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Liability for damage caused by space activities

A rmel Kerrest and Caroline Thro

Introduction

Legal sources of liability for damage caused by space activities

The issue of liability for space activities caused a lot of ink to flow even before the signature of the Liability Convention1 and animated hours of debate within the legal sub-committee of the United Nations (UN) Committee on the Peaceful Uses of Outer Space (COPUOS). Only a few days after the first meeting of this sub-committee, the United States (US) submitted a proposal on the issue of liability.2 The position of the former Soviet Union at that time, which was more focused on the issue of rescue and return of astronauts than on liability for space activities, is interesting. The Soviet Union took that stance because of its belief that “compensation would undoubtedly be payable”.3 This reasoning was coherent with the previous case law.4 The international community was aware, however, of the high-risk activity, and the necessity of a strict and clear liability regime in case of damage due to space activities. The obligation to pay compensation was not sufficient, since non-space-faring nations were also concerned.5 As a first step, it has thus to fix the scope of the regime before pointing out its mechanism and procedures.

As soon as human activities are carried out in any space (area), they have to be regulated irrespective of the nature of such activity. Since those activities occur in an international space, international law and, especially, the UN Charter should have a central role to play.

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3 UN, Committee on the Peaceful Uses of Outer Space, Legal Sub-Committee, Summary Record of the Fourteenth Meeting, UNGAOR, 1st Sess, UN Doc A/AC.105/C.2/SR.14 (1962) at 3.
Gradually, a *lex specialis* has been created for liability issues in outer space:

1. *Resolution 1348* has stated for the first time that the launching State shall be internationally liable for damage caused by its space object, but has remained silent on the forms of liability.  

2. *Outer Space Treaty* has reproduced almost the same wording of Resolution 1348 in its Article VII to describe the specific liability of the launching State(s) for damage caused by a space object. Article VII, however, cannot be read without the correlated Article VI of the Treaty which foresees the international responsibility of States for national space (governmental and non-governmental) activities.

3. It is, however, only in 1972 with the promulgation of the *Liability Convention* that the frame and the scope of a liability regime for damage caused by space objects has precisely been drawn. This convention is the result of the work of the UNCOPUOS which, already in 1959, identified the issue of “liability for injury or damage caused by space vehicle as legal problems susceptible of priority treatment”. Owing to the difficulty of the topic and different proposals of the delegations, the draft of the Liability Convention took almost ten years, if Resolution 1348 is taken as a starting point for this issue. At the end, the Liability Convention was adopted containing two different legal regimes depending on the occurrence of the damage, with each time the launching State(s) as designated liable person.

Contrary to the usual solution in case of objective liability, the Liability Convention does not “channel” the liability on the launching State. Article XI opens the possibility for the victim to pursue “a claim in the courts or administrative tribunals or agencies of the launching State”.

The aim of the broad approach to the liability issue for space activities comes from one major consideration: should damage occur to a third party due to a space activity, this party should be able to raise a claim against at least one responsible State and get full compensation. The very specific and unique nature of space activities (high technologies, high risks, huge investments, etc.) may lead to important damages which private firms cannot afford. This is why for space activities States play an insurance role in case of damage due to a private activity and pay the remaining compensation amount.

**Who is liable?**

Under the Liability Convention, the *launching State* is internationally liable for damage caused by its space object(s). It might be surprising that the international liability of a State is engaged even for private activities, which is not the case for any other international regime. As at the time of the Liability Convention’s negotiations, the legal nature of outer space was not evident,

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8 UN Committee on the Peaceful Uses of Outer Space was established by the UN General Assembly in 1958 as an *ad hoc* committee. See *Question of the Peaceful Use of Outer Space*, GA Res 1348 (XIII), UNGAOR, 13th Sess, UN Doc A/RES/13/1348 (1958).
10 *Liability Convention, supra* note 1, art XI.
since, the rule of State’s sovereignty in its air space was established with the Paris Convention\(^\text{11}\) and restated in the Chicago Convention.\(^\text{12}\) To enforce the liberty of use in outer space, space-faring nations were inclined to accept this specific and strict liability regime. This results also from the above mentioned broad approach and from the fact that outer space is of extreme importance from a strategic point of view. States are thus not inclined to leave it to private entities.

