

Jakub Radwan

*Faculty of Law, Administration and Economics
University of Wrocław*

Liability in Outer Space: the Question of Admissibility

Odpowiedzialność w przestrzeni kosmicznej: kwestia dopuszczalności

Abstract

The number of artificial space objects has increased exponentially since the launch of Sputnik 1 in 1957. Geocentric orbits have been occupied not only by operational space devices but also by a significant population of space debris. Consequently, the congestion of outer space has reached unprecedented levels. However, the Convention on International Liability for Damage Caused by Space Objects was elaborated on the premise that the likelihood of a collision between human-made space objects was virtually nil in outer space. Therefore, the convention stipulates that a launching State shall bear international liability for damage inflicted in outer space only provided that the fault is attributable to the State or the persons for whom the State is responsible. Interestingly, however, the spacefaring States have consistently abstained from resorting to the provisions of the convention notwithstanding the documented cases of loss of or damage to space objects in the aftermath of collisions. As a result, the convention could be deemed to have fallen into desuetude by virtue of prolonged non-enforcement. However, the analysis of the notion of desuetude in international law does not permit the conclusion that the convention shall be regarded as null and void. Conversely, such considerations as the lack of a definition of fault in outer space or the soft law character of the regulations pertaining to space debris mitigation and removal represent more plausible explanations for the absence of formal claims based on the convention. Accordingly, the prior passive conduct of States with respect to liability would not preclude future demands for compensation for damage sustained in outer space.

Keywords

outer space, liability, damage, responsibility, space object, space debris, satellite, launching State, desuetude, international law, space law

Streszczenie

Liczba sztucznych obiektów kosmicznych znacząco wzrosła od czasu wystrzelenia Sputnika 1 w 1957 r. Orbity okołoziemskie są zajmowane nie tylko przez czynne obiekty kosmiczne, ale także przez znaczną ilość kosmicznych śmieci. W konsekwencji zagęszczenie obiektów w przestrzeni kosmicznej osiągnęło bezprecedensowy poziom. Jednakże Konwencja o międzynarodowej odpowiedzialności za szkody wyrządzone przez obiekty kosmiczne została oparta na założeniu, że ryzyko zderzenia pomiędzy obiektami kosmicznymi wytworzonymi przez człowieka jest praktycznie zerowe w przestrzeni kosmicznej. Z tego powodu konwencja stanowi, że państwo wypuszczające odpowiada za szkody wyrządzone przez obiekt kosmiczny w przestrzeni pozaziemskiej wyłącznie wówczas, gdy winę można przypisać państwu lub osobom, za które jest ono odpowiedzialne. Co jednak ciekawe, nie

zważając na udokumentowane przypadki utraty lub uszkodzenia obiektów kosmicznych w następstwie kolizji, państwa prowadzące działalność kosmiczną dotychczas konsekwentnie powstrzymywały się od powoływania się na postanowienia konwencji. W rezultacie, w związku z długotrwałym niestosowaniem konwencji, mogłaby ona zostać uznana za wyłączoną z obrotu prawnego wskutek *desuetudo*. Jednakże analiza koncepcji *desuetudo* w prawie międzynarodowym nie uzasadnia wniosku, że konwencja utraciła moc prawną. Przeciwnie, inne czynniki takie jak niewypracowanie definicji winy w przestrzeni kosmicznej lub status miękkiego prawa, jaki posiadają regulacje dotyczące zapobiegania powstawaniu i usuwania kosmicznych śmieci, reprezentują bardziej prawdopodobne przyczyny braku oficjalnych roszczeń opartych na konwencji. Tym samym dotychczasowa bierna praktyka państw w stosunku do odpowiedzialności nie wyłącza możliwości wystąpienia z roszczeniami za przyszłe szkody wyrządzone w przestrzeni kosmicznej.

