

ON THE NEED TO REGULATE SPACE TRAFFIC MANAGEMENT

*Professor Dr. Maureen Williams **
Chair of Public International Law, University of Buenos Aires
Chair of the ILA Space Law Committee
maureenw@fibertel.com.ar

Opening Remarks

This paper deals with the interaction between international law and the specific principles of space law as applied to space traffic management. The objective is to determine whether the time has come to lay down special rules on this question having in mind the sharp increase of commercial activities in outer space in the last decade. This, in turn, implies an analysis of the existing rules of international law with emphasis on the Space Treaties in force and, particularly, the 1975 Registration Convention. The relationship between space traffic management and the work of ICAO will be similarly addressed within this context, as also the issue of space debris.

The foregoing analysis will ease the way towards establishing whether it appears advisable, in the present international scenario, to engage in the drafting of detailed rules and regulations on this matter which, by their very nature, are unlikely to be long-lived. Likewise, the need to include the subject of space traffic management on the agenda of COPUOS will be evaluated from various standpoints and so will the possible role of the ITU in this field.

Should we conclude that the time is ripe for creating new law to govern this matter, the paper would then discuss -and possibly suggest- some general principles to serve as guidelines.

Introducing the problem

Nowadays it is not unfrequent for international space lawyers, both practitioners and academics, to engage in the analysis of the advantages and shortcomings of creating new law with the idea of giving a more precise legal meaning to the general principles stemming from the Outer Space Treaties presently in force.

Prompted by the advances of science and technology and the increasing commercial applications of space activities, certain specific areas have been the object of proposals. The general idea is to keep pace with such unprecedented advances in order to be consistent with the present reality. Within the evaluation of the possible laying down of new law to this end, the issues surrounding remote sensing and space debris take pride of place followed, somewhat closely in recent times, by the regulation of space traffic management. There is a growing feeling in this direction.

Thoughts are beginning to be voiced in many an international forum -private or intergovernmental- drawing attention to the need of proceeding without delay to the review of the existing law, in the case of remote sensing, and in the case of space debris and traffic management, to the creation of new law. At this

stage the view that the existing law needs to be supplemented is gradually gaining ground.

Indeed, space debris and space traffic management are closely interwoven questions, particularly in today's world context and especially when it comes to considering a possible regulation of the latter.

Space debris, in accordance with the ILA International Instrument on this topic¹, means:

Man-made objects in outer space, other than active or otherwise useful satellites, when no change can reasonably be expected in these conditions in the foreseeable future.

Space debris may result, inter alia, from:

- ***Remote space operations including spent stages of rockets and space vehicles, and hardware released during normal manoeuvres.***
- ***Orbital explosions and satellite breakups, whether intentional or accidental.***
- ***Collision-generated debris.***
- ***Particles and other forms of pollution² ejected, for example, by solid rocket exhaust.***
- ***Abandoned satellites.***

In fact, in any down-to-earth attempt to suggest specific rules to govern space traffic management,

the risk created by space debris is at the root of the problem. Professor Perek points out that today over 90% of all trackable objects in outer space come under that category, and so do almost 100% of objects that are so far too small to be tracked³. To this alarming statement we may add that, as technology advances day by day, it enables the tracking of very small particles of second generation debris. This technical possibility would have been unthinkable a few years back. Therefore, the figures would reach, in a short time, an even higher number.

Thus, a preliminary conclusion -to be confirmed or adjusted throughout this paper- is that space debris in the first place and, secondly, space traffic management, are topics to be included for discussion on the agenda of the Legal Subcommittee (LSC) of Copuos.

Terminology

The foregoing questions take us, in turn, to the problem of agreeing on definitions, particularly in the context of the 1975 Registration Convention. To ease the way for further regulation and to clear up outstanding doubts, the questions of terminology should be tackled from the outset.

Many of these terms -coined at the time of the drafting of the Space Treaties now in force- need

more precision in today's world scenario. In the following paragraphs I shall address the terms which, in the general view, are considered directly linked to space traffic management and the need for regulation. At this stage, however, the importance of agreeing on a definition of outer space as *conditio sine qua non* for the enforcement of rules on space traffic management speaks for itself. It therefore seems redundant to discuss the issue within the scope of this presentation.

