
link of nationality or registration (from time of injury to time of settlement)
individuals
ship, aircraft, spacecraft
corporations

APPENDIX II

STATE JURISDICTION

TYPE	TERRITORIAL		QUASI-TERRITORIAL		PERSONAL	
OBJECT	*Terra firma* (terrestrial or extra-terrestrial) including adjacent maritime belt, subsoil and superjacent space		Ships, aircraft and spacecraft		Individuals, corporate bodies and business enterprises	
MATERIAL SCOPE	In respect of the whole territory, including all its resources, all persons and things therein, and the extra-territorial activities of all such persons, whether individual or corporate		In respect of the craft themselves and all persons and things therein, including the activities of such persons, individual or corporate, whether on board the craft or elsewhere		In respect of individuals, corporate bodies and business enterprises, and all property, rights and legal interests belonging to them, wherever they may be	
SOURCE	*International customary law*: sovereignty, law of war and *status mixtus*, including self-defence and reprisals. *Treaties* with, and *recognition* or *acquiescence* of, other international persons, *e.g.*, protectorates, leased, mandated and trust territories		State jurisdiction over flag-craft and pirate vessels *jure gentium*. Right to flag under *international customary law* may be based on nationality of owner or charterer, other "genuine link," and registration. It may also be derived from *consent*, *recognition* or *acquiescence* of other international persons		*International customary law*: State jurisdiction over nationals, including corporate bodies and business enterprises endowed with nationality, other persons owing allegiance, and pirates *jure gentium* *Treaties* with, and *recognition* or *acquiescence* of, other international persons, *e.g.*, jurisdiction over protected persons	
ELEMENT	JURISFACTION	JURISACTION	JURISFACTION	JURISACTION	JURISFACTION	JURISACTION
HIERARCHY AND PRECEDENCE (*Jurisfaction*)	On a par with other types of jurisfaction		On a par with other types of jurisfaction		On a par with other types of jurisfaction	
HIERARCHY (*Jurisaction*)		First		Second		Third
PRECEDENCE (*Jurisaction*)		In case of conflict, overrides quasi-territorial and personal jurisaction		In case of conflict, gives way to territorial jurisaction but overrides personal jurisaction		In case of conflict, gives way to both territorial and quasi-territorial jurisaction
GEOGRAPHICAL SCOPE	Limitless (terrestrial and extra-terrestrial)	National territory of a State, other territory for the international relations of which it is responsible, and territory under its *occupatio pacifica* or *bellica*	Limitless (terrestrial and extra-terrestrial)	Over flag-craft anywhere outside territories subject to the territorial jurisaction of other recognised international persons	Limitless (terrestrial and extra-terrestrial)	Over all individuals, corporate bodies and business enterprises subject to a State's personal jurisdiction outside territories or craft subject to the territorial or quasi-territorial jurisaction of other recognised international persons
RELEVANCE TO SPACE LAW	Extra-terrestrially applicable	Stresses the urgent need of clearly delimiting national space from outer space. Will also apply to extra-terrestrial territories, once sovereignty established and recognised in accordance with existing rules of international law	Extra-terrestrially applicable	Applicable to national spacecraft in outer space	Extra-terrestrially applicable	Applicable to nationals and other persons or entities subject to a State's personal jurisdiction even when they are in outer space

Asteroids and other Celestial Bodies - Some Legal Differences

Dr. Ernst Fasan*

I. Introduction

Since the beginning of the work on Space Law the term "Celestial Bodies" was used. This expression begins with the Czech author Vladimir Mandl in 1932, the very first writer dealing with Outer Space Law,[1] and is followed up by the writings in the 1950's and early sixties.[2] When the United Nations started their investigation of the related problems, the topic of Celestial Bodies was one of them, and not the least one.

Proposals of the USA of Nov. 13, 1957[3] and the (then) USSR of March 15, 1958[4] both proposed (in different terms) the use of Outer Space for peaceful - or nonmilitary use. Celestial Bodies were not mentioned specifically. Neither were such Bodies mentioned in the (not unanimous) UNGA Resolution of Dec. 13., 1958[5] which established the *ad hoc Committee on the Peaceful Uses of Outer Space,* and which requested the Peaceful Uses of Outer Space.

The UNGA Resolution of Dec. 12, 1959,[6] which created a (not *"ad hoc"*) Committee on the Peaceful Uses of Outer Space (COPUOS) requested the said Committee to "study the nature of legal problems which may arise from the exploration of Outer Space," but did not mention Celestial Bodies either.

There followed the unanimous UNGA Resolution of Dec. 20, 1961,[7] already laying down some principles of Space Law, notably that: *"Outer Space and Celestial Bodies are free for Exploration and Use by all States in conformity with international Law, and are not subject to national appropriation."*

Now it was obvious that Space Law should apply to Celestial Bodies, and that they were (obviously) not the same as the empty (or nearly empty) Outer Space itself. This notwithstanding the fact that the so called "Test Ban Treaty," signed in Moscow on August 5, 1963, still spoke about

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1 DAS WELTRAUMRECHT, EIN PROBLEM DER RAUMFAHRT, (Bensheimer Verlag, Berlin/Mannheim, 1932). A new edition is being prepared by Dr. Stephen Doyle.

2 *See*, for instance, LEGAL ASPECTS OF SPACE EXPLORATION, A SYMPOSIUM, (87th US Congress, 1st Sess., US Senate Doc. No. 26, Washington, D.C., 1961) and ERNST FASAN, WELTRAUMRECHT (Krausskopf Flugwelt Verlag, Mainz 1965) as well as the literature quoted therein.

3 U.N. Doc. A/C 12PV. 821,6.

4 U.N. Doc. A 3818.

5 U.N.G.A. Res. 1348(13).

6 U.N.G.A. Res. 1472 (14).

7 U.N.G.A. Res. 1721(16).

"nuclear weapons explosion ... in outer space ...", not mentioning celestial bodies specifically.[8]

The following UNGA Resolutions, however, continued to uphold the notion of Celestial Bodies in general,[9] although some scholars such as Cocca,[10] Haley[11] and the Hon. George Miller,[12] House of Representatives of California, pointed out that the Moon might have special legal characteristics.

But then, the "Treaty on Principles, Governing the Activities of States in Exploration of Outer Space, including the Moon and other Celestial Bodies" (The Space Treaty)[13] [14] stated in its Art. II: "Outer Space, including the Moon and other Celestial Bodies, are not subject to national appropriation by claim of sovereignty, by means of use or occupation or by any other means."

II. Astronomical Facts about Celestial Bodies.

We know, and we have to take into account, that there are several kinds of Celestial Bodies. Our Universe shows Billions of Galaxies, each of which consists of billions of stars. One of them is our own Galaxy, also called "The Milky Way." And it was made clear by the then President of the United States, Mr. Lyndon B. Johnson, that our Galaxy is the realm of the terrestrial nations exploration.[15] Stars are huge and enormously hot bodies, and some of them seem to be surrounded by planet-like subsidiaries. With the exception of the sun they are many light years away, so any question of appropriation of stars need not be considered at the present time and the foreseeable future. But even our own sun with a distance from Earth of eight light minutes (150 million kilometers) is not

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8 For text, *see* FASAN, *supra* note 2.

9 U.N.G.A. Res. 1962(18), and 1963 (18), both of Dec. 13., 1963.

10 *Principles for a Declaration with reference to the legal Nature of the Moon*, 1 PROC. COLLOQ. L OUTER SPACE 36 (1959). The first three volumes of the Proceedings on the Law of Outer Space have now been republished by the International Institute of Space Law under the auspices of its president, N. Jasentuliyana.

11 Andrew G. Haley, *Survey of Legal Opinion on Extraterrestrial Jurisdiction*, 3 PROC. COLLOQ. L. OUTER SPACE 37 (1960).

12 *Who owns the Moon?*, 88th Cong. 1st Sess. (Jan. 18, 1963).

13 For texts of the Space Treaties and Agreements, and related Documents, *see* United Nations Treaties and Principles on Outer Space, U.N. Doc. A/AC.105/572 Rev. 2 (1997).

14 The Space Treaty has up to now been signed by 120 Nations, 93 of whom have also ratified it. It is with this the practically universally accepted Legal Document regarding Outer Space and, as we have seen, the Celestial Bodies. *See* U.N.G.A., COPUOS, Report of the Legal Subcomm. (LSC), 36th Sess., Vienna, April 1-18, 1997. U.N. Doc. A/AC.105/C.2/L.206/Rev. 1 (April 4, 1997).

15 U.S. President L. B. Johnson, Letter of Transmittal of Feb. 7, 1967: *Hearings before the Senate Committee on Foreign Relations*, 90th Cong., 1st Sess. 107 (1972).

approachable for us humans. We use its radiation, without which we would not exist, but we cannot land on it, we cannot control it, and thus we can by no legal definition appropriate it: neither can a single Nation, nor the whole of humanity.

Around the sun revolve nine planets, two of which, namely Neptune and Pluto, have been discovered only recently.[16] One of them is our Earth. And at least seven of them are accompanied by one or more natural satellites, by moons, revolving around them. One of them is our own Moon.

Then there do show up occasional phenomena in the sky, which appear, grow more and more luminous, and finally disappear again: The comets. Some of them return in elliptical orbits after some decades, as comet Halley. Others seem to have nearly parabolic orbits and may after passing the sun disappear for thousands of years, or forever.[17] Here is not the place to discuss all the legends and fears connected to those objects. But one fact remains: They are Celestial Bodies, and some of them have even been investigated by terrestrial Space Ships.

Furthermore, we know that occasionally little natural objects are approaching our planet, and even fall down on it. These are the Meteorites. They are three dimensional natural objects moving in outer space. So they are bodies, most of them very small, moving within the gravitational field of our sun. Thus they (once more) are Celestial Bodies.

But that is not all. Already in 1801 Piazzi found between the orbits of Mars and Jupiter a small moving object which one year later was rediscovered by Gauss. It was obviously a very small planet in orbit around the sun, and it was called Ceres. Shortly later, Pallas was found, and then Juno and Vesta. By 1953 about 1600 such bodies, called Planetoids, or Asteroids, were cataloged, and the total number of them is estimated to be over 50,000.[18] One of them, Hermes, came nearer to the Earth's orbit than that of our own Moon. And at least one of the Asteroids, Ida, has a natural satellite of its own! A new category of Celestial Bodies was found, and was well known, even before the beginning of the Space Age.

Are then all these natural objects "Celestial Bodies" in the sense of the UNGA Resolutions, or of the Space Treaties? Is their appropriation prohibited as well as that of, say, Mars. Even if they pose threats to Earth?

There is only one hint: In the Agreement Governing the Activities of States on the Moon and other Celestial Bodies, we find a provision that *"This Agreement does not apply to extraterrestrial materials which reach the surface of the Earth by natural means."* This provision once more

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[16] The astronomical facts are generally known. Reference is made to K. SCHAIFERS AND G. TRAVING, MEYERS, HANDBUCH WELTALL (6th ed., Bibliographisches Institut, Mannheim, Wien, Zurich 1984). *See also* remarks by E. Fasan in 3 PROC. COLLOQ. L. OUTER SPACE 18 (1961).

[17] If their orbits are hyperbolic, they may no longer belong to our solar system.

[18] *See* K. SCHAIFERS AND G. TRAVING, MEYERS, HANDBUCH WELTALL, *supra* note 16, at 162*ff.*

clarifies, *argumento e contrario,* that all other extraterrestrial material seems to be deemed "Celestial Bodies".

III. Asteroids and other small Bodies in the Literature

Already in the sixties, some Space Legal writers saw the obvious physical difference between a Moon, say of Jupiter, and an Asteroid of only a kilometer or a few hundred meters in diameter. A few opinions may be quoted in alphabetical order.

Barth calls them potential sources of raw material, especially metallics.[19] *Christol* stressed the fact that the USA position before the U.N. had made it clear that the Moon Agreement places no moratorium upon the exploitation of the natural resources on celestial bodies. But no definition of the latter term was given.[20]

Cocca wrote a most detailed investigation of the various opinions regarding the legal nature of small natural objects in Space, quoting *Csabafi, Fasan, Kiss, Markoff, Verplaetse,* and especially *Smirnoff,* Chairman of the then Working Group Three of the IISL. He endorses the solution, found by this Working Group: Celestial Bodies in the sense of this Resolution are natural objects in Outer Space, including their eventual gaseous coronas which can not be artificially moved from their natural orbits."[21]

The Committee on Commerce, Science, and Transportation of the US Senate prepared in 1980 a report on the Moon Agreement. It brought about a detailed history of the relevant UN negotiations. It started with Argentina's proposal, as presented by ambassador *Cocca,* Art. 3 of which requested a distinction of the legal system "applicable to natural resources used in their place of origin . . from those brought to Earth for use," and endorsed the "Common Heritage of Mankind" Principle.[22]

The following USSR and USA proposals are quoted both mentioning "the Moon and other Celestial Bodies" without any definition of the latter. The same must be said of the following UN draft Treaties. But that is not quite valid for the subsequent "Comparision of the Moon Agreements draft with other International Documents."[23] In discussing Art. 1, quite correctly the question is raised, "as to whether asteroids and other materials brought from deep space into earth orbit or to the earth would be subject to the term of this Agreement."[24] And under "Issues" this very same question is repeated.[25]

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19 *Das Raumzeitalter* (Dacia1981, p. 157).

20 Christol, *The Moon Treaty Enters into Force,* 79 AM.J. INT'L L. 163, at 166 (1985).

21 7 PROC. COLLOQ. L OUTER SPACE 16 (1962).

22 P. 7.

23 P. 45.

24 P. 47.

25 P. 79.

Fasan deems Asteroids not as Celestial Bodies in a legal sense, but as parts of Outer Space, as long as they can be transported into or through Space.[26] *Gorove* equals the Moon with "other planets of the solar system" which seems clearly to exclude Asteroids, Comets and Meteorites.[27] *Jenks* discussed the "Moon and other planets or satellites", the sovereignty over which should be vested with the United Nations. Radiation should be free for use. Asteroids are not mentioned specifically.[28] *Lachs* raises the question of a minimum size of a natural object in Space in order to be deemed a Celestial Body. The definition of the latter should be "land areas in Space."[29] *Haley* said in his book SPACE LAW AND GOVERNMENT: "Meteor Mining will become an industrial objective, and all the ancient problems of law will be asserted under vastly more complicated circumstances."[30] *McDougal, Lasswell and Vlasic* do point out that Asteroids might be immense deposits of useful minerals, and they quote Vassiliev who thinks that they may be used as "ocean going ships", offering "more room than . . . a man built ship."[31]

Goldie saw and clearly raised the question whether the notion of non appropriation would apply to the Planets and Moons. And then he asks: "what regimes should then govern such Planetoids as Eros, Hermes, Icarus, and others?"[32] *Hosenball* makes clear that the Moon Treaty should apply to "the list of the planets", and seems to defend these as "Celestial Bodies." He, too, does not deal with the small bodies, now under discussion.[33] *Rehm* quotes *Dettmering* and *Fasan* and their distinction between planets and Moons in orbits, unalterable by human technology.[34] And *Zhukov*, last but by no means least, strongly opposes *Fasan*, because future technology might well be able to alter the orbits of Asteroids. And he quotes *Cowle* who foresaw Asteroids, brought down to a crash on Earth, as a most dangerous weapon of the future.[35]

Finally, in "Pioneering the Space Frontier," the Report of the National Commission on Space of 1986, there is a whole chapter on "Readily accessible Asteroids," which recommended: *"Expanded Earth-based and space based searches for readily accessible asteroids; continued telescopic*

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26 FASAN, *supra* note 2, at 133.

