

1. The concept of the ‘launching State’ in commercial launch ventures

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1. INTRODUCTION

The concept of the ‘launching State’ is central in modern space law. It is related to the notion of liability for ‘damage caused by a space object’ as defined in the 1972 Liability Convention.¹ Space activities have changed a lot since the 1960s and 1970s when the legal framework for space activities was adopted. At that time few activities took place, and only States were involved. Because of the cold war, these activities were under the strict control of the two main spacefaring States. Nowadays many other States and many private entities are involved, with a plethora of new activities including commercial ventures taking place. It is often asked whether the legal framework established at the time by the Liability Convention is still efficient when commercial space ventures are concerned.

This question will be considered in the following four steps:

1. What is the importance of the notion of launching States?
2. What is the interest of holding States – the launching State(s) – liable for damage caused by a space object?
3. What happens when private entities are involved?
4. Who carries the risk created by private space activities?²

¹ Convention on International Liability for Damage Caused by Space Objects (hereinafter the Liability Convention), adopted by the General Assembly in its Resolution 2777 (XXVI), opened for signature on 29 March 1972, entered into force 1 September 1972.

² A. Kerrest and L.J. Smith, ‘Article VII of the Outer Space Treaty’ in S. Hobe, B. Schmidt-Tedd and K.-U. Schrogl (eds) *Cologne Commentary on*

2. THE IMPORTANCE OF THE NOTION OF THE 'LAUNCHING STATE'

From the very beginning, liability for damage caused by a space object has been linked with the notion of the launching State.³ As early as 1959 the first report of the ad hoc Committee on the Peaceful Uses of Outer Space (UNCOPUOS) refers to the 'liability of the launching State and other States associated with it in the space activities causing injury or damage'.⁴ The USA proposal concerning liability for space vehicle accidents⁵ refers to the 'State or international organizations responsible for the launching of space vehicles'. During the same meeting of the UNCOPUOS Legal Subcommittee, India submitted a proposal referring to 'damage caused by space vehicles which they have launched'.⁶

The choice of the launching State as a criterion by which to apportion liability was appropriate for several reasons. First of all, it holds States liable, which is unsurprising given that only States were involved in space activities at the time. To this day this is arguably the best solution as States, especially spacefaring States, are normally rich and solvent and are able to bear significant amounts of risk without the need to purchase insurance. This is quite useful. As they do not require insurance, States may accept liability without a ceiling in either amount or time, which was exactly what happened under the Liability Convention. In light of the technical conditions at the time, these modalities were necessary to ensure the protection of potential victims. As satellites may stay in orbit for decades, it is appropriate that launching States' liability is maintained until the satellite returns to Earth.⁷

Space Law (hereinafter CoCoSL), Volume 1 (Kluwer 2009); L.J. Smith, A. Kerrest and F. Tronchetti, 'The Convention on International Liability for Damage Caused by Space Objects' in CoCoSL Volume 2 (Kluwer 2013).

³ B. Cheng, 'Convention on International Liability for Damage Caused by Space Objects' in N. Jasentuliyana and R.S.K. Lee (eds), *Manual on Space Law*, Volume 1 (Oceana Publications 1979) 83.

⁴ Report of the Ad Hoc Committee on the Peaceful Uses of Outer Space (document A/4141, 14 July 1959) p. 23 at II B point 10; Carl Christol, 'International Liability for Damage Caused by Space Objects' (1980) 14 *American Journal of International Law* 346.

⁵ USA: Draft proposal on liability for space vehicle accidents 1962 (A/AC.105/C.2/L.4) http://www.unoosa.org/pdf/reports/ac105/AC105_006E-lc.pdf.

⁶ India: Proposal – Draft conclusions (A/AC.105/C.2/L.5) http://www.unoosa.org/pdf/reports/ac105/AC105_006E-lc.pdf.