(a) The concept of space debris.

In the previous chapter mention was made of the ILA definition which, nowadays, is widely accepted by the doctrine⁴. Many of the members of the ILA who supported the adoption of this text in 1994 are equally members of the IISL and views generally coincide. The scientific consultants of the ILA Committee, namely Professors Rex (Germany), Perek (Czech Republic) and Ricciardi (Argentina), participated actively with the present writer in the different stages of the preparation of this text⁵ and were, on general lines, in agreement with the Draft. To date, the Buenos Aires International Instrument on Space Debris continues under permanent review by the ILA Space Law Committee.

Professor Rex, in his comments to the Report submitted by the present writer to the 69th Conference of the ILA (London 2000), expressed his views in no uncertain terms. First, he stated that space debris was not covered by the 1972 Liability Convention and that it was urgent to agree on an international instrument to govern this issue to strictly limit the production of future debris, having in mind the huge economic importance of the issues involved, taking due care, at the same time, not to set obstacles in the way of beneficial space utilisation. Secondly, this expert strongly opposed the inclusion, by means of an amendment to the Liability Convention, of liability for damage caused by space debris. Thirdly, Professor Rex explained that the urgency to have a specific instrument on this matter was grounded on the rapidly expanding market in the field of telecommunications which would possibly include up to twenty satellite constellations with around one thousand satellites together in the low earth orbits⁶.

If we have in mind the wide, non-exhaustive scope of the ILA definition one may easily conclude that it comes very close to the one advocated by Professor Perek in his presentation to this 46th Colloquium and embodied in the 1999 UN.⁷ Let us take a closer look at this text.

Space debris are all man-made objects, including their fragments and parts, whether their owners can be identified or not, in Earth-orbit or re-entering the dense layers of the atmosphere, that are non-functional with no reasonable expectation of their being able to assume or resume their intended functions or any other functions for which they are or can be authorised⁸.

It is therefore clear that in the present time we count with realistic definitions (and/or descriptions) of what should be understood by space debris. Consequently, it appears both timely and sensible to agree, at governmental level, on the meaning, scope and implications of this term. Such course of action seems a necessary previous step to enable the international community to embark in the development of space traffic management regulations.

This is the essence of the deeply-rooted conclusion of the doctrine holding that the legal aspects of space debris should be added to the agenda of the LSC of Copuos without further delay⁹.

(b) The Registration Convention

Certain sections of this instrument are in strong need of amendment and clarification as a

pre-requisite for the regulation of space traffic. We are light years ahead of 1975 when this Convention was adopted. Consequently, the definitions and requirements embodied therein are not enough to meet the needs and challenges of the present time.

The general view appears to be, however, that amendments to the Space Treaties in force be avoided¹⁰. As in the case of the Liability Convention, the prevailing idea is that any change or addition should be introduced by a separate instrument, such as a UNGA Resolution or Protocol, so that the original text of the Convention remains untouched.

The matter has been extensively discussed in recent years by the ILA, albeit not linked to space traffic management proper but, rather, to the growing role of private entities in space activities¹¹. However so, as space traffic management is an illustrative example of a commercial activity, the conclusions are equally applicable thereto.

Professor Kopal, one of the Special Rapporteurs of the ILA Space Law Committee on this topic, championed the idea of unifying national registries kept by the launching states and supplementing Article IV of the Convention by making reference to the name and position of the subjects responsible for the launch

and of the subjects owning and/or operating the space object in question. Moreover, this expert was very much aware of the obstacles which formal amendments to the Registration Convention were likely to bring about as a result of double standards. He stood clearly against the procedure of amendment to this Convention which could entail the withdrawal of some of its parties¹². Both the national and international registrations, in the view of Prof. Kopal, should enable the identification of the launching state as well as other legal entities participating in launching activities¹³.

Professor Bin Cheng has, likewise, provided useful thoughts on this question. He points out the need to update the requirements of Article I of the Convention (on definitions) observing that there is a problem regarding the "connecting factor" between private entities and the state, particularly with respect to the terms "a state which launches or procures the launching", a question to which a short reference will be made in the next chapter.

In his book *Studies in International Space Law*¹⁴, Chapters 23 and 24, Prof. Cheng discusses a number of options to determine the referred link, such as nationality, domicile, residence, place of incorporation, place of business and so forth.

