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## ARTICLE III OF OUTER SPACE TREATY AND ITS RELEVANCE IN THE INTERNATIONAL SPACE LEGAL FRAMEWORK.

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### Abstract

The core of space law, by nature and by necessity, forms part of international law. Article III of Outer Space Treaty specifically obliges States to act in accordance with international law including the UN Charter. It is generally accepted by scholars that Article III does not imply an automatic extension of international law to outer space and celestial bodies, including the UN Charter *in toto*. However, even though space law claims to some extent priority over general international law, it does not mean that it is a self-contained regime. Despite the peculiarity of space environment Article III provides that space law is intrinsically and extensively linked with international law and its other branches, defining their interactions and synergies. This paper examines that international law clarifies and develops basic principles applicable to outer space in order to guarantee space sustainability. Nowadays, due to the rapid expansion of space activities and the lack of international binding instruments this process is coming into being throughout UN resolutions, guidelines, TCBMs and codes of conduct. These no legally binding instruments are important tools in the evolving process of international law for providing to the States a conduct in order to cover fundamental areas of concerns. Throughout the International Court of Justice decisions and international practice, the notion of sustainable development has softly grown as a concept firstly, and then qualified as an objective. Accordingly, the need for adopting measures most likely to achieve the objective with which specific States conduct must be consistent also in carrying on space activities. In consideration of the difficulties and complexity of the traditional law-making process in adapting the existent *corpus iuris spatialis* to the new needs, the flexibility of the wording of Article III ascertains that not only international norms specifically applicable to the protection of the space environment, but also rules of international law at large, whether its nature is customary, conventional or other. These principles and rules of international environmental law, especially those related to the concept/objective of sustainable development, can contribute to the protection of space environment strongly.

**Keywords:** International Space Law, Space Activities, Sustainable Development, Space Sustainability

### 1. Introduction

Since the beginning of the space age, the sources of international law have shaped space law. The current space law establishes the legal status of outer space and fundamental legal mechanisms for its exploration and use. In addition, art. III of the Outer Space Treaty (OST) specifically obliges States to act in accordance with international law including the UN Charter. Nowadays, the rapid progress of technologies as well as the increase in the number of actors in the space field have raised new issues that need to be regulated. Especially, while the international community is obtaining several benefits from the uses of outer space, at the same time, the price is being paid in the form of environmental damage endangering future activities. The space environment is unique and its protection is a much more serious concern than one would ordinarily think. The international community is trying to solve this issue throughout UN

resolutions, guidelines, Transparency and Confidence-building Measures (TCBMs) and codes of conduct. No legally binding instruments are important tools in the evolving process of international law for providing the States with a conduct in order to cover fundamental areas of concerns. These instruments often provide technical standards that result still inadequate to face the risks of an unsustainable environment in outer space.

In light of this, art. III of OST provides information that international law, including the Charter of the United Nations (UN) applies to activities in outer space. This means that applicable law includes not only international norms specifically applicable to the environmental protection of outer space, but also customary rules, conventional or other. These principles and rules of international environmental law, especially those related to the concept/objective

of sustainable development, can contribute to the protection of the space environment strongly.

## 2. The Relevance of Art. III of Outer Space Treaty

The increasing relevance of outer space and space technologies is leading the adoption of a variety of new norms, contained in different instruments from the traditional sources of space law. However, when taking into account the rules governing the space activities art. III of the OST should be taken more into account. From the viewpoint of international law it is one of the most essential provisions of the OST. Hence, space law is intrinsically and extensively linked with international law and its other branches, defining their interactions and synergies [1].

### 2.1 From the UNGA Resolution to the OST: a Brief Overview of the Meaning of Art. III of the OST

International regulation in outer space is a recent area of when compared to other fields of law. However, discussions and legal studies on the possibility of establishing rules in outer space emerged much before [2]. Shortly after the launching of the first artificial satellite in 1957, the international community became more aware of the need of implementing a set of rules in order to regulate the future human activities in outer space. It was clear that legal rules regulating space activities were needed in order to avoid the development of practices dictated exclusively by national and strategic interests. It was feared that such practices could eventually result in conflicts among nations, thus the international community decided to cooperate in the establishment of the rules governing space activities and in their actual implementation.

With these premises the UN was identified as the natural forum for the negotiation of international space law. In 1958 an *ad hoc* committee was appointed by the UN General Assembly (UNGA) to deal with the problems arising from space activities and to provide space activities with an adequate legal framework. On 12 December 1959, this committee became a permanent body and was given the name of Committee on the Peaceful Uses of Outer Space (COPUOS) with a specific structure composed of two sub-committees, one dealing with legal matters, the Legal Sub-Committee, and the other addressing technical issues, the Technical Sub-Committee [3].