⁷ The liability of the launching State has no limit in time after the launch but the victim has only one year after his learning of the damage to ask for

The very broad definition of the 'launching State' stems from its four alternative criteria: the State that launches, the State that procures the launch, the State from whose territory a space object is launched and the State from whose facility a space object is launched. As a result there is always at least one liable launching State that can be identified for any given space object. If more than one State fulfils these criteria, they are jointly and severally liable, which is testament to the victim-oriented nature of the space liability regime.

The fact that more and more activities have been privatized does not change the international responsibility or liability of the States for whom the activity is a 'national activity' according to Article VI of the Outer Space Treaty,⁸ or who are a launching State for the space object under Article VIII of the Outer Space Treaty. Some States would like to avoid liability through a new and narrower interpretation of the Liability Convention that would exclude liability of launching State(s) in the case of private activities. If such an interpretation were accepted, however, States could avoid being held liable simply by privatizing an activity. This would be a clear violation of the spirit of the Liability Convention, and even of the letter in the context of Article VI Outer Space Treaty whereby private activities are included in the notion of 'national activities' under the responsibility and control of the appropriate State. In the case of private activity launched from the high seas, this narrow interpretation would result in no launching State being liable, which is clearly unacceptable and contrary to the aims and purposes of the Convention.

Among the four criteria of the launching State, the most difficult to define is the one that refers to 'procuring the launch'. Its inclusion was a way to apportion some liability to States lacking autonomous launch capability and using the launch capabilities of other States. This linkage proved to be foresighted, as the State that procures the launch is currently often the only one to have a legal link to the satellite once it is in orbit.

Although for the time being there is no case of a launching State having to pay compensation to a victim under the Liability Convention

compensation, as per the Liability Convention Art. X/1, http://www.unoosa.org/oosa/en/SpaceLaw/gares/html/gares_26_2777.html.

⁸ The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (hereinafter the Outer Space Treaty), adopted by the General Assembly in its Resolution 2222 (XXI), opened for signature 27 January 1967, entered into force 10 October 1967, <http://www.unoosa.org/oosa/SpaceLaw/outerspt.html>, Articles VI and VIII.

for damages caused by a privately owned or operated space object, the matter raises significant legal questions.

First, the definition of launching State(s) may pose problems when international private consortia operate satellites. The important rationale behind the fourfold criteria is to enable the victim to easily identify a liable launching State. The important side effect of the broadness of the criteria is to prevent accidents. If a State risks becoming liable for a space activity, it will efficiently control this activity and thus limit the risk of an accident. For this reason it may be useful for the various potential launching States to pass an agreement prior to the launch such as the one referred to in Article V of the Liability Convention. These agreements have no effect on the rights of the victim(s) but may ease the relationship between launching States. It may be considered unfair, for instance, that the State of the territory in which the launch takes place would be liable for damage caused by the space object in orbit, especially if a long time had passed since the launch. It may also be considered unfair that the State procuring the launch would be liable for the damage caused by the launch itself. *Dura lex sed lex*. The purpose of the Liability Convention is to protect victims. It is the launching States' responsibility to divide liability among themselves. Such agreements may be used; indeed, they should be used. For the time being, however, prelaunch agreements are rather rare, and State practice surrounding them is in need of further refinement.

A second issue relating to private space operations is the transfer of ownership of a satellite in orbit. In such cases the launching State remains liable even if it has little or no control over the satellite or the satellite operator anymore. It may be necessary to improve the way States can register space objects to reflect this evolution in economic reality. According to Article 1(c) of the Registration Convention, 'The term "State of registry" means a launching State on whose registry a space object is carried in accordance with article II'. This restricts the possibility of registering a satellite to those States which are launching States. Therefore, in the case of a transfer of ownership and control of the satellite after the launch, the launching State is liable for damage caused by the space object but can no longer control it, whereas the State of the new owner is responsible according to Article VI of the Outer Space Treaty, even if it cannot register it or exercise jurisdiction and control over it.⁹ This is a point which urgently requires discussion within

⁹ The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial

UNCOPUOS. It is preferable that a solution is found without opening the Pandora's Box of treaty amendments.¹⁰

3. THE NATURE OF THE LIABILITY OF THE 'LAUNCHING STATE(S)'

As is often observed, space liability under the Liability Convention offers a high degree of protection for potential victims. When the damage is caused on Earth or to aircraft in flight, the liability is absolute. This is an exceptional provision in international law, especially when we consider that this liability has no ceiling either in amount or time, and extremely few reasons for exoneration. No act of God, nor a fault of a third party, nor a terrorist action, nor even the fault of the victim if it is short of 'gross negligence or an act or omission done with intent to cause damage' may exonerate the launching State (Liability Convention, Article VI). It should be noted that even this exceptional exoneration ceases if the activity is unlawful.