According to the Liability Convention’s definition, a launching State is the one:

- Which launches;
- Procures the launch;
- From whose territory the space object is launched; or
- With whose facilities the space object is launched.

These four criteria cover all possible situations and ensure thus the presence of a launching State for any damage caused by any space object. It may have the consequence of a plurality of launching States. According to Article V of the Liability Convention, they shall be jointly and severally liable,\(^\text{13}\) meaning that the victim could sue one of the launching States and ask for full compensation. Therefore, the Liability Convention encourages launching States to “conclude agreements regarding the apportioning among themselves of the financial obligation” by leaving any risk-sharing duty to the launching States.\(^\text{14}\) As launching States seemed not very keen for signing these agreements, the UN Resolution on the application of the concept of “launching State” pointed out again the high importance of the necessity of signing the agreements on the sharing of risks and financial obligations.\(^\text{15}\) In reality, a launching State might not have full control over the respective space activity during the whole process (launch and life in orbit) in case of a joint launch. It would thus make sense to foresee within an agreement the full compensation duty during the launching phase for the State conducting the launch. For any damage occurred during the life in orbit, the State of registration of a satellite, which has effective control over it, would ensure compensation. Only the one having effective control can limit the risks of an accident. Since the victim has no clue on the role of each launching States, the victim is only looking to get its damage repaired by suing one launching State.\(^\text{16}\)

The Liability Convention also foresees the case of a damage caused by the collision of two space objects, where two different groups of launching States become jointly and severally liable without knowing it before the occurrence of the accident.\(^\text{17}\) Here, the sharing of liability shall be done proportionate to the committed fault or by half, if the fault cannot be determined.\(^\text{18}\)

The most important criterion, having regard to a State’s liability, is of course the territory criterion, since it can be determined without any doubt.\(^\text{19}\) What happens, however, should the

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\(^{11}\) Convention Relating to the Regulation of Aerial Navigation, 1 June 1922 [Paris Convention].

\(^{12}\) Convention on International Civil Aviation, 7 December 1944, 15 UNTS 295, art 1, Can TS 1944 No. 36, ICAO Doc 7300/9 [Chicago Convention].

\(^{13}\) Liability Convention, supra note 1, art V(1).

\(^{14}\) Ibid., art V(2).


\(^{16}\) This is of course only true for absolute liability, and not for any fault liability.

\(^{17}\) Liability Convention, supra note 1, art IV.

\(^{18}\) See ibid.

\(^{19}\) Every seismograph could precisely determine the location of the launch.
launch occur from an international territory, such as the high seas or the airspace above the high seas? Sea Launch, a private consortium, owns launch capabilities on the high seas, that is outside the territorial jurisdiction of any State. The two stages Zenit Rocket are Ukrainian, and the last and third stage the Russian Bock DM Upper. The home port of Sea Launch between the Launch campaigns is Long Beach in California. At the beginning of the project, the Sea Launch Company was incorporated in the Cayman Islands, a British Overseas Territory. Becoming aware of the legal risks and issues of being a launching State of Sea Launch, the United Kingdom (UK) requested the company to register in another State. The company then became American. Boeing Commercial Space Company owns 40 percent of the Sea Launch Company. Since Boeing leads the team, it furnishes the home port and some parts of the launcher and payload accommodations, and commercializes the launch. Thus, the license can be obtained by the US Government in compliance with its Commercial Space Launch Act. As such, the US becomes a launching State of the Sea Launch project, which is also in the interest of the company in case of any damage.

The State procuring the launch is in principle the one having control over the space object, meaning being the owner of the satellite and having registered it. The choice of the State of registration for a private consortium is also determining the law, either national or international, applicable to their operation.

Some argued that no liability of a launching State exists in the case of exclusively private commercial activities. This interpretation goes against the aims, purposes and the spirit of the Liability Convention, and, more specifically, are in contradiction with the context of its Article VI that foresees that States are responsible for “national activities” including public and private operators. It does not reflect the practice of the space-faring States which assume liability also for exclusively private commercial activities. This can been seen in their practice of registration of space object according to the Registration Convention and in the usual provisions of domestic legislation concerning private activities in outer space.