27 STEPHEN GOROVE, SPACE LAW, ITS CHALLENGES AND PROSPECTS 174 (Sijthoff, Leiden 1977).

28 WILFRED JENKS, SPACE LAW , at 100*ff.* (Steven & Sons, London 1965).

29 Manfred H. LACHS, THE LAW OF OUTER SPACE, at 46 (Sijthoff, Leiden 1972).

30 ANDREW HALEY, SPACE LAW AND GOVERNMENT, at 133 (Appleton, Century, Crofts 1963).

31 MYRES S. MCDOUGAL, HAROLD D. LASSWELL AND IVAN A.VLASIC, LAW AND PUBLIC ORDER IN SPACE, at 767 (Yale U. Press, 1963).

32 12 PROC. COLLOQ. L. OUTER SPACE 156 (1980).

33 *See* Hosenball, *Current Issues of Space Law before the United Nations*, 2 J. SPACE L. 8 (1974).

34 HANDBUCH DES WELTRAUMRECHTS 112 (Böckstiegel ed., Carl Heymanns Verlag, Köln 1991).

35 WELTRAUMRECHT, 272*ff.* (German Translation, Berlin Verlag 1968).

characterization of their surfaces; and robotic prospector missions to particularly promising asteroids."[36]

In recent times, however, small Celestial Bodies were also seen in a new perspective. It was the perspective of such bodies coming very near to Earth, and even posing a possible threat to our planet: "*an estimated 99 asteroids or comets are known to pose possible danger to earth. While not an immediate threat, seven previously unknown asteroids are big enough and close enough to pose at least a potential threat."*[37]

NASA started a program of "Near-Earth Asteroid Rendezvous spacecraft," which by the way discovered the Asteroid Mathilda. This so called NEAR mission will bring the spacecraft in 1999 to a distance of 18 kilometers from Eros' surface and will be able to study this "Celestial Body" in detail.[38] But also the study of comets was intensified, especially by ESA, including a factual "Lander."[39]

And we will have to be content with the following observation: "It is expected that it will take up to 30 years to discover 90% of all objects (1 km or more in size) with Earth crossing orbits."[40]

IV. Legal Definition of the Term "Celestial Body"

These astrophysical facts are of course followed by the question of definition of the Term "Celestial Body". There is no difficulty about the Moon, because our satellite is mentioned specifically in the Space Treaties. The literature quoted makes clear that the planets themselves are "Celestial Bodies" in all legal senses, too. From this follows that the main Legal provisions of the five Space Treaties and Agreements do apply to those bodies. This disregarding the fact that those five legal documents have achieved quite different adherences by Nations regarding signature, and especially, ratification. But all these instruments are in accordance concerning some basic legal rules, which may be requoted in very shortened sentences:

1) Exploration and Use of Celestial Bodies a) is to be carried out for the benefit and in the interests of all countries; b) shall be free, c) is to be conducted according to international law;

2) Celestial Bodies a) are not subject to national appropriation, b) are to be kept free from nuclear weapons or other weapons of mass destruction. c) shall be used for peaceful purposes only;

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36 *See* p. 65.

37 See Report on the 4th Space Governance Conference, held August 1997, in Denver, Colorado, referred to in 25 J. SPACE L. 172 (1997). *See also* 3 "THE NEO NEWS" of the Planetary Society (no. 3, 4th quart., 1997), which deals extensively with "Near Earth Objects".

38 HIGHLIGHTS IN SPACE 1996, at 61, 96 (U.N. ed., New York 1997). *See also* 35 AEROSPACE AMERICA 63 (Dec. 1997).

39 HIGHLIGHTS IN SPACE 1996, at 61.

40 35 AEROSPACE AMERICA at B 18 (Dec. 1997).

3) Installations (bases) a) may be erected, equipment and military personnel may be used, b) remain under jurisdiction and control of the launching state, c) are to be registered with the Secretary General of the United Nations, d) may be visited by representatives of the State Parties.

4) The notions of liability, and of mutual assistance, retention of ownership, prompt return, consultations, *etc.* are firmly written down also.

While these provisions are not contended in earnest, the question of exploitation, the notion of "Common Heritage of Mankind," of an international agency, *etc.* are still in dispute.

The above list, quoted from the Space Treaty,[41] is intentionally very brief because it does only in part touch our problem of definition.

If all these notions do apply to any land mass in Space, even, say, to a comet or asteroid with a diameter of one or ten kilometers, and if such a body is discovered to possibly cross Earths orbit, then it poses a danger not only to astronauts,[42] but also threatens to cause an adverse change of the environment of the Earth,[43] although not caused by a national activity in Space. Such a (natural) space object would be "extraterrestrial material" which would reach the surface of the earth by natural means.[44] And it would be - in all seriousness - "a phenomenon which could endanger human life."[45]

If now any state or group of states had the capability to deflect such an asteroid from its natural orbit, and guide it, for instance, towards the sun, this would of course mean intentional destruction of the said body, and nobody could or would question the legality, and the absolute necessity of such an action. But destruction of an object, a *res* in Latin legal language, is the ultimate appropriation. Surely, this could not be in earnest an act contrary to international Space Law, as it exists. So, is such a small body, for instance, a "Tunguska Meteorite," a Celestial Body in a legal sense, and would anybody be opposed to such an action on such a legal basis?

To quote quite another example: The Use of a celestial body (for peaceful purposes) is permitted. Is it permitted then, to alter the orbit of a small asteroid- as long as this does not pose any danger to earth or any of its nations? Is it permitted, to erect then on this asteroid a scientific station (of course, with due information of the Secretary General of the UN, and if necessary after consultations with other Nations). Is it then permissible to bring this Asteroid with the said station into an orbit

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41 *See supra* note 13.

42 Art. V(2) of the Space Treaty.

43 Art.1X of the Space Treaty.

44 Art. 1(1) of the Moon Agreement, *supra* note 13, which however has gained much less adherence than the other Space Treaties and Agreements (12 signatures, of those 9 ratifications only). *See supra* note 14.

45 Art. 5(3) Moon Agreement. The newly discovered Asteroid XF11 would be a typical example. An excellent overview is given by Brooks in *"Dangers from Asteroids and Comets: Relevance of International Law and the Space Treaties,"* 40 PROC. COLLOQ. L. OUTER SPACE 234*ff.* (1998)

around earth, for instance far above the geostationary orbit? It would remain free for inspection. It would remain free from all military use and from all weapons of mass destruction. But would that still be "Use" in the sense of the Space Treaties. And what, as I have once asked[46] if such an Asteroid is hollowed out, if the material thus won is used to erect stations and other structures. And if it is covered with such man made structures? If it has a diameter of a few hundred meters only, would it not somehow loose its capacity of a "natural Celestial Body", and become a man made, an artificial "space object", to which quite different legal notions would apply, for instance regarding ownership, control, registration and liability?

The makers of the Space Treaties were prudent and well advised that they dealt with "the Moon and other Celestial Bodies." But obviously they had substantial natural objects in mind, as sometimes expressly said and partly quoted above. But surely Space Law will have to proceed in this regard too. "Comet watch," "Asteroid watch," even "Meteorite watch" will not and can not remain an activity of scientific observation only. It may request, or it may at least permit positive action concerning an object thus discovered.

If we would agree with the above, we might have at least two possible means of approach. We could still call, say, Asteroids "Celestial Bodies," and wait, and try to find solutions for possible unexpected contingencies, a few examples of which are given above. Or we could in more clearness say and define what is meant by "Celestial Body" in the sense of the Space Treaties and other Instruments.

And, in due salute to the first president of the International Institute of Space Law, the late Michel Smirnoff, we could find a solution similar to that of the unanimous Draft Resolution of March 15, 1964, of the then Working Group Three of the International Institute of Space Law. The relevant paragraph might read, taking into account the legal development of the last decades, as follows:

"Celestial bodies in the sense of the treaties and agreements on outer space are natural objects in outer space including their eventual gaseous coronas which can not be artificially moved from their natural orbits."[47]

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[46] Fasan, *Large Space Structures and Celestial Bodies.* 27 PROC. COLLOQ. L. OUTER SPACE 243 (1984).

[47] Smirnoff, *Report for Working Group three of the IISL,* 7 PROC. COLLOQ. L. OUTER SPACE 352 (1964).

THE SETTLEMENTS OF DISPUTES IN SPACE: NEW DEVELOPMENTS

I.H.Ph.Diederiks-Verschoor*

The settlement of disputes is not a problem of recent days, as one might be inclined to believe. In fact, it has preoccupied the minds of those interested and involved in finding adequate solutions for a considerable period of time. Therefore, before embarking upon a sketch of the latest developments surrounding this important issue, it is useful to briefly review what has happened in the past and what has been achieved.

Arbitration

The first attempts to address the problem date back to the last decades of the 19th century, and they led eventually to the establishment of the Permanent Court of Arbitration. On July 29, 1899, the sovereign powers meeting in The Hague at what was to become known as the First Hague Peace Conference adopted a "Convention for the Pacific Settlement of International Disputes."[1] This Convention established the Permanent Court of Arbitration (PCA): the first global mechanism for the settlement of disputes. The 1899 Convention was revised in October 1907 as a result of the Second Hague Peace Conference.[2]

The PCA is one of the oldest institutions dedicated to resolving international disputes, and it has served the community of nations for nearly 100 years. Lately, however, the PCA adopted two new sets of rules of arbitration. The first set, issued in October 1992, is designed for optional use in resolving disputes between States. One of the issues that may be raised in State arbitration is whether or not a State has the capacity to enter into an arbitration agreement. This capacity depends on its national law.[3] The second set, adopted in July 1993, is designed for disputes between States and non-State parties. Both sets are patterned after the widely accepted arbitration rules of UNCITRAL (the United Nations Commission on International Trade Law). These rules have been in force since July 6, 1993. The International Bureau (Secretariat) has its offices in the Peace Palace in The Hague.

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1 Convention for the Pacific Settlement of International Disputes, July 29,1899; 32 Stat. 1799.

2 Convention for the Pacific Settlement of International Disputes, Oct. 18,1907; 36 Stat. 2199.

3 P. Sanders, *Private Parties and the Permanent Court of Arbitration, in* THE FLAME REKINDLED. NEW HOPES FOR INTERNATIONAL ARBITRATION, 6 LEIDEN J. INT'L L. 289-291 (Special issue, 1993).

Settlements of disputes through the International Court of Justice

Also in 1899 the Permanent Court of International Justice was established by inter-governmental agreement at The Hague in the Netherlands. This agreement was also revised in 1907. Towards the end of World War II in 1945, the United Nations Organisation was set up and its Charter stipulated in its Article 2, section 4, that "All members shall settle their international disputes by peaceful means in such a manner that international peace and security, and justice, are not endangered."

To further this aim the International Court of Justice was established, based on Article 92 of the UN Charter which states: "The International Court of Justice shall be the principal judicial organ of the United Nations. It shall function in accordance with the annexed Statute, which is based upon the Statute of the Permanent Court of International Justice and forms an integral part of the present Charter." Only States can bring their disputes before this Court.

Settlement of disputes in space law

The Space Treaty of 1967,[4] which is the fundamental instrument of outer space law, refers in its Articles III and IX only to the general principles of international law for the settlement of disputes. The Convention on International Liability for Damage Caused by Space Objects of 1971[5] has established a Claims Commission, but its decisions have no binding force. No rules concerning disputes are to be found in any other space law treaties.

Special courts

In addition to the above mentioned organization there are 'special courts.' In the sphere of aviation and space activities there is an International Court of Air and Space Arbitration, established in 1994 by the Société Française de Droit Aérien et Spatial. It is designed for the swift and economical settlement of any contentious matters related directly or indirectly to air and space activities. This is currently the only international arbitration organization specifically for air and space. Arbitration costs shall be based on French standards which are considered very reasonable in such a system. Consequently, costs shall be lower than

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[4] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, T.I.A.S. No. 6347, 610 U.N.T.S. 205 (hereinafter "Outer Space Treaty"). For the text of this treaty, see also I.H. PH. DIEDERIKS-VERSCHOOR, AN INTRODUCTION TO SPACE LAW, Annex 1, at 149-156 (1993).

[5] Convention on International Liability for Damage Caused by Space Objects, March 29, 1972, 24 U.S.T. 2389, T.I.A.S. No. 7762, 961 U.N.T.S. 187 (hereinafter "Liability Convention"); for a text see also AN INTRODUCTION TO SPACE LAW, *supra* note 4, Annex 3, *at*163-172.

in lawsuits in the national courts of many countries or in certain other arbitration organizations. It is expected that parties will have a financial interest in resorting to such arbitration and will subsequently refer cases more readily and more regularly to the new Court of Arbitration. Lastly, its Rules of Arbitration cover two major points required by the specific nature of the subject matter: first, the Rules provide for an interim arbitration procedure which parties may implement when they deem urgent provisional measures to be necessary; second, the Rules stipulate arrangements for appointing French and foreign experts listed according to their specialist areas and recommended by the Court.

Settlement of disputes in telecommunications

Extremely important activities are being carried out in space in telecommunications. Organisations dealing with these matters, such as the International Telecommunication Union (ITU), the International Telecommunications Satellite Organisation (Intelsat), and the International Maritime Satellite Organisation (Inmarsat) have, unlike the space treaties, detailed rules governing the settlement of disputes. They failed, nevertheless, to cover all situations, as was evidenced in a case involving the Kingdom of Tonga.[6] It is worth noting that domestic legislations do sometimes contain rules regulating the settlement of disputes, for instance, in the USA the NASA (National Aeronautics and Space Administration) and COMSAT (Communications Satellites) Acts are instances in point.

New developments and ideas

In 1996 the International Court of Justice celebrated its 50th anniversary, and this milestone can be taken as a point of departure for describing contemporary developments and new thinking on the problem of settling disputes. For this celebratory occasion a Colloquium[7] was arranged where several aspects of the work of the Court were discussed. One of the sessions, organized and presided over by Judge Vereshchetin, was dedicated to the issue of 'Equipping the Court to deal with developing areas of international law: Space Law.' In his introduction, the Chairman emphasised that the purpose of the session was to generate new ideas. Böckstiegel, who is an expert in this field and who was also the main speaker in this session, mentioned that, in view of the growing tendency toward commercial space activities and private enterprises, there was a growing demand for effective dispute settlement involving space activities. Pointing out that sufficient means in the form of arbitration organizations

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[6] R. Oosterlinck, *Tangible and Intangible Property in Outer Space*, 39 PROC. COLLOQ. L. OUTER SPACE 271-283, at 278-279 (1996).

[7] INCREASING THE EFFECTIVENESS OF THE INTERNATIONAL COURT OF JUSTICE, PROC. ICJ/UNITAR COLLOQ. TO CELEBRATE THE 50TH ANNIVERSARY OF THE COURT (C. Peck and R.S.Lee eds., 1997).

were available for international business relations, Böckstiegel noted that these were lacking insofar as disputes involving States and international organizations in the field of space law were concerned. At the end of his lecture, Böckstiegel put several questions on this aspect to his audience. Böckstiegel's questions and other ideas suggested during the discussion were a stimulant for me to reconsider the entire subject of 'settlements of disputes in space'.

For a start, I would like to stress that the term 'space law' can be interpreted by different people in different ways. We are dealing with legal problems arising from the use and exploration of outer space, and these problems can be about outer space, space to earth, earth to space aspects. They can concern not only international public law, but also tort, contracts, environment, antitrust, taxation, intellectual property, insurance, citizenship, etc. Sometimes a thorough knowledge of space science and technology is also necessary. The problem has also been identified and recognized by the International Law Association, as is evidenced by a study and proposals of its Space Law Committee, which will now be called 'Convention on the Settlement of Disputes Regarding Space Activities' instead of 'Convention on the Settlement of Space Law Disputes'[8]

For States it is possible to select the International Court of Justice as a body for the settlement of space law disputes. This would be an all the more obvious and justified choice as several judges of the Court are well acquainted with space law.