What follows is a glaring illustration of the problems likely to occur in connection with Article II (2) of the Registration Convention, as explained by Professor Cheng in his comments to the ILA Space Law Report adopted by the London Conference.

The above-mentioned provision deals with the case of two or more launching states in respect of one single space object, leaving it to them to establish which of them shall register the object in its national registry. This procedure may cause undue confusion and ought to be reviewed. To say the least, it eases the way for flags of convenience to proliferate in international space law¹⁵.

I believe this situation would imply a serious obstacle to any attempt of laying down rules for space traffic. Moreover, as Prof. Cheng indicates, Article VII on the position of international intergovernmental organisations should be re-examined in view of their increasing role in space activities¹⁶.

Presumably, in a not too distant future, these organisations will play an important part in the regulation of space traffic. In fact, the present writer believes that ICAO and the ITU would be the natural and most appropriate bodies to be entrusted with such challenging responsibilities.

These matters are no doubt of a highly sensitive nature which supports the conclusion that a cautious approach should be taken when considering amendments to the Space Treaties in force.¹⁷ The political will for that purpose is lacking at the moment and the international community, as perceived in the different fora, does not see with favour any changes of the kind. Consequently, the idea of introducing clarifications, definitions or minor adjustments through separate instruments - binding or otherwise- appears the wisest solution today.

Along these lines the ILA New Delhi Conference considered, in connection with the 1975 Registration Convention, that

*to ease identification a separate protocol or UNGA Resolution is suggested dealing, inter alia, with the unification of national registries and clarification of certain terms, such as "launching state", while maintaining its text intact*¹⁸.

(c) The term "launching State"

This topic was addressed by the present writer during the IISL Colloquium held in Houston in 2002 to which, *brevitatis causa*, reference is made hereby¹⁹.

I shall simply recall now that on the occasion of the International Colloquium held in Cologne to

mark the end of Project 2001, the Working Group on Launch and Associated Services expressed similar views, i.e. contrary to the amendment of the Space Treaties and, particularly, to changes in the terms "launching authority" and "launching State".²⁰ A consensus is therefore growing to the effect that the terms "launching state" and "launching authority" should not be changed in the space treaties as this would entail a very complex procedure of amendments at a time when the political scenario is not really prepared for it. Consequently, the role to be played by national space legislation in the present time becomes of major importance.

It is fair to say that the clarification of the terms "a State which launches or procures the launching" remains outstanding. This problem, common to the Liability and Registration Conventions, is today a matter of concern to space lawyers who have made their ideas abundantly clear in recent years at COPUOS, particularly Dr. Schrogl and members of his Working Group on the topic. On the private level the IISL and the ILA have dedicated considerable efforts to this issue.

Suffice it to say at the moment that, once these terminological controversies are sorted out and dissipated, all the other issues surrounding space

traffic management will be easily resolved.

Conclusions

Just as the Space Law Treaties presently in force are considered sufficient to govern the commercial aspects of space activities in the present time, so are these Treaties and the existing customary law appropriate, so far, for the initial phases of space traffic management, an undoubted commercial activity.

Having said so, we cannot escape the fact that space activities, particularly those in the hands of private entities, are growing in geometrical progression. Hence, it does not seem unreasonable to start thinking of a more precise meaning for the existing law applicable to space traffic management. Similarly, the most appropriate ways of moving in this direction should be discussed.

With this objective in mind it is essential to move swiftly towards the clarification of certain concepts, *inter alia* those focused upon in this paper. We should have international rules on space debris, a topic to be included without delay on the agenda of the LSC of COPUOS, where the above-mentioned *ILA International Instrument on Space Debris* has been introduced and explained, and could serve as basis for discussion. The obscure definitions and requirements

underlying the Registration Convention should be updated for more precision. And we should come to terms with the different interpretations of the concept of "launching state" embodied in the Liability and Registration Conventions, and agree on a definition common to all.

First and foremost, outer space must be defined.

The suggested steps would certainly ease the way of the institutions which, presumably, will be called upon to deal with space traffic management. As observed earlier, when the time comes, ICAO and the ITU appear the most appropriate.