The designation of “launching State” is only valid taking the legal ground of the Liability Convention. Nothing prevents the victim to file a suit against the operator in a domestic court. This solution might be the quickest and easiest one, but will not guarantee all the privileges a victim could have under the Liability Convention: the victim, for example, may have to prove the fault of the tortfeasor which is difficult in the case of space activities.

Here, private international law will determine the applicable law and will judge the case in the same manner as for all tort cases.

This opportunity opens the way of taking the most advantages of various domestic laws which is commonly known as forum shopping.

While discussing and debating the issue of liability for space activities to elaborate the Liability Convention, the delegation of the UK, followed by the Australian one, requested the recognition in the Convention of a separate legal personality for international organizations.

21 Convention on Registration of Objects Launched into Outer Space, 14 January 1975, 1023 UNTS 15, art II [Registration Convention].
23 See e.g. UN, Committee on the Peaceful Uses of Outer Space, Legal Sub-Committee, Summary Record of the One Hundred and Seventeenth Meeting, UNGAOR, 8th Sess, UN Doc A/AC.105/C.2/SR.117 (1969) at 12.
International organizations should thus be free/able to make a declaration of acceptance of the agreement, and should not be bound by the declaration of acceptance of its Member States.\textsuperscript{24} Some, nonetheless, have argued that, once a majority of its Member States are party to a Treaty, the respective international organization should become \textit{ipso facto} bound by the Treaty.\textsuperscript{25}

Ultimately, a consensus on the issue was reached and, as a result, the final wording for the Liability Convention was drafted as follows:

In this Convention, with the exception of articles XXIV to XXVII, references to States shall be deemed to apply to any international intergovernmental organization which conducts space activities if the organization declares its acceptance of the rights and obligations provided for in this Convention and if a majority of the States members of the organization are States Parties to this Convention and to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.\textsuperscript{26}

For the victim, the inclusion of international organization within the ambit of the Liability Convention does not bring a significant change, since one Member State being Party to the Liability Convention could, at the end of the process, always be held liable for the whole damage. In such a case, the Liability Convention foresees the possibility for the international organization to bring the claim through one of its Member States at the condition that it is also Party to the Liability Convention.\textsuperscript{27}

\section*{Liable for what?}

As already stated in the title, this liability regime only applies to “damage caused by a space object”. The term “space object” includes “component parts of a space object as well as its launch vehicle and parts thereof”.\textsuperscript{28} It appears that the definition of a space object includes the launch vehicle, although the biggest part (upper stage 1 and 2) of the launcher will never enter outer space. This extension of the definition of the space object is employed to broaden the scope of the Liability Convention.

In an attempt to clarify the definition of “object”, Article 1 of the Liability Convention includes “component parts of a space object”. This was not really useful, since this precision does not clarify the wording. Any object launched in outer space, irrespective of its size or use, is a “space object”, and may cause a damage, thus giving rise to the liability of the launching State. If a space object explodes into many objects, these are also space objects according to the Convention.

The European Union is in the process of deploying its own navigation system, called Galileo.\textsuperscript{29} Unlike the Global Positioning System (GPS), there will be user-charges for the

\begin{footnotesize}
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\item[] \textsuperscript{24} See e.g. UN, Committee on the Peaceful Uses of Outer Space, Legal Sub-Committee, \textit{Summary Record of the Hundred and Twentieth Meeting}, UNGAOR, 8th Sess, UN Doc A/AC.105/C.2/SR.120 (1969) at 6.
\item[] \textsuperscript{25} UN, Committee on the Peaceful Uses of Outer Space, Legal Sub-Committee, \textit{India: Proposal: Convention concerning Liability for Damage caused by the Launching of Objects into Outer Space}, UNGAOR, UN Doc A/AC.105/C.2/L.32/Rev.2 (1968), art XIII(1).
\item[] \textsuperscript{26} \textit{Liability Convention, supra} note 1, art XXII(1).
\item[] \textsuperscript{27} Ibid., art XXII(4).
\item[] \textsuperscript{28} Ibid., art I(d).
\end{itemize}
\end{footnotesize}
receipt and use of signal from Galileo; a contract will exist between the service provider and the final user, organizing each party’s responsibility in the event of a service interruption.

