SPACE DEBRIS AND OBLIGATIONS ERGA OMNES – A LEGAL FRAMEWORK FOR STATES' RESPONSIBILITY?

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ABSTRACT

The space debris problem has potential to preclude access to outer space which will have dire consequences for all States, both developed and developing. Although there are no explicit and specific norms in international space law regulating issue of space debris, certain rules of conduct and obligations imposed on States in regard of the subject can be interpreted from the five international treaties which together form the legal framework of international space law. International obligations connected to space debris issue are obligations *erga omnes* and by using the framework of international responsibility for internationally wrongful acts it is possible to protect them. In contemporary legal regime it is possible to create effective and operative way to ensure, that States conduct will be coherent with the common interest of international community as a whole. Elucidation of the legal character of the international obligations concerning space debris can provide useful tools for States to properly react to any misconduct happening in the outer space. Presented ideas and issue solving mechanisms can also be implemented into the UN system by equipping international organizations with the means to actively monitor and oversee the space debris issue.

1. INTRODUCTION

Space debris is inherent to the human activities in the outer space. Each launch is creating more and more space debris, and there is no escape from it. Nevertheless, States should take up on active measures in order to take control over the growing problem. It is estimated, that currently only around 6% of the catalogued orbital population are functional objects. European Space Agency estimates, that currently there are around 34.000 objects greater than 10 cm, around 900.000 objects from greater than 1 cm to 10 cm and around 128.000.000 objects greater than 1 mm to 1 cm [1]. The velocity of these objects is so high, that even the smallest of them endanger the safety and integrity of object launched into the outer space. At the beginning of space exploration, little to no regard was given to the consequences of the space missions. The international space law, which was being developed during the 1st Space Race, was established before international community recognized space debris to be the major problem. When the first space debris mitigation guidelines were being released, there were already tons of space junk orbiting the Earth, and the space debris issue is an issue that grows exponentially. This cascade effect is called the 'Kessler syndrome'. Kessler predicted, that unless international community introduced effective and resolute measures aimed at clearing the outer space of debris, even without new

launches, the growing accumulation of space debris would eventually deprive us of access to the outer space [2].

As the space debris numbers increase, the awareness of the issue grows stronger. The technological development is directed towards a significant reduction of the generated space debris and more and more technological solutions for active space debris removal are being developed. Unfortunately, the legal norms regulating the exploration and use of the outer space were established in a times, where potential for space industry was virtually nonexistent. It has led to a situation in which the regulations contained in treaties relating to space law are more likely to interfere with the active prevention of the effects of space debris than are helpful. At the time of drafting of the treaties, the international community pursued a different objective and did not take into account the degree of the outer space usage that we are seeing today. Nevertheless, in the light of the recent developments of contemporary international law, it is possible to use existing concepts and mechanisms to ensure that every State is under obligation to care for space environment and in a case of wrongful conduct or omission it's obligated to repair the damages and harmful effect on the heritage of mankind that is the outer space.

2. THE LEGAL FRAMEWORK OF SPACE LAW

Human activities carried out in the outer space are governed by international law and, in particular, by the international space law. Between 1967 and 1984, five treaties entered into force, which form the core of the contemporary international space law. The first and the most important treaty in the subject of space law is Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies of 1967 (The Outer Space Treaty), considered the *Magna Charta* of the outer space. It provides basic framework on international space law and contains principles that should be applied to any activity conducted in the outer space. As of 2021, 111 States were parties to the Outer Space Treaty, therefore the treaty is considered to contain principles that became customary international law and they bind not only States, but also non-signatories [3]. The next four treaties have more specific scope and they govern the rules concerning the astronauts and return of space objects (Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space of 1968 – The Rescue Agreement), establish basic framework for international liability for space activities (Convention on International Liability for Damage Caused by Space Objects of 1972 – The Liability Convention), contain legal norms regarding registration of space objects (Convention on Registration of Objects Launched into Outer Space of 1976 – The Registration Convention) and set basic rules about activities of States on celestial bodies (Agreement Governing the Activities of States on the Moon and Other Celestial Bodies of 1984 – The Moon Agreement) [4].

3. DEFINING SPACE DEBRIS

All activities in the outer space have to be conducted in the accordance with the legal norms contained in the treaties mentioned above. They are legally binding and some principles achieved status of customary law. Therefore, the issue of space debris have to be taken into account through the prism of these regulations. However, before considering the specific legal norms relating to space debris, the issue of its definition should be marked.