It is interesting to examine the reasons behind the acceptance by spacefaring States of such a broad and profound system of liability. It appears that at the time of the adoption of these principles, the freedom of use of outer space was not established beyond discussion. The 1919 Paris Convention on International Air Navigation recognized that the space above a State's territory was under its sovereignty. When the space era began, by contrast, it was necessary to establish beyond doubt the freedom to use outer space. The fact that such broad and unlimited liability was accepted for damage on Earth and not for damage in orbit seems to be a good indication of the deal struck between liability favouring non-spacefaring States (potential victims) and the freedom of use which they had to accept without being able to take any significant advantage of it for the time being.

In case of damage 'elsewhere than on the surface of the Earth to a space object', the Liability Convention requires that fault is proven (Article IV), which might cause difficulty even for spacefaring States. It

Bodies (hereinafter the Outer Space Treaty), adopted by the General Assembly in its Resolution 2222 (XXI), opened for signature 27 January 1967, entered into force 10 October 1967, <http://www.unoosa.org/oosa/SpaceLaw/outerspt.html>, Articles VI and VIII.

¹⁰ A. Kerrest, 'Legal aspects of transfer of ownership and transfer of activities' (2012) IISL/ECSL Symposium Legal Subcommittee, Fifty-first session, <http://www.unoosa.org/pdf/pres/lsc2012/symp-01E.pdf>.

appears that States taking part in this great adventure, and their nationals, have less protection on account of their decision to participate.

For the time being there is no system of 'space traffic management'. This compounds the problem of determining who is at fault in case of an accident. In this context it may be possible to refer to the customary rules applying on the high seas. Taking the example of a collision between two space objects, one under control and manoeuvrable, the other a piece of unresponsive and unmanoeuvrable space debris, we need to ask ourselves: would it be preferable to impose liability on the operator who does not move his satellite, provided he can, or on the operator who has dangerously left his satellite in a well-used orbit?

For damage in orbit, the Liability Convention refers to the 'fault' of the launching State or the 'fault of persons for whom it is responsible'. This reference to a 'fault' shows that the Liability Convention does not refer to a violation of international law, as is usually the case in general international law, but to an independent concept of 'fault'. It refers to ignorance, carelessness or negligence. If there were an accident, a judge would have to consider the behaviour of the operator with reference to the 'normal' or 'right behaviour'. Experts may be consulted, but more concrete substantiations of generally accepted behaviour exist as well. These arguably carry more weight, and include 'codes of conduct', such as the one accepted by the Inter-Agency Space Debris Coordination Committee and summarized by UNCOPUOS. These written rules may be used as points of reference in determining whether the operator or State is at fault in the case of an accident. In this way, although the codes of conduct themselves are not compulsory, they may be considered a good indicator of the 'right behaviour' of a 'careful space objects operator'.

Another point that needs interpretation in Article III of the Liability Convention is the notion of the 'person for whom it is responsible'. Two interpretations are possible. The first refers to Article VI of the Outer Space Treaty and therefore includes the fault of any governmental agency or any non-governmental entity conducting any 'national activity' in outer space. The second interpretation would refer only to agents of the State, as is the case in general international law. Once more it is difficult to anticipate the possible decision of an international judge; however, the broader interpretation taking Article VI of the Outer Space Treaty into consideration is the most likely. Consequences of this choice of interpretation are significant; under the broader interpretation, private activities would expose launching States to a risk of sizeable claims for in-orbit damage as a result of faults committed by its nationals. In any case, the

proof of fault for an activity conducted in outer space remains problematic. States' recognition of this issue may be seen as the basis of their acceptance of absolute/objective liability for damage on Earth.