Special chambers

One of the suggestions Böckstiegel made was in the form of a question: 'as the full Court of Justice may be considered as not best fit for settling disputes regarding space activities and taking note that the Court in 1994 established a chamber specifically to deal with environment cases, could a special chamber be created for space disputes?' He suggested that the duties of the Environmental Chamber could easily be widened to deal with matters involving Space Law, for instance if a dispute were to arise about damage caused by debris of spacecraft traced as belonging to a State or organization of States to a spacecraft of another State or organization. According to Article 26, section 2, of the Statute of the International Court of Justice the Court may at any time form a chamber to deal with a particular case. Böckstiegel thought in this context, in terms of a standing chamber of the Court, while my thinking tends to favor a Court *'ad hoc'*. However, Böckstiegel was of the opinion that the one does not exclude the other, and that one may have a wider option than one thinks in the International Court of Justice. Judge Schwebel clarified this point by giving a clear survey of the origin of Article 26, section 2 of the Statute of the International Court, saying that there are two sorts of chambers contemplated by the Statute. He explained that the first category are

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[8] *See* M. Williams, *Report on Dispute Settlement Regarding Space Activities, in* REPORT OF THE 67TH CONFERENCE OF THE ILA 457-470 (Helsinki, 1996).

chambers for a particular subject, which are standing chambers. These were prescribed in the Statute of the Permanent Court for Transport, Communications and Labour but, as Judge Schwebel mentioned, they were never actually used. When the Statute was rewritten in 1945, those specific references were simply deleted, but the possibility of creating a standing chamber of the Court was retained and it has indeed been implemented. In the case of the Environmental Chamber, Judge Schwebel came to the conclusion that there are no other chambers as yet, but 'there is certainly no reason why a chamber on space problems - standing chamber of the Court - could not be set up.' [9]

Judge Schwebel further considered that the parties involved in a special case would not be able to express their views on the composition of such a standing chamber, but that in an *'ad hoc'* chamber of the Court the parties would be able to submit their views on its composition, although the Court would of course have the final decision in the choice of the judges.

Responsibility of the State in space law

Another aspect is the increasing involvement of private enterprise in space law. Both Böckstiegel and Von der Dunk have expressed opinions on this topic, especially about the question of State responsibility for private activity, and how far sovereign rights of individual States may extend into the area of outer space while the main principle of outer space law is that no rights of sovereignty of a State can be claimed in outer space.[10] However, in my opinion, it would be unrealistic to deny that there is a lot of hidden sovereignty in space. A State can decide whether or not it will allow the reception of political or religious programs through telecommunication means. States can prohibit remote sensing activities, and they can also claim intellectual property on the data and results obtained by space activities. But with the commercialization and privatization of space activities and the increasing need for closer cooperation the influence of the States may diminish.

In this context the definition of 'launching State' can also be of importance. According to Article 1 of the Liability Convention of 1972, a 'launching State' is "a State which launches or procures the launching of a space object, or a State from whose territory or facility a space object is launched." Two things must be noted in connection with this definition: 1) No mention is made of the moment in time when the launching will start; 2) When a launching takes place on the territory of another State, there usually is a prior agreement between the States concerned.

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9 *Equipping the Court to Deal with Developing Areas of International Law: Space Law, in* INCREASING THE EFFECTIVENESS OF THE INTERNATIONAL COURT OF JUSTICE, *supra* note 7, at 445-465.

10 Outer Space Treaty, *supra* note 4, Art. II.

In Principle 2 of the Nuclear Power Source Principles of 1992,[11] however, there is another definition, namely "For the purpose of these Principles, the terms 'launching State' and 'State launching' mean the State which exercises jurisdiction and control over a space object with nuclear power sources on board at a given point in time relevant to the principle concerned." For the purpose of principle 9 (Liability and Compensation) the definition of the term "launching State" as contained in that principle is applicable as mentioned in the Liability Convention.

It is clear that problems could arise in identifying and deciding which State will be responsible for the activities of private companies. We now have not only the State which launches the satellite of a private company which will be responsible, but also the State which will be responsible for the manufacturing of a satellite done by a private company.

According to Article VI of the Outer Space Treaty the launching State remains responsible for the activities of private companies, so the question arises if, in addition to this type of responsibility, the State where the company has been established will also be responsible for the activities of a private company. In case of international cooperation, more than one State could be responsible for the damage caused by a launching that goes wrong: among them the State which exercises jurisdiction and control over a space object with nuclear power sources on board. Awford has even made a list of 15 States which would, in a certain situation, be responsible as a launching State.[12]

Advisory opinions

During the session on space law of the Court, Von der Dunk suggested that the role of the Court as regards space law should be extended to give the Court some kind of competence to provide advisory opinions, not at the request of one of the parties in the case, but as a kind of law-defining statement. There are several examples of the Court giving advisory opinions, but the Court never gave an advisory opinion outside a case and on its own initiative.[13]

It was not the first time that this item was discussed. In 1933 Lauterpacht had stated that '...the general and direct availability of Advisory Opinions might prove yet another instrument for the initiation of the process of peaceful change on the basis of judicial pronouncements

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11 Principles Relevant to the Use of Nuclear Power in Outer Space, December 14, 1992. For a text, see Annex 8 to AN INTRODUCTION TO SPACE LAW, *supra* note 4, at 201-208.

12 I. Awford, *Legal Liability Arriving from Commercial Activities in Outer Space, in* RESEARCH AND INVENTION IN OUTER SPACE, LIABILITY AND PROPERTY RIGHTS 95-110 (Sa'id Mostestar ed. 1995).

13 *See Equipping the Court, supra* note 9, at 458-460.

which have in strict law no binding force, but which constitute at the same time an authoritative expression of the existing law'.[14]

According to this line of thinking the States themselves could ask for an advisory opinion of the Court. But besides this option an advisory opinion of the Court on its own initiative could be useful in view of the experience and the authority of the Court. Those advisory opinions could clarify obscure points in treaties or laws which the Court deems necessary and desirable. This would also be useful for space law.

In the session on space law of the International Court of Justice Colloquium, Jasentuliyana referred to the question whether organizations could be parties to a dispute before the Court. In his opinion a dispute between ITU and INMARSAT could be brought to the Court. He mentioned that this would prove that the ICJ has a role to fulfill in space law, the more so as in space law the responsibility for space activities still rests on the States, and the ITU had recognized the ICJ in its statutes. I think this is an interesting question and I do not see a valid reason why a form of cooperation between States, realized in an organization, could not be involved in the settlement of disputes before the Court, although admittedly in Article 34 of the Court it is expressly stated that 'Only States may be parties before the Court'. It may be desirable to add a clause to Article 34 saying that an organization of States may also be a party in a dispute for the Court.

In that case one State, member of an organization of States, could be appointed as a representative of that organization to be a party in a dispute before the Court. In that context there is also the problem whether one State and an organization of States, when represented by one State, can be considered as equal parties.

Another complication would arise if a State does not fancy starting a dispute against a certain State in this organization. In the session dedicated to the subject 'Increasing the use and appeal of the Court' Judge Kooymans declared: 'It is no longer exceptional that States transfer parts of their sovereign rights to an association or organization of States, which becomes the new holder of such sovereign rights.' As an example, he mentioned the European Community, saying 'but it certainly cannot be excluded that this will become a quite common trend'.[15]

This latter may be considered not to be of paramount importance in cases where private legal problems are involved. Moreover, in such disputes arbitration will be the only possibility, as things are at present.

A point mentioned by Böckstiegel[16] is the question whether a special chamber could deal with several cases simultaneously, in case a

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[14] HERSCH LAUTERPACHT, THE FUNCTION OF LAW IN THE INTERNATIONAL COMMUNITY 336 (1933).

[15] *Increasing the Use and Appeal of the Court, in* INCREASING THE EFFECTIVENESS, *supra* note 7, at 62.

[16] K.-H. Böckstiegel, *The Settlement of Disputes Regarding Space Activities After 30 Years of the Outer Space Treaty, in* OUTLOOK ON SPACE LAW OVER THE NEXT 30 YEARS 237-249 (G. Lafferranderie and D. Crowther eds., 1997).

speedy procedure would be deemed essential. It is a matter for the International Court of Justice to consider when a special chamber for space law is to be established. Furthermore, I would like to mention Böckstiegel's suggestions for an efficient case management in the same study.

Observations on methods and cases

The cases and methods of dispute settlement in space law were also reviewed in a session of the International Institute of Space Law,[17] in which session Williams dealt extensively with the proposals of the International Law Association, giving as her opinion that inasmuch as most of the provisions of the proposed Convention on the Settlement of Disputes related to Space Activities are applicable at the present time, a new international instrument is not necessary. In that same session, Safavi gave a survey of the different issues that could give rise to disputes, namely: disputes occurring from civil space activities; disputes occurring from criminal acts; a combination of the two above mentioned cases; and disputes resulting from the application and interpretation of principles mentioned in international conventions and treaties.[18]

A very special case has been commented on by Zhukov and Veshchunov, namely the liability for copyright infringement in the case of TV transmission via satellite (Essel Vision's claim against Intersputnik). This is a good example of a practical application which will become more and more frequent as telecommunications is the most used activity of satellites in outer space. Zhukov and Veshchunov commented on a case that occurred in 1993. The dispute was between two broadcasting companies which accused each other of being in breach of copyright. The authors give the following facts: 'In 1993, India's Essel Vision (a subsidiary of ZEE TV) stated that its right for public demonstration of films in India had been violated by Asia United Media Ld. (AUM) registered in the UK. AUM leased communications channels from Intersputnik. It was stated that Intersputnik bore joint responsibility with AUM that was in breach of copyright. According to the plaintiff's lawyers, who referred to a provisional authority of the Bombay High Court, the case could be submitted to a Russian court if Intersputnik did not take appropriate measures. The plaintiff's statement at the Bombay High Court could be reduced to the idea that video copyright holders had no right to transmit video cassettes through satellite and cable TV, as defined in Section 14(c) of the Copyright Law of India. In the plaintiff's opinion the copyright for the video cassettes was transferred to the owners only for direct-to-home service. In the decision of October 27, 1993, the Bombay High Court found the plaintiffs' arguments convincing but did not pass any final award. At the same time, the plaintiffs objected (even considering arbitration

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17 *Cases and Methods of Dispute Settlement in Space Law*, 39 PROC. COLLOQ. L. OUTER SPACE, 61-84 (1996).

18 H. Safavi, *Cases and Methods of Dispute Settlement in Space Law*, 39 PROC. COLLOQ. L. OUTER SPACE, 68-72 (1996).

proceedings) against film satellite transmissions via channels originating in Russia whenever AUM had no appropriate copyrights. At Intersputnik's request, the President of AUM advised that his company had all necessary rights to demonstrate TV programs in India and flatly repudiated the alleged copyright violation."[19]

As I mentioned before: in space law disputes between private parties, arbitration is the only means of settlement. I would like to add some observations about the awards in arbitration on commercial space matters. In an interesting article Menzies pointed out that on "1 September 1995 the 1994 Arbitration Act came into effect in the People's Republic of China". Of international importance is the Chinese International Commercial Arbitration Commission (CIETAC) which has jurisdiction to hear foreign related arbitration. As Menzies explained, this is a particular form of arbitration that is dealt with in Chapter 7 of the Arbitration Act. Thus CIETAC's Arbitration Rules have to be followed when dealing with China. But the meaning of the word 'commercial' in the UNCITRAL Model Law will be taken into account.[20]

In view of the increasing volume of private activities in space, national laws in the special field of space law become ever more important. It will certainly be necessary in space law to use the modern term 'globalization'. Combining the adaptation and harmonization of national space laws with existing treaty regulations and principles in international space law will be a problem that needs to be addressed urgently.

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[19] G. P. Zhukov and V. S. Veshchunov, *Liability for Copyright Infringement in the Case of TV Transmission via Satellite (Essel Vision's Claim against Intersputnik)*, 39 PROC. COLLOQ. L. OUTER SPACE, 73-74 (1996).

[20] I. Menzies, *The Recognition and Enforcement of Arbitral Awards in the People's Republic of China*, AUSTRALIAN INT'L L. J., 111-129 (1996).

PROSPECTIVE SPACE LAW

Aldo Armando Cocca*

Introduction

The exploration of outer space and celestial bodies gave an unprecedented opportunity to legal science: an omni-comprehensive vision of present and future situations. Among the many innovations that it brought about, further remarks will be made on seven which relate to the following briefly indicated subjects and corresponding headings:

1) The recognition of new legal subjects, in particular the enshrinement of the concept of mankind as an international legal subject;

2) Abolition of the principle of sovereignty in space and its replacement by the principle of jurisdiction and control;

3) Full compensation for damages caused by space activities;

4) Outer space, celestial bodies and their natural resources regarded as the common heritage of mankind;

5) Astronauts regarded as envoys of humankind;

6) International cooperation as an obligation in space activities;

7) International liability of states for damages caused by space activities.

1) Recognition of Mankind as an International Legal Subject

The first opportunity I had to express the need to recognize and proclaim mankind as a legal subject was in 1944. At the end of my examination on Public International Law, the tribunal asked me to speak about the meaning of 'international community'. I answered that it is improper to utilize the term community in connection with a reference to States, due to the fact that this word is applied to associations of persons with a superior aim. The exceptions to this would be the United Nations and the organs of its system. For this reason, the term is rightly spoken of with reference to religious communities, as well as human groups that gather scientists, writers, artists.

In 1962, I wrote that Space Law rules are applicable to all activities of man in outer space which serve an interest on Earth. The word man was taken, of course, in the sense of mankind. In my paper, I anticipated the emergence of mankind as a new subject created by Space Law.[1]

The 1967 Space Treaty in the first paragraph of its Preamble states: *Inspired* by the great prospects opening up before mankind as a result of man's entry in outer space. Thus, in this brief paragraph the word 'prospect' is used for the first time in an international instrument and

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[1] A. A. Cocca, *Basic Statute for the Moon and Heavenly Bodies*, 5 PROC. COLLOQ. L. OUTER SPACE 36 (1963).

'prospect' is used for the first time in an international instrument and mankind is recognized as a legal subject. It should be recalled that man is also recognized as a subject of Space Law. In the second line of the Preamble the concept of mankind as a legal subject is reaffirmed when reference is made to the *common interest of all mankind* in the progress of the exploration and use of outer space. The third paragraph of the Preamble also recognizes 'peoples' as legal subjects, when it states that the exploration and use of outer space should be carried on for the *benefit of all peoples* irrespective of the degree of their economic or scientific development. It may also be recalled that the equality among peoples is reinforced by this last phrase where the dignity of peoples is the criterion of their equality.

In view of the foregoing, man, peoples and mankind are recognized as legal subjects under Space Law, and so an end is put to the discussion of internationalists as to whether they should recognize, among others, the individual as a subject of international law.

2) Abolition of the principle of sovereignty in space and its replacement by the principle of jurisdiction and control

States have given up their right to exercise sovereignty in outer space and celestial bodies. This is of major significance because it was a decision that appeared in Resolution 1962 (XVIII) of December 13, 1963 entitled: *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space* which was adopted unanimously by the United Nations General Assembly. The procedure was part of the strategy of obtaining the recognition of principles through resolutions of the General Assembly prior to the consideration of the text of a treaty.

The text of Article II of the Outer Space Treaty contained no obstacle to its approbation in the General Assembly and cannot be more explicit: *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.*

In replacing the principle of sovereignty, Article II established a clear and precise principle, full of legal content, that of *jurisdiction and control.*

3) Full compensation for damages caused by space activities

The limitations of liability in Air Law, Nuclear Law and other legal branches, were abandoned in the elaboration of Space Law. The reasons that brought about the liability limitation had lacked a valid legal content, they were derived from other causes and interests.