In any case, it is questionable whether the victim of a navigation service can claim under the Liability Convention, since, for any damage on Earth, the rationale of the Convention is to compensate victims being third parties to any space activity. However, a victim using a navigation service cannot unambiguously be qualified as third party to space activity. Moreover, in the spirit of the Liability Convention, there has to be a physical damage caused by a physical space object, and not by the loss of a signal.30

According to Professor Bin Cheng, a space object is a man-made object which is launched or intended to be launched in outer space.31 During the elaboration of the Convention, a space object was implicitly understood as having material and physical properties.32 The object causing the damage has to have material and physical properties, and thereby does not include non-material masses, such as signals or electronic interferences.33 Electromagnetic waves do not constitute a physical means of propagation covered by the Liability Convention.

Furthermore, when launched into Earth orbit or beyond, the space object must be registered according to Article II(1) of the Registration Convention.34 Since the space signal is not

34 Bernhard Schmidt-Tedd et al., “Article II REG” in Stephan Hobe et al., eds, Cologne Commentary on Space Law (Koln: Heymanns, 2009) vol 2, 244 at 251.
registered in conformity with the Registration Convention,\textsuperscript{35} and that it is not launched into Earth orbit or beyond, the space signal cannot be considered as a space object.

Nowadays, there appears to be a specific need for a special liability regime for harmful interferences.\textsuperscript{36} Even though the International Telecommunication Union (ITU) Convention and its Radio Regulations strictly prohibit harmful interferences,\textsuperscript{37} the ITU has no control procedure upon the States on their use of interferences.

Furthermore, there must exist a causal link between the space object and the damage. If the link is too remote, no claim could be raised under the Liability Convention. According to the direct causation theory, the wrongful act must directly lead to the damage.\textsuperscript{38} For indirect damage,\textsuperscript{39} where the link to the space object is unclear, “it must be such that it would not otherwise have occurred, had the space object not caused the initial damage”.\textsuperscript{40} The chain of causation should not suffer any interruption.

**What kind of liability?**

Depending on the damage, the Liability Convention makes a difference on the applicable liability regime. This goes again back to the initial rationale of the liability regime for space activities: it is important to ensure an absolute compensation for a victim stranger to any space activity. Thus, the Liability Convention foresees an absolute liability for damage caused on the surface of the Earth or to an aircraft in flight.\textsuperscript{41} On the other hand, concerning damage in outer space, the victim shall prove a fault of the responsible State to establish its liability.\textsuperscript{42}

**Absolute liability**

Since most information in the space sector are highly sensitive and as such, protected, and since fault is almost impossible to prove in the case of damage caused by space activity, the drafters of the Liability Convention felt it important to impose an objective liability. The choice was made in favor of an absolute liability rather than for an objective liability, to avoid any exoneration possibilities. Article II of the Convention provides:

\begin{quote}
A launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth or to aircraft in flight.\textsuperscript{43}
\end{quote}

So here the principle is to designate the liable party/culprit by the Convention without any legal question on the way the party carried out its activity.

\begin{itemize}
  \item \textsuperscript{35} *Registration Convention*, supra note 1, art III (the registration must be notified to the UN). The Secretary General maintains a register in which the information notified must be recorded. See Stephan Mick, *Registrierungskonvention und Registrierungspraxis* (Köln: Heymanns, 2007) at 28.
  \item \textsuperscript{36} Smith & Kerrest, “LIAB article II”, supra note 30 at para 111.
  \item \textsuperscript{39} Christol, *supra* note 34 at 359–60.
  \item \textsuperscript{40} Smith & Kerrest, “LIAB article II”, supra note 30 at 127.
  \item \textsuperscript{41} *Liability Convention*, supra note 1, art II.
  \item \textsuperscript{42} Ibid., art III.
  \item \textsuperscript{43} Ibid., art II.
\end{itemize}
The risk of damage on Earth caused by a space object after its launch is rather low. Only huge objects can reach the Earth surface as small ones burn while entering atmosphere. For example, Kosmos 945, a Soviet spying satellite with a nuclear payload, fell on Canadian territory in 1978.