For obvious reasons, the Liability Convention does not apply to damage caused to a national of one of the launching States. The same exclusion applies to foreigners, provided they took part in the launch – this is less obvious. This point confirms the hypothesis of a link between the protection of victims on Earth and the acceptance by every State, even non-spacefaring States, of the freedom to use outer space.

4. LIABILITY OF THE 'LAUNCHING STATE(S)' AND ACTIVITIES OF PRIVATE ENTITIES

The 1972 Liability Convention does not deal directly with the liability of private persons. It deals with the liability of launching States for space activities, including private activities, but not for the liability of the private entities themselves. Liability as set out in the Liability Convention only regulates interstate liability. When a State falls under one of the four criteria constituting a launching State, it is liable for damage caused by the space object on the ground or to aircraft in flight, and potentially liable for damage caused elsewhere.

Contrary to what was set forth in the 1969 Brussels International Convention on Civil Liability for Oil Pollution Damage, there is no channelling of the liability to operators and, therefore, no conditional exoneration of the operators. According to Article XI, paragraph 2, '[n]othing 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 victim may demand compensation directly from the private operator before a domestic judge on the basis of ordinary liability/responsibility laws. The choice belongs to the victim. He may elect to sue the operator before a domestic judge under domestic law, but he may also ask his State to enter into the diplomatic process of the Liability Convention, which does not require the prior exhaustion of local remedies. This freedom of choice implies the possibility of forum shopping. In practice, victims are likely to choose their forum case by case. If the damage is very important or if the operator is unable to pay or no longer exists, the victim benefits from asking his State to use the Liability Convention. In other cases, the route via a domestic judge might be preferable. This choice belonging to the victim is essential.

To summarize the various aspects of this choice, the positive points of using the Liability Convention are a State's liability, unlimited in amount and in time, and a joint and several liability enabling the victim to choose the liable State most able to pay compensation. The principal drawback is the State-to-State character of the procedure over which the victim has little or no control, and which holds a risk of political influence on the settlement of the dispute. As is the case with diplomatic protection, the victim State is free to select the way in which it wishes to obtain compensation and to decide whether to transfer the indemnification to its national.

On the other hand, using the domestic courts and laws enables the victim to exercise full control over his action, to receive the entire indemnification for his damage, and to avoid excessive political influence. Drawbacks of this approach include the risk of insolvency of the liable operator, the possibility of absolute liability in domestic law (in case of damage on Earth), and possible difficulties in obtaining the *exequatur* of the domestic judge's decision.

Until now no cases have presented themselves, either of damage caused by a space object to a private person or damage caused by a private space object. It seems that the best way for the victim to obtain compensation would be through a domestic judge. This is especially true if the liability of a private operator is recognized. Nevertheless, in some cases this would be risky or difficult. In such cases, the Liability Convention plays the role of a safety net. Therefore, although its specific mechanism for interstate liability may not be used often, it has an important role in securing space activities and in encouraging States to control activities and prevent accidents. Evidence thereof can be found in most systems of national space legislation.

There is another difficulty of interpretation in the Convention that has yet to be clarified, since no judge, either domestic or international, has ever had to apply it in a contentious case. According to Article XI the victim may use other means to obtain indemnification; the problem relates to the conjunction of the delay of one year as set out in Article IX for action under the Liability Convention and the provision of Article XI, paragraph 2, according to which the victim is 'entitled to present a claim under this Convention in respect of the same damage for which a claim is being pursued in the courts or administrative tribunals or agencies of a launching State or under another international agreement which is binding on the States concerned'. The conjunction of both articles obliges the victim to choose between action under the Liability Convention and action using domestic remedies, as it would be difficult in practice to settle the case before the domestic judge within one year. This is

certainly not what the drafters of the Convention had in mind when they relieved the victim from exhausting local remedies in Article XI, paragraph 1. Nevertheless, it seems to be a consequence of the way the treaty text was drafted.