Those who had an opportunity to advance the concepts of the emerging Space Law felt the need to adopt a firm position towards the protection of a victim of space damage. It has been understood that no argument based upon the compensation and damage derived from aeronautical and nuclear activities could be sustained anymore because of

its lack of legal and ethical content. The discussions that went on in scientific meetings shaped the opinion of those who decided the question. So, when the debates in COPUOS took place, there were no differences regarding the proper criteria among its members.

4) Outer space, celestial bodies and their natural resources regarded as the common heritage of mankind

Common heritage is a principle born for and within Space Law. Once the International Institute of Space Law was created and the first Colloquium was held, the participants had the opportunity of advancing their thoughts in connection with the common heritage of mankind.

In the first Colloquium (The Hague, 1958), I stated that it was necessary: a) to declare the Moon open for utilization by the international community of nations; and b) to draw up regulations for the utilization of the Moon for peaceful purposes.

In my view, the existence of natural resources on the Moon is an evident fact. It is therefore necessary to lay down regulations for their exploitation.[2]

On the occasion of the Fifth Colloquium (Varna, 1962), I proposed to declare that celestial bodies were to be considered *res communis omnium for all mankind*, regardless of the nation that had reached and occupied them.[3]

During the Sixth Colloquium (Paris, 1963), I said: The intellectual and cultural capital of all humanity transforms the *celestial products* into *res in commercium*, hence all humanity has the right to share in the benefits of production.[4]

In the Seventh Colloquium (Warsaw, 1964), I stated: The wealth contained in the celestial bodies or their natural resources is a *res communis humanitatis,* much as the celestial body itself, the reason being that the wealth contained forms part of the celestial body and no separation has taken place. On the other hand, a celestial product is a portion of a celestial body, separated from its substance.[5]

In connection with the codification of Space Law, the principle of the common heritage of mankind was utilized and explained on June 19, 1967, in Doc. A/AC.105/C2/SR75 (Spanish, English and French texts), corresponding to the Inaugural session of the COPUOS of that year. This means that the principle was introduced in Space Law by the Argentine Delegation prior to the Note Verbale of 17 August 1967 of the Embassy of

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2 A.A. Cocca, *Principles for a Declaration with Reference to the Legal Nature of the Moon,* 5 PROC. COLLOQ. L. OUTER SPACE 36 (1958).

3 A.A. Cocca, *Basic Statute for the Moon and Heavenly Bodies,* 5 PROC. COLLOQ. L. OUTER SPACE 39 (1962).

4 A.A. Cocca, *Determination of the Meaning of the Expression "res communis humanitatis" in Space Law,* 6 PROC. COLLOQ. L. OUTER SPACE 69 (1963).

5 A.A. Cocca, *Legal Status of Celestial Bodies and Economic Status of the Celestial Products,* 7 PROC. COLLOQ. L. OUTER SPACE 19 (1964).

Malta, which naturally had received the documentation of COPUOS being a representative to the United Nations.[6]

5) Astronauts as envoys of humankind

To reinforce the nature of mankind as a legal subject, Article V of the Space Treaty establishes that States parties to the Treaty *shall regard astronauts as envoys of mankind in outer space and celestial bodies*. In this sense, States shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory of another State Party or on the high seas. When astronauts make such a landing, they shall be safely and promptly returned to the State of Registry of their space vehicle. Article V also establishes the duty of assistance by astronauts of a State Party to other astronauts of another State Party in outer space. Finally, Article V determines that States Parties to the Treaty must immediately inform other States Parties or the Secretary-General of the United Nations of any phenomena they discover in outer space, including the Moon and other celestial bodies which could constitute a danger to the life or health of astronauts.

As we can observe, the Treaty establishes specific rules for the astronauts. In this regard, it offers a new concept and a new extent of representation in Article V (envoy of mankind). The term "envoy" has a precedent in diplomatic law, that of an envoy extraordinary. An envoy ranks just below an ambassador and always is an agent, a messenger. The reason for this unique concept lies in the fact that astronauts have been vested with the legal representation of all mankind in outer space and celestial bodies. No former representation has ever been as wide and, politically, it goes beyond the most audacious ambition. On the other hand, this investment was recognized in the General Assembly by unanimity and acclamation.

6) International cooperation as an obligation in space activities

International cooperation is a goal in international law. In Space Law it is an obligation. In this sense, Article I of the Outer Space Treaty (OST) establishes two principles: freedom of scientific investigation jointly with the duty of facilitating and encouraging co-operation in such investigation. Article XI determines that, in order to promote international co-operation in the peaceful exploration and use of outer space, States

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[6] This appeared in the following document of the First Committee "Examination of the Question of the Reservation Exclusively for Peaceful Purposes of the Sea Bed and the Ocean Floor and Subsoil thereof, Underlying the High Seas beyond the Present Limits of National Jurisdiction, and the Use of their Resources in the *Interest of Mankind."* (Emphasis added).*See* UN GAOR, 22nd Sess, Supp. No. 16, UN Doc. A/C.1/Pv. 1515 (1967).

parties conducting activities in outer space agree to inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of the nature, conduct, locations and results of such activities. The Secretary-General of the United Nations, on receiving the said information, should be prepared to disseminate it immediately and effectively.

Until this approbation of the OST, there was no other text so explicit and binding in connection with international cooperation.

7) International liability of states for damages caused by space activities

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

As it can be seen, the State bears the primary responsibility for any activity in outer space and for these purposes the traditional interpretation to regard an international organization as a legal subject is ignored.

The Strategy to Put the Innovations in the Preamble

In the same way as the United Nations Charter, the Space Treaty put many substantial innovations of legal science in its Preamble. The principles and concepts contained in the Preamble of the Charter lasted without difficulties during the 22 years that separated one instrument from the other. The 1967 Space Treaty reinforces the 1945 Charter and certifies to the success of the strategy used.

One of the reasons that the OST entered so rapidly into force is the method utilized in the discussions of its principles. As soon as the deliberations started, the method of consensus was adopted. This means the consent of *all*, not the majority, of the persons that constitute a corporation or assembly. It implies coincidence, conciliation, concord, harmony, good faith.

Consensus expressed in international organizations or diplomatic conferences implies the responsibility of the one who gives it. It is a compromise of each one in a process more complex than vote and denotes conciliation. It is affirmative by the way in which it is expressed: it is a sum of affirmative attitudes and is positive in its consequences. It is,

therefore, a practical procedure. Everything is clear, nothing is left to be clarified.

The major consensus towards which mankind is expected to go is the universal consensus for peaceful coexistence. It is a special merit of Space Law to have incorporated this procedure as a course of action to create itself.

EVENTS OF INTEREST

A. PAST EVENTS

U.N. REPORTS

Symposium on Review of the Status of the Outer Space Treaties

On Occasion of the 37th Session of the Legal Subcommittee (LSC) of the United Nations Committee on the Peaceful Uses of Outer Space in Vienna, the International Institute of Space Law (IISL), in cooperation with the European Centre for Space Law (ECSL) organized - as in previous years - a Symposium. It took place shortly after the opening of the Session of LSC on March 23, 1998.

Dr. Nandasiri Jasentuliyana, President of the IISL, Deputy to the Director General, United Nations Office at Vienna, and Director, Office for Outer Space Affairs, had requested *Dr. Ernst Fasan,* Honorary Director of IISL, to serve as coordinator, and *Mr. Philipp McDougal,* Associate Legal Affairs Officer to the UN Office for Outer Space Affairs, to act as rapporteur.

Fasan welcomed the audience which consisted of most of the delegates of the Legal Subcommittee Meeting, and of several other attendants, and indicated the Agenda which would deal with the five Outer Space Treaties and Agreements, to be examined by outstanding speakers, namely: *Dr. Stephen Doyle,* on the 1967 Outer Space Treaty; *Dr. Gabriel Lafferranderie,* substituted by *Dr. Andre Farand,* on the 1968 Rescue Agreement, *Dr. Frans von der Dunk,* on the 1972 Liability Convention; *Dr. Lubos Perek,* on the 1976 Registration Convention; and, as the scheduled fifth speaker had excused himself, *Dr. Stephen Doyle* and *Dr. Andre Farand,* on the 1979 Moon Agreement.

The coordinator pointed out that the topic of the Symposium was on the Agenda of the Legal Subcommittee for this year and expressed his hope that the papers to be presented would informally provide some background information for the audience. He then called on the first speaker.

Doyle reported on the 1967 Outer Space Treaty which had received 93 Ratifications, and 27 more Signatures. He mentioned the earliest work on space law, that of *Vladimir Mandl.* Then, the author explained the ratification process in the USA, where after receiving advice from the Senate, it was the President by whose signature the ratification process was completed, and the international instrument, thus ratified, became part of the law of the United States. He added that there were nine topics not yet regulated which would now or soon require COPUOS-LSC attention, namely:

1. Roles and Status of International Organisations;
2. Roles and Status of Private Organisations in Space;

3. An Agreement (Principles) on Space Debris;
4. Intellectual Properties Created in Outer Space;
5. A System of Space Environmental Law;
6. Legal Status, Rights & Obligations of Crews in Space;
7. Legal Regime for Space-Based Navigation Systems;
8. Delimitation of Outer Space; and
9. Recurring, Frustrating Problems of Terminology.

Farand delivered the paper of *Lafferranderie,* entitled "The European Space Agency and the Astronauts Policy." He pointed out that there was not only the "Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space" to be considered, which had entered into force on December 3, 1968, but also two other legal instruments, namely:

1) The new International Agreement on the Space Station and the Memorandum of Understanding between NASA and ESA, and

2) the Resolution to be passed the last week of March, 1998, on the setting up of the European Corps of Astronauts replacing a previous Resolution passed in 1989.

He deemed a "Unified European Space Agency policy on Astronauts" as necessary, and brought as example the Spacelab Agreement and Memorandum of 1973. The Spacelab was considered to be an integral part of the Shuttle, and the first European Astronaut, *Ulf Merbold,* was thus subject to US Laws and regulations during this flight in 1983. The same is to be said regarding the MIR flight: "The Russian Law applies."

In the "Columbus Declaration," drawn up on December 15, 1987, there is a "Code of Conduct" mentioned which ought to be drawn up, but still "the Astronauts shall be placed under the authority of the flight commander of the inhabited base." The paper then explained the recruitment, selection, and training of ESA Astronauts, and finally the ESA/NASA Astronaut Training Agreement of 1992, and the Standards of Conduct Agreement to be signed by the astronaut assigned to a flight; it also had an extensive bibliography.

The third panelist, *Dr. Frans von der Dunk,* had to excuse himself by telephone in the last moment due to a (thankfully not serious) accident. He submitted his paper 'The 1972 Liability Convention Enhancing Adherence and Effective Application" earlier so that this document could be read by the Rapporteur. *Dunk's* paper pointed out that the Liability Convention has been ratified by 76 States and signed by a further 25 Nations. He showed that the Convention is essentially an elaboration of Art. VII of the Space Treaty and demonstrated that it provides an interesting case for interpreting the Mexican proposal in the broadest sense.

Dunk discussed the question whether the definition of "space object" would need further definition, and then pointed out the difficulties arising from damage done by "unidentifiable space debris." Regarding the definition of the term "damage," he was of the opinion that the "mere pollution of the space environment which is almost by definition the result

of the coming into being of space debris," is not to be deemed as "damage" in the sense of the convention. He called for an authoritative interpretation, for example by way of an UNCOPUOS - guided Resolution.

He then demonstrated that the Liability Convention does not take private space activities into account in a detailed manner but that inability exclusively rests upon states. He gave several examples that this regulation might not be sufficient, that national laws might have to be considered, and how international liability could be linked with national liability. He concluded that the increase of private involvement in space activities, and the growing risks originating from space debris require either formal amendment or at least informal but authoritative interpretation in order to "fill the drinking pit before the calf has drowned."

Perek first gave a history of the registration practice even before the signing of the Space Treaty, and the Registration Convention, going back to 1962 when USA and USSR announced their first starts, up to the last one, done by Luxembourg in 1997. The Registry of the UN Secretary General which consists of issues of governmental announcements appears in the series of UN documents A/AC.105/INF, and goes up to No. 401. For publication of the launching announcements a new series of documents (ST/SG/SER.E) was introduced, and a third series, (ST/SG/SER.E/INF) "contains information furnished by the States on the establishment of national registers in compliance with Article II of the Convention."

Perek then discussed the Report of the Secretary General of the UN in accordance with the General Assembly Resolution 41/66 regarding the application of the Convention between 1975 and 1986 which appeared in an Annex of his paper. It listed the functional objects only, whereas the nonfunctional had not been registered. Of the 1474 objects launched in this period, 1438 had been registered. Of the 1297 objects launched between 1986 and 1996, 1225 had been registered. The speaker then pointed out that the data furnished to such a great extent did not give an indication as to where those objects could be found! But some indications can be found in the Spacewarn Bulletin by COSPAR, in the NASA Two Line Elements or in the ESA DISCOS System.

The speaker said the timeliness of announcements was often missed (months instead of hours or at least days), and he discussed the difference in the formats used by various States.

In spite of those weak points the author thought that the Convention was a valuable instrument especially in the acknowledgement of responsibility of the launching States for space objects by registering. Informal agreements, for example, the Interagency Debris Coordination Committee on termination of the activity of satellites, on finding congruence with the names used by ITU, and the question of NPS were discussed. The ANNEX mentioned above contained a "List of unregistered Space Objects from 1976 to 1996," and the number of relevant payloads.

Due to the absence of *Prof. Ram Jakhu,* the rapporteurs present had decided that *Dr. Doyle* and *Dr. Farand* would briefly report on the 1979 Moon Agreement. *Doyle made* special reference to the paper of *Dr. Eilene*

Galloway during the 1997 Turin Space Law Colloquium, and he urged the auditorium to obtain the relevant Proceedings to be published, which would also contain as an Addendum the papers of the UNCOPUOS/LSCIISL Symposium of 1997.

Doyle agreed with *Galloway* that no space faring nation had ratified the said Agreement, largely because its provision that the Moon is the "common heritage of mankind" is linked to criteria to establish an international regime when its natural resources are about to become exploitable. *Doyle* pointed out that obviously no State would ratify an international agreement unless it would benefit it in some way, and at least not impose unestimable duties.

Farand discussed the European situation, including project "Euromoon" which had to be dropped. He pointed out that the ESA/NASA Astronaut Training Agreement of 1992, and the Standards of Conduct Agreement to be signed by the astronaut assigned to a flight would apply to ventures to and on the Moon.

After these papers there followed a questions and answers period. It was started by questions of the Representative of Japan, *Mrs. Naoko Sugita to Dr. Doyle* about the authority involving flight to a station, and on the station itself. *Doyle* pointed out that such authority was unclear yet but that - similar to the authority of a captain of a ship on the high seas - a special set of rules would be necessary, especially in order to ensure the safety of the crew.

There followed a learned discussion between *Prof. Vladimir Kopal* of the Czech Republic and *Dr. Doyle* about value and content of *Mandl's* book, which soon will be republished by *Doyle*.

Kopal expressed and explained his opinion that the Registration Convention seemed to serve its purpose. The Moon Agreement, however, does not deal with our natural satellite alone but with the other celestial bodies of our solar system also, including asteroids. Negotiations similar to those regarding the Sea Bed Convention might facilitate the situation. He proposed to add to *Doyle's* nine topics a tenth one, namely, "The Legal regime of Natural Resources on Celestial Bodies."

