

COMMERCIAL SPACE ACTIVITIES: AN INVENTORY OF LIABILITY - AN INVENTORY OF PROBLEMS

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Abstract

Wherever commercial activities are undertaken, the question of liability for harmful effects of those activities to others is one of the first things to come to a lawyer's mind. With space activities of course, as long as endowed with commercial character, it is no different. Nevertheless, the special character of space activities as a category and space as an area, reflected in the *corpus juris spatialis* which has developed over the past decades as a *lex specialis* to the *lex generalis* of general public international law, provides this question of liability with a number of special features when regarded in this context.

Where time and again confusion arises as to what "liability" means in theory and, as a consequence, entails in practice, before focussing on the issue of liability for commercial space activities it seems adamant to provide some clarity on these issues to allow sensible dialogues and discussions. The present paper therefore purports to survey a number of general aspects which arise in respect of liability as a notion common to more or less all municipal legal systems and to international law as a whole, and then to analyze briefly how these aspects specifically relate to the issue of commercial space activities. Hence, an inventory is made of the most important aspects of the notion of liability in theory, which should be helpful in clarifying the specific juridical consequences of liability for commercial space activities - and at least focusses discussions. Among these aspects, some of the most important relate to the intricate relationship between public international and private, civil liability, and the relevance of the notion of the "appropriate state" for the field of liability. A short comparison with the doctrine of state responsibility, as it has developed in the state-to-state relationship defined by international law and transplanted into space law, is unavoidable on some of the subissues concerned.

Theoretically speaking, eight different aspects of "liability" are submitted to be of paramount importance for any analysis of liability as it operates *vis-à-vis* commercial activities. When surveying these eight paramount aspects of any liability regime, at the same time by relating them to the specifics both of space activities and of the space law-liability regime, as illustrated by 'legal facts' of both international and national brand, the problems which remain with respect to liability for commercial space activities are taken stock of, and the fundamental character of the relationships between public international and private liability, respectively international liability and state responsibility are highlighted. It is submitted, that any analysis of the issue of commercial activities and the related liability-questions should at least take account of the inventory of problems thus provided.

1. Introduction

Of course, liability questions are of fundamental importance for those undertaking commercial activities of whatever kind. Otherwise successful business undertakings could be totally destroyed merely by the fact that liability has not been duly taken into account and cared for. The basic question therefore is, how does liability operate specifically for commercial space activities? What risks, what opportunities does it provide? What specific aspects of liability are worth scrutinizing by a commercial enterprise before undertaking space activities?

Liability from the point of view of entities undertaking commercial space activities may seem a many-headed dragon. Liability in the legal sense relevant for those entities is probably best defined as "an obligation one is in law or justice to perform", or more to the point, the "condition of being responsible for a possible or actual loss, penalty, evil, expense, or burden", or even a "duty to pay money or perform some other service".¹

For a clear insight into the relevance of the topic of liability for commercial space activities, starting from such definitions it will be necessary to develop some further theoretical outlines of the principle. In that way, a frame of reference will materialize for any discussion on practical issues and problems. It is this frame of reference, together with a few examples and some general concluding remarks, which the present paper sets out to present.

Liability as a notion, developed and still rooted very much in municipal legal systems, invites

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many questions when it comes to activities which take place in the special international area of outer space. This holds true, despite the prominent conclusion of liability as a central mechanism in the Outer Space Treaty², as the basis for all international space law, and the elaboration of that mechanism by means of the Liability Convention³. For example, the question arises what the exact relation under international space law is with the twin notion of responsibility, which is also given a prominent place in the Outer Space Treaty⁴, but is not elaborated by means of an additional international legal instrument. How does liability for space activities principally operate on the national level, in view of the international character of space law - and the international status of outer space? Where does the fact that most private space activities are commercial ones, while commercial ones are often automatically equated to private ones, come into this picture?