It may be argued that Article XI, paragraph 1 frees the victim from the obligation to use local remedies while not preventing him from doing so, but still the procedural rule of the one year delay applies. Here, as in many other cases, it would be useful to have a body of case law to clarify the interpretation of the Convention. This is not to say, however, that we wish to complain about a lack of space accidents.

Both the launching State(s) and the private operators may have to pay compensation. The launching State will have to do so if the victim and/or the victim's State decide to present a claim under the Liability Convention; the operator or any liable person has to pay if the victim decides to present his claim in domestic 'courts or administrative tribunals' pursuant to Article XI of the Liability Convention. Of course, the principle *non bis in idem* would apply. As was discussed above, the choice of legal forum will depend on the specific circumstances of the case, with arguments on both sides. In arguably the majority of cases it would be preferable to sue the operator directly before a domestic judge, whereas in other cases, especially if the damage in question is huge, it would be more prudent to use the diplomatic procedure offered by the Liability Convention.

5. WHO WILL BEAR THE BURDEN OF RISK IN THE CASE OF PRIVATE ACTIVITY IN OUTER SPACE?

This is the question that is at the heart of this chapter. It requires two different points to be considered. The first is the sharing of the burden of indemnification among jointly and severally liable launching States, if there is more than one, which is currently usually the case. The second is the sharing of the same burden between the State that has to pay according to the Liability Convention and the private operator whose activities lie at the origin of the State's liability.

A. Sharing the Risk Between Launching States

First of all, we have to keep in mind that the decision as to which State will be presented with a claim for compensation lies with the victim or the victim's State. Many issues may enter into consideration when choosing which launching State to claim against, including the 'deep

pockets' of a given State or the practical likelihood of obtaining indemnification. Article V of the Liability Convention deals with this matter, positing that:

A launching State which has paid compensation for damage shall have the right to present a claim for indemnification to other participants in the joint launching. The participants in a joint launching may conclude agreements regarding the apportioning among themselves of the financial obligation in respect of which they are jointly and severally liable. Such agreements shall be without prejudice to the right of a State sustaining damage to seek the entire compensation due under this Convention from any or all of the launching States which are jointly and severally liable.

UN General Assembly Resolution 59/115 on the application of the concept of the 'launching State', adopted by consensus in December 2004, 'recommends that States consider the conclusion of agreements in accordance with the Liability Convention with respect to joint launches or cooperation programmes'.¹¹ Article V, paragraph 2 of the Liability Convention recognizes the principle of 'a right to present a claim for indemnification to other participants in the joint launching'. The question is: who will pay? The provision is not very clear, as it does not specify the final distribution among launching States of the duty to pay indemnification. It is difficult to refer to a possible fault of one of the launching States because the system, at least for damages occurring on Earth, is based on absolute liability. Does this mean that the obligation to pay damages should be shared equally among launching States? This solution would certainly not be accepted, as the role and interest of the various launching States may differ vastly. During UNCOPUOS deliberations, the point was repeatedly raised by some States, citing for instance that it would be unfair for a State like Brazil to be solely liable on account of its territory being used for the launch.

Article IV, paragraph 2 of the Liability Convention may offer a further indication:

In all cases of joint and several liability referred to in paragraph 1 of this article, the burden of compensation for the damage shall be apportioned between the first two States in accordance with the extent to which they were at fault; if the extent of the fault of each of these States cannot be established, the burden of compensation shall be apportioned equally between them. Such apportionment shall be without prejudice to the right of the third State to seek

¹¹ United Nations General Assembly Resolution 59/115 (10 December 2004), Article 2.

the entire compensation due under this Convention from any or all of the launching States which are jointly and severally liable.