The representative of Morocco, *Mme Souriya Otmani* requested more details about the ratification process in the USA, and about remedies for eventual non-application of treaties. The answers were given by *Dr. Doyle,* with a focus on the US legal situation.

The closing remarks were given by the Chairman of the Legal Subcommittee, *Dr. Vaclav Mikulka,* who expressed his view that today's Symposium was especially fruitful and interesting. He then closed the Symposium with thanks to the IISL and ECSL, the speakers, the coordinator and the audience.

An informal reception provided further opportunities for an informal exchange of views by the attendants.

Dr. Ernst Fasan,
Honorary Director, IISL.

COMMENTS

Elements of Space Law in the Hungarian Legal System

Antecedents

Space Research in Hungary began with an experiment carried out by the physicist Zoltán Bay. He and his team on February 6, 1946, registered an echo from the surface of the Moon by radio radar equipment. Something artificial (a package of photons) from Earth reached another celestial body. It was a European "first", since independently of Bay's success, a simultaneous experiment was carried out in the United States.

Ten years after the Moon-experiment, a group of scientists realizing that Hungary should be prepared for the beginning of space exploration during the International Geophysical Year, founded the Committee on Astronautics as a non-governmental society.

After launching the first satellites, international cooperation started in the sixties. The Hungarian Academy of Sciences (MTA) became a member of COSPAR in 1962. The committee was renamed the Hungarian Astronautical Society. It organized workshops and conferences that cover a wide range of topics from space physics and satellite geodesy, to remote sensing and space law. The Society has been a member of the IAF since 1959.

In 1966, Hungary joined the cooperation Intercosmos (IC) initiated by the Soviet Union. A temporary agreement on collaboration of working groups was signed in 1968 while the Agreement on Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes was concluded on July 13, 1976. Adoption of decisions and recommendations on programs and plans was carried out by the Meeting of Leaders of National Organizations. In the beginning the national coordinating body in Hungary was the Government Committee for Space Research. In 1978 this responsibility was transferred to the Intercosmos Council of the Hungarian Academy of Sciences. The Secretariat of the Council was responsible for international relations mainly limited to socialist countries. This organization of space activities continued until 1991 when the IC cooperation was concluded.

Satellite communication in 1971 was separated from IC activities and the Intersputnik International Satellite Telecommunication Organization was established by nine IC countries - Hungary among them. Hungary was also a party to another agreement concluded in the framework of the IC: the Convention on the Transfer and Use of Data of the Remote Sensing of the Earth from Outer Space signed in 1978. (The two conventions were promulgated by law decrees No. 23 of 1972 and No. 30 of 1979, respectively).

Within the IC cooperation a fruitful space activity was carried out by Hungarian institutions involved in space research. Worth mentioning is the fact that the IC contributed to the development of space law science by

its Space Law Seminars. These were useful fora for discussing current problems mainly from the agenda of the COPUOS Legal Subcommittee.

Organization of Space Activities Today

Even in the eighties the IC cooperation was going its traditional way. Basic research was the main topic without taking into consideration the rapid progress of application in the west. The political-economic changes necessitated a new orientation and a new organization.

In January 1992 a governmental decree created a new organization for coordination of research and practical uses of space technology. (Fig. 1)

The Hungarian Space Board consisting of members delegated by ministries and government offices is responsible for policy issues, working under the supervision of the Minister of Transport Communication and Water Management.

The Scientific Council for Space Research consists of experts ensuring the scientific background for the Board and the Space Office. Its important task, among others, is evaluating tenders for financial support of projects submitted by institutions

The Hungarian Space Office is an operative body. It coordinates activities of institutions taking part in space research, promoting the participation in international relations including the UN-COPUOS level.

The new space organization as a first decision stated certain priorities. It decided to concentrate Hungarian space research capacity in five directions: 1) Space Earth Systems; 2) Space Physics, solar studies; 3) Life sciences; 4) Satellite technics and technology, including communications and broadcasting; 5) Space technology. Highest priority is given to the first due to positive effects on the national economy.

The opinion of the Board and the Council from the beginning has been that a small country like Hungary can and has to participate in scientific space missions though for a long time it will not be able to launch its own satellites or carry out manned missions in outer space. After the predominance of financial methods of a planned economy the new organization had to initiate a different way of space activities. Financial support is now function-oriented in a new state tender system. In this way the space organization has been able to provide the financial conditions to about 25 institutions involved in space projects.

Treaties, Conventions, Agreements

Hungary is a party to the most important international treaties constituting the main source of the body of space law rules. Hungarian constitutional law in 1989 accepted the fundamental principle that "the Hungarian legal system should recognize the rules generally acknowledged in international law and safeguard the conformity of municipal law to international obligations undertaken by the country." (Act No. 31 of 1989, Sec. 7, para. 1) Accordingly, the following instruments constitute an

integral part of the Hungarian legal system: Principles Treaty -- Law-Decree No. 4 of 1967, Rescue Agreement - Law-Decree No. 22 of 1969, Liability Convention - Law-Decree No. 3 of 1973, Registration Convention - Law-Decree No. 7 of 1978.

An important task of the new Hungarian organization has been the conclusion of agreements on international cooperation on bilateral or multilateral bases. Such contracts were signed with the Central European Initiative and NASA in 1992, with the National Space Agency of the Ukraine in 1994, with the Russian Space Agency and the Space Research Organization of India in 1995.

New developments in this field are the promulgation of the Agreement with the European Space Agency signed at Venice on April 10, 1991 (Government Decree No. 93 of 1997) and the Agreement with ESA concerning Hungary's participation in the scientific experiment development programme (PRODEX) of ESA.

The Venice Agreement is the most important contract of cooperation concluded after the historical changes of 1989. This cooperation, however, is not unprecedented. In Article 1 the Parties affirm the desire to strengthen and extend their existing cooperation in the peaceful uses of outer space for their mutual benefit, and to provide the appropriate means to further cooperation.

As fields of cooperation, the Agreement provides: solar system exploration, space astronomy and astrophysics, solar-terrestrial physics, earth observation, space meterology and geodesy, space biology and medicine, fundamental research in microgravity, telecommunications, and other fields as may be agreed from time to time. (Art. 2)

One of the forms of cooperation is the development of joint projects in the above areas. (Art. 3.2) Other forms are: periodic consultations on matters of mutual interest, award of fellowships to each other's scientific and technical personnel, exchange of specialists, joint symposia and conferences, and use of ESA networks (ESIS) for electronic mail data exchanges.

The agreement contains practical modalities of execution, such as: high level representatives of both parties shall meet not less than once every two years to review the implementation of the Agreement and provide exchange of general information of space activities, in accordance with their respective rules of dissemination of such information, obtained in joint experiments made available to the other party subject to rules mutually agreed upon, and intellectual property rights. (Art. 4)

Concerning personal contacts, the Parties in pursuance of the Agreement shall facilitate exchange visits by their respective scientists. They shall designate a representative who shall be responsible for defining and examining cooperative programs. Joint working groups may be constituted to examine proposals and make recommentations for the Parties. (Arts. 5-6)

The Agreement otherwise is a frame/enabling/contract: namely, its implementation is subject to arrangements on specified projects to be concluded on each occasion.

The Prodex-Agreement was signed at Budapest on Jan. 23, 1998, referring to Hungary's request for participation accepted by the Council on March 21, 1996. By the Agreement Hungary becomes the Participant in the PRODEX in the capacities and under the conditions laid down in the Declaration of October 8, 1986 and the Implementing Rules.

In practical terms, Hungary according to the Agreement "is interested to cover, with the benefit of the Agency's management the following fields of activity through PRODEX": participation in the ROSETTA experiments, participation in the CLUSTER data handling, in providing a dosimeter for the International Space Station, in the ERS/ENVISAT data handling/remote sensing/ and "additional areas of space research transmitted to the Agency examined by the PRODEX participants." The Agreement became effective by the signature for a duration of the PRODEX Declaration.

Air and Space Law

The profound changes of the economic and political system in Hungary necessitated new air law regulations considering the demands of free market economy. The parliament fulfilled this task by a new air code "Act No. 97 of 1995 on the Air Traffic". This statute replaced "Act No. 8 of 1981 on Civil Aviation" which was based on conditions of a centralized, planned economy. The new rules reflect the intention of liberalizing State control to an indispensable limit.

Among the new elements of this codification of air law is the definition of Hungarian airspace which indirectly also concerns a basic issue of international space law. Former rules did not attempt to define airspace subject to Hungarian sovereignty. The Act now declares: "Hungarian airspace is the part of airspace above the territory surrounded by confines of the State to the altitude where air traffic is physically possible. The Hungarian Republic has complete and exclusive sovereignty over its airspace." (Sec. 4, emphasis added).

This definition - though it does not refer to free outer space above the altitude of physically possible air traffic - could be hardly interpreted otherwise than the implied acceptance of the aerodynamic theory of delimitation. The upper limit of Hungarian air sovereignty under actual technical level would be consequently at an altitude of about 30-40km. It is not meaningless that the first draft of the Act would have accepted the theory of effective control stating that 'the Hungarian airspace ends at the altitude of air navigation and the effective range of anti-aircraft defense.' In this respect, the new definition does not impair the security demand of the country in an age of missiles when intercepting of a hostile object would be probably impossible within a delimited space above the state

territory. The above rules do not exclude making use of the right of self-defense above sovereign airspace as defined in Article 4 of the Air Code.

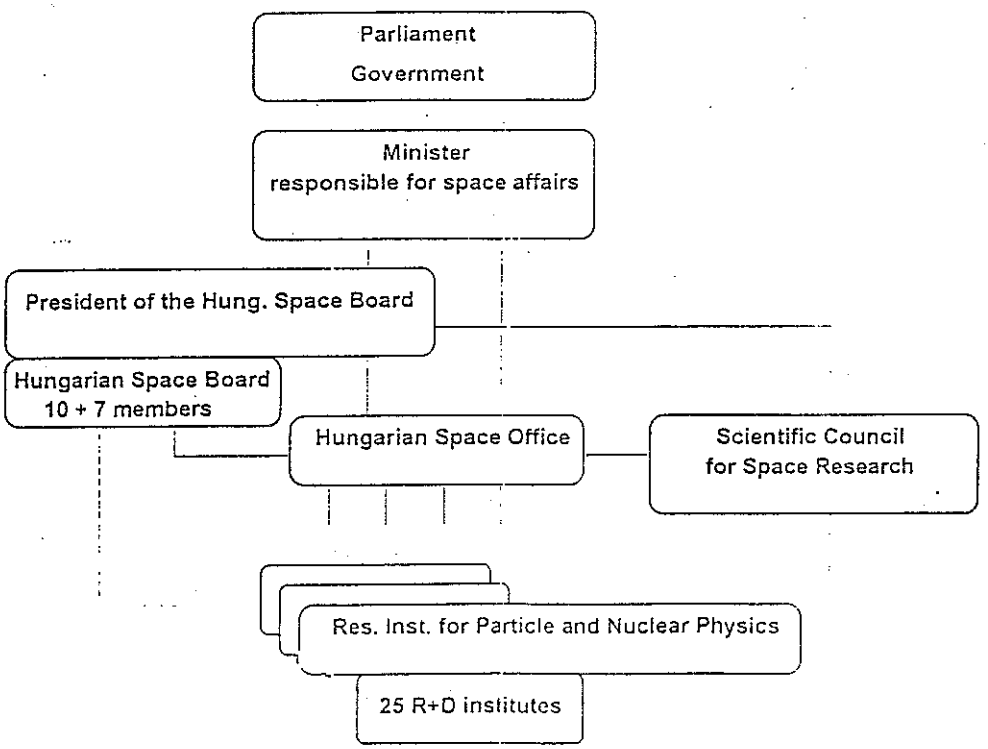
As to the problem of passage of launch vehicles or other space objects through Hungarian airspace, it can be stated only that the Act does not include this activity in "air traffic" which is defined as "traffic locomotion in the airspace by an aircraft" (Sec. 71, para. 8, emphasis added), especially because the definition of aircraft according to the Act does not apply to such objects.

Otherwise, innocent passage of space objects above the altitude "where air traffic physically is possible" according to strict interpretation of the Act would not offend Hungarian air sovereignty.

*Gyula Gál**

Fig. 1.

ORGANIZATION CHART OF HUNGARY'S SPACE ACTIVITY



CASE DEVELOPMENTS

Aerospatiale, the French aerospace agency, filed a suit in U.S. District Court for the District of Columbia on Dec. 11, 1997 charging its competitor Daimler-Benz with **copyright infringement,** unfair competition and false advertising and claiming that a satellite photo constructed in France by Aerospatiale for Nahuel, the Argentinean space program, bearing Aerospatiale's copyright notice in the back was doctored by Daimler Benz and then published as its own in Aviation Week and Space Technology and in one of its corporate brochures.

The U.S. Justice Department brought a lawsuit against Primestar Inc., an Englewood, Colorado-based company, to block its plan to use the **110 degree DBS slot** - one of three such orbital positions assigned by the ITU to the U.S. - because it is controlled by five of the largest cable television operators in the U.S. who could use their market power to take advantage of consumers.

Executive and Legislative Notes

In an effort to streamline its rules governing direct broadcast satellites, the **FCC** is considering whether companies should be restricted from owning licenses for both cable and direct-broadcast satellite services.

The House Science, Space and Aeronautics Subcommittee is conducting hearings to determine what kind of space agency the United States needs for the future. These **NASA-at 40** hearings would help clarify long-term space goals and overcome what some lawmakers regard as an absence of energetic support for space by the administration.

A bill aimed at deployment of a national **anti-missile defense** system failed to receive the necessary support in the Senate in a close vote in May.

The Senate Commerce, Science and Transportation Committee voted to send to the full Senate S. 1250, an **authorization bill for NASA** for FY 1998, FY 1999 and FY 2000, and S. 1609, the Next Generation Internet Research Act of 1998. A House authorization bill passed last year would authorize more than the Senate in years FY 1998 and FY 1999. It is worth noting that Congress has not sent NASA authorizing legislation to the White House since 1992.

H.R. 1702, the **"Commercial Space Act of 1997"** seeks to identify opportunities for commercial industry, including participation in the International Space Station, grants authority to the Department of Transportation to issue "reentry" licenses, involving homebound trips, for the next generation of reusable launch vehicles that will be operated by commercial companies. This provision is important both for NASA's X-33 program and for other companies whose reusable launch vehicles under current law would not be permitted to reenter the Earth's atmosphere and land following delivery of their payloads to orbit.

The **Senate Version of H.R. 1702** as approved by the Commerce, Science and Transportation Committee includes several provisions which are different from the House bill. Among others, the Senate version: directs NASA to study the possibility of turning the International Space Station over to commercial operators once the outpost is assembled in orbit; permits the conversion of excess ballistic missiles into launch vehicles that could carry out satellite-delivery missions; and aims to clarify complex and sometimes divergent space licensing requirements among various federal agencies. The Committee approved H.R. 1702 in March and the bill is likely to be voted on by the full Senate hopefully some time this Summer.

International Developments

On Jan. 29, 1998, the U.S., Canada, Japan, Russia, together with ESA's 11 Member States (Belgium, Denmark, France, Germany, Italy, Netherlands, Norway, Spain, Sweden, Switzerland and the United Kingdom), forming five Partners, signed the **1998 Intergovernmental Agreement (IGA) on Cooperation on the International Space Station.*** They established the framework of cooperation among the Partners on the design, development, operation and use of the space station and set forth each State's rights and obligations as well as their jurisdiction and control over their respective components of the station. This new IGA is expected to replace the one signed in 1988 upon its entry into force, after ratification by the United States, Russia and Japan.

The French declaration to the IGA states that France will not pay any more for space station operations than the amount it budgets each year for such spending. In actuality, however, if accidents happen, it can be expected that all participating countries will have to pay for them.