Słowa kluczowe

przestrzeń kosmiczna, odpowiedzialność, szkoda, obiekt kosmiczny, kosmiczne śmieci, satelita, państwo wypuszczające, *desuetudo*, prawo międzynarodowe, prawo kosmiczne

1. Introduction

In 1983, an orbiting fleck of paint of unknown origin gauged a pit in the outer layer of a windscreen of the Challenger shuttle¹. Importantly, “[a] slightly larger object might have punctured the windshield and killed the entire crew”². In 1996, the remnants of the upper stage of the disintegrated Ariane 1 rocket impaired the operations of the CERISE satellite³. The event represented the earliest documented case of an accidental collision between cataloged space objects⁴. In 2009, the destruction of Iridium 33 and Cosmos 2251 marked the first crash which involved intact spacecraft in orbit⁵. Notably, as early as 1978, Donald Kessler famously envisaged that “collisional breakup of satellites will become a new source for additional satellite debris in the near future, possibly well before the year 2000”⁶. In 2013, the collision between a fragment of the Fengyun-1C satellite and the BLITS satellite demonstrated that a mere shift in orbital parameters is bound to deprive space objects of technical capacity⁷. Accordingly, the adduced examples cor-

¹ I. Asimov, *Space garbage*, Gareth Stevens Publishing, Milwaukee 1989, p. 12.

² *Ibidem*.

³ L. Viikari, *The Environmental Element in Space Law: Assessing the Present and Charting the Future*, Martinus Nijhoff, Leiden 2008, p. 39; *Cerise* is a French word for a cherry which is used in literature to denote the satellite in question. However, the proper name of the satellite is CERISE. The acronym stands for *Caractérisation de l'Environnement Radioélectrique par un Instrument Spatial Embarqué*.

⁴ *Ibidem*.

⁵ M. J. Listner, *Iridium 33 and Cosmos 2251, three years later*, “Space Safety Magazine”, 10 February 2012, <http://www.spacesafetymagazine.com/space-debris/kessler-syndrome/iridium-33-cosmos-2251-years-later-learned-then/> [accessed 17 February 2018].

⁶ D. J. Kessler, B. G. Cour-Palais, *Collision Frequency of Artificial Satellites: The Creation of a Debris Belt*, “Journal of Geophysical Research”, vol. 83, no. A6, 1 June 1978, p. 2645, [http://webpages.charter.net/dkessler/files/Collision Frequency.pdf](http://webpages.charter.net/dkessler/files/Collision%20Frequency.pdf) [accessed 17 February 2018].

⁷ L. David, *Russian Satellite Hit by Debris from Chinese Anti-Satellite Test*, 8 March 2013, <https://www.space.com/20138-russian-satellite-chinese-space-junk.html> [accessed 17 February 2018]; The acro-

roborate that the subject matter of damage sustained in outer space has not been confined to the realm of an academic debate. Conversely, not only sizeable objects but also a plethora of small scale debris have posed a material threat to human space ventures⁸.

Pursuant to Article 3 of the Convention on International Liability for Damage Caused by Space Objects, “in the event of damage being 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, the latter shall be liable only if the damage is due to its fault or the fault of persons for whom it is responsible”⁹. Interestingly, however, as opposed to damage inflicted by the return of a space object to the Earth¹⁰, the provisions pertaining to liability in outer space have not been invoked to date. This article represents a concise attempt at a critical examination of the admissibility of future claims in the light of a longstanding dormancy of the legal regime for damage sustained in outer space.

2. Legal setting

The negotiation and drafting of the four major treaties and agreements of international space law were concluded in barely 18 years after the launch of Sputnik 1¹¹. Therefore, together with the extension of State sovereignty onto the continental shelf¹², the

nym BLITS stands for Ball Lens in the Space. Fengyun-1C was destroyed by China in an anti-satellite missile strike. The impact rendered BLITS inoperable.

⁸ Newton’s first law of motion provides that “an object in motion stays in motion with the same speed and in the same direction unless acted upon by an unbalanced force”. The trajectory of space objects is solely affected by the force of gravity. Consequently, the absence of air resistance results in a near constant velocity of objects in outer space.

⁹ *Convention on International Liability for Damage Caused by Space Objects*, adopted on 29 November 1971, opened for signature on 29 March 1972, entered into force on 1 September 1972, *United Nations Treaty Series*, vol. 961, New York 1975, p. 188; Hereinafter referred to as the Liability Convention.

¹⁰ See *Canada: claim against the Union of Soviet Socialist Republics for damaged caused by soviet Cosmos 954*, <http://www.emond.ca/links/intlaw7/cases/soviet.doc> [accessed 17 February 2018].

¹¹ The list of major treaties pertaining to outer space encompasses the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, the Convention on International Liability for Damage Caused by Space Objects, and the Convention on Registration of Objects Launched into Outer Space. The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies has been deliberately excluded due to a fairly low number of ratifications. See U. N. Doc. A/AC.105/C.2/2017/CRP.7.