As early as the beginning of the exploration of outer space it was recognized that international law, including the Charter of the UN, accompanies man's entry into outer space. Indeed, in 1959 the COPUOS observed in its Report (A/4141) that the provisions of the UN Charter and the Statute of the International Court of

Justice "as a matter of principle [...] were not limited in their operation to the confines of the earth" [4]. Moreover, the first UN document containing recommendations addressed to the States, concerning activities in outer space, was resolution 1721 (XIV) A, unanimously adopted by the UNGA on 20 December 1961. In this document, after having recognized a general interest of mankind in the exploration of outer space for peaceful purposes, the UNGA adopted the recommendation that in their activities in the exploration and use of outer space States should be guided by the following principles: international law, including the UN Charter, applies to outer space and celestial bodies; outer space and celestial bodies are opened for exploration by all States according to international law and are not subject to national appropriation.

A great significance of these principles, reaffirmed in the Resolution 1802 (XVII) adopted on the 14<sup>th</sup> December 1962 by UNGA, is that they confirmed a basic principle according to which States are obliged to be guided by international law in all their actions and in all environments, including outer space. The next and the most important stage in the evolution of space law within the United Nations was the unanimous adoption on 13 December 1963 of the UNGA resolution 1962 (XVIII) entitled "The Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space". As a result of the intense diplomatic negotiations [5], this Declaration contains nine principles which may be regarded as the core of the international law of outer space around which space law was developed. The fourth of these sets of principles clearly states "the activities of States in the exploration and use of outer space shall be carried on 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 Declaration of Legal Principles was the first step before the adoption of an agreement governing the activities of States in the exploration of outer space, namely the OST adopted in 1967 which is a reflection of those principles. Indeed, art. III of the OST using essentially the same wording made it the duty of the States, Parties to the Treaty, "[...] to carry on their activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law including the UN Charter".

During the preparatory phases of the OST it is noteworthy that several States, such as the United Kingdom, the Union of Soviet Socialist Republic and United States of America made proposal that intended to include references to international law. However, the Summary records of the Legal Sub-Committee of the

COPUOS show that there was no unanimity of opinion regarding the meaning of the principle that international law and the UN Charter are applicable to outer space activities [6]. Indeed, difficulties may arise in determining which principles and rules of international law are to be applied to a given situation. While an integral part of international law, space law takes some features that individualize it. For instance, peculiarities of outer space and the related activities that take place derive through its unique environment and the mode of propulsion in the empty space. These characteristics are linked to the nature of the legal regulation of different forms of exploration and uses of outer space. Hence, most international standards, related to the specific use of parts of the external world that are different from space, as the law of the sea, air or the rules relating to Antarctica are, by their nature, inapplicable in this new field. These rules are repealed or replaced by new rules in international space law. Other standards, as spelled out in the UN Charter, such as those governing the Non-Self-Governing Territories, simply do not exist in space law. It is clear that international law can not be applied totally to the activities of the new and specific types of behaviours in outer space. Thus, as stated by Judge Manfred Lachs, the general principle of the validity of international law does not mean that international law, including the UN Charter, apply to outer space *in toto* [7]. However, the development of human activities in a new area does not absolve States from their duties arising under international law or that fixed in the UN Charter. Even though space law does contain mainly new standards and rules which develop the common background in a new area of human activities, general international law does not apply in the field of space only to complete certain provisions or to overcome existing weaknesses [8]. As for the structural principles of international law such as the principle of the equal sovereignty of all states, collaboration and cooperation to develop friendly relations among States, or the principles enshrined in art. 2.4 and 51 of the UN Charter on the duty to refrain from the threat or use of force and the inherent right of self-defense, their direct and equally applicability to man's activities in outer space is clear [9]. In this sense, although every field of international relations would be regulated most directly by its *lex specialis*, it does not mean that a significant part of international law, such as rules of customary international law and general principles of international law, are not applicable generally [10]. Therefore, it is without any doubt that a substantial part of international law and UN Charter apply to human activities in outer space. Furthermore, throughout art. III, developments in international law, such as new international agreements, rules of customary law or new interpretations of the provisions of the UN Charter, which are compatible with the peculiarity of the space activities, can be

extended to the use of outer space.

## 2.2 *Is Space law a Self-contained Regime?*

Now, an interesting point is to consider what is the relationship of space law to general international law and other branches of international law respectively. In order to analyse this issue it is necessary to explore the question whether space law should be considered as a so-called self-contained regime.

The issue of the self-contained regimes is a topic very discussed by the scholars. On the one hand, there is a part of the literature that highlights the unity of international law; on the other hand, some underline its fragmentation characterized by the emergence and spreading of special legal systems marked by the development of special rules and verification mechanisms that differ from those of the general international law. The topic of the self-contained regimes appeared in several cases in international jurisprudence. Moreover, it was discussed by the International Law Commission (ILC) during the works on the Draft articles on the responsibility of States for internationally wrongful acts characterized by the different opinion on the concept given by the Special Rapporteurs Willem Riphagen and Gaetano Arangio Ruiz [11]. However, Special Rapporteur James Crawford, rather than finding out a solution to the divergent opinion of the ILC's previous Rapporteurs, decided to refer the issue to the topic took up by the Commission, namely the ILC Working group on the Fragmentation of international law chaired by Martti Koskenniemi. Therefore, Special Rapporteur James Crawford avoided express recognition of self-contained regimes speaking of "*strong*" forms of *lex specialis*, including what are often referred to as *self-contained regimes* in his comment of the art. 55 of the ILC Draft articles [12].