Contemporary binding international space law does not contain a legal definition of space debris. Some authors are of the opinion, that space debris should be considered as a space object. Article 1 of both the

Liability Convention and the Registration Convention states, that the term 'space object' includes component parts of space object as well as its launch vehicle and parts thereof. However, recognition space debris as one of the forms of space objects could make it much more difficult to legally mitigate it and actively remove space debris that are already in the outer space. Under article 5 of the Rescue Agreement, States are obliged to notify the launching State about its space objects that have returned to Earth on their territory and have to return it to them upon request. Moreover, under article VIII of the Outer Space Treaty, States on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Considering space debris as space object would make its removal legally problematic. Without any norms stating, when space object becomes obsolete and is subject for removal, States retain control over it for indefinite time. Such situation can lead to such absurd results as for example treating removing space debris of other State from orbit due to the danger it's posing as against international law or even as an act of piracy [5].

Increase in awareness about the space debris issue among the international community resulted in concluding few non – binding guidelines and technical recommendations for space debris mitigations. These documents, as part of international soft law are not binding, but nevertheless can be important, especially when considering customary status of specific legal norms. Without presence of binding definition of space debris, authors of such guidelines decided to include it in drafted documents.

In October 2002, the Inter – Agency Space Debris Coordination Committee issued Space Mitigations Guidelines [6] containing set of non-binding guidelines for space agencies drafted with an emphasis on cost effectiveness, that can be considered during planning and designing of spacecraft and launch vehicles in order to minimise or eliminate generation of debris during operations. Definition of space debris included in these guidelines while being made "for the convenience of the readers of this document" states, that space debris are all man-made objects including fragments and elements thereof, in Earth orbit or re-entering the atmosphere, that are non-functional. The identical definition was included in United Nations Office For Outer Space Affairs Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space [7] adopted in 2007, and then endorsed in 2008 by United Nations General Assembley [9]. Both guidelines mentioned above are defining space debris separately from space objects and both use so called functionality approach, which emphasizes the non-functionality of such objects as characteristic attribute of space debris.

4. THE OUTER SPACE TREATY PROVISIONS RELATED TO SPACE DEBRIS ISSUE

The international space law does not explicitly and directly contain any legal norms in the subject of space debris, space debris mitigation or space debris removal. However, there are some legal norms included in the space treaties that by establishing some principles and rules which are generally applicable to outer space activities and therefore include space debris in their scope.

Article I of the Outer Space Treaty constitutes the principle of freedom of usage and exploration of the outer space. In second paragraph it states, that outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies. This principle forbids States to preclude access to outer space by other States. It also implies obligation to sustain the outer

space in a condition which allows States to exercise their rights granted under the Outer Space Treaty. States should therefore not only minimize the space debris emission, but should actively work towards maintaining the outer space usable, for example by applying procedures that allow active space debris removal.

Keeping space debris in the outer space can be also treated as a form of appropriation, which is forbidden under article II of the Outer Space Treaty. By placing or keeping a non-functional object in the same space it removes the possibility of another, functional object using that location. Article II of the Outer Space Treaty states, that that the outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means. . The wording of this article is also repeated in Article 11 of the Moon Agreement. This principle was so fundamental, that one of the earliest United Nations General Assembly resolutions on the topic of outer space included it in its content [9]. It's worth noting, that simply placing an object in the outer space doesn't constitute appropriation. Nevertheless, there is possibility, that some States will be motivated to keep non-functional objects in their spot in the outer space just to keep that spot to themselves, for later usage. This can be the case especially in the Low Earth Orbit, where large satellite constellations, such as SpaceX Starlink can be placed.

The crucial provision of the Outer Space Treaty that can be applied to space debris issue is article IX. This article requires States to be guided in exploration and use of outer space by the principle of co-operation and mutual assistance. All activities in outer space, including the Moon and other celestial bodies should be conducted with due regard to the corresponding interests of all other States Parties to the Treaty. Moreover, the studies and usage of outer space should be conducted as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter. States are also obligated to undertake appropriate international consultations before conducting any activity which may harmfully interfere with other nations' space activities. Since space debris is considered as harmful contamination as a man-made alteration to the environment of outer space that interferes with the access of other States to outer space [10], the issue lies within scope of article IX of the Outer Space Treaty. It's worth noting, that the protected value in the provision obliging to avoid harmful contamination isn't the space environment itself, but the safety and interest of whole international community. As J. Helge stated "an interpretation of Article IX OST, that concludes that States have to use the Earth orbit and must protect the space environment in a way that ensures long-term sustainability integrates the treaty text into the international legal system from which it draws breath and ends up in normative harmony with the law in pursuit of sustainable development, in particular sustainable utilization of common resource and environmental protection of the global commons" [11].