While dealing with those fundamental questions, a summary analysis will be made of the eight different theoretical aspects of "liability" which are perceived by this author to be of importance, as they appear both on liability in general and on space law liability in particular. Moving from the theoretical to the practical, they will provide some sort of preliminary theoretical checklist, defining the parameters for the problems of liability for commercial space activities. The inventory of problems thus provided, it is submitted, will allow for a clearer focus when efforts are undertaken to solve some of the most pressing issues relating to liability *vis-à-vis* private and commercial space activities.⁵

As a starting point, the first aspect is that of arriving at a definition of liability, focussing on damage as the paramount trigger. A second and closely related question pertains to the consequences *in abstracto* once liability has arisen, especially that of compensation. A third aspect relates to the question of the entity liable under a regime at issue, and the relationship with the causation of the damage. A fourth aspect relates mirrorwise to the question of the victimized entity, and its potential to claim compensation for the damage concerned. A fifth question then is the mechanism in force to deal with liability claims between claiming and liable entities.

Sixthly, narrowing down on how liability is working - be it still *in abstracto* - the relationship between liable and claimant entities is scrutinized, with a view for example to the rather general practice of waivers. This relates to the inter party-*versus*-third party liability dichotomy, and the comparable distinction between contractual and tort liability. Seventhly, the character of a particular liability regime as to absolute, strict, risk or fault liability, and the question of the burden of proof, is an important element of any analysis.

Finally, as an eighth point the issue of compensation will be tackled once more, this time

mainly on its practical component: is compensation theoretically unlimited, or are there caps on liabilities, and if so, how are they construed? This is the culminating point of analysis from the point of view of any commercially oriented entity, since it relates most directly to the question of whether a specific commercial undertaking will be profitable or not.

2. A Further Definition of "Liability"

The first step in this regard is the elaboration of the definition of "liability" by focussing on how the principle operates. Liability, as can be glanced already from the few definitions provided, is a form of accountability of legal persons towards other legal persons for specific activities and their consequences. The many different national legal systems in which the principle has been elaborated moreover all have in common that the operation of the principle is triggered by the causation of damage. If damage occurs, liability can be invoked at least in principle; if damage is absent, no issues of liability could enter discussions. This is also true for space law.⁶

Damage is defined for the purpose of space law-liability rather strictly to the extent that it means "loss of life, personal injury or other impairment of health; or loss of or damage to property of States or persons, natural or juridical, or property of international intergovernmental organizations"⁷. Hence, it does not for example include indirect economic damage, in contrast for instance to the legal framework originally established for space station "Freedom"⁸, or immaterial damage other than impairment of health as they might be acknowledged under public international law⁹ or national legal systems.

Another important factor to keep in mind when discussing liability under the pertinent rules of space law, is that the principle can only be invoked as long as the damage in question has been caused by a space object.¹⁰ Hence, damage caused for example to a communications satellite directly from the earth, without an intermediate role for another space object, falls outside the scope of the space law-liability regime - and most probably outside of any other liability-regime as well. Although so far this remains theory, the increasing proliferation of communication satellites and ground stations, not to speak of the increasing amount of commercial disputes related to communications satellites' orbital positions and frequencies, make for an exponentially increasing possibility that such occurrences might happen in the not too distant future.¹¹

The role of damage as the sole trigger of liability is not self-evident however. The International Law Commission for example has tried to confine the operation of the principle of liability in public international law to those cases of damage only

where no internationally wrongful act, that is no violation of an international obligation, is at issue.¹² The reason for adding a second indispensable trigger of liability lies in the concept of state responsibility which the ILC is dealing with more or less simultaneously; and this is the source of much confusion also on liability.¹³

Responsibility, as another fundamental mechanism of accountability operative under public international law, is triggered precisely by the occurrence of an internationally wrongful act, including cases where these acts cause or involve damage¹⁴. Hence, responsibility threatens to overlap in its operation, with respect to cases of damage, with the operation of liability. Since this overlap also appears in the Outer Space Treaty and the Liability Convention, where damage is given an unequivocal role as the sole trigger of liability and damage as an important element of an internationally wrongful act is not excluded under responsibility, it can not be ignored however.