The case referred to in Article IV, paragraph 2 is different; the common damage is unexpected because it is caused by an accident. Two space objects have collided and caused damage to third parties either on Earth or in orbit. In that case the launching States of each space object are jointly and severally liable toward the third party(ies). The sharing of the risk should be done according to a potential fault of one of them. If the fault cannot be established, the sharing should be done equally. This provision may be difficult to apply given the difficulty in proving a fault in outer space. In some cases it may even produce unfair results. For example, if a nuclear power source is on board one of the space objects, the risk is considerably increased. If, in such a case, damage to a third party occurs and no fault can be proven, an equal distribution would be unfair in view of the operators' unequal contribution to the risk of damage, with the contribution of the nuclear-powered craft being much greater. One possibility might be to consider the use of a nuclear power source as a fault per se. However, this reasoning is highly uncertain.

Where damage is caused by only one space object, this mechanism of weighing respective faults is absent, although there may still be several launching States. In this case, referred to in Article V of the Liability Convention, the only practically feasible way of transferring, wholly or in part, the duty of indemnification to launching State(s) other than the one against whom the victim State chooses to claim, is for the launching States to conclude an agreement prior to launch 'regarding the apportioning among themselves of the financial obligation'. In this respect, it would be very useful if UNCOPUOS were to draft standard agreements between launching States that could be referred to before the launch in order to prevent these kinds of difficulties in the case of an accident.

B. Sharing the Risk Between Launching States and Private Operators Acting Under Their Launching State's Liability

As we have already seen, and as is commonly accepted, under the Liability Convention States are liable for damage caused by a 'national activity' conducted by a 'non-governmental entity' if they fulfil one of the criteria making them a liable launching State.

Of course, the State that has paid may look to 'get its money back' from the operator. This is one of the major functions of domestic legislation dealing with space activities. When they authorize a space activity, States do so conscious of the risk involved in being a launching

State, and they require the operator to purchase insurance to cover this risk. The fact that the majority of national space laws impose an insurance requirement lends credibility to this preoccupation among potential launching States. However, given the specific nature of space activities, especially of launch operations, it may be difficult for the operators to obtain insurance. The risk may be high, the number of launches is small, and the insurance market is narrow. In the national space laws of the USA and France, the obligation to obtain insurance may be replaced by the demonstration of financial responsibility.¹² In both cases the narrow character of the space insurance market is taken into consideration. Further, US national space law does not require the licensee or transferee to obtain insurance or demonstrate financial responsibility of more than 'the maximum liability insurance available on the world market at reasonable cost if the amount is less than the applicable amount' required by the 'Maximum Probable Loss'.¹³ In the French decree the minister in charge of space may, for a limited time, exempt the operator from subscribing to an insurance policy or demonstrating financial capacities due to the state of the insurance market.¹⁴

Two issues should be considered here. The first is the problem of obtaining insurance without any ceiling of amount and time in order to reimburse the launching State that has paid under the Liability Convention; the second is the case of legal action against the operator before a domestic judge pursuant to Article XI of the Liability Convention.

In most domestic legislation the obligation of the operator to reimburse the launching State if it has had to indemnify a victim is limited or may be limited. This limitation in the form of a ceiling, which does not exist in respect of the State's liability under the Liability Convention, seems to be a precondition if the operator wishes to obtain insurance. No insurer can cover a risk that it cannot evaluate beforehand. This is the reason that has been put forward on many occasions to set a ceiling in respect of absolute liability.¹⁵ To the extent that such liability is imposed on a State, this is not necessary. However, it is necessary when private operators may

¹² 51 US Code § 50914 – Liability Insurance and Financial Responsibility Requirements; Décret N° 2009-643 du 9 juin 2008, Article 16 (as modified by the Décret N° 2014-1315 of 3 November 2014 at Article 20).

¹³ 51 US Code § 50914 – Liability Insurance and Financial Responsibility Requirements at (a) (3) (B).

¹⁴ Décret N° 2009-643 du 9 juin 2008 Article 17 (as modified by the Décret N° 2014-1315 of 3 November 2014 at Article 20).