According to Koskenniemi a self-contained regime covers the case where "a set of primary rules relating to a particular subject matter is connected with a special set of secondary rules, that claims priority to the secondary rules provided by general law" [13]. Nevertheless, he came to the conclusion that no regime is fully self-contained, taking into consideration that general international law at least provides a normative background and serves as a fall back option in case a special regime fails. Similar, and even more pragmatic conclusion was emphasised by Simma and Pullowsky according to which scholars should not concentrate that much on this issue. On the contrary, in order to determine whether a certain regime claims to some extent to have priority over general international law it should rather be decisive "whether [...] a fall back in general international law is expedient to serve the purposes of the special regime" [14].

The concept of self-contained regime does not seem to be convincing even though, in modern international law, it is possible to find legal systems governed by special rules where primary and secondary norms exclude once and for all the application of norms of general international law [15]. For instance, the international telecommunications regime, governed by the Constitution and Convention of the International Union of Telecommunications (ITU) and its related Administrative Regulations, constitutes a special legal system, but not a self-contained regime. The ITU specialized legal setting implies the strongest institutional framework and an ability to set new international norms for adapting the emerging needs. However, the establishment of special rules do not exclude that the Parties have the chance to return to the rules of general international law if they so wish [16].

Even with regard to space law the thesis of self-contained regime is not convincing entirely. As it has been pointed out, if we consider space law within the self-contained regime taking into account the provisions of the OST, there are circumstances in which space law claims to some extent to have priority over general international law [17]. However, general international law fills existing lacunae and provides interpretative aid. In addition, the case law of the International Court of Justice (ICJ) and of other international tribunals suggests that where possible an integrated conception of international law is better to a fragmented one. This reflects the thought of avoiding to consider any part of international law in isolation from the whole, even when it is a *lex specialis*. Rules of international law are not only dynamic, but potentially is their interaction. This is not only true for outer space law but also for the other branches of international law. Space law, therefore, should not to be considered a self-contained regime, “[...] rather a part of contemporary international law. Accordingly, general international law and other branches of international law should be applicable as long as they serve the purpose to promote the rule of law ‘in heaven as on earth’ ” [18].

### 2.3 The “Gateway” for General International law

Pursuant to art. III of the OST international space law consists of rules arising from all typical sources of international law, which are listed in art. 38, par. 1 of the Statute of the International Court of Justice. The emphasis is on the relevant rules of international law that will normally apply to outer space activities. Following what has been stated above, general rules of international law fills the lacunae of space law. Based on the maxim *lex specialis derogat legi generali*, space law would prevail over general international law in case of specific regulations in space law. Contrariwise, general international law should be applied. Art. III of

the OST implies that international treaties with universal applicability and customary international law are complementary to space law. Other branches of international law, such as international environmental law and the law of international responsibility, can be used to complement the lacunae or inadequacy of space law. In this sense, art. III acts as a “gateway” through which rules of international law become applicable to outer space [19].

Nowadays, the unique environment of outer space is threatened by the development of human activities. Especially space debris, collisions and fragmentations in space, frequencies overlapping, collisions among space objects, intentional and unintentional harmful interferences and deliberate destruction of satellites are the most prevalent warning issues that need to be solved. The international community has certainly not remained totally unconscious of these issues. On the one hand, technical rules for safeguarding the space environment have already been adopted at different levels and for different threats. On the other hand, following art. III of the OST, applicable law includes not only international norms specifically applicable of outer space, but also rules of international law at large, whether its nature is customary, conventional or other. Principles and rules of international environmental law developed on Earth and the aim for its sustainable development can strongly contribute to the protection of the space environment.

### 3. Regulating Space Activities through Technical Rules

Outer space is useful for several human activities, but its specific environment does not make it human-friendly. It is a well-know fact that the space environment is helpful for our well being on earth and the commercial applications of outer space are many and ever increasing. Throughout the use of outer space there have been fundamental progress in telecommunications, direct television broadcasting, Internet, remote sensing. Moreover, many are the plans by both governmental and non-governmental organisations for space travels as well as space tourism. However, the space environment is fragile, and constantly changing with the occurrence of different human controlled or uncontrolled events and the protection of the space environment is a much more serious concern than one would ordinarily think [20].

In this light, there are many scientific proposals and efforts to reduce the degradation of the space environment, by combining the technical aspects with the appropriate legal framework, especially by eliminating space debris. With regard to the legal framework concerning outer space, there are rules aimed at the protecting the environment but since 1979

no binding agreements have been adopted in order to adjust space law to the new needs.

