

PRESENT INTERNATIONAL LAW PRINCIPLES APPLICABLE
TO SPACE DEBRIS AND THE NEED FOR THEIR SUPPLEMENT

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ABSTRACT

Measurement and assessment of space debris, as well as methods which could be applied to reduce these undesirable consequences of space activities, have been discussed by scientists and technologists. These efforts should be accompanied by exploration of legal issues involved. Following an analysis of relevant international agreements, the author concludes that a special legal document on space debris is highly desirable.

1. INTRODUCTION

From a growing number of reports and studies published in recent years, it is evident that an effective protection of space environment against proliferation of space debris became a recognized aim of the present space community. Measurement and assessment of space debris, as well as methods which could be applied to reduce these undesirable consequences of space activities, have been discussed in greater detail by scientists and technologists.

Whatever conclusions may come out from the discussions in the scientific and technical area, when pondering the ways to keep outer space clean and safe, it is also necessary to consider the availability and possible development of adequate legal means for this purpose. A realistic approach to the study of legal aspects of the space debris issue should start by the following question: Is the present international law of outer space as developed in the United Nations sufficient for this endeavour? Or do such efforts require strengthening and supplementing of the existing rules, or even the elaboration of a new, special legal instrument?

2. PRESENT LEGAL BASIS FOR
KEEPING OUTER SPACE CLEAN
AND SAFE

The 1967 Outer Space Treaty enshrined in its Article VI the principle of international responsibility for national activities in outer space as well as for space activities of international organizations. States Parties to the Treaty are responsi-

ble for assuring that national activities are carried out in conformity with the provisions set forth in the Treaty, and the activities of non-governmental entities require authorization and continuing supervision by the appropriate State Party to the Treaty.

Of a particular interest, in relation to the issue of space debris, may be the provision of para. 3, Article V of the Outer Space Treaty according to which States Parties to the Treaty shall immediately inform the other States Parties and the UN Secretary-General 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.

Moreover, Article IX of the Outer Space Treaty spelled out a general principle for protection of the space environment. According to it, "States Parties to the Treaty shall pursue studies of outer space, including the moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the earth resulting from the intro-

duction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose." When analyzing this particular text, can we conclude that by "harmful contamination" and "adverse changes in the environment of the earth resulting from the introduction of extraterrestrial matter" the drafters of this provision intended to also cover the effects caused by space debris? Can we also assume that by adopting "appropriate measures" adequate steps for prevention and mitigation of space debris could be understood including some legal tools to be elaborated and applied in order to attain this goal?

The principle of international liability for damage caused by space objects or their component parts on the earth, in air or in outer space was also included in the 1967 Outer Space Treaty. This principle was further elaborated in the 1972 Convention on International Liability for Damage Caused by Space Objects which includes a number of provisions that may be considered as relevant to space debris. As explicitly stated in Article I of the Convention, the term "space object" includes component parts of a space object as well as its launch vehicle and parts thereof. Apparently, by an

extensive interpretation of this provision, space debris which originate from space objects, their launch vehicles or the parts thereof, should be covered by this definition. However, is it possible to go in this interpretation so far as to qualify as component parts of a space object or parts of its launch vehicle the smallest fragments or even flakes of paint peeled off from such objects? Moreover, will such small pieces of material be always identifiable as to their origin? It is obvious that without an exact identification of a piece of space debris, it would be impossible to impute any liability for damage caused by such particles to anybody.

Furthermore, it should be recalled that the 1972 Liability Convention, in its Articles II - IV, deals with two categories of damage, one caused by space objects on the surface of the earth or to aircraft in flight, the other caused elsewhere than on the surface of the earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State. According to some authors, these provisions should also apply to damage caused by space debris.²

However, according to the 1972 Convention, the liability provided for damage effected elsewhere than on the surface of the earth or to aircraft in flight shall only be applied in case of fault on the part of the launching State or the fault of persons for whom this State is responsible. But the term "fault" has not been specified in the Convention. May it be assumed that both "intent" and "negligence" are supposed to be considered as a basis of fault?³

On the other hand it should be observed that the term "damage", as defined in Article I of the 1972 Liability Convention, means only "loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or property of international intergovernmental organizations". It must be concluded from this definition that the term "damage" in the Liability Convention does not include damage caused by space activities to the space environment.