¹⁵ It is for instance the case in the International Convention on Liability for Oil Pollution Damage 1969 (Brussels Convention) and its 1992 Protocol.

have to reimburse the State, in order to avoid the obligation for the operators to play 'Russian roulette' when a State authorizes a space operation. In their domestic legislations, most States agree to set a ceiling and thereby assume a part of the risk themselves, should damage happen that exceeds this ceiling. This is, for instance, the case of the Belgian Space Law at Article 15§3: 'the amount determined in accordance with §2 may be limited by the King, on conditions that he may determine. In such an event, the State's right of recourse against the operator may not exceed that limit.'¹⁶

In the US 1984/1988 Commercial Space Launch Act, the maximum probable loss (MPL) is set by NASA for the Federal Aviation Administration's Office of Commercial Space Transportation (FAA/AST) with a maximum of USD 500 million, although it is usually set much lower, from 15 to 250 million according to the financial risk of the launch.¹⁷ In its 2008 law, France fixed a liability cap at an amount of EUR 60 million. Up to this amount the insurance covers damages; in excess of this amount the French government chips in.

C. A More Complex Problem: Action of the Victim Before a Domestic Judge

In this case it is unusual for the operator's State of nationality to intervene. Most often, it lets the operator handle the problem. If the victim, using his right under Article XI of the Liability Convention, decides to claim damages under domestic legislation where no ceiling applies, and especially if that domestic law recognizes a form of tort or objective liability, the operator may be in great difficulty if the amount of damages awarded is very large. For this reason, the USA and France, two States very much involved in space launches, have decided to support their operators by setting a liability cap, which applies not only for the reimbursement of what the State has paid as a consequence of the Liability Convention but also to the indemnification awarded by a domestic judge under domestic law. In both cases the State guarantees the amount exceeding the ceiling. This solution also benefits the victim, as he is certain to be indemnified, either by the operator or its insurance company or by the State.

¹⁶ Law of 17 September 2005 on the Activities of Launching, Flight Operation or Guidance of Space Objects consolidated text as revised by the Law of 1 December 2013 (Belgian Official Journal of 15 January 2014).

¹⁷ US Commercial Space Launch Act in US Code § 50915 – Paying Claims Exceeding Liability Insurance and Financial Responsibility Requirements.

In both cases, however, there are some limitations to this guarantee. In the USA it applies only during a launch period of 30 days.¹⁸ It is organized under a three-tier approach. The first tier is borne by the launch company. It is limited by a maximum probable loss calculated by NASA. The maximum amount is USD 500 million, but it is usually much less. The second tier is provided by the US government, up to USD 1.5 billion (1988 value).¹⁹ The third tier is left to the launch company, which may elect to purchase insurance,²⁰ and is in principle limited to an amount of USD 1500 million (1978 value).²¹ This indemnification scheme is in principle limited in time, although the US Congress has repeatedly extended it. It currently runs until September 2025.²² In France there is no limit either in time or in amount, but two phases are considered. During the launch phase itself, the guarantee applies to both damage on Earth and damage in orbit; during the in-orbit

¹⁸ 14 CFR § 440.11

Duration of coverage for licensed launch, including sub-orbital launch, or permitted activities; modifications.

(a) Insurance coverage required under § 440.9, or other form of financial responsibility, shall attach when a licensed launch or permitted activity starts, and remain in full force and effect as follows:

- (1) Until completion of licensed launch or permitted activities at a launch or reentry site; and
- (2) For orbital launch, until the later of—
 - (i) Thirty days following payload separation, or attempted payload separation in the event of a payload separation anomaly; or
 - (ii) Thirty days from ignition of the launch vehicle.

¹⁹ Approximately \$3.1 billion in 2017.

²⁰ Government Accountability Office (GAO), 'Commercial Space Launches: FAA's Risk Assessment Process Is Not Yet Updated' (4 February 2014) <http://www.gao.gov/assets/670/660635.pdf>; GAO, 'Preliminary Information on Issues to Consider for Reauthorization', <http://www.gao.gov/products/GAO-12-767T> (accessed 15 August 2017); J.A. Vedda, 'Study of the Liability Risk-Sharing Regime in the United States for Commercial Space Transportation' (1 August 2006) [https://www.faa.gov/about/office_org/headquarters_offices/ast/reports_studies/media/Risk_Study\(final\).pdf](https://www.faa.gov/about/office_org/headquarters_offices/ast/reports_studies/media/Risk_Study(final).pdf) (accessed 15 August 2017).