The liability for damages is regulated by article VII of the Outer Space Treaty and the Liability Convention. Article VII states, that each State Party to the Treaty that launches or procures the launching of an object into outer space, including the Moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air or in outer space, including the Moon and other celestial bodies. The Liability Convention is without a doubt *lex specialis* and should be taken into account along with other international rules governing the area of responsibility,

especially the legal norms in the subject of responsibility for internationally wrongful acts.

The provisions of the Outer Space Treaty, especially the legal norms contained in article I, article II, article VII and article IX have a similar goal – to protect interests of international community by forbidding and regulating specific conduct of States in the Outer Space. Most of these provisions achieved customary status, with the mentioned United Nations General Assembley Resolutions as *opinion juris*. Resolutions called for reduction of space debris and for providence of support for debris mitigation guidelines given by the IADC which are said to reflect "existing practises as developed by number of national and international organizations". Moreover, a number of states have created debris mitigation policies and implemented them into their domestic legislation [12], which can be an example of second component of international customary law – *usus.*

The customary status of these Outer Space Treaty provision, along with the interests of international community as a whole as protected value and with near universal scope, can be proof of their status as *obligations erga omnes*.

5. OBLIGATIONS ERGA OMNES CONCEPT AND ITS CONSEQUENCES FOR SPACE DEBRIS REMEDITION AND REMOVAL

Legal relationships between states can be organized in four ways. Obligations can be bilateral, interdependent, *erga omnes partes* and *erga omnes*. Bilateral obligations are owed by one legal subject to another with equivalent on the side of other subject. Interdependent obligations are obligations owed by one legal subject to a group of other legal subjects and performance of that obligation is necessary condition for the performance of the equivalent obligations held by the group of other legal subjects. Obligations *erga omnes partes* are said to be obligations biding on a group of states established in a common interests, where performance of an obligation by specific subject isn't connected to the performance of the equivalent obligations by the other members of such group. Finally, obligations *erga omnes* are obligations owed by one legal subject to "the international community as a whole" [14].

The existence of obligations *erga omnes* was *expressis verbis* confirmed by the International Court of Justice in the Barcelona Traction Case. The Court held, that there are some international obligations, that concern all States. In view of the importance of the rights involved, all States can be held to have a legal interest in their protection; they are obligations *erga omnes* [15]. Malcolm Shaw stated, that these obligations are "of a different or higher status than others" [16], André de Hoogh refers to obligations *erga omnes* as "obligations of a higher normative value" [17], together with *jus cogens* and international crimes they are part of ongoing constitutionalizing of international obligations. Obligations *erga omnes* aren't necessarily distinguished by the importance of their substance. They are norms with certain procedural features - namely the feature that a breach of them can be invoked by any State and not just by individual beneficiaries [18]. As Ma Xinmin said, "obligations *erga omnes* show that in parallel to national interests there are interests and values of international community of States. Such interests concern the common interests of all States as a whole and all mankind. They are not simply the sum of the national interests or individual States, but common rights and interests enjoyed by the international community or all mankind as a whole" [19].

In the authors opinion, legal norms contained in provisions of the Outer Space Treaty, especially article I, II, VII and IX acquired status of obligations *erga omnes*. They were established in order to protect values common to the international community as a whole – to

protect the access and usability of outer space for current and future generations. They lay at the foundation of all regulations regarding use and exploration of outer space and they have deep roots in the concepts of province of mankind and the Common Heritage of Mankind. All States, both developed and developing have interests in ensuring the effective and proper performance of these obligations and all States should be able to take action in case of a breach of such obligation *erga omnes.*

As mentioned above, obligations *erga omnes* have some procedural implications – their breach can be invoked by any State, not only the State which was directly injured by the action or omission of other State. The legal framework for the responsibility of states for actions and omissions that is considered as internationally wrongful acts was subject to the works of International Law Commission (ILC) since 1953, when the General Assembly requested the Commission to undertake "the codification of the principles of international law governing State responsibility", as soon as it considered it advisable. The most recent effect of ILCs work on the codification of customary norms regarding the international responsibility was presented in 2001 as Draft Articles on Responsibility of States for Internationally Wrongful Acts [20].