### *3.1 Existing Provisions to Protect the Space Environment*

Considering the provisions related to environmental protection within existing space law these are minimal. In the five basic space law Treaties adopted between 1967 and 1979, the protection of the space environment was not very much considered. The reason is that the major “environmentalist” concern in space treaties has been, at the moment of their negotiation and conclusion, the so-called “back-contamination” resulting from the introduction of extra-terrestrial substances. However, as it has been pointed out, if analysed in with an evolving prospective the *corpus* of principles and rules of space law provide a basic environmental regulation [21].

The OST in its art. I, par. I states that: “the exploration and use of outer space shall be carried out for the benefit and in the interest of all countries, [...] and shall be the province of all mankind”. A dynamic approach to this provision can be considered that not only the freedom of any State to carry out space activities without suffering harmful interference by others is covered, but also safeguarding the space environment, as an integral part of this freedom. Still looking at the OST, particular consideration must be given to art. IX. This is considered as the basis for the environmental protection of outer space and its preservation for peaceful uses. It takes in consideration the principles of co-operation, mutual assistance and of due regard to the interests of all states, and it sets forth the provision that states shall “[...]pursue studies in outer space, including the Moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination [...]”. Therefore, this provision clearly imposes upon States conducting space exploration activities, the obligation of avoiding harmful contamination of outer space and the Earth’s orbits, which are an integral part of the space environment.

The Convention on International Liability for Damage Caused by Space Objects at art. 2 while applying also to the damage caused by space objects on the Earth’s surface does exclude the space environmental damage and the vagueness of terminology in other provisions, such as some commentators underlines in the art. V of the Rescue Agreement, does not seem to regard the protection of the space environment [22].

Then come arts. 7 and 11 of the 1979 Moon Agreement which also deal with the issue of environmental protection. The former in its first paragraph contains an improvement in comparison with art. IX of the OST, by explicitly considering the risk of lunar contamination and imposing upon States the duty to take measures to prevent the disruption of the existing balance of its

environment. The latter encourages the concept of the common heritage of mankind, according to which one of the elements is the conservation of the environment for future generations. Unfortunately, the relevance of these provisions in the protection of the space environment is very limited. Firstly, the provisions of the Moon Agreement apply only to the moon and other celestial bodies and not to outer space as a whole. Secondly, and more significantly, the practical effects and binding nature of the Moon Agreement are debatable given the low level of ratification (16 as April of 2016). Mention should also be made to UNGA Resolution 47/68 adopted in the 1992 concerning the Principles relating to the use of nuclear power sources in outer space which deals with the safe use of nuclear power sources in outer space particularly in order “to minimize the quantity of radioactive material in space and the risks involved”.

### *3.2 UNISPACE III and the Need for a Sustainable Use of Outer Space*

Rapid progress in space exploration and technology led to the need for finding out solutions of safeguarding the space environment in absence of real provisions capable to do it. In order to discuss the serious issues in the exploration and peaceful uses of outer space three major UN conferences were convened in Vienna in 1968, 1982 and 1999 (UNISPACE) [23].

With regards to the use of outer space and its environment, UNISPACE III which was convened from 19 to 30 July 1999 in Vienna organized within a renewed sense of cooperation: the end of the Cold War, emerging opportunities for greater cooperation after the 1996 UNGA Resolution 51/122 deserves particular mention. Furthermore, the very element which influenced UNISPACE III was the UN Conference on Environment and Development, the so-called “Earth Summit”, held in Rio de Janeiro in 1992, which concluded with the adoption of the Rio Declaration on Environment and Development and the Agenda 21 as a non-binding instruments regarding to the concept of sustainable development.

UNISPACE III represented an important forum for discussing the emerging needs in outer space. Regarding the space environment, particular attention was made during the Workshop on “Space Law in the Twenty First Century” coordinated by the International Institute of Space Law (IISL) on the theme *Maintaining the space environment* [24]. The pollution of the space environment was discussed largely and the experts recognised that human activities in outer space already had their impact on the space environment.

At UNISPACE III, bearing in mind the 1992 Earth Summit in Rio and the concept of sustainable development, the need for a sustainable use of outer

space was recognised in order to maintain the space environment for future generations. Therefore, the conference represented an important step in discussing the concerns of the space environment and the actions to be taken. The most important result of UNISPACE III was the adoption of the Vienna Declaration on Space and Human Development, which provided the basis of a strategy to address global challenges at the dawn of the 21<sup>st</sup> century, comprising 33 specific recommendations that addressed global challenges and were subsequently endorsed by the UNGA in its resolution 54/68 on 6th December 1999. This declaration called for advancing scientific knowledge of space and protecting the space environment. Moreover, it defined space technologies as unprecedented challenges to sustainable development; results of space research should assist States, especially developing countries, with a view to promoting sustainable development of all people; space technology as measures for sustainable development of countries. The conference represented a starting point for rethinking the agenda of the UN bodies dealing with outer space issue. The aim is to develop new mechanisms reflective of these new complexities in space activities and working towards securing the long-term sustainability of outer space activities.