The most important feature of the new IGA is the confirmation of Russian participation. As the first international outpost in space the station is expected to be used as a multi-purpose research lab and a test center for new technologies in the exceptional conditions of microgravity.

Because of delays caused by Russian economic problems the **launch of the first space station element,** a Russian-built, NASA-financed core module called Zarya - meaning sunrise - to provide the station's initial propulsion, has been postponed from Aug. 25 to Nov. 20, 1998 to be followed by the first U.S. section, a connecting passageway, called Unity, on Dec. 3. Launch of a service module providing the station's initial crew quarters and the propulsion necessary to keep the outpost in orbit, is tentatively scheduled for April 20, 1999. Dispatch of the first crew of one American commander and two Russians is not expected until July 1999, the earliest. The first phase of station assembly is expected to

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* Excerpts of the Agreement, are reproduced in CURRENT DOCUMENTS, *infra*. For full texts of the Agreement and the Memorandum of Understanding of the same date, see UNITED STATES SPACE LAW - NATIONAL AND INTERNATIONAL REGULATION, Secs. II. 22 (f) and (g) (Stephen Gorove ed., OCEANA 1998).

be completed in January 2000 and the outpost to be fully outfitted with European and Japanese modules by January 2004.

A Joint **U.S.-Ukrainian communiqué of March 6, 1998** states that the cause of nonproliferation would be best served by Ukraine's membership in the Missile Technology Control Regime. U.S. support of Ukraine's membership brings it closer to full-fledged MTCR membership.

ITU's second World Telecommunication Development Conference held in late March in Malta adopted the **Valletta Declaration,** the Valletta Action Plan and the Strategic Plan for the Development Sector with a series of measures aimed at achieving global access to telecommunications.

In April 1998, **INMARSAT Assembly** - over U.S. objections - approved a proposal of its shareholders to transform INMARSAT's structure into a private company operating commercially and issuing publicly traded stock.

Africa Telecom 98, the largest telecommunications event ever held in Africa, took place May 4-9, 1998 in Johannesburg, South Africa, providing a forum for sharing ideas on future trends and discussion of strategies to guarantee, through the appropriate use and management of telecommunications, sustainable development and economic growth for the developing as well as the industrialized world. Also in focus were the latest telecommunication developments, particularly those that will support developing countries in their efforts to leapfrog the infrastructure and information gaps.

At an ITU sponsored Conference held at **Tempere,** Finland thirty-three countries signed an **agreement** on June 18, 1998 **on** the Provision of **Telecommunication Resources for Disaster Relief and Mitigation.** The text contains 16 articles which cover the provision of telecommunication assistance in times of disaster relief, and provide for the protection of representatives of aid agencies and other organizations involved in disaster response, as well as for the safeguarding of their right to possess and use various types of communications equipment, such as mobile phone or radios.

Manfred Lachs Space Law Moot Court Competition

The winners of the US and European preliminary competitions were the Universities of North Carolina, US, and Helsinki, Finland, respectively.

The **Finals** of the 7th Manfred Lachs Space Law Moot Court Competition will be held **October 1, 1998** in Australia. Monash University will host the competition which will take place in the Supreme Court ceremonial room. Three judges of the ICJ have been invited to judge the finals between the teams of the winners of the US and European preliminary competitions.

Other Events

The "**Le Gouëff Advocates**" firm of Luxembourg organized a conference on June 18-19, 1998 for the European Lawyers' Union regarding the "Law of Telecommunications, Information Technologies and Multimedia: Towards a Common Framework." Within this broad context, discussion topics included the liberalization of telecommunications in Luxembourg, competition law in the telecommunication sector, tariff, piracy, electronic commerce, and convergence issues.

Iridium LLC expects to complete in 1998 its constellation of 66 satellites in orbit to combine the world-wide reach of its LEO satellites with land-based systems and enable subscribers to communicate by using hand-held telephones and pagers virtually anywhere in the world.

The Pro Tempore Secretariat of the 3rd Conference of the Americas supported and assisted by the Centro de Investigacion y Difusion Aeronautico-Espacial of Montevideo, Uruguay, announced organization of an International Competition on legal aspects of the different practical applications of space technology included in the substantive topics of the agenda of UNISPACE III to be held in Vienna July 1999.*

The International Space University, Strasbourg, France has been granted permanent-observer status with UNCOPUOS.

Construction of the **rocket launch facility on Kodiak Island,** Alaska, is expected to be complete by mid-1999.

Brief News in Retrospect

The presence of a **mysterious antigravity force,** first discovered but later discarded by Einstein, was recently observed by astronomers who with the help of the Hubble Space Telescope and earth based telescopes studied the motion of exploding stars more than 7 billion light-years away. They found that the antigravity force is causing the universe to expand at an accelerating rate. A seeming paradox in the two theories that lie at the foundation of physics - quantum mechanics and general relativity - suggests that at least one of them is flawed.

An international team of scientists has discovered that nature's smallest subatomic particle, called the **neutrino,** previously thought to have no mass at all, actually weighs one ten-millionth the mass of an electron. The discovery strikes a devastating blow at the traditional explanation of how the universe works at the particle level. Even a cubic inch of deep space holds about 1,500 neutrinos making the universe heavier than thought. While the discovery changes several primary assumptions, it leaves a host of unanswered questions, among them: will the universe collapse under its weight or will it contain so little mass that it will expand forever? Only time will tell.

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* Further information may be obtained from Secretaria Pro-Tempore III CEA, Ministerio de Relaciones Exteriores, Colonia 1206 piso 3, C.P. 11.100-Montevideo, Tel (598-2) 900 18 26, Fax (598-2) 903 03 93, E-mail: iiicea.@mrree.gub.uy

Groups of astronomers have detected small **galaxies** about 12.2 and 12.3 billion light years from Earth, the most distant objects ever seen closer to the big bang beginning of the universe which most astronomers believe was about 13 billion years ago. They have also detected the largest explosion ever observed since the Big Bang which appears to have released several hundred times more energy than an exploding star or supernova.

Astronomers using the Hubble Space Telescope have for the first time sighted and photographed **a planet outside our solar system.**

Pathfinder's Rover robot uncovered evidence suggesting that conditions had been conducive for the formation of life early in Mars history. Although the Pathfinder/Rover mission found no definite evidence of life, because there was liquid water a billion of years ago on Mars, it is conceivable that there could have been life. Similar findings from detailed pictures of the Galileo spacecraft involving Jupiter's moon, Europa, suggest that the moon may have had an ocean of liquid water conceivably harboring some forms of life. At the same time, a recent study by a California research team casts doubt on claims that a rock from Mars contains evidence of life. Nonetheless, scientists were astounded to find **water vapor in** the atmospheres of **Jupiter, Uranus, Neptune, and Saturn's moon, Titan,** which is to be visited by a joint US-European probe in 2004. Also, preliminary findings from Lunar Prospector, launched Jan. 7, 1998 indicate evidence that relatively large amounts of frozen water are concentrated **near** both **the north and south poles of the moon,** buried in the soil over an area of about 25,000 square miles. It is estimated that, if the amount of ice could all be extracted and used for drinking, it would be enough to sustain a lunar-base colony of 2,000 people for well over a century, even without recycling. The cost of transporting such amount of water from Earth to the moon would run into astronomical figures even if space launches could be reduced to one-tenth of their current costs. Of course, the technical challenges of mining the water and making it a resource for drinking water would have to be resolved prior to efforts leading to possible colonization and use of the lunar base as a rocket fueling station for deep space exploration.

A team of astronomers reported in March 1998 that a mile-wide **asteroid** was expected to pass within 30,000 miles of the Earth in 2028 but NASA scientists put the miss at 600,000 miles. They agreed that a catastrophic impact by an asteroid or comet at some time in the future is certain, unless measures are taken to head it off but they disagreed as to what approach to take. An asteroid that collided with Earth about 65 million years ago is thought to have caused the extinction of dinosaurs. NASA would like astronomers to hold news about any Earth-threatening comet or asteroid secret for 72 hours, an effort likely to be doomed to failure.

A storm of high-velocity **Leonid meteoroids** that intercept the Earth every November is expected this year to be the most intense in three decades. They can hit all satellites in orbit and pose difficult operational decisions regarding protective measures to reduce potential damage to optic and sensing equipment.

Malfunction of Panamsat's Galaxy 4 satellite in May wreaked havoc on an estimated 4 out of 5 US pagers, 40-45 million customers world-wide, including a host of communications services, radio and television stations.

NASA's Advanced Communication Satellite project has demonstrated that that **Ka-band systems** can overcome the scattering effect that rain has on radio signals.

The flight of the space shuttle **Discovery** launched on June 2, 1998 was the ninth and final time a shuttle linked up with the aging Mir space station. It returned U.S. astronaut Andrew Thomas who has been living on Mir since January.

A revolutionary spacecraft, named **Deep Space 1,** which uses electrically charged particles from the Sun instead of liquid-fueled rocket engines in order to move through space, is to be launched this summer to fly by Mars, an asteroid, and a comet in a two-year test of new technologies.

A Russian nuclear submarine is to hurl into space in August 1998 a German satellite in the world's **first underwater space launch.**

One of the last foreigners to fly on the Russian station include a veteran French astronaut who is expected to spend five weeks on Mir in mid-1999. The Russians plan to let **Mir** burn up in the atmosphere by the end of 1999 and concentrate instead on the international space station.

Eileen Collins has been designated to become the first woman to command a U.S. shuttle mission.

Takao Doi, a Tokyo-born engineer, participating in the space shuttle Columbia's Nov.-Dec. 1997 mission became **the first Japanese spacewalker.**

Vietnam has become the 82nd member of INMARSAT.

There has been increasing interest in promoting private space travel and **tourism** early in the 21st-Century.

B. FORTHCOMING EVENTS

Because of the absence or uncertainty about the presence of several proposed chairmen, the sessions of the 41st **Colloquium** to be held in **Melbourne Sept. 28- Oct. 2, 1998** have been rescheduled as follows:

Session 1: Managing Space Resources and Revitalizing Space Treaties
Chairmen: M. Davis (Australia) & S.E. Doyle (USA);

Session 2: Confidence Building and Commercial Interests in Space
Chairman: T. Kosuge (Japan);

Session 3: Legal Aspects of Navigation Satellites, GPS, Space Applications and Space Uses
Chairmen: F. Lyall (UK) & M. Komar Kantmaadja (Indonesia);

Session 4: Other Issues of Space Law, including the 30th Anniversary of the Rescue Agreement of 1968
Chairmen: P. Sterns (USA) & He Qizhi (China).

The 15th **National Space Symposium** will be held April 6-9, 1999 at the Broadmoor, in Colorado Springs.

The 42nd IISL **Colloquium** will take place in **Amsterdam,** The Netherlands, **Oct. 4-8, 1999.** The following sessions and chairs have been proposed:

Session 1: Legal aspects of Space Station utilization (patents, property rights, crew, commercial uses, debris, international cooperation, private sector...)

Chairman: Prof. Dr. I. Diederiks-Verschoor (The Netherlands) & Prof. Dr. H. A. Wassenbergh (The Netherlands);

Session 2: New developments relating to legal aspects of telecommunications (LEOs, tethered structures, geostationary platforms in the stratosphere, and recent ITU regulations)

Chairmen: Ms. Marcia Smith (USA) & Dr. L. Perek (Czech Republic);

Session 3: Legal Implications of expanding privatization in space national law aspects, interaction between government and industry...)

Chairmen: Prof. Jonathan Galloway (USA) & Ms. T. Masson-Zwaan (The Netherlands);

Session 4: Other issues of Space Law, including legal aspects of launching space objects from non-terrestrial sites

Chairmen: Dr. J. Monserrat, Filho (Brazil) and Dr. L. Tennen (USA).

As reported by our Journal previously, **UNISPACE III** will be held in Vienna, **July 19-30, 1999** and IISL will organize a four-day Workshop at the beginning of UNISPACE.

BOOK REVIEWS/NOTICES

STUDIES IN INTERNATIONAL SPACE LAW by Bin Cheng (Clarendon Press, Oxford 1997), pp. 798.

The book is a collection of writings by Professor Bin Cheng, starting with pre-sputnik articles and ending with his latest 1995 paper. It is a history of a lifetime devoted to covering -- and creating -- a new branch of international law.

All areas of law have been based on facts. At least, the Latin saying *"Ex facto sequitur lex"* points to that statement. But it is intrinsically true of space law which governs human activities in an environment entirely different from other environments and opened to man only forty years ago. This deep connection between space law and science, in particular astronomy, is offered by this reviewer, an astronomer by education, as an excuse for expressing his opinion on legal matters.

Science and law have another thing in common. Both are based on logical thinking. Science, in our case astronomy, uses for its expression mathematics, while law uses precisely defined terms and logical statements. In fact, scientists, very precise in their mathematics, could learn from lawyers their strict and precise verbal formulations.

Part I, **International Law and Space Law,** leads in five Chapters from the beginning of space activities to a strong statement that space law is an integral part of public international law.

The vast program of international scientific cooperation, sponsored by the International Council of Scientific Unions, the International Geophysical Year, was, indeed, at the beginning of space activities. Bin Cheng, after hearing statements by the US Government and by the Soviet Government about their intentions to launch artificial Earth satellites, decided that the consideration of legal aspects of space could not be postponed any longer. He turned to the basic question, of how outer space should be defined or delimited. Cheng's first paper (Chapter 1) was published one year before the launch of the first Sputnik. It discussed the upper limits of airspace and the legal status of outer space. Outer space must be regarded as free in analogy to the freedom of high seas. In the next Chapter the author investigates high-altitude flights, sometimes pilotless, sometimes possibly in a military mission, and considers the introduction of a "flight space" which would cover both the airspace and outer space.

Chapter 3 which originated in 1960, discusses principles of aerial navigation, i.e. airspace sovereignty, nationality of aircraft, conditions for international navigation, and international cooperation. Cheng comes to the conclusion that these principles cannot be mechanically taken over by space law. They could, however, stimulate new ideas and keep the discussion rather along concrete than speculative lines.

In the next Chapter, entitled "International Cooperation and Control: from Atoms to Space", the author finds that the experience in

international cooperation and control, in particular in the military as well as peaceful uses of nuclear energy, provides valuable lessons for regulation of space activities which could also show the same dual use.

Chapter 5, "The Extraterrestrial Application of International Law", written in 1965, maintains that outer space is res extra commercium and that this fact emphasizes the importance and urgency of a clearly defined boundary between outer space and air space. Further, celestial bodies are res nullius. Claims of sovereignty over celestial bodies can be barred by a treaty on non-appropriation of celestial bodies, if such treaty finds wide acceptance. Now, 33 years later, we still have no delimitation of outer space but we have a widely accepted Outer Space Treaty.

Part II, **The United Nations and Outer Space,** begins with a chapter of the same title. It is a review of the situation in the early years -- it was written in 1961. Of concern at that time was the allocation of frequencies, the use of reconnaissance and surveillance satellites, demilitarization and disarmament and, of course, the establishment of an Ad Hoc Committee on the Peaceful Uses of Outer Space.

Chapter 7, "United Nations Resolutions on Outer Space: 'Instant' International Customary Law", dates to 1965. It examines the status of non-binding UN General Assembly resolutions and their general relation to international customary law. In particular, Resolution 1721(XVI) of 1961 and 1962(XVIII) of 1963 played an important role in the continuation of the Committee on the Peaceful Uses of Outer Space. It could eventually establish the principle of consensus and it could begin its work because an agreement between the two space superpowers had been reached.

Chapter 8, "The United Nations and the Development of International Law Relating to Outer Space", is of a much later origin than preceding chapters. The author delivered a series of lectures in Thessaloniki in 1985 which were published in 1990. Important resolutions and, in particular, the five treaties were discussed and again the legal status of resolutions and their relation to international law was studied.