Some guidance for dealing with space debris can also be found in other UN space law instruments. The 1975 Convention on Registration of Objects launched into Outer Space established the duty of the launching State to re-

gister space objects both nationally and internationally /with the United Nations/. The launching State is even obliged to notify the Secretary-General, "to the greatest extent feasible and as soon as practicable, of space objects concerning which it has previously transmitted information, and which have been but no longer are in earth orbit." In this connection it is to be recalled that the term "space object" is specified in the Registration Convention in the same way as in the Liability Convention, i.e. that it includes component parts of a space object as well as its launch vehicle and parts thereof. This provision of the Registration Convention might offer a certain basis for developing a practice of providing more detailed information about space debris remaining in outer space in connection with the decay of space objects.

Finally, attention should be also drawn to the last of the UN space treaties, the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, in spite of the fact that thus far, this instrument has collected but a limited number of adhesions. In relation to the moon, Article 7 of

Agreement goes farther than the 1967 Outer Space Treaty went generally, for the States Parties to the 1979 Agreement, in exploring and using the moon, are obliged to take measures to prevent the disruption of the existing balance of its environment, whether by introducing adverse changes in that environment, by its harmful contamination through the introduction of extraenvironmental matter or otherwise. The word "otherwise" may include the pollution of the moon environment or some of its areas by generation of space debris. But will such pollution be that big to be qualified as "disruption of the existing balance" of the moon environment ? ⁴

As a whole, it is obvious that for the solution of all legal problems relating to the protection of outer space against space debris the provisions of the present international law of outer space are too general, raise a number of questions and are far from being satisfactory.

On the other hand, a certain step forward has been marked in the specific field of the use of nuclear power sources in outer space. Though the 1992 Principles dealing with this subject ⁵ are applicable only to a parti-

cular kind of instrumentalities /namely to "nuclear power sources in outer space devoted to the generation of electric power on board space objects for non-propulsive purposes, which have characteristics generally comparable to those of systems used and missions performed at the time of the adoption of the Principles"/, some important innovations have been introduced by these Principles in comparison with the earlier space law instruments. They include, inter alia, the idea of storing nuclear reactors and radioisotope generators in a disposal orbit after the conclusion of the operational part of their missions, and also a certain specification of the general principle of liability for damage as far as the determination of compensation for damage is concerned.

The problems relating to the use of nuclear power sources in outer space have several common points with problems of protection of the space environment against space debris. A successful conclusion of these efforts in the form of a set of internationally agreed Principles Relevant to the Use of Nuclear Power Sources in Outer Space in 1992 offers an example for a si-

milar approach to the problems of protection of the space environment against space debris.

3. THE NEED FOR A SPECIAL LEGAL INSTRUMENT ON SPACE DEBRIS

The foregoing analysis of the existing agreements as well as the fact that neither the domestic laws of individual space-faring nations provide satisfactory tools for mitigation of space debris bring us to the conclusion that the elaboration and adoption of a special legal document that would deal with space debris is highly desirable. Such an instrument should provide a precise interpretation of the space agreements in force with regard to their application to space debris and deal with those aspects of this issue that are not regulated by the law in force. Of course, this new instrument should remain in full harmony with the main principles of the 1967 Outer Space Treaty.

From the legal viewpoint, an international convention, i.e. a legally binding treaty, would be the best form for a satisfactory solution of all issues involved. However, in the light of the actual practice of the United Nations, a set of principles of a similar sort as the 1992 Princi-

ples Relevant to the Use of Nuclear Power Sources in Outer Space might be worked out by the COPUOS and adopted by the UN General Assembly as the first step of space legislation relating to this subject. Only at a later stage, a legally binding convention on the same subject, which would be based on the experience with the UN recommendatory principles, could be negotiated by States.

Such a legal instrument might be drafted along the lines of the International Instrument on the Protection of the Environment from Damage Caused by Space Debris, which was adopted by the 66th Conference of the International Law Association /ILA/, an important legal non-governmental organization, held at Buenos Aires in August 1994. The United Nations Convention or Principles, too, should include a number of definitions, particularly those relating to "space debris" and "damage" caused by it, and should be applicable to space debris which causes or is likely to cause direct or indirect, instant or delayed damage to the environment or to persons and objects.