### *3.2 Recent Initiatives for Sustainability in Outer Space*

Following the recommendations of UNISPACE III in the last decade several initiatives have been launched at the international level to face the challenge of space safety, security and sustainability. More precisely sustainability refers the use of outer space in a way that maintains its potential to meet the needs and aspirations of present and future generations, and that ensures that all humanity continue to use the outer space for peaceful purposes, scientific and technological advancements and socioeconomic benefits [25].

To achieve sustainability a set of technical rules have been adopted for space debris which its proliferation is considered the “major risks to the sustainability of mankind’s exploration and use of outer space” [26]. The Space Debris Mitigation Guidelines set out in 2002 by the Inter Agency Debris Committee (IADC), and updated in 2007; the IADC Space Debris Mitigation Guidelines provided the basis for the UN COPUOS Space Debris Mitigation Guidelines which have subsequently been endorsed by the UNGA by way of a Resolution. Although the UN COPUOS Space Debris Mitigation Guidelines constitute an important step towards reducing risks related to space debris, they are not sufficient in the long term. Environmental protection is not even mentioned and they remain quite general in nature and do not provide a comprehensive approach to the problem. Then, other international standards have

followed such as the European Code of Conduct for Space Debris Mitigation adopted in 2007 by ASI, CNES, DLR, ESA and UK Space Agency. New initiatives are now considered and planned towards active space debris remediation or removal and development of related technologies. But space debris is not the only threats. Overall, environmental problems in outer space are discussed by the international and scientific community largely [27]; but the adoption of technical standards does not exhaust the legal tools that are being put in place to face the risks of an unsustainable environment in outer space [28]. Accordingly, there are other on-going initiatives that starting from the existing UN treaties and principles on outer space seek to ensure space sustainability, safety and security such as the Draft International Code of Conduct for Outer Space Activities (ICoC) and the UN COPUOS Working Group on Long-Term Sustainability (LTS) of Outer Space Activities respectively.

The ICoC comes from a EU proposal with the aim to enhance the safety, security, and sustainability of all outer space activities. It addresses clear political commitments regarding the security in outer space and contains policies and procedures to minimise the possibility of accidents in space, collisions between space objects or any form of harmful interference with another State’s peaceful exploration and use of outer space. Especially the principle of harmful interferences which are embodied in the Code and regard the responsibility of the Subscribing States to take all appropriate measures and cooperate in good faith to prevent harmful interference in outer space activities. In addition, it can be considered as an instrument for the implementation of the recommendations contained in the report of the Group of Governmental Experts on Transparency and Confidence Building Measures in Outer Space Activities (GGE on TCBMs). The UNGA welcomed the consensus report in its resolution 68/50 of 5<sup>th</sup> December 2013 on TCBMs, encouraging member States to review and implement the proposed TCBMs for example in the form of unilateral declarations, bilateral commitments or a multilateral code of conduct. In July 2015, in New York the last meeting devoted to negotiate the ICoC took place with the participation of representatives from more than 100 countries.

#### *3.2.1 UN COPUOS Working Group on Long-Term Sustainability of Outer Space Activities*

In 2010, COPUOS under the Scientific and Technical Subcommittee (STSC) established the Working Group on the LTS of Outer Space Activities [29]. The Working Group is tasked with producing a consensus report containing voluntary best-practice guidelines for all space actors to ensure the long-term sustainable use of

outer space. While the guidelines themselves are not legally binding under international law, as stated in the notes of the Secretariat, any action taken towards their implementation should be consistent with the applicable principles and norms of international law. They are formulated in the spirit of enhancing the practice of States and international organizations in applying the relevant principles and norms of international law. One of the main objectives of the LTS is to examine and propose measures to ensure the safe and sustainable use of outer space for peaceful purposes and the benefit of all countries. The agenda aims to protect the space environment and is also closely related to the concept of sustainable development. Indeed, the general idea of integrating economic and environmental interests can be extended to the domain of outer space.

In order to elaborate a multi-faceted and comprehensive solution to the problems, the work is carried out by a specifically established Working Group within the framework of the Subcommittee, which in its turn is subdivided into four Expert Groups:

1. Sustainable space utilization supporting sustainable development on Earth, co- chaired by Filipe Duarte Santos (Portugal), Enrique Pacheco Cabrera (Mexico);
2. Space debris, space operations and tools to support collaborative space situational awareness, co-chaired by Claudio Portelli (Italy) and Dick Bueneke (USA);
3. Space weather, co-chaired by Takahiro Obara (Japan) Ian Mann (Canada);
4. Regulatory regimes and guidance for actors in the space arena, co-chaired by Sergio Marchisio (Italy) and Michelle Clement (Australia).