In the light of the provisions of this Draft Articles, there is an internationally wrongful act of a State when conduct consisting of an action or omission: (a) is attributable to the State under international law; and (b) constitutes a breach of an international obligation of the State (article 2). There is a breach of an international obligation by a State when an act of that State is not in conformity with what is required of it by that obligation, regardless of its origin or character (article 12). The State that is responsible for internationally wrongful act is then obligated to cease that act, if it is continuing and to offer appropriate assurances and guarantees of non-repetition, if circumstances so require (article 30). Moreover, the responsible State is under an obligation to make full reparation for the injury caused by the internationally wrongful act (article 31), which can take form of restitution, compensation and satisfaction, either singly or in combination (article 34). Considering the topic of responsibility in connection to space debris issue, the most important form of reparation is restitution. Article 35 states, that a State responsible for an internationally wrongful act is under an obligation to make restitution, that is, to re-establish the situation which existed before the wrongful act was committed, provided and to the extent that restitution: (a) is not materially impossible; (b) does not involve a burden out of all proportion to the benefit deriving from restitution instead of compensation. States, in case of invocation of responsibility are therefore obligated to actively work towards re-establishing the desired from the point of international community situation, for example remove excessive space debris that was placed in the outer space due to the violation of provisions of the Outer Space Treaty. Article 42 of Draft Articles entitles an injured State to invoke the responsibility of another State and article 48 regulates the situation, when the responsibility is invoked by any State other than an injured State. It is possible, if the breached obligation is owed to a group of States including that State, and is established for the protection of a collective interest of the group or it's owed to the international community as a whole.

In order to induce State to comply with its obligations, States can take up on countermeasures. States entitled under article 48 to invoke the responsibility of another State can take lawful measures against that State to ensure cessation of the breach and reparation in the interest of the injured State or of the beneficiaries of the obligation breached. These so called third-party countermeasures have been conceptualised as a means to operationalize multilateral obligations such as obligations *erga omnes* allowing states to respond to

breaches of such obligations [21]. The countermeasures are defined as “pacific unilateral reactions, which are intrinsically unlawful, which are adopted by one or more States against another State, when the former consider that the latter has committed an internationally wrongful act which could justify such a reaction” [22]. As international practice shows, the institution of third-party countermeasures is taken up by large number of States not individually injured in response to previous serious breaches of the most fundamental international obligations committed by another State [23].

The *erga omnes* status of international obligations contained in provisions of the Outer Space Treaty, along with the possibility of invoking the state responsibility by even non injured State and with the third-party countermeasures can constitute the legal tools for States to properly react to any misconduct happening in the outer space. The legal reaction will be based on contemporary international law and won’t require any specific provisions regarding the conduct in case of a space debris situation. Moreover, it seems that by using the already established framework of third-party countermeasures, States can be able to actively remove space debris that was put in orbit as a result of wrongful action or commission of other State. This can be particularly useful for fighting with illegal appropriation of spots in the Earths orbit.

Because of the significance of the subject matter and the potential for situations and conflicts arising from the use of such legal framework, these actions could be linked to an international body equipped with power to issue recommendations and solutions towards States whose actions or omissions are causing increase in space debris population. By constituting such international body, representatives of States that consider the exploration and usage of outer space as part of their policy will be able to directly contribute to the mitigating efforts. In the most dire situations, it should be able to issue binding directives, drafted not only with the purpose of ending harmful actions or omissions, but also to educate the responsible State about consequences of its conduct. Means to achieve desirable conduct should also be suited for targeted State - the work of the proposed body should not be reduced to imposing fines, but to contribute to the common goal of reducing population of space debris in the outer space. This international body could take form similar to International Seabed Authority or be linked to the United Nations system as for example new subcommittee of The Committee on the Peaceful Uses of Outer Space. Such solution will require advanced and long-lasting cooperation from all States that are looking into the sky with hope for advancement and potential of growth, but such cooperation will be beneficial for all mankind – not only for current generations but for all generations to come.

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