²¹ Approximately \$3.9 million in 2017. US Department of Transportation and FAA/AST, 'Liability Risk Sharing Regime For US Commercial Space Transportation' (2002).

²² S. 102(d) of the Commercial Space Launch Competitiveness Act of November 2015 (H.R.2262 – 114th Congress (2015–2016)).

phase it applies only to damage on Earth.²³ Orbital mechanics and the operational aspects of space activities, however, dictate that, in the case of satellites placed in a geostationary orbit at least, the risk of damage occurring on Earth during this second phase is all but non-existent.

D. A Consequence of the Liability of the Launching State: the Authorization and Control of Private Operators

There are two reasons for States to promulgate national space legislation. The first is the obligation under Article VI of the Outer Space Treaty to authorize and supervise 'national activities' conducted in outer space by non-governmental entities. The second one, and certainly the most important at present, is the liability of the launching State under Article VII of the same Treaty and under the Liability Convention. This by itself is the reason why every piece of domestic space legislation requires a licence or authorization for 'national activities'. This requirement, although apparently based on Article VI of the Outer Space Treaty, is often implemented in a broader fashion to also cover those instances when a State may be at risk of receiving claims in its capacity as a launching State, for example when a company of its nationality launches or procures the launch, when national facilities are used or when the launch is carried out from the State's territory.

This need for control may cause difficulties when more than one launching State is involved. It is the consequence of the joint and several liability of launching States for the whole process. Every launching State is liable for any damage caused by a space object where they have, by one way or another, contributed to its launch. This creates the risk that more than one State may decide to control the launch, which in turn would impose an undue burden on operators and risk delaying the operation. In some cases control is impossible or very difficult by nature. If an American satellite is launched from China, then both States are launching States and both are liable for damages caused by the launch and by the space object after the launch without any limitation in time. We have seen that this rule, although it may be considered unfair, has proved highly effective in protecting victims.

For private companies there is a fear of redundancy of control and an important risk of delay. One State or the other may opt to control the whole process, as it is liable for every phase. The solution to this problem

²³ Official Journal of the French Republic No. 0129 (4 June 2008) page 9169, Law no. 2008-518 (3 June 2008) on Space Operations.

is not to modify the treaties or to reduce the liability of launching States and thus the protection of the victim; it is to support the elaboration of agreements such as those referred to in Article V of the Liability Convention. Before the launch, and while negotiating the launch agreement, launching States should negotiate a division of the burden of the risk in case of accident. At the very least they could differentiate between the launch phase itself and the in-orbit phase. Each State would assume the burden of the risk for its own phase and agree to reimburse the other State if the latter is presented with a claim for damages. In this regard it is important to remember that the victim's (or his State's) choice of respondent for a liability claim will likely be based on solvency rather than responsibility. Generalization of such agreements could avoid detrimental redundancy of control, as only one State would have to pay *in fine* for the indemnification of the victim. In launch operations, time is, of course, of the essence. Finally, as provided for in Article V of the Liability Convention, this kind of agreement has no effect on the rights of the victims.

6. CONCLUSION

The liability of launching States is an old principle that was established at the beginning of the space era. The system may have to evolve, but we need to keep in mind the necessity of maintaining a strong, efficient and fair mechanism of liability to indemnify the victims and to limit the occurrence of accidents through the preventative effects of responsibility and liability.

A wholesale modification of the treaties, the so-called 'comprehensive approach', is not desirable, as it looks certain to put the whole system at risk, given that few States would nowadays still accept responsibility and liability as they were accepted at the time of the first launches. We should keep in mind the difficulties of regulating private activities on the high seas and support efficient control by States linked with their responsibility and liability for space activities. Any difficulties, which will of course arise, may be solved individually by international, multilateral or bilateral agreements.