The expert groups have considered inputs received from States members of the Committee, international intergovernmental organizations and non-governmental entities to identify areas of concern for the LTS of outer space activities. The expert groups have also considered current practices, operating procedures, technical standards and policies associated with the safe conduct of space activities. On this basis a set of candidate Guidelines have been proposed. Indeed, during the 2016 session of the COPUOS consensus was reached on an initial set of 12 guidelines covering a broad range of topics aimed at fostering space sustainability, while other 16 are still under discussion, fall into several broad categories: policy and regulatory frameworks; space operations; international cooperation and capacity-building; and scientific and technical research and development [30]. The topics addressed by these agreed-upon guidelines include encouraging States to adopt, amend, and revise existing national space regulations; ensuring appropriate structures to supervise national space activities; and ensuring the equitable,

rational, and efficient use of radiofrequency spectrum and of orbital regions. Additionally, there are agreed guidelines on sharing and improving accuracy of orbital data, space debris, and space weather, as well as capacity building of space capabilities. Among the accepted Guidelines particular mention deserves Guideline 27, which aims to “Promote and support research into and the development of ways to support sustainable exploration and use of outer space”. Here it is underlined that States and international intergovernmental organizations should promote the development of technologies that minimize the environmental impact; should consider appropriate safety measures to protect the Earth and the space environment from harmful contamination; conducting research and development activities to support the sustainable exploration and use of outer space should also encourage the participation of developing countries in such activities.

### *3.3 Relevance of Soft Law in the Process of Evolving International Law*

Since 1979 the regulation of space activities has been addressed through instruments of soft law due to the lack of new treaties in the field of space law. Negotiating new treaties take time, political will and the consensus-based decision-making in the COPUOS represents even one more impediment. In 1959, when COPUOS became a permanent body the number of States was 24 and it has grown to 77 in 2016. Naturally is more difficult to reach a consensus today. The elaboration of new binding treaties has never been accepted, despite repeated proposals for such discussions. Moreover, the idea is that the existing treaties stemmed from several compromises, and not from a uniformity of views. Therefore, there are risks in starting discussions about new treaties, as this may re-open the debate on the already agreed upon issues. It does not mean that there will be no new treaties on space law but it will take time to negotiate a new one. The existing rules of space law constitute the general framework but the gaps left in many areas like protection of the space environment; space debris; space tourism and others need to be regulated as soon as possible and soft law seems to be the better way.

These soft law instruments provide guidelines or standards of conduct that may often influence the actions of States in relation to the specific context, but they do not have the possibility to be binding upon States such as treaties do. Rather it is the subsequent reflection in treaties and customary law the relevant concepts contained in these instruments [31]. In a broad context the most notable examples of these instruments are the Universal Declaration of Human Rights (UDHR), the Stockholm Declaration and Rio Declaration.

One of the typical forms of soft law is the UNGA Resolution, but over the decades State practice has developed a variety of terms to refer to international instruments by which States establish or adopt non legally binding frameworks.

As a matter of fact, space law has provided, by starting from the UNGA Resolutions 1721 (XIV) and 1962 B (XVII), a series of non binding instruments in the context of the exploration and use of outer space. In particular, the UNGA adopted a set of five space related principles. More recently Guidelines, Codes of conducts and other political commitments have been developed or on-going to face the challenge of space security and sustainability. The trend towards the use of such instruments is clear. It represents the long-established methodology for the future endeavours in outer space due to their advantages in many situations. The fact that they are not binding makes their easier negotiations; they allow for the prescription of standards and guidelines, whilst allowing States some room to manoeuvre in the context of their relationships with each other; being the basis for political will of the adoption of subsequent treaties or reflection as customary law; establishing not only normative rules but also technical regulation which are needed due to the space environment. In this sense, while the benefits of a clear and coherent legal framework probably still best reflected through a treaty regime, in the arena of space activities there is considerable benefit from such instruments. Indeed, they can provide in a number of occasions an indispensable function in the development of a proper international space legal framework [32].

#### 4. Sustainable Development in Outer Space

Rules of space law, even through a dynamic interpretation, do not seem to be suitable for ensuring the future sustainable use of outer space. At the same time, the on-going initiatives are noteworthy but the only technical rules cannot fill the existent legal gap and it is obvious that the future will see an even greater range of space activities evolve.

As stated above, activities related to the exploration and use of outer space are to be carried out in accordance with international law; in this sense, applicable law includes not only international norms specifically relevant to the environmental protection of outer space, but also rules of international law at large, whether its nature is customary, conventional or other. For this reason, in order to look for sustainability in outer space, it is possible to refer to the principles of international environmental law which have developed greatly in recent years [33]. In the ICJ judgment of 25 November 1997 on the case *Gabcikovo-Nagymaros*, the Court explicitly made reference to existing norms of

international law in the field of environmental protection, and among them specifically to a well-consolidated principle of general international law, which provides a duty of control and preventive action. Moreover, the Court recognised “new norms and new standards” affirmed by a large number of instruments that tend to reconcile economic development with the protection of the environment aptly expressed by the principle of sustainable development [34]. In this sense, the principle of sustainable development is acquiring relevance even in the space sector [35]. Its application in outer space is a consequence of the general obligation of States not to damage the environment beyond national jurisdictions. This obligation was enshrined in two important documents, such as the Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration. They provide that the States have responsibility to ensure activities within their jurisdiction or control do not damage the environment of other States *or of areas beyond the limits of their national jurisdiction*. Outer space is one of these areas beyond national jurisdiction thus, while new norms will be elaborated within space law, there are interactions among rules and principles related to the protection of the environment on Earth that can apply to outer space.