The absolute liability functions without any maximum amount or time. Since States are liable for damage caused by their space objects, there is no need for setting any time limit or amount. Only the victim’s “gross negligence” (faute lourde) or willful misconduct (faute intentionnelle) might limit the respective State’s liability.

Fault liability

During the final moments of the adoption of the text of the Liability Convention, Article III was only providing for absolute liability. The Italian position changed the minds of the drafters, and introduced a presumption of fault for collisions in outer space. Article III of the Liability Convention now states:

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.

Here, an issue arises with respect to the interpretation of persons for whom the launching State is responsible. Are only agents of the State meant, since it would be the case in general international law? This reasoning would however go against the spirit of international space law. A conformed interpretation would require to take into account Article VI of the Outer Space Treaty, stating that States are responsible for national activities. It is the logical consequence that the launching State is liable for any damage caused by the space activity of one of his nationals, and not only for his State’s agents.

It can be argued that liability for damage in orbit has not been efficiently enough dealt with in the Liability Convention. The obligation to prove fault and the absence of special provisions for fault liability may cause some difficulties in the implementation of the provisions of the Convention. If it is the case, the victim would like to sue the operator or even the State, using

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44 It is a major difference and interest of the Liability Convention compared to other conventions dealing with liability. For instance, in the 1969/1992 Convention on Civil Liability for Oil Pollution Damage, a limit is set for the liability of the owners of the ship. See International Convention on Civil Liability for Oil Pollution Damage, 29 November 1969, 973 UNTS 3, as amended by Protocol of 1992 to amend the International Convention on Civil Liability for Oil Pollution Damage, 1969, 27 November 1992, 1956 UNTS 285, art V.

45 Liability Convention, supra note 1, art VI(1), (2).

46 UN, Committee on the Peaceful Uses of Outer Space, Legal Sub-Committee, United States Proposal: Convention concerning Liability for Damage Caused by the Launching of Objects into Outer Space, UNGAOR, 1964, UN Doc A/AC.105/C.2/L.8, art III.


48 Liability Convention, supra note 1, art III.

49 See The Corfu Channel Case, supra note 5; II Yearbook of the international law commission, part II, UN Doc A/CN.4/SER.A/2001/Add.1 (Part 2) at 93.

50 See e.g. Loi n° 2008-518 du 3 Juin 2008 relative aux opérations spatiales, NOR: ESRX0700048L, art 2(2), (3) [Loi n° 2008-518].
another legal basis than resorting to the Liability Convention, domestic law, or general international law.

**Exoneration**

The particularity of the space liability regime is the principle of *restitutio in integrum*, meaning that no ceiling exists. Like every liability regime, exoneration, however, is possible in specific cases. Concerning absolute liability, no exoneration is possible implying a full compensation for the damage. Only the victim’s gross negligence (*faute lourde*) or willful misconduct (*faute intentionnelle*) might limit the delinquent State’s liability. This is, however, very difficult to prove and might almost never be the case. In the same line of thinking, it is very difficult to prove the launching State’s fault for any damage in outer space. Therefore, it can be contended that the launching State’s liability would quite often be excluded for this reason.

**The damage**

According to the Liability Convention, the term “damage” means “loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or property of international intergovernmental organizations”.  

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51 Liability Convention, *supra* note 1, art I(a).
53 UN, Committee on the Peaceful Uses of Outer Space, Legal Sub-Committee, *Summary Record of the One Hundred and Third Meeting*, UNGAOR, 7th Sess, UN Doc A/AC.105/C.2/SR.103 (1968).
Two ways for the victim to obtain compensation: the dispute settlement mechanism under the liability convention or the recourse before a domestic judge under domestic law

**Liability Convention**: Under the Liability Convention, this is a State-to-State relationship, unlimited in time and amounts. The biggest impediment of this procedure is exactly this relationship, since the procedure might be time consuming. The victim must address a request for compensation to his/her ministry of foreign affairs which will then forward the demand to the ministry of foreign affairs of the launching State (if more than one launching State can be identified for the space object having caused the damage, the victim’s State will have to choose and address to one of the launching States the request of compensation, since they are jointly and severally liable). The State representing the victim might also choose not to act for political reasons. Similarly, the launching State and the victim’s State can agree on a partial compensation also for political reasons.