In the private field, the work of study groups and think tanks would be more than welcome to provide the pillars and suggest the contents of what will -hopefully- become an international instrument to govern traffic in space.

Only then would we stand on safe grounds to move towards the LSC of COPUOS for discussion on effective regulations to govern space traffic management. Possibly, earlier than we think.

¹ This text, known as the "Buenos Aires International Instrument for the Protection of the Environment from damage caused by Space Debris" was adopted by consensus at the 66th Conference of the International Law Association in 1994. It was subsequently submitted to the Legal Subcommittee of COPUOS, with detailed explanations, and continues under permanent review by the Space Law Committee of the ILA. See Report to the 66th Conference of the ILA (Buenos Aires 1994) by the present writer (pp.305-325, also pp.9-13)

² In the context of the ILA International Instrument it was agreed that the words "pollution" and "contamination" would be considered synonyms. See *op.cit.* in note 1, pp.309-311.

³ Cf. Lubos Perek, "Basic Problems in Space Traffic", paper submitted to his 46th Colloquium on the Law of Outer Space, Bremen 2003.

⁴ On 9 November 2001, on the occasion of a Conference on Space Debris held in London within the framework of the European Centre of Space Law (UK point of contact) it was recommended to use the ILA International Instrument on Space Debris as basis for

international discussion for a convention on the subject.

⁵ See Reports of the ILA Conferences, Space Law Committee (Queensland 1990, Cairo 1992 and Buenos Aires 1994). However, Professors Rex and Ricciardi did not recommend the inclusion of rules on international responsibility and liability. The ILA Space Law Committee, per contra, thought this was indispensable. The latter position was endorsed by the 66th ILA Conference. See Buenos Aires Report (66th Conference, pp.311-314).

⁶ See Report of the 69th Conference of the ILA, London 2000, Report of the Space Law Committee by the present writer, pp.580-1.

⁷ Technical Report on Space Debris adopted by the Scientific and Technical Subcommittee of Copuos in 1999 (A/AC.105/720).

⁸ Quoted by Prof.Perek in his presentation to the present Colloquium. See note 3, *supra*.

⁹ Dr. Monserrat Filho, in his presentation to the IISL/ECESL Symposium on "Prospects for Space Traffic Management" (Vienna, 2 April 2002) stated that it was necessary to establish an international regime for all issues arising from space debris, such as its legal definition, procedures for the removal of space debris and its minimisation in the future. This, in this

expert's view, would include the development of industrial standards and their implementation by States and private entities.

¹⁰ *Such the conclusions of the ILA Space Law Committee submitted to the London (2000) and New Delhi (2002) Conferences, adopted without dissent. It should however be noted that this does not apply to the 1979 Moon Agreement which, according to the ILA, is in need of dramatic changes and should be either "improved on or discarded".*

¹¹ *See ILA Space Law Committee Report to the 68th Conference (London 2000) pp. 585-6 (Prof. Kopal), op.cit. in note 6, and Report of the ILA Space Law Committee to the 70th Conference (New Delhi 2002), pp. 192-227, at pp. 200-201.*

¹² *See Kopal, Report of the 69th ILA Conference, pp. 575-6.*

¹³ *Ibid.*

¹⁴ *See Bin Cheng, STUDIES IN INTERNATIONAL SPACE LAW, Clarendon Press Oxford 1997, Chapters 23- 24, pp. 621-666.*

¹⁵ *Op.cit in note 6, p.585.*

¹⁶ *Ibid.*

¹⁷ *Such the position of Professor Kopal in his Special Report to the 70th Conference of the ILA (2002), fully supported by the Space Law Committee and the Plenary Session of the Conference. See op.cit.in note 11, p. 201.*

¹⁸ *Ibid., pp. 13-16. (Resolution 1 /2002 , English and French texts).*

¹⁹ *See by the present writer, "Perceptions on the definition of a "launching State" and Space Debris Risks" , paper submitted to the 45th Colloquium on the Law of Outer Space, Houston 2002.*

²⁰ *See Panel Working Group on Launch and Associated Services, in 'Project 2001' - Legal Framework for the Commercial Uses of Outer Space, Ed. Karl-Heinz Böckstiegel, Carl Heymanns Verlag, Köln, Berlin, Bonn, München (2002), pp.55-144.*