Part III, **United Nations Treaties on Outer Space,** provides a detailed discussion of four of the five UN Treaties including the various phases of negotiations.

In Chapter 9, "The 1967 Space Treaty", the question of the definition of outer space was again taken up. The author considers it the inevitable first step in any rational approach to the legal problems of outer space. Nevertheless, the Space Treaty has avoided adopting a definition unlike the Antarctic Treaty where the area of application is precisely defined as "south of 60° South Latitude". The Treaty gives no indication from what height its provisions referring to outer space begin to operate.

In Chapter 10, "The 1968 Astronauts Agreement", the author makes an interesting comment that its Article 3 restricts the assistance to astronauts who have alighted, while the 1967 Treaty, by being more general, makes provisions also for assistance in outer space. The chapter is concluded on a critical note, the last section being entitled "How not to make a Treaty".

Chapter 11, on "The 1972 Convention on International Liability for Damage Caused by Space Objects", was written in 1979. The author has a high opinion of the Convention. He concludes:

"All in all, the Liability Convention is a treaty which all the members of the Outer Space Committee and its Legal Sub-Committee may look back with some satisfaction and even pride. Their labour has been rewarded by a convention which not only forms an important chapter in the emergent "corpus juris spatialis", but also deserves an honorable mention in the annals of international treaty law. All it needs now is to be observed in good faith."

No separate chapter has been devoted to the Registration Convention. It has, however, received due attention in other Chapters, e.g. in Part II, Chapter 8, section II B 4; Part IV, Chapter 13, section IV C and Chapter 16, section V.

Chapter 12, "The Moon Treaty", concludes Part III. It was first published in 1980, before it became apparent that the Treaty would eventually enter into force but without the space superpowers being parties to it. The author discusses at length the concept of the *common heritage of mankind* and considers the extension of the word *moon* to celestial bodies of the solar system as extraordinary and, on the whole, considers the drafting of the Treaty as poor.

Part IV, **Outer space, Astronauts and Space Objects,** opens the consideration of space law from the point of view of substance rather than from the point of view of legal instruments. Chapter 13 on "Outer space: The International Legal Framework --- the International Legal Status of Outer Space, Space Objects, and Spacemen" was the subject of lectures given in Thessaloniki in 1979 and first published in 1981.

In discussing the legal status of outer space and celestial bodies, the author expressed very succinctly his opinion on the need for demarcation of outer space from national airspace:

"How it can be argued that these two zones need not in law be clearly demarcated has always remained a great mystery to me."

The international law does not operate on functional delimitation which makes the "locus" irrelevant. This is documented on the example of reconnaissance - which is legal if performed from outside the territory of a state and illegal if it is performed from the territory or airspace of a state. Thus the legality depends on the locus.

The author shows evidence that outer space under general international law would at least begin from the lowest point reached by an artificial satellite, in other words, the lowest perigee ever achieved. From a diagram of known low perigees, provided by the UN Secretariat in 1976,*

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* The diagram appears on p. 396 and again in the following chapter 14 on p. 451. From the point of view of economy of publication perhaps a reference would have been sufficient. On the other hand, since the book is a collection of writings, there is merit in publishing complete texts. The diagram attracted the attention of the reviewer because he prepared it in 1976 for the study of the U.N. Secretariat.

the author concludes that an altitude of 96 kilometers is definitely in outer space. In case the lone satellite was the proverbial one swallow which does not make a summer, the 110 kilometer line should satisfy even the most sceptical.

Discussing the status of the geostationary orbit, the author mentioned the Bogotà Declaration which takes advantage of the fact that there is at present no clear-cut delimitation of outer space and raises claims to the geostationary orbit. The author fears that in the future States which object to remote sensing satellites could claim sovereignty over national space above the heights at which such satellites operate.

The same chapter deals with the legal status of outer space and of celestial bodies under multilateral treaties, with the demilitarization of outer space and celestial bodies and with the legal status of space objects and astronauts. In that section, the author discusses, *i.a.*, the Registration Convention. He notes that the launching State can be one of four different States: the State that launches, the State that procures the launching, the State from whose territory a space object is launched or the State from whose facility a space object is launched. Also the fact that a space object has to be registered in two registers, the national register and the UN Register, is analyzed.

Chapter 14 has been devoted to "The Legal Regime of Airspace and Outer Space: The Boundary Problem. Functionalism versus Spatialism: the Major Premises". It was first published in 1980 with additions from other articles on the same topic.

Some of the subjects have been covered elsewhere but here attention is being paid to the 1979 Soviet Working Paper which proposed an altitude of 100(110) km as the boundary of outer space.

Chapter 15 deals with "The Legal Status of Astronauts". It was first published in 1989. The insufficiency of the present legal status of astronauts is explained. It may become important soon when an international space station is launched.

Chapter 16 was also first published in 1989. It deals with the "Legal Status of Spacecraft, Satellites and Space Objects". Very interesting is its section VIII, C, dealing with the identification of space objects. The author doubts that the Registration Convention will help in identification because the Convention does not require advance registration, does not set a fixed delay for the announcement of launchings, and because the information provided under the heading "general function of the space objects" is in most cases "singularly cryptic".

Chapter 17 is on "Nationality of Spacecraft". It was published in 1992. Usually, nationality has been granted to ships and aircraft but not to space objects. The author ponders if the concept of nationality would not have some advantages in linking space objects to States. The author concludes that nationality of space objects would be an effective step toward clarity and consistency.

Chapter 18 carries the title "Definitional Issues in Space Law: Space Objects, Astronauts, and Related Expressions". It was first published in 1991. The first problem is the relation between a "space object" and an

Chapter 18 carries the title "Definitional Issues in Space Law: Space Objects, Astronauts, and Related Expressions". It was first published in 1991. The first problem is the relation between a "space object" and an "object launched into outer space". Especially the Registration Convention does not provide a simple answer. Several other fine points were treated in this respect, among them space debris. The author is of the opinion that non-functional objects as well as fragments continue to be space objects. In this context he asks the question: Are States legally entitled to move or remove such objects? The author suggests that States can develop a practice of disowning such objects by an entry in the UN Register. The disowned objects could be freely moved or removed by anyone. This interesting idea of Bin Cheng certainly merits a more detailed consideration, especially at present when the question of space debris is before the Scientific and Technical Subcommittee and when a decision will have to be made soon about further steps to be taken by the UN COPUOS in this matter.

Part V, **Military Use of Outer Space,** starts with Chapter 19 on "Definitional Issues in Space Law: the 'Peaceful Uses' of Outer Space". It was first published in 1983. The author very strongly defends the position that "peaceful" means "non-military" and that it should not be restricted to "non-aggressive".

In Chapter 20, "The Military Use of Outer Space and International Law", first published in 1992, the restrictions of military use of outer space are studied as they appear in various treaties.

Part VI, **Commercial Uses of Outer Space and International Law,** starts with Chapter 20 on "Communications Satellites". It was first published in 1971, at an early stage of satellite communications. It contains a scientifically correct description of the geostationary orbit, which appears to the observer on the earth "as if it were stationary", implying that, in fact, it is not stationary. It describes also the Molnya system and gives the history and legal status of INTELSAT and INTERSPUTNIK. It discusses also legal problems raised by one of the first applications of space technology, satellite telecommunications.

Chapter 22, on "Legal and Commercial Aspects of Data Gathering by Remote Sensing", was first published in 1992 at a time when that application was already in an advanced stage and the UN Principles relating to Remote Sensing of the Earth had been agreed to several years before. The Principles, as a UN General Assembly resolution, are guidelines, not legally binding rules. The author concludes the chapter by stating that the result is not worth the fifteen years of work on that topic.

No separate chapters were devoted to other applications of space technology, such as meteorology and navigation. The role of the World Meteorological Organization was, however, discussed in Chapter 6.

The next two chapters deal with International Responsibility and Liability. Chapter 23, covering from that point of view "Launch Activities", was first published in 1995 while Chapter 24, covering "National Activities in Outer Space, Especially by Non-governmental Entities", dates to 1993.

to regularize the status of space objects in foreign airspace, need to clarify relevant terms, need for an agreement on the meaning of "peaceful", need to clarify the status of a space object, and others.

The book is concluded by an Epilogue on "The Contribution of Air and Space Law to the Development of International Law", first published in 1986. Although the Epilogue discusses the impact of air and space law, it is rather an essay about international law, completing thus the circle where it started in Chapter 1.

An Appendix contains the texts of relevant treaties and principles, a bibliography and index.

Regretfully, far too many points could not be reproduced here in more detail. It demonstrates the fact that a review is no substitute for reading and studying the book, in particular if the book is the fruit of forty years of logical thinking.

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THE CONCEPT OF THE COMMON HERITAGE OF MANKIND IN INTERNATIONAL LAW, by Kemal Baslar (Developments in International Law, vol. 30, Nijhoff, The Hague 1988), pp. XXVIII, 427.

This treatise deals with a topic which has been the subject of many years of research, analysis and extensive debate, involving political, philosophical, moral and legal undertones ever since the Maltese delegate to the UN, Ambassador Arvid Pardo, suggested in 1967 to the UN General Assembly that the deep seabed and the ocean floor and its resources be declared the common heritage of mankind.

The avowed purpose of the book is to analyze the conceptual foundations of the common heritage concept, consider the applicability of the concept in various disciplines of public international law, and develop a normative framework so that the concept can be transformed into the domain of international law as a binding principle.

In pursuit of this aim, in the first part of the book the author traces what he regards as the natural law basis of the concept and makes an attempt to clarify the connotations attached to the term which he believes should be based on the "Stewardship ethic and the public trust doctrine." Accordingly, the author argues that absolute sovereignty and national interests are stumbling blocks which prevent the application of the common heritage of mankind to regions and resources that are within national boundaries.

The second part of the book analyzes the application of the concept in various domains of international law, including outer space, the law of the sea, the administration of Antarctica and environmental law, and attempts to find the legal status of the concept in international law *"per se."* In so doing, the author champions a notion that would elevate the concept to a binding principle of international law, much as a human right, in line with

to find the legal status of the concept in international law *"per se."* In so doing, the author champions a notion that would elevate the concept to a binding principle of international law, much as a human right, in line with natural-law tenets and free of the positivist doctrines of the notion of sovereignty and the actual consent of states.

A part of the book which is likely to be of most interest to space lawyers deals with outer space and the common heritage of mankind and addresses the interpretation and application of the concept to different resources of the space environment, such as lunar minerals, the geostationary orbit, the radio frequency spectrum used for space communications, solar energy, low earth orbits and the La Grange positions (L-5-s).

The author's crystal ball, which he offers in conclusion, depicts a third millennium scenario in which the common heritage concept would become the nucleus of a new discipline: Planetary Resources Management Law. In his view, only time will tell whether this would emerge as a branch of state-centered international law or perhaps an anthropocentric law of mankind. One could also speculate whether a third possibility could also emerge, which would abandon the concept and turn it into a resource law for what could by then perhaps be called spacekind.

In addition to an index, the monograph has extensive annotations as well as a bibliography of books, articles, theses and dissertations which reflect well on the initial scholarly endeavor, a Ph.D. thesis submitted in 1995 to Nottingham University, which served as a basis for this publication.

Stephen Gorove
Chairman
Ed. Bd., J. SPACE L.

NOTICES

DERECHO ESPACIAL COMERCIAL - ASPECTOS INTERNACIONALES NACIONALES Y CONTRACTUALES (COMMERCIAL SPACE LAW - INTERNATIONAL, NATIONAL AND CONTRACTUAL ASPECTS), by Julian Hermida (Ediciones Depalma, Buenos Aires 1997), pp. XXIV, 327.

This paperback is principally written in Spanish (pp. 1-244), but is followed with an abridged English version (pp. 245-304). Chapter 1 discusses the development and growth of Space Law, from the accomplishments of COPUOS in creating international treaties and conventions to domestic and intergovernmental regulation, and elaborates on what presently provides the most growth in the field of Space Law - common provisions in Agreements between the parties involved, whether private or public. Chapter 2 discusses commercial space transport and the regulation and Agreements thereof, mainly focusing on domestic regulation of the main space faring States. Chapters 3-6 provide a brief overview of several topics, including Insurance aspects in the preparation and

undertaking of space related activities, Satellite Telecommunications, and domestic regulation and development of Remote Sensing Activities.

The book concludes with a Chapter on international and domestic regulation of Intellectual Property rights of Inventions made in outer space. Given the interesting topics and a well organized and written text, persons with Spanish fluency who could benefit from the more in-depth Spanish text would likely find this book a useful tool in understanding the current framework and issues in Space Law.

Michael A. Gorove
Attorney at Law
Associate Editor, J. SPACE L.

SPACE COOPERATION INTO THE 21ST CENTURY, edited by Peter M. Bainum, Gayle L. May, Makoto Nagatomo, Kuninori T. Uesugi, Fu Bingchen and Zhang Hui (Am. Astronautical Soc'y, Advances in the Astronautical Sciences, vol. 96, Univelt 1997), pp. xviii, 1080.

SPACE SAFETY AND RESCUE 1995, edited by Gloria W. Heath (Am. Astronautical Soc'y, Science and Technology Ser., vol. 93, Univelt 1997), pp. xii, 469.

The first of these two publications of the American Astronautical Society includes papers presented at the Seventh International Space Conference of Pacific-Basin Societies held July 15-18, 1997, in Nagasaki, Japan. Its theme focused on "Space Cooperation into the 21st Century". Among the variety of topics addressed at the technical sessions were space communications, space transportation and propulsion, space science and missions, and beneficial applications of space systems. The technical papers were preceded by sections addressing national and international programs and contributions submitted by international students for a competition in connection with the conference. Sections which may be of special interest to lawyers include those dealing with space debris and environmental issues, as well as those focusing on manned space flight, the international space station and a Pacific Spaceport.

While the second publication under the auspices of the International Academy of Astronautics, as those under "Space Safety and Rescue" title in prior years, follows its traditional pattern by focusing on the technical aspects of the subject matter, it also provides data on effects and ramifications involving risk assessment and management issues in different scenarios. Random examples of potential legal interest may be found in both the engineering ("Space Debris Mitigation" by Joseph P. Loftus, Jr.) and the economical aspects of space debris mitigation measures ("Meteoroid and Orbital Debris Risk Mitigation for the International Space Station" by Allen J. Lindenmoyer, *et al.*). Unfortunately, the publication has no index and a perfunctory glance reveals no general exposition of safety concerns about earth threatening asteroids, perhaps because this had not been a major news item in 1995.

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* Excerpts of the Agreement, are reproduced in CURRENT DOCUMENTS, *infra*. For full text, see UNITED STATES SPACE LAW - NATIONAL AND INTERNATIONAL REGULATION, Sec. II. 22(f) (Stephen Gorove ed., OCEANA 1998).

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CURRENT DOCUMENTS

AGREEMENT AMONG THE GOVERNMENT OF CANADA, GOVERNMENTS OF MEMBER STATES OF THE EUROPEAN SPACE AGENCY, THE GOVERNMENT OF JAPAN, THE GOVERNMENT OF THE RUSSIAN FEDERATION, AND THE GOVERNMENT OF THE UNITED STATES OF AMERICA CONCERNING COOPERATION ON THE CIVIL INTERNATIONAL SPACE STATION.

Done at Washington, January 29, 1998

Excerpts*

Article 1
Object and Scope

1. The object of this Agreement is to establish a long-term international cooperative framework among the Partners, on the basis of genuine partnership, for the detailed design, development, operation, and utilization of a permanently inhabited civil international Space Station for peaceful purposes, in accordance with international law. This civil international Space Station will enhance the scientific, technological, and commercial use of outer space. This Agreement specifically defines the civil international Space Station program and the nature of this partnership, including the respective rights and obligations of the Partners in this cooperation. This Agreement further provides for mechanisms and arrangements designed to ensure that its object is fulfilled.