This difficulty has been foreseen by the drafters of the Convention. This is the reason why they decided not to include the requirement of exhaustion of local remedies before instituting any claim for damages under the Convention. The State of the victim is required, however, to act within one year after being aware of the damage. This gives rise to another difficulty: should the claimant choose the internal/domestic recourse, for which the procedure might be longer than a year, the claimant could no longer ask for the diplomatic way in the case of an unsuccessful claim.

It should be noted that if the operator is solvent and the fault easy to prove, the claimant will, it is highly likely, choose domestic law.

The Liability Convention does not apply to “nationals of the launching State” and to foreign nationals having taken part to the launch. In some domestic law, as in the French one, the same protections than under the Liability Convention are foreseen for national victims.

According to the Liability Convention, should for any reasons the negotiations remain unsuccessful, the requesting State can ask for the composition of a “Claims Commission”. Only if agreed upon by the Parties, the Claims Commission’s decision will be binding. Otherwise, it will only have a recommendation character, but must be in any case a motivated decision, meaning that the decision must clearly state the position held by the Claims Commission. The composition of the Claims Commission is mandatory, should the negotiations remain unsuccessful. States can only agree upon the nature of the decision.

**Through domestic legal order**: Article X(2) of the Liability Convention, inter alia, provides:

> Nothing in this Convention shall prevent a State, or natural or juridical persons it might represent, from pursuing a claim in the courts or administrative tribunals or agencies of a launching State.

The Liability Convention is the international *lex specialis* for the liability regime for damage caused by space objects. It is, however, at the victim’s discretion to opt for another basis to claim

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55. *Liability Convention, supra* note 1, art XI(1).
56. *Ibid., supra* note 1, art X(1), (2).
57. *Ibid., supra* note 1, art VII.
59. *Ibid., supra* note 1, art X(2).
compensation for damage caused by a space object. By doing so, the victim is able to choose the court in which the claim will be brought and, consequently, which law will apply to settle the dispute. The victim will most probably choose the court and the applicable law that offer the same advantageous protection, and thus full compensation, as the Liability Convention. It can be argued that, having regard to the complexity of the procedure put in place by the Liability Convention, actions will more certainly be brought to national courts rather than on the basis of the Convention.

### The consequences of the liability

Any damage caused by a space object(s) obliges the concerned launching State to a *restitutio in integrum*. If this principle cannot be applied, the compensation is made financially. It is, nevertheless, important to take into consideration that principle, since financial compensation is only a second choice. Furthermore, the amount of the financial compensation has to reflect this basic principle.

**The necessity of control by potential launching States:** As stated previously, Article VII of the Outer Space Treaty cannot be read without Article VI of the Treaty, which provides:

> States Parties to the Treaty shall bear international responsibility for national activities in outer space, ... whether such activities are carried on by governmental agencies or by non-governmental entities ... The activities of non-governmental entities in outer space ... shall require *authorization and continuing supervision by the appropriate State Party* to the Treaty.

Article VII of the Outer Space Treaty and the Liability Convention create another reason for States to control private space activities: they may be liable as a launching State. It is true that there is no special obligation under these treaties on a launching State to control the activities of private entities. Nonetheless, a launching State needs to control the space activities of such commercial entities to avoid being held liable. Therefore, it is the launching State’s duty to organize internally an authorization process before any launch and a control procedure upon the operator while conducting the space activity, not only to ensure conformity of such activity with international law, but also to determine the risk of the activity and to reduce the possibility of such risk. Only a State, who has the power to authorize and control, can become the appropriate responsible State for having “the factual means of avoiding liability”.

Each State can choose its own way of authorization and control. It is, however, still true that many space-faring nations have yet to enact any domestic space law foreseeing any authorization and control procedures. In such circumstances, it is difficult to know which State has control over a given space object, if no national law foresees any control procedure.