¹² In 1945, President Truman proclaimed that “the Government of the United States regards the natural resources of the subsoil and sea bed of the continental shelf beneath the high seas but contiguous to the coasts of the United States as appertaining to the United States, subject to its jurisdiction and control”. See H. S. Truman, *Proclamation 2667: Policy of the United States With Respect to the Natural Resources of the Subsoil and Sea Bed of the Continental Shelf*, 28 September 1945, The American Presidency Project, G. Peters, J. T. Woolley (eds.), <http://www.presidency.ucsb.edu/ws/?pid=12332> [accessed 17 February 2018]. The practice initiated by the United States was readily adopted by other coastal States and under-

inception and codification of *ius spatiale* exemplify one of the most spectacular developments in international law. However, in contrast to the appropriation of the continental shelf, “a number of treaty rules were being created and became legally binding before the problems governed by these rules could be realized in space activities”¹³. Liability illustrates an area where, in order to keep pace with the advancements in space technology, the States enacted a body of anticipatory treaty norms. Notably, as stated by the International Law Commission, “[i]nternational law does not needlessly restrict the freedom of action of States; if their aims are legitimate, and if the means of achieving these aims pay reasonable regard to the separate interests of other States and to community interests, injurious consequences that are incidental to their activities do not of themselves entail responsibility for a wrongful act, provided that the loss is recompensed”¹⁴.

Nevertheless, the Liability Convention was elaborated on the premise that the likelihood of an accident involving artificial objects was virtually non-existent in outer space. The congestion of Geocentric orbits, however, has increased exponentially since the launch of Sputnik 1 in 1957. According to the register maintained by the United Nations Office for Outer Space Affairs, there are currently 8049 human-made objects in outer space¹⁵. Yet, the data furnished in conformance with the Convention on Registration of Objects Launched into Outer Space and General Assembly resolution 1721 B (XVI) does not comprise space debris¹⁶. The European Space Agency developed a statistical model to assess the size of space debris population which yielded a result in excess of 166 million pieces of orbital junk¹⁷.

went a subsequent codification within the Convention on the Continental Shelf and the United Nations Convention on the Law of the Sea.

¹³ G. M. Danilenko, V. S. Vereshchetin, *Custom as a Source of International Law of Outer Space*, “Journal of Space Law”, vol. 13, no. 22, 1985, p. 23; The White House press release issued with the Truman Proclamation 2677 not only provides that “[t]he advance of technology prior to the present war had already made possible the exploitation of a limited amount of minerals from submerged lands within the 3-mile limit”, but also that “the rapid development of technical knowledge and equipment occasioned by the war now makes possible the determination of the resources of the submerged lands outside of the 3-mile limit”. See H. S. Truman, *op. cit.*

¹⁴ U. N. Doc. A/CN.4/334 and Add.1 & Corr.1 and Add.2, p. 255; According to the report, “the term «responsibility» should be used only in connection with internationally wrongful acts and that, with reference to the possible injurious consequences arising out of the performance of certain lawful activities, the more suitable term «liability» should be used”. The document further indicates that the position of the International Law Commission was consistent with the practice of the United Nations Committee on the Peaceful Uses of Outer Space.

¹⁵ U. N., Office for Outer Space Affairs, *Online Index of Objects Launched into Outer Space*, http://www.unoosa.org/oosa/osoindex/search-ng.jsp?lf_id [accessed 17 February 2018].

¹⁶ *Ibidem*; The database also contains space objects which are not yet registered with the United Nations. It attests to the value of the Online Index as a comprehensive source of data on the objects launched into outer space.

¹⁷ European Space Agency, *Space debris by the numbers*, http://www.esa.int/Our_Activities/Operations/Space_Debris/Space_debris_by_the_numbers [accessed 17 February 2018].

In the early years of the Space Age, however, the “big sky theory” prevailed as a broadly accepted paradigm¹⁸. The concept of outer space was intrinsically associated with desolation and immense vastness. A gridlock of outer space appeared inconceivable to the scientists, let alone to the founding fathers of international space law. Regardless, the members of the United Nations Committee on the Peaceful Uses of Outer Space were cognizant that damage sustained in outer space was not to be completely excluded from the purview of the prospective liability instrument. The general sentiment of the international community was succinctly expressed by a Hungarian delegate who stated that “any agreement on liability must be as complete as possible; in other words, it must cover damage caused in outer space and not only damage caused on the ground or in the atmosphere”¹⁹. Nevertheless, as a representative of the United States remarked pertinently, “the possibility of a collision between space objects was a very remote complex matter and not of direct concern to the great majority of inhabitants of the earth, whose protection was that Convention’s main aim”²⁰.