2. The Partners will join their efforts, under the lead role of the United States for overall management and coordination, to create an integrated international Space Station. The United States and Russia, drawing on their extensive experience in human space flight, will produce elements which serve as the foundation for the international Space Station. The European Partner and Japan will produce elements that will significantly enhance the Space Station's capabilities. Canada's contribution will be an essential part of the Space Station. This Agreement lists in the Annex the elements to be provided by the Partners to form the international Space Station.

3. The permanently inhabited civil international Space Station (hereinafter "the Space Station") will be a multi-use facility in low-earth orbit, with flight elements and Space Station-unique ground elements provided by all the Partners. By providing Space Station flight elements, each Partner acquires certain rights to use the Space Station and participates in its management in accordance with this Agreement, the MOUs, and implementing arrangements.

4. The Space Station is conceived as having an evolutionary character. The Partner States' rights and obligations regarding evolution shall be subject to specific provisions in accordance with Article 14.

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* For full texts of the Agreement and the Memorandum of Understanding of the same date, see UNITED STATES SPACE LAW - NATIONAL AND INTERNATIONAL REGULATION, Secs. II. 22 (f) and (g) (Stephen Gorove ed., OCEANA 1998).

Article 2
International Rights and Obligations

1. The Space Station shall be developed, operated, and utilized in accordance with international law, including the Outer Space Treaty, the Rescue Agreement, the Liability Convention, and the Registration Convention.

2. Nothing in this Agreement shall be interpreted as:

(a) modifying the rights and obligations of the Partner States found in the treaties listed in paragraph 1 above, either toward each other or toward other States, except as otherwise provided in Article 16;

(b) affecting the rights and obligations of the Partner States when exploring or using outer space, whether individually or in cooperation with other States, in activities unrelated to the Space Station; or

(c) constituting a basis for asserting a claim to national appropriation over outer space or over any portion of outer space.

Article 3
Definitions

For the purposes of this Agreement, the following definitions shall apply:

(a) "this Agreement":
the present Agreement, including the Annex;

(b) "the Partners" (or, where appropriate, "each Partner"):
the Government of Canada; the European Governments listed in the Preamble which become parties to this Agreement, as well as any other European Government that may accede to this Agreement in accordance with Article 25(3), acting collectively as one Partner; the Government of Japan; the Government of the Russian Federation; and the Government of the United States;

(c) "Partner State":
each Contracting Party for which this Agreement has entered into force, in accordance with Article 25.

Article 4
Cooperating Agencies

1. The Partners agree that the Canadian Space Agency (hereinafter "CSA") for the Government of Canada, the European Space Agency (hereinafter "ESA") for the European Governments, the Russian Space Agency (hereinafter "RSA") for Russia, and the National Aeronautics and Space Administration (hereinafter "NASA") for the United States shall be the Cooperating Agencies responsible for implementing Space Station cooperation. The

Government of Japan's Cooperating Agency designation for implementing Space Station cooperation shall be made in the Memorandum of Understanding between NASA and the Government of Japan referred to in paragraph 2 below.

2. The Cooperating Agencies shall implement Space Station cooperation in accordance with the relevant provisions of this Agreement, the respective Memoranda of Understanding (MOUs) between NASA and CSA, NASA and ESA, NASA and the Government of Japan, and NASA and RSA concerning cooperation on the civil international Space Station, and arrangements between or among NASA and the other Cooperating Agencies implementing the MOUs (implementing arrangements). The MOUs shall be subject to this Agreement, and the implementing arrangements shall be consistent with and subject to the MOUs.

3. Where a provision of an MOU sets forth rights or obligations accepted by a Cooperating Agency (or, in the case of Japan, the Government of Japan) not a party to that MOU, such provision may not be amended without the written consent of that Cooperating Agency (or, in the case of Japan, the Government of Japan).

Article 5
Registration; Jurisdiction and Control

1. In accordance with Article II of the Registration Convention, each Partner shall register as space objects the flight elements listed in the Annex which it provides, the European Partner having delegated this responsibility to ESA, acting in its name and on its behalf.

2. Pursuant to Article VIII of the Outer Space Treaty and Article II of the Registration Convention, each Partner shall retain jurisdiction and control over the elements it registers in accordance with paragraph 1 above and over personnel in or on the Space Station who are its nationals. The exercise of such jurisdiction and control shall be subject to any relevant provisions of this Agreement, the MOUs, and implementing arrangements, including relevant procedural mechanisms established therein.

Article 6
Ownership of Elements and Equipment

1. Canada, the European Partner, Russia, and the United States, through their respective Cooperating Agencies, and an entity designated by Japan at the time of the deposit of its instrument under Article 25(2), shall own the elements listed in the Annex that they respectively provide, except as otherwise provided for in this Agreement. The Partners, acting through their Cooperating Agencies, shall notify each other regarding the ownership of any equipment in or on the Space Station.

2. The European Partner shall entrust ESA, acting in its name and on its behalf, with ownership over the elements it provides, as well as over any other equipment developed and funded under an ESA programme as a contribution to the Space Station, its operation or utilization.

3. The transfer of ownership of the elements listed in the Annex or of equipment in or on the Space Station shall not affect the rights and obligations of the Partners under this Agreement, the MOUs, or implementing arrangements.

4 Equipment in or on the Space Station shall not be owned by, and ownership of elements listed in the Annex shall not be transferred to, any non-Partner or private entity under the jurisdiction of a non-Partner without the prior concurrence of the other Partners. Any transfer of ownership of any element listed in the Annex shall require prior notification of the other Partners.

5. The ownership of equipment or material provided by a user shall not be affected by the mere presence of such equipment or material in or on the Space Station.

6. The ownership or registration of elements or the ownership of equipment shall in no way be deemed to be an indication of ownership of material or data resulting from the conduct of activities in or on the Space Station.

7. The exercise of ownership of elements and equipment shall be subject to any relevant provisions of this Agreement, the MOUs, and implementing arrangements, including relevant procedural mechanisms established therein.

* * *

Article 16
Cross-Waiver of Liability

1. The objective of this Article is to establish a cross-waiver of liability by the Partner States and related entities in the interest of encouraging participation in the exploration, exploitation, and use of outer space through the Space Station. This cross-waiver of liability shall be broadly construed to achieve this objective.

2. For the purposes of this Article:

(a) A "Partner State" includes its Cooperating Agency. It also includes any entity specified in the MOU between NASA and the Government of Japan to assist the Government of Japan's Cooperating Agency in the implementation of that MOU.

(b) The term "related entity" means:

(1) a contractor or subcontractor of a Partner State at any tier;

(2) a user or customer of a Partner State at any tier; or

(3) a contractor or subcontractor of a user or customer of a Partner State at any tier.

This subparagraph may also apply to a State, or an agency or institution of a State, having the same relationship to a Partner State as described in subparagraphs 2(b)(1) through 2(b)(3) above or otherwise engaged in the implementation of Protected Space Operations as defined in subparagraph 2 (f) below.

"Contractors" and "subcontractors" include suppliers of any kind.

(c) The term "damage" means:

(1) bodily injury to, or other impairment of health of, or death of, any person;

(2) damage to, loss of, or loss of use of any property;

(3) loss of revenue or profits; or

(4) other direct, indirect or consequential damage.

(d) The term "launch vehicle" means an object (or any part thereof) intended for launch, launched from Earth, or returning to Earth which carries payloads or persons, or both.

(e) The term "payload" means all property to be flown or used on or in a launch vehicle or the Space Station.

(f) The term "Protected Space Operations" means all launch vehicle activities, Space Station activities, and payload activities on Earth, in outer space, or in transit between Earth and outer space in implementation of this Agreement, the MOUs, and implementing arrangements. It includes, but is not limited to:

(1) research, design, development, test, manufacture, assembly, integration, operation, or use of launch or transfer vehicles , the Space Station, or a payload, as well as related support equipment and facilities and services; and

(2) all activities related to ground support, test, training, simulation, or guidance and control equipment and related facilities or services.

"Protected Space Operations" also includes all activities related to evolution of the Space Station, as provided for in Article 14. "Protected Space Operations" excludes activities on Earth which are conducted on return from the Space Station to develop further a payload's product or process for use other than for Space Station related activities in implementation of this Agreement.

3. (a) Each Partner State agrees to a cross-waiver of liability pursuant to which each Partner State waives all claims against any of the entities or persons listed in subparagraphs 3(a)(1) through 3(a)(3) below based on damage arising out of Protected Space Operations. This cross-waiver shall apply only if the person, entity, or property causing the damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations. The cross-waiver shall apply to any claims for damage, whatever the legal basis for such claims against:

(1) another Partner State;

(2) a related entity of another Partner State;

(3) the employees of any of the entities identified in subparagraphs 3(a)(1) and 3(a)(2) above.

(b) In addition, each Partner State shall, by contract or otherwise, extend the cross-waiver of liability as set forth in subparagraph 3(a) above to its related entities by requiring them to:

(1) waive all claims against the entities or persons identified in subparagraphs 3(a)(1) through 3(a)(3) above; and

(2) require that their related entities waive all claims against the entities or persons identified in subparagraphs 3(a)(1) through 3(a)(3) above.

(c) For avoidance of doubt, this cross-waiver of liability includes a cross-waiver of liability arising from the Liability Convention where the person, entity, or property causing the damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations.

(d) Notwithstanding the other provisions of this Article, this cross-waiver of liability shall not be applicable to:

(1) claims between a Partner State and its related entity or between its own related entities;

(2) claims made by a natural person, his/her estate, survivors or subrogees (except when a subrogee is a Partner State) for bodily injury to, or other impairment of health of, or death of such natural person;

(3) claims for damage caused by willful misconduct;

(4) intellectual property claims;

(5) claims for damage resulting from a failure of a Partner State to extend the cross-waiver of liability to its related entities, pursuant to subparagraph 3(b) above.

(e) With respect to subparagraph 3(d)(2) above, in the event that a subrogated claim of the Government of Japan is not based upon government employee accident compensation law, the Government of Japan shall fulfill its obligation to waive such subrogated claim by ensuring that any assisting entity specified pursuant to subparagraph 2(a) above indemnifies, in a manner consistent with Article 15(2) and in accordance with applicable laws and regulations of Japan, any entity or person identified in subparagraphs 3(a)(1) through 3(a)(3) above against liability arising from such subrogated claim by the Government of Japan. Nothing in this Article shall preclude the Government of Japan from waiving the foregoing subrogated claims.

(f) Nothing in this Article shall be construed to create the basis for a claim or suit where none would otherwise exist.

Article 17
Liability Convention

1. Except as otherwise provided in Article 16, the Partner States, as well as ESA, shall remain liable in accordance with the Liability Convention.

2. In the event of a claim arising out of the Liability Convention, the Partners (and ESA, if appropriate) shall consult promptly on any potential liability, on any apportionment of such liability, and on the defense of such claim.

3. Regarding the provision of launch and return services provided for in Article 12(2), the Partners concerned (and ESA, if appropriate) may conclude separate agreements regarding the apportionment of any potential joint and several liability arising out of the Liability Convention.

* * *

Article 20
Treatment of Data and Goods in Transit

Recognizing the importance of the continuing operation and full international utilization of the Space Station, each Partner State shall, to the extent its applicable laws and regulations permit, allow the expeditious transit of data and goods of the other Partners, their Cooperating Agencies, and their users. This Article shall only apply to data and goods transiting to and from the Space Station, including but not limited to transit between its national border and a launch or landing site within its territory, and between a launch or landing site and the Space Station.

Article 21
Intellectual Property

1. For the purposes of this Agreement, "intellectual property" is understood to have the meaning of Article 2 of the Convention Establishing the World Intellectual Property Organization, done at Stockholm on 14 July 1967.

2. Subject to the provisions of this Article, for purposes of intellectual property law, an activity occurring in or on a Space Station flight element shall be deemed to have occurred only in the territory of the Partner State of that element's registry, except that for ESA-registered elements any European Partner State may deem the activity to have occurred within its territory. For avoidance of doubt, participation by a Partner State, its Cooperating Agency, or its related entities in an activity occurring in or on any other Partner's Space Station flight element shall not in and of itself alter or affect the jurisdiction over such activity provided for in the previous sentence.

3. In respect of an invention made in or on any Space Station flight element by a person who is not its national or resident, a Partner State shall not apply its laws concerning secrecy of inventions so as to prevent the filing of a patent application (for example, by imposing a delay or requiring prior authorization) in any other Partner State that provides for the protection of the secrecy of patent applications containing information that is classified or otherwise protected for national security purposes. This provision does not prejudice (a) the

right of any Partner State in which a patent application is first filed to control the secrecy of such patent application or restrict its further filing; or (b) the right of any other Partner State in which an application is subsequently filed to restrict, pursuant to any international obligation, the dissemination of an application.

4. Where a person or entity owns intellectual property which is protected in more than one European Partner State, that person or entity may not recover in more than one such State for the same act of infringement of the same rights in such intellectual property which occurs in or on an ESA-registered element. Where the same act of infringement in or on an ESA-registered element gives rise to actions by different intellectual property owners by virtue of more than one European Partner State's deeming the activity to have occurred in its territory, a court may grant a temporary stay of proceeding in a later-filed action pending the outcome of an earlier-filed action. Where more than one action is brought, satisfaction of a judgment rendered for damages in any of the actions shall bar further recovery of damages in any pending or future action for infringement based upon the same act of infringement.

5. With respect to an activity occurring in or on an ESA-registered element, no European Partner State shall refuse to recognize a license for the exercise of any intellectual property right if that license is enforceable under the laws of any European Partner State, and compliance with the provisions of such license shall also bar recovery for infringement in any European Partner State.

6. The temporary presence in the territory of a Partner State of any articles, including the components of a flight element, in transit between any place on Earth and any flight element of the Space Station registered by another Partner State or ESA shall not in itself form the basis for any proceedings in the first Partner State for patent infringement.

Article 22
Criminal Jurisdiction

In view of the unique and unprecedented nature of this particular international cooperation in space:

1. Canada, the European Partner States, Japan, Russia, and the United States may exercise criminal jurisdiction over personnel in or on any flight element who are their respective nationals.

2. In a case involving misconduct on orbit that: (a) affects the life or safety of a national of another Partner State or (b) occurs in or on or causes damage to the flight element of another Partner State, the Partner State whose national is the alleged perpetrator shall, at the request of any affected Partner State, consult with such State concerning their respective prosecutorial interests. An affected Partner State may, following such consultation, exercise criminal jurisdiction over the alleged perpetrator provided that, within 90 days of the date of such consultation or within such other period as may be mutually agreed, the Partner State whose national is the alleged perpetrator either:

(1) concurs in such exercise of criminal jurisdiction, or

(2) fails to provide assurances that it will submit the case to its competent authorities for the purpose of prosecution.

3. If a Partner State which makes extradition conditional on the existence of a treaty receives a request for extradition from another Partner State with which it has no extradition treaty, it may at its option consider this Agreement as the legal basis for extradition in respect of the alleged misconduct on orbit. Extradition shall be subject to the procedural provisions and the other conditions of the law of the requested Partner State.

4. Each Partner State shall, subject to its national laws and regulations, afford the other Partners assistance in connection with alleged misconduct on orbit.

5. This Article is not intended to limit the authorities and procedures for the maintenance of order and the conduct of crew activities in or on the Space Station which shall be established in the Code of Conduct pursuant to Article 11, and the Code of Conduct is not intended to limit the application of this Article.

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