**The sharing of risks among launching States:** The Liability Convention deals with two different situations. In Article IV, the Convention provides for the case of two space objects colliding and

\[61\] See *Case concerning the Factory at Chorzów (Germany v Poland)* (1928), PCIJ (Ser A) No. 17; *The Corfu Channel Case*, supra note 5.

\[62\] *Outer Space Treaty*, supra note 8, art VI [emphasis added].

causing damage to third parties. Article V considers the incident of a damage caused by one space object, and, hence, addresses plurality of launching States and apportionment of financial obligations among themselves.

In Article IV, the Liability Convention foresees the possibility of two or more launching States who can be held jointly and severally liable, if the collision of their respective space objects have caused a damage to a third party. Here, the Liability Convention organizes their relation, since these launching States could not predict before the launch of the space objects to be jointly and severally liable in the event of damage. Therefore, the Liability Convention provides that these launching States will have equal liability to provide compensation to the third State – the burden of compensation shall be apportioned equally between them – unless one State’s fault can be proved. However, as already mentioned, it is difficult to prove fault in the space sector.

According to Article V, since the launching States for one activity can become jointly liable, the victim can claim compensation against only one of these States. In this regard, the latter will be bound to pay, if found liable. However, in such a circumstance, that launching State has a right of indemnity against the other launching State(s). Therefore, the Liability Convention recommends the signature of agreements “regarding the apportioning among themselves of the financial obligation”. As for instance, the State from whose territory and with which facilities the launch is procured, must ensure financial compensation for the whole launching procedure, since during that moment the other launching State(s) have no possibility of control over the activity.

The sharing of risks between launching States and private entities: Since most private entities would go bankrupt, domestic law generally provides that the State to whom the private entity belongs takes charge of the remaining amount and will not ask for full reimbursement from the corporatized entity of what it has paid as a launching State. It is thus common for States to require, while granting authorization to the commercial entity for the concerned activity, subscription of an insurance up to the legal ceiling. The State stands as the insurance for the remaining amount. It is questionable whether this ceiling applies also in the case of an action brought by the victim before a domestic court. In this respect, differences between national space laws should be noted.

If the victim claims compensation under the Liability Convention, it is a State-to-State relationship. Nonetheless, the launching State, who has observed its liability engaged, can ask for reimbursement of the amount from the operator. The aim of national laws, if they exist, is to regulate the financial relationship between the launching State and its operator. For the reasons exposed previously, States mainly predict a limitation of such reimbursement.

64 Liability Convention, supra note 1, art IV:

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, and of damage thereby being caused to a third State or to its natural or juridical persons, the first two States shall be jointly and severally liable to the third State, to the extent indicated by the following:

(a) If the damage has been caused to the third State on the surface of the Earth or to aircraft in flight, their liability to the third State shall be absolute;

(b) If the damage has been caused to a space object of the third State or to persons or property on board that space object elsewhere than on the surface of the Earth, their liability to the third State shall be based on the fault of either of the first two States or on the fault of persons for whom either is responsible.

65 Ibid., art V(2).
France and the US have gone further to protect their launch operators. Both of them have, in their domestic space regulations, agreed with their space industry on the limitation of the operator's liability, thereby maintaining the ceiling irrespective of the procedure chosen by the claimant. This reflects their will to support the space sector, even though, in the case of the US space regulations, the limitation only lasts for 30 days after the launch.

The French space regulation, referring to the French financial law,\(^{66}\) provides for a warranty for all damage caused during the launching phase.\(^{67}\) For any damage occurred during the in-orbit phase caused by a space object for which France is the launching State, the warranty plays fully only for damage on the surface of the Earth or to an aircraft in flight.\(^{68}\)

This provides for a win-win solution. The operator receives the State’s warranty for almost all damage and sees its liability limited. On the other hand, the operator has an obligation to obtain a license to conduct space activities conditional on getting an insurance coverage up to the ceiling (after which the State takes the insurer role). An operator carrying out space activities is subject to, like all other companies, bankruptcy, whereas a launching State is considered as being solvent and long-lasting. This justifies that the launching States take over the insurer role up to a certain ceiling. In any case, the insurability would be impossible for the space operator in the absence of a ceiling.