3. Legal dormancy and implications for admissibility

Grotius famously observed, albeit with regard to property, that “[f]or though time is the great agent, by whose motion all legal concerns and rights may be measured and determined, yet it has no effectual power of itself”²¹. According to Grotius, in the absence of a positive legal norm, the passage of time *per se* does not entail legal consequences. As compared to treaties signed centuries ago, barely 46 years of rule of the Liability Convention shall not be regarded as a long-term state of dormancy. On the one hand, the first significant collision between artificial space objects only occurred in the end of the 20th century. On the other hand, however, the period in question has encompassed nearly the entire duration of human activity in outer space. Nevertheless, perusal of the Vienna Convention on the Law of Treaties, the most authoritative codification of treaty law, inevitably leads to the conclusion that *desuetude* was not specified as a distinct ground for termination of treaties²². Interestingly, however, the *travaux préparatoires* reveal that the inclusion of *desuetude* was contemplated by the International Law Commission.

¹⁸ K. R. Young, *Space Junk: The Dangers of Polluting Earth’s Orbit*, Twenty-First Century Books, Minneapolis 2016, p. 11.

¹⁹ U. N. Doc. A/AC.105/C.2/SR.91, p. 8.

²⁰ *Ibidem*, p. 44.

²¹ H. Grotius, *On the Law of War and Peace*, Jazzybee Verlag Jürgen Beck, North Charleston 2016, p. 72.

²² *Vienna Convention on the Law of Treaties*, adopted on 23 May 1969, opened for signature on 23 May 1969, entered into force on 27 January 1980, *United Nations Treaty Series*, vol. 1155, New York 1987, p. 331.

In his Second Report to the International Law Commission, Sir Gerald Fitzmaurice rejected the existence of “any objective principle of law terminative of treaties on the mere ground of age, obsolescence, or desuetude as such”²³. The Special Rapporteur adduced historical treaties which were nevertheless contemporarily deemed to have remained in force as opposed to having been declared null and void by the sole virtue of age²⁴. Fitzmaurice further surmised that “where the parties themselves, without denouncing or purporting actually to terminate the treaty, have, over a long period, conducted themselves in relation to it more or less as though it did not exist, by failing to apply or invoke it, or by other conduct evincing lack of interest in or reliance on it, it may be said that there exists what amounts to a tacit agreement of the parties, by conduct, to disregard the treaty and to consider it as being at an end”²⁵. Importantly, in the Third Report, Fitzmaurice provided a valuable commentary on the notion of implied consent. He asserted that the concurrence of the parties can “only be inferred from the conduct of both sides, or all of the parties, sufficiently long continued; and, as a general rule, only if, in addition, the character of the treaty is such that its application after the lapse of time would be anachronistic or inappropriate”²⁶.

Therefore, in order for a subsequent resort to the Liability Convention to become obsolete or morally questionable, a pervasive non-observance of a legal duty would need to be conclusively established. However, Article 8 of the Liability Convention provides that “a State which suffers damage, or whose natural or juridical persons suffer damage, may present to a launching State a claim for compensation for such damage”. “May” is a modal auxiliary verb which holds connotations of possibility or permission. Consequently, the provision shall not be construed as the imposition of a positive legal obligation of an unconditionally binding character. On the contrary, the pursuit of a claim for damage is contingent upon a decision on the part of the injured State.

In the hallmark case of *S. S. Lotus*, the Permanent Court of International Justice noted that “[e]ven if the rarity of the judicial decisions to be found among the reported cases were sufficient to prove in point of fact the circumstance alleged by the Agent for the French Government, it would merely show that States had often, in practice, abstained from instituting criminal proceedings, and not that they recognized themselves as being obliged to do so; for only if such abstention were based on their being conscious of having a duty to abstain would it be possible to speak of an international custom”²⁷. By the same token, given the discretionary basis of legal action stipulated in the Liabil-

²³ U. N. Doc. A/CN.4/SER.A/1957/Add.1, p. 48.

²⁴ *Ibidem*.

²⁵ *Ibidem*.

²⁶ U. N. Doc. A/CN.4/107, p. 28.

²⁷ *S. S. Lotus* (France v. Turkey), 1927, P.C.I.J., Ser. A, No. 10, p. 28.

ity Convention, forbearance in a certain case would not extinguish a general right to seek compensation for damage. Whereas it would restrain subsequent claims pertaining to a particular incident, it would not extend to cover unrelated events in space²⁸.