The 1994 ILA Draft Instrument establishes a general obliga-

tion of States and international organizations-parties to this Instrument to cooperate and to take all appropriate measures to prevent, reduce, and control any damage or significant risk arising from activities under their jurisdiction or control which are likely to produce debris.⁶ "All appropriate measures" to be taken, however, are not specified in the ILA Draft Instrument which remains fairly flexible in this regard. In our opinion, the UN Convention or Principles on space debris might go farther and include, at least in general terms, the duties concerning measures to be taken in the construction and operation phases of space objects. Moreover, they should establish the duty to remove non-functional space objects from the most saturated parts of outer space /such as LEOs & GSO/ either to lower orbits so that they could descend to the atmosphere and burn up, or to a sufficiently high /depository/ orbit. Moreover, the right of any State or international space organization to intervene against space debris in special cases should be explicitly recognized. Of course, this right would be applied rather exceptionally and should be constrained by exact

conditions and procedures.

In this particular regard, space legislation might evaluate the experience from another area - that of the law of the sea. The first example is offered by the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties which was concluded at Brussels on 29 November 1969.⁷ In the basic provision of this instrument, States Parties to the Convention are authorized "to take such measures on the high seas as may be necessary to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of pollution of the sea by oil, following upon a maritime casualty or acts related to such a casualty, which may reasonably be expected to result in major harmful consequences". The Convention further provides for consultations to be proceeded before any measure is taken by a coastal State exercising this right. But in cases of extreme urgency requiring measures to be taken immediately, the coastal State take measures rendered necessary by urgency of the situation, without prior notification or consultation or without conti-

nuing consultations already begun. Of course, all measures taken by the coastal State in accordance with this Convention shall be proportionate to the damage actual or threatened to it.⁸

Another example from the area of the law of the sea, which may be referred to with regard to space debris, is offered by the 1982 United Nations Convention on the Law of the Sea which entered into force in 1994.⁹ Its Article 60, which deals with artificial islands, installations and structures in the exclusive economic zones, provides inter alia: "Any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, taking into account any generally accepted international standards established in this regard by the competent international organization. Such removal shall also have due regard to fishing, the protection of the marine environment and the rights and duties of other States. Appropriate publicity shall be given to the depth, position and dimensions of any installations or structures not entirely removed." According to Article 80 of the 1982 UN Convention, the same provision also applies mutatis mutandis to artificial islands, installations and structures on the

continental shelf.

Of course, the examples of the protection of the seas are to be carefully pondered when looking for an appropriate solution of the issues relating to the protection of space environment against space debris. An effective legal protection of space environment, however, seems to be indisputable and should not be delayed too much. If it was possible to agree on legal instruments relating to serious issues in other environments - and some of them are really far-reaching - why should it be impossible to reach an agreement on a rather modest instrument on the protection of space environment against space debris? Such a legal step would help to maintain the exploration and use of outer space as "the province of all mankind" for the benefit and in the interests of all countries in accordance with the leading principle of the 1967 Outer Space Treaty.

4. REFERENCES

1. Cf., in particular, Reports of the Scientific and Technical Subcommittee on the Work of Its Thirty-second and Thirty-third Sessions, UN doc. A/AC. 105/605, 24 February 1995, pp. 15-18, and UN doc. A/AC. 105/637, 4 March 1996, pp. 15-25. At its Thirty-fourth session in 1997, the Subcommittee continued in its consideration of this issue in accordance with its work plan.
2. Gorove, S., Definitional Issues Pertaining to "Space Object", Proceedings of the Thirty-seventh Colloquium on the Law of Outer Space, International Institute of Space Law of the IAF, October 9-14, 1994, Jerusalem, Israel, AIAA, p. 90.
3. Interagency Report on Orbital Debris by Office of Science and Technology Policy, November 1995, p. 46.
4. For the texts of all space treaties referred to in this paper as well as for the status of Parties to these instruments cf. United Nations Treaties and Principles on Outer Space, UN doc. A/AC. 105/572, United Nations, 1994.
5. See Principles Relevant to the Use of Nuclear Power Sources in Outer Space, in UN doc. A/AC. 105/592 quoted supra in ref. 4, pp. 47 s.
6. Ibidem, Article 3 of the ILA Draft Instrument.
7. Cf. the text of this Convention in United Nations Legislative Series, National Legisla-

tion and Treaties Relating to
the Law of the Sea, UN doc.
ST/LEG/SER.B/16, New York, 1974,
p. 439 s.

8. It should be mentioned, however, that the Brussels Convention is not applicable to any warship or other ship owned or operated by a State and used, for the time being, only on government non-commercial service.

9. Cf. its text in The Law of the Sea, United Nations Convention on the Law of the Sea with Index and Final Act of the Third United Nations Conference on the Law of the Sea, United Nations, New York, 1983, particularly pp. 19-20 and 29.