One situation can destabilize this process of control \textit{via} licenses of the launchings State upon the operator, namely the transfer of ownership of space object(s) in orbit.\(^{69}\) This transfer is allowed and has already been foreseen in the Outer Space Treaty:

\begin{quote}
Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their components parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth.\(^{70}\)
\end{quote}

This transfer of ownership should then be followed by the transfer of registration, meaning that the operator being the new owner of the space object has to register it in compliance with the Registration Convention. The Registration Convention limits the possible Registration States to one of the launching States of the space object.\(^{71}\) This rationale comes from the twofold aims of registration under the Registration Convention: to establish a legal link between a State and an object, and to facilitate a possible claim of a victim, allowing an easier identification of at least one of the liable launching States.

Complications arise when the new owner of the space object is not a national of one of the initial launchings States of this specific space object. A new State will have effective control over the space object and will be responsible according to Article VI of the Outer Space Treaty. However, it cannot register the space object under the Registration Convention, and, thus, will not be liable under the Liability Convention in case of a damage, since the initial owner remains liable according to this text.

\textit{Liability for damage}

\begin{flushright}
\textit{67} Loi n° 2008-518, supra note 50, art 15.
\textit{68} Ibid.
\textit{69} Armel Kerrest, “Legal Aspects of Transfer of Ownership and Transfer of Activities” (Paper delivered at the IISL/ECSL Symposium “Transfer of Ownership of Space Objects: Issues of Responsibility, Liability and Registration”, Vienna, Austria, 19 March 2012) [unpublished] [Kerrest, “Legal Aspects”].
\textit{70} Outer Space Treaty, supra note 7, art VIII.
\textit{71} Registration Convention, supra note 21, art II.
\end{flushright}
To avoid such a situation, national laws, especially the French space regulation, provide for an obligation to secure authorization to transfer ownership of in-orbit space object(s). It may cause difficulties when operators intend to sell their satellites: this may block many transfers and may jeopardize the selling of second-hand satellites.

A solution to counteract the negative effects of the combination of the Liability Convention and the Registration Convention, without modifying any of the conventions, can be to encourage concerned States to enter into bilateral agreements providing for a complete transfer of all international obligations (responsibility, liability, registration, etc.) to the new owner’s State.

**Concluding remarks**

The Liability Convention taken as a whole is a well-thought document which fits in the international space law context from the beginning of the 1970s. However, like all legal instruments, the Liability Convention has limitations to its proper application, especially for the liability regime of damage in orbit.

Additionally, some provisions are not in line with a fault liability. For instance, in the case of a fault liability for damage in orbit, the joint and several liability of the launching States does not make any sense. Again, in the case of damage occurring in orbit caused by space debris, it is not easy to determine the responsible launching State who can be held liable. It should be noted that, due to the presence of space debris in huge amounts, damage frequently occurs in orbit, perhaps more frequently than damage occurring on the surface of the Earth or to an aircraft in flight. In reality, only the US keeps a record/register of some space debris. Nonetheless, in this case, the proof may be influenced, since the register is not neutrally kept by an international organization.

Concerning damage on the surface of the Earth and to aircraft in flight, the Liability Convention fulfills the expectations: a third party to space activities can claim damages. The Liability Convention would certainly fulfill its role of “safety net”, by protecting the potential victim and finally making space activities safer “for the benefit and in the interest of all countries”.

In current circumstances, any significant modification of the Convention would be very detrimental to the whole system. Alternatively, without modifying the Convention, it is possible, and even necessary, to improve the liability mechanism by practice and by agreements between States, especially launching States.

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72 See e.g. *Law on the Activities of Launching, Flight Operations or Guidance of Space Objects*, art 13, § 5, online: Belgian Science Policy Office www.belspo.be/belspo/space/doc/beLaw/Loi_en.pdf (“[w]hen the transferee operator is not established in Belgium, the Minister may refuse the authorisation in the absence of a specific agreement with the home State of the third party in question and which indemnifies the Belgian State against any recourse against it under its international liabilities or claims for damages”); Michael Gerhard, “Transfer of Operation and Control with Respect to Space Objects – Problems of Responsibility and Liability of States” (2002) 51:4 ZLW 571 at 578.

73 *Loi n° 2008-518*, supra note 50, art 3.

74 See Gerhard, supra note 63 at 581.

75 See Kerrest, “Legal Aspects”, supra note 70.

76 *Outer Space Treaty*, supra note 7, art I.