The award in the case of Yuille, Shortridge & Co. represents an excellent illustration of the point²⁹. The arbitration concerned, *inter alia*, the permissibility of invoking in 1834 the provisions of an Anglo-Portuguese treaty from 1654. The treaty in question had not been formally repealed by the parties. The arbitrary commission stated that “in those cases in which there would result from the breach of the treaty but little or no harm to British subjects, the intervention of their government would be futile, it would be a gratuitous lack of politeness towards a friendly government, to abstain then would be an act of courtesy and not one of renunciation”³⁰. The absence of claims for damage sustained by Iridium 33 and BLITS may be ascribed not only to courtesy but also to negligible damage, ample insurance coverage, or the lack of insurmountable evidence to satisfy the burden of proof. Interestingly, in the aftermath of the Iridium 33 incident, the press speculated that “[i]f the United States determines that a legal action would not be diplomatically palatable or otherwise interfere with its diplomatic efforts with another sovereign nation, the United States government could assert its jurisdiction under Article VI of the Outer Space Treaty and prevent Iridium LLC from proceeding”³¹. Notably, the accident coincided with an attempt on the part of the United States to negotiate transparency and confidence-building measures in outer space with the Russian Federation³². Similarly, as far as BLITS is concerned, it was conjectured that the pursuit of a legal claim by Russia was relinquished due to close cooperation with the People’s Republic of China³³.

²⁸ Moreover, whereas the doctrine of *venire contra factum proprium nemini licet* is firmly embedded in international law, the plea of estoppel is constrained by the time limits prescribed in the Liability Convention. Pursuant to Article 10, “a claim for compensation for damage may be presented to a launching State not later than one year following the date of the occurrence of the damage or the identification of the launching State which is liable”, or “within one year following the date on which it learned of the aforementioned facts; however, this period shall in no event exceed one year following the date on which the State could reasonably be expected to have learned of the facts through the exercise of due diligence”.

²⁹ Yuille, Shortridge & Co. (Great Britain v. Portugal), 1861 [in:] A. Lapradelle, N. Politis (eds.), *Recueil Des Arbitrages Internationaux, 1856-1872*, vol. 2, Paris 1923, p. 105, quoted in O. Corten, P. Klein (eds.), *The Vienna Conventions on the Law of Treaties: A Commentary*, vol. 1, Oxford University Press, New York 2011, p. 1024.

³⁰ *Ibidem*.

³¹ M. Listner, *Revisiting the Liability Convention: reflections on ROSAT, orbital space debris, and the future of space law*, 17 October 2011, <http://www.thespacereview.com/article/1948/1> [accessed 17 February 2018].

³² T. Hitchens, *Transparency and Confidence Building in Outer Space Inching Toward Action*, Federation of American Scientists, Public Interest Report, Winter 2011, <https://fas.org/pubs/pir/2011winter/2011Winter-Transparency.pdf>, p. 2 [accessed 17 February 2018].

³³ M. Wall, L. David, *Legal Action Against China Unlikely in Space Junk Crash with Russian Satellite*, 12 March 2013, <http://www.space.com/20173-china-space-junk-crash-lawsuit.html> [accessed 17 February 2018].

As stated by the International Court of Justice in the Jurisdictional Immunities of the State judgment, “[w]hile it may be true that States sometimes decide to accord an immunity more extensive than that required by international law, for present purposes, the point is that the grant of immunity in such a case is not accompanied by the requisite *opinio juris* and therefore sheds no light upon the issue currently under consideration by the Court”³⁴. Therefore, provided that the decisions of the United States and the Russian Federation to abstain from lodging claims for Iridium 33 and BLITS respectively were prompted by courtesy or political considerations, the conduct of the States in question did not reflect a sense of legal obligation. Accordingly, it would not represent an emerging rule of international customary law.