It has to be said that space law recognised principles of international environmental law even before its evolution on Earth. The principle of intergenerational equity, namely the need to preserve natural resources for the benefit of future generations can be found in art. I of the OST implicitly. This principle is one of the essential components of the concept of sustainable development which is composed by a vast range of legal standards and principles closely connected to its realization. Intergenerational equity for its part clarifies the principles of the sustainable use of natural resources, of prevention and precaution, of environmental impact assessment, and of access to information and participation in the decision-making process. Important standards for the achievement of sustainable development are also inspired by intra-generational equity which include the principle of common but differentiated responsibilities.

Starting from the Rio Declaration all these principles are reflected in various treaty regimes closely connected with sustainable development and they are considered to be the cornerstone of international environmental law [36]. However, it is not possible to start from the assumption that all the environmental principles are applicable to space activities indiscriminately. Instead, we must assess the applicability of these principles, both from a technical-scientific point of view and from the strictly legal. Moreover, some of the existing relevant principles need to undergo transformation to be suitable for application to the protection of the space environment.

#### 4.1 “From earth to heaven”: Integration from the International Environmental Law

The application in outer space of the duty of control, preventive action and due diligence as a part of the more general duty of environmental prevention of customary character has been recognized by the ICJ. Indeed, in its 1996 advisory opinion on the *Legality of the Threat or Use of Nuclear Weapons*, the Court held that “the existence of a general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national jurisdiction is now part of the corpus of international law relating to the environment” [37]. In this sense, States are obliged to exercise their general right to explore and use outer space with due regard also to the protection of the global environment. Space activities, whether these are carried on by governmental agencies or by non-governmental entities, have a continuing duty to take appropriate measures to prevent, minimise and control the environmental harm of outer space. This continuing duty equates to an obligation for States to act with due diligence [38].

Speaking about interactions, if we consider the obligation of preventive action to avoid potential damage to outer space, we should take into account the precautionary principle. While the application of the preventive action is clear, the reflection of the precautionary principle in outer space result more complicated. The precautionary principle is based on the logic that environmental harms, due to the lack of scientific certainty, cannot be advocated by States in order to delay preventive measures. Now, the precautionary principle has gained increasing relevance in international law, in the European Union Law and in national legislation, but its application to all space activities can be more problematic due to the general lack of scientific certainty regarding many phenomena in outer space. The methodology of this principle is applicable to outer space whereas its entirely application should follow the developing scientific knowledge and environmental harms. However, if there is enough scientific evidence to establish the possibility of a risk of serious harm, States cannot justify their lack of action with the absence of a proof of harm. The same goes, for another important principle of international environmental law, namely polluter pays. In a similar manner, the application of this principle in outer space does not appear entirely suitable for the space sector.

An important principle of international environmental law, strongly linked with the principle of intergenerational equity, is the principle of common but differentiated responsibilities. The principle result as a more specific application of two general principles of space law: that of international cooperation, and that

according to which space activities have to be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development. Moreover, the application and evolution of this principle should be a normal consequence taking into account the needs affirmed at the last two UNISPACE conferences and the 1996 UNGA resolution 51/122 regarding “Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries” [39].

Then comes the duty to inform which also plays an important role. It can be found in principles 18 and 19 of the Rio Declaration as a prerequisite for effective national and international environmental management, protection and cooperation which relate to terrestrial environment. It integrates the same principle fixed in space law through art. IX of the OST.

The relevant practice of outer space activities shows a clear tendency toward the recognition of the necessity to protect the space environment and to respect the fundamental principles of international environmental law. These rules and principles can and should serve as basic ways providing direction in attempts to adapt the out-dated (and Earth oriented) law of outer space from an environmental point of view.

In addition, mention should be made to the secondary norms of international law which govern State responsibility for wrongful acts. Indeed, the special regime of international responsibility and absolute liability set forth in articles VI and VII of the OST and in the 1972 Convention provided little substance in terms of mechanism for claiming compensation for the protection of the space environment. The rules of State responsibility for wrongful acts are applicable to outer space, thus that every breach of an international legal obligation contained in the Space Treaties or in any other international norm, customary or conventional, with the same objective entails State responsibility and creates a further obligation to make reparation. In the case of a breach of an obligation concerning the protection of the outer space environment by a State, given the legal nature of outer space, as a *res communis omnium*, it is evident the application of art. 42 of the Draft Articles on State responsibility for internationally wrongful acts adopted by the ILC in 2001. The injured State is entitled to invoke the responsibility as the State whose rights and interests are directly affected by a violation of conventional or customary norms protecting the space environment[40]. In addition, it has been observed that “[...] Art. IX establishes an obligation of protecting space environment which is *erga omnes partes*, and therefore owed to a group of States for the protection of a collective interest, the responsibility of the violator can be invoked, according to Art. 48 literal

a of the Draft Articles, by any State other than an injured State. The same conclusion arise from the customary nature of the obligation of States to prevent environmental damages in areas beyond the limits of national jurisdiction, as the outer space, the Moon and other celestial bodies. This is an obligation owed to the international community as a whole as per Art. 48 literal b of the Draft Articles” [41].