In the foregoing case of Yuille, Shortridge & Co., the arbitrators further indicated that “the question would be of a different nature if the government of Great Britain had on several occasions refused to intervene, considering that the treaty had fallen into desuetude, or if it had, for the same reason, renounced in its pursuit of an already initiated intervention”³⁵. The Treaty of Commerce concluded between Germany and Austria in 1930 represents another case in point³⁶. The Constitutional Court of Austria observed in 1973 that Austria had not complied with the obligation of equal treatment of German citizens with respect to the acquisition of real property³⁷. Despite manifest violations of the treaty, Germany failed to file a formal protest with Austria. Moreover, Germany desisted from publishing the treaty in the official register of federal legislation³⁸. Furthermore, the Court stated that “according to the law of the European Economic Community the Council of the EEC would have had to give its consent to the continued application of the Treaty of Commerce, which Germany never sought”³⁹. Consequently, the Court inferred conclusively that the Treaty of Commerce fell into *desuetude*⁴⁰. The dictum lends support to the argument that notwithstanding the absence of *desuetude* within the Vienna Convention, the notion as such may be of relevance to treaties which confer duties upon the parties. A prolonged non-performance of an obligation which is not followed by declarations of protest of the counterparties or a sequence of express waivers of a general right would arguably represent acceptable manifestations of *desuetude* in international law.

³⁴ *Jurisdictional Immunities of the State* (Germany v. Italy: Greece intervening), judgment, I.C.J. Reports 2012, p. 123.

³⁵ *Yuille, Shortridge & Co., op. cit.*

³⁶ G. Nolte, *Subsequent Agreements and Subsequent Practice of States Outside of Judicial or Quasi-judicial Proceedings* [in:] G. Nolte (ed.), *Treaties and Subsequent Practice*, Oxford University Press, Oxford 2013, p. 358.

³⁷ *Ibidem*, p. 358–359.

³⁸ *Ibidem*, p. 359.

³⁹ *Ibidem*.

⁴⁰ *Ibidem*.

Moreover, rapid *consuetude* exemplified by the launch of Sputnik 1 could warrant an assumption that legal norms within the framework of space law are prone to undergo *desuetude* in a similarly expeditious manner⁴¹. On the one hand, legal theory does not preclude the prospect of customary law formation on the sole basis of passive practice. On the other hand, however, the legal effect of a pattern of discretionary State inaction, let alone of an individual instance of abstention from lodging a claim for damage would not, in principle, justify an appeal to *desuetude*. Nevertheless, *desuetude* remains a theoretical scenario which could arise in the aftermath of a major collision of foreign space objects attributable to the actions of a certain launching State. A release of claims by the injured State whereby the State accepts the loss of spacecraft as an inherent element of space operations could engender a legitimate expectation of analogous conduct amongst the community of spacefaring States, albeit initially prompted by comity considerations.

4. Additional considerations

Recourse to the convention has been further constrained by the fact that the concept of fault is not accompanied by a legal definition in the Liability Convention or other instruments of international space law. The Space Debris Mitigation Guidelines of the Inter-Agency Space Debris Coordination Committee admittedly provide recommendations “with an emphasis on cost effectiveness, that can be considered during planning and design of spacecraft and launch vehicles in order to minimise or eliminate generation of debris during operations”⁴². Notably, the document was endorsed by the United Nations Committee on the Peaceful Uses of Outer Space⁴³. Furthermore, in resolution 62/217, the General Assembly “[a]grees that the voluntary guidelines for the mitigation of space debris reflect the existing practices as developed by a number of national and international organizations, and invites Member States to implement those guidelines through relevant national mechanisms «to the greatest extent feasible»”⁴⁴. However, recommendations and resolutions of the General Assembly enjoy a limited legal status. Accordingly, the violation of soft law instruments would not be sufficient to prove fault or negligence on the part of a launching State.

⁴¹ *Desuetude* represents an opposite process to the formation of customary law.

⁴² Inter-Agency Space Debris Coordination Committee, *IADC Space Debris Mitigation Guidelines*, IADC-02-01, rev. 1, September 2007, [http://www.iadc-online.org/Documents/IADC-2002-01, IADC Space Debris Guidelines, Revision 1.pdf](http://www.iadc-online.org/Documents/IADC-2002-01_IADC_Space_Debris_Guidelines_Revision_1.pdf) [accessed 17 February 2018].

⁴³ U. N. Doc. A/AC.105/890.

⁴⁴ U. N. Doc. A/RES/62/217.

Similarly, a formal definition of outer space has not been introduced as of yet. On the one hand, a number of States voiced an opinion that “it was not necessary to develop a definition and delimitation of outer space when the absence of such a definition had not resulted in any legal or practical problems”⁴⁵. On the other hand, however, certain States view “a definition and delimitation of outer space indispensable as a legal basis through which to regulate their national territories and to resolve practical issues arising from collisions that could occur between aerospace objects and aircraft”⁴⁶.

The definition of a launching State, albeit stipulated in the Liability Convention, likewise poses a potential legal issue with respect to damage sustained in outer space. For example, whereas Iridium 33 was owned and operated by the Motorola company based in the United States, the satellite in question was placed into orbit by a Russian Proton carrier rocket from the Baikonur launch site in Kazakhstan⁴⁷. Consequently, not only the United States but also the Russian Federation and Kazakhstan could be regarded as the launching States of Iridium 33 within the meaning of the Liability Convention.

5. Concluding observations

The advocates of conspiracy theories are prone to speculate that the claims for damage in outer space have been resolved by means of clandestine negotiations between the launching States. However, notwithstanding political and courtesy considerations, the indeterminate character of the provisions pertaining to liability in outer space represents the most credible explanation for the absence of formal claims. As a result, unless a satisfactory standard of fault is produced in a binding instrument of international space law, the States are expected to remain reluctant to present demands for compensation. Nevertheless, the previous practice of the spacefaring States shall not be construed as a tacit agreement to suspend the operation of the Liability Convention in whole or in part.

The General Assembly expressed a view that “it is essential that Member States pay more attention to the problem of collisions of space objects”⁴⁸. Arguably, the magnitude of the issue has not been significant enough to justify legal action. It is likely that the threshold of risk acceptable to the spacefaring States or the insurance companies has not been exceeded to date. Therefore, as opposed to invoking the notion of *desuetude*,

⁴⁵ U. N. Doc. A/AC.105/769, p. 6.

⁴⁶ *Ibidem*.

⁴⁷ See U. N. Doc. ST/SG/SER.E/332 and R. S. Jakhu, *Iridium-Cosmos Collision and its implications for space operations* [in:] K.-U. Schrogl, B. Baranes, C. Venet, W. Rathgeber (eds.), *Yearbook on Space Policy 2008/2009: Setting New Trends*, Springer, New York 2010, p. 254–275.

⁴⁸ U. N. Doc. A/52/615.

it behooves to acknowledge that liability mechanisms germane to outer space have been held in abeyance.

The inevitable wave of upcoming space accidents, however, will shed light on the prospective application and development of the legal regime of liability. On the one hand, it may re-affirm the principle of liability based on fault and give rise to a satisfactory standard of care. On the other hand, as famously stated by Jenks, “the victim could never hope to discharge the burden of proof involved in establishing fault in the conduct of an ultra-hazardous activity”⁴⁹. Accordingly, the principle of the common heritage of mankind may evolve to embrace not only common but also absolute liability for damage sustained in outer space. Nevertheless, since it could act as a deterrent to harnessing the potential of space technology, the international community may be likewise confronted with a dilemma as to whether international law ought to recognize the concept of liability with respect to damage sustained in outer space.

References

Treaties

Convention on the Continental Shelf, adopted on 26 April 1958, opened for signature on 29 April 1958, entered into force on 10 June 1964.

Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, adopted on 19 December 1966, opened for signature on 27 January 1967, entered into force on 10 October 1967.

Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, adopted on 19 December 1967, opened for signature on 22 April 1968, entered into force on 3 December 1968.

Vienna Convention on the Law of Treaties, adopted on 23 May 1969, opened for signature on 23 May 1969, entered into force on 27 January 1980.

Convention on International Liability for Damage Caused by Space Objects, adopted on 29 November 1971, opened for signature on 29 March 1972, entered into force on 1 September 1972.

Convention on Registration of Objects Launched into Outer Space, adopted on 12 November 1974, opened for signature on 14 January 1975, entered into force on 15 September 1976.

Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, adopted on 5 December 1979, opened for signature on 18 December 1979, entered into force on 11 July 1984.

United Nations Convention on the Law of the Sea, adopted on 10 December 1982, entered into force on 16 November 1994.

⁴⁹ C. W. Jenks, *Liability for ultra-hazardous activities in international law* [in:] *Recueil Des Cours, Collected Courses, 1966*, vol. 117, Kluwer Law International, Leyden 1967, p. 180.