#### 4.2 Sustainable Development from Concept to Objective

The observation in the previous section shows that the principle of sustainable development is basically applicable to improve the protection of the space environment. Since its formulation the concept of sustainable development has been receiving recognition at the international level constantly. However, it has to be said that its reflection as a legal principle is not without criticism [42]. Sustainable development seems to be dynamic and what needs to be done to achieve it evolves according to circumstances, in particular according to the time, the area, or the subjects concerned. As we have seen for outer space, the standards that need to be respected in order to achieve sustainable development will vary according to whom they apply, and the same level of commitment as that of a developed state will not be required of a developing one.

The placement of sustainable development within the legal framework has received wide support in a vast array of non-binding international legal documents; it also finds expression in a very large number of international treaties, even though this recognition is of little legal significance since such references or provisions related to sustainable development are very soft to impose an obligation on States to develop sustainably. This does not mean that they cannot still impose an obligation on States to act in order to promote sustainable development. Moreover, it is reflected even in a number of international judgments [43]. Most notably the International Court of Justice which has referred to sustainable development, firstly as a “concept” (*Gabcikovo-Nagymaros* case), and later as an “objective” (*Pulp Mills on the River Uruguay* case). For the Court, in the *Gabcikovo-Nagymaros* case, the parties had to find a satisfactory solution for the volume of water to be released into the old bed of the Danube and into the side-arms on both sides of the river; in doing so, the current norms of international environmental law had to be taken into consideration by the parties because of the need to reconcile economic development with environmental protection, which the Court thought was aptly expressed in the “concept” of sustainable development. The general statements adopted by the Court invited criticism from the Vice-President Weeramantry that in his separate opinion, on

the contrary, considered sustainable development “as a principle with normative value”, and as such found that it is “an integral part of modern international law” due to the fact the components of the principle come from well-established areas of international law [44].

More recently the ICJ, in its decision on the case *The Pulp Mills on the River Uruguay*, “made some further, but limited comments on the legal implications of sustainable development, without going all the way towards the recognition of it as a legal norm” [45]. In this context, the Court superseded the previous statement of sustainable development as a *concept* and qualified it as an *objective*. Although it is far from recognising its customary nature, sustainable development is now more than just a concept; it is an objective, and an objective with which specific state conduct must be consistent. Accordingly, in relation to the objective of sustainable development, States are not forced to achieve it, but are bound to try; they should struggle with or do their best to achieve sustainable development.

#### 5. Conclusions

The initiatives of the international community for facing the issue given by the unique space environment are very remarkable; they represent not only the cooperation for achieving the sustainable use of outer space, but also the continuous implementation of the rules that ought to govern the use and the exploration of the outer space. Thanks to the COPUOS action, progress has been made in the field of implementing the protection of the space environment. These initiatives are “soft” and provide mostly technical standards. In this period, marked by the lack of binding agreements, their value and function is essential in the development of a proper regulation.

There is no doubt that the principal solution would be an international convention focusing on the environmental aspects of space activities. However, having always in mind art. III of OST, international regulation of outer space has interactions and synergies with international law and its other branches. What it is known but worthwhile to emphasis is that international regulation in outer space is embedded in international law. Despite the undoubted unique features regarding space law, it does not represent a separate paradigm, as a logical consequence of the wording of art. III of the OST. It is obvious that in the future there will be new issues to undertake; if we look at space law only, there are areas of lacunae clearly and it might be difficult to find an answer. Accordingly, “this reality cannot deny the need to 'answer the question' when a difficult legal issue arises — one cannot simply say that there is 'no law' ” [46]. It is necessary to always bear in mind that art. III provides the information that space law is intrinsically

and extensively linked with international law that is dynamic and evolving. It creates interactions that cannot be ignored.

Notwithstanding, a more traditional approach resulting in hard law, might be preferable in the long term, art. III of the OST will allow extending the application of international law “from earth to heaven”. In this sense, with the regard to the aspect of environmental problems in outer space, it is not possible to deny or to hide the application of the rules and principles arising out from international environmental law to solve them, although with the necessary care of the outer space features. Additionally, developed and developing countries demonstrate a positive opinion of the sustainable development, given its employing in legal and non legal instruments. The ICJ’s decision as defined it not as a concept anymore, rather as an objective. Moreover, sustainable development is at the core of LTS of Outer Space Activities currently under the COPUOS’s discussion. Therefore, sustainable development should be the *objective* of the future international cooperation in the field of space activities for integrating the environmental protection of outer space and with which specific States conduct must be consistent.

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