Resolutions and Official Documents of International Organizations

Resolutions of the General Assembly of the United Nations

U. N. Doc. A/RES/62/217.

Official Documents of the United Nations

U. N. Doc. A/52/615.

U. N. Doc. A/AC.105/C.2/SR.91.

U. N. Doc. A/AC.105/C.2/2017/CRP.7.

U. N. Doc. A/AC.105/769.

U. N. Doc. A/AC.105/890.

U. N. Doc. A/CN.4/SER.A/1957/Add.1.

U. N. Doc. A/CN.4/107.

U. N., Office for Outer Space Affairs, *Online Index of Objects Launched into Outer Space*, http://www.unoosa.org/oosa/osoindex/search-ng.jsp?lf_id

U. N. Doc. ST/SG/SER.E/332.

Other Official Documents

European Space Agency, *Space debris by the numbers*, http://www.esa.int/Our_Activities/Operations/Space_Debris/Space_debris_by_the_numbers

Inter-Agency Space Debris Coordination Committee, *IADC Space Debris Mitigation Guidelines*, IADC-02-01, rev. 1, September 2007, http://www.iadc-online.org/Documents/IADC-2002-01_IADC_Space_Debris_Guidelines_Revision_1.pdf

Proclamation 2667: Policy of the United States With Respect to the Natural Resources of the Subsoil and Sea Bed of the Continental Shelf, 28 September 1945, The American Presidency Project, G. Peters, J. T. Woolley (eds.), <http://www.presidency.ucsb.edu/ws/?pid=12332>

Cases and Arbitral Awards

Permanent Court of International Justice

S. S. Lotus (France v. Turkey), 1927.

International Court of Justice

Jurisdictional Immunities of the State (Germany v. Italy: Greece intervening), 2012.

International Arbitration

Yuille, Shortridge & Co. (Great Britain v. Portugal), 1861.

Books

Asimov I., *Space garbage*, Gareth Stevens Publishing, Milwaukee 1989.

Grotius H., *On the Law of War and Peace*, Jazzybee Verlag Jürgen Beck, North Charleston 2016.

Viikari L., *The Environmental Element in Space Law: Assessing the Present and Charting the Future*, Martinus Nijhoff, Leiden 2008.

Young K. R., *Space Junk: The Dangers of Polluting Earth's Orbit*, Twenty-First Century Books, Minneapolis 2016.

Articles

Danilenko G. M., Vereshchetin V. S., *Custom as a Source of International Law of Outer Space*, "Journal of Space Law", vol. 13, no. 22, 1985.

David L., *Russian Satellite Hit by Debris from Chinese Anti-Satellite Test*, 8 March 2013, <https://www.space.com/20138-russian-satellite-chinese-space-junk.html>

Hitchens T., *Transparency and Confidence Building in Outer Space Inching Toward Action*, Federation of American Scientists, Public Interest Report, Winter 2011, <https://fas.org/pubs/pir/2011winter/2011Winter-Transparency.pdf>

Jakhu R. S., *Iridium-Cosmos Collision and its implications for space operations* [in:] K.-U. Schrogel, B. Baranes, C. Venet, W. Rathgeber (eds.), *Yearbook on Space Policy 2008/2009: Setting New Trends*, Springer, New York 2010.

Jenks C. W., *Liability for ultra-hazardous activities in international law* [in:] *Recueil Des Cours, Collected Courses, 1966*, vol. 117, Kluwer Law International, Leyden 1967.

Kessler D. J., Cour-Palais B. G., *Collision Frequency of Artificial Satellites: The Creation of a Debris Belt*, "Journal of Geophysical Research", vol. 83, no. A6, 1 June 1978, [http://webpages.charter.net/dkessler/files/Collision Frequency.pdf](http://webpages.charter.net/dkessler/files/Collision%20Frequency.pdf)

Listner M., *Revisiting the Liability Convention: reflections on ROSAT, orbital space debris, and the future of space law*, 17 October 2011, <http://www.thespacereview.com/article/1948/1>

Listner M. J., *Iridium 33 and Cosmos 2251, three years later*, "Space Safety Magazine", 10 February 2012, <http://www.spacesafetymagazine.com/space-debris/kessler-syndrome/iridium-33-cosmos-2251-years-later-learned-then/>

Nolte G., *Subsequent Agreements and Subsequent Practice of States Outside of Judicial or Quasi-judicial Proceedings* [in:] G. Nolte (ed.), *Treaties and Subsequent Practice*, Oxford University Press, Oxford 2013.

Wall M., David L., *Legal Action Against China Unlikely in Space Junk Crash with Russian Satellite*, 12 March 2013, <http://www.space.com/20173-china-space-junk-crash-lawsuit.html>

Other sources

Canada: claim against the Union of Soviet Socialist Republics for damaged caused by soviet Cosmos 954, <http://www.emond.ca/links/intlaw7/cases/soviet.doc>