State responsibility in outer space law, similarly to general public international law, attaches to states as soon as certain activities are not "carried out in conformity with the provisions set forth in the present Treaty"¹⁵. Since the same treaty includes an obligation for states to "carry on activities in (...) outer space (...) in accordance with international law, including the Charter of the United Nations"¹⁶, one can safely assume that responsibility in space law operates no different in principle from state responsibility in general public international law.

The consequences of this general structure of liability (and likewise those of responsibility) under space law specifically for commercial activities will only become apparent after going into more detail as to how liability works, once relevant damage has been ascertained. In any case, undertaking efforts for the prevention of damage by one's activities obviously at this stage would be a wise thing to do, since damage might directly trigger liability, and indirectly responsibility in some cases.

3. The Consequences in Law of Liability

This leads us to the second issue regarding liability. The principal consequence of liability being incurred for damage is a duty for the relevant entity to compensate such damage. The overlap with responsibility becomes effective here, since in the case of international responsibility arising under space law as well as under general international law, the responsible state has to provide reparation for the international wrongful act in question - which in principle amounts to a duty to compensate damage if damage has occurred as a consequence or an element of the international wrongful act in question.¹⁷

While nothing has been elaborated further on these potential consequences of responsibility for certain

space activities, in terms of the duty to pay compensation for damage which occurred - would *restitutio in integrum* be obligatory under all circumstances? could punitive damages be awarded? - with respect to the consequences of liability the Liability Convention is quite clear: material compensation has to be provided.¹⁸

The relevance of this conclusion *vis-à-vis* commercial space activities is obvious. Although for non-commercial space activities the same consequences attach to damage and the resulting liability, it is especially for commercial activities, undertaken as they are for profit motives, that the chances of an accident occurring and the average damage resulting from such accidents should be calculated as carefully as possible, in order to discern whether the activity in question commercially speaking is indeed worth undertaking. Whether the entity undertaking activities includes liability in its calculations by earmarking some of its own assets for such occasions, or by insuring itself with an insurance company against a certain premium, does not make a fundamental difference in this respect. If it is taking no chances, it will also take care of potential obligations to pay compensation as a consequence of responsibility arising.

4. The Causation of the Damage and the Liable Entity

At the same time, the above brings us to the third aspect of liability, the entity to be identified as the one who has to compensate for the damage in question. Here, a peculiar trait of especially space law-liability becomes apparent. In municipal legal systems where liability was developed, it attaches to persons, whether natural or juridical, who could be held accountable for the occurrence of the damage because they, in actual fact, caused that damage. This is what one might call civil liability, or private liability if it is kept in mind that public entities such as states could also be held liable as long as they had in actual fact caused the damage in question. In any case, these systems of civil liability operated within a specific national state, jurisdiction and legal order.

When liability as a mechanism is transferred to the international, inter-state level, it can take two fundamentally distinct forms. The first is a simple elevation of civil or private liability to the international level, or more exactly, adding transboundary aspects to the liability of (private) legal persons. The entity actually causing the damage is still held liable in those cases of transboundary damage. This happened for instance in air law, where both with respect to liability for damage to persons and goods on board aircraft¹⁹ and with respect to liability for damage occurring on the ground²⁰ (private) carriers or operators are held liable and will have to compensate the respective damage.

These treaties essentially are treaties of private international law, obliging the states parties, where necessary, to harmonize their national legislation with respect to cases involving liability respectively to establish such legislation in line with the requirements provided for by the treaties. Only in addition, public inter-state mechanisms were created by those treaties to help that process of harmonization.

Under international space law on the contrary international liability took on the second form: an elevation of the system of liability as a whole to the international level, with the subjects of international law - the states - themselves as the liable entities.²¹ This, importantly enough, even if the damage concerned was the consequence of a partially or completely private launch activity.

The Liability Convention provides four criteria for a state to become a liable entity in respect of a certain case of damage, through the notion of "launching state": a state which launches, a state which procures the launch of, a state whose facility is used for the launch of, as well as the state whose territory is used for the launch of a specific space object are to be held liable in case that space object causes damage.²²

Under the first of those criteria, either a state or a number of states (co-)launched the space object in question - and hence are liable in case of damage - or a private entity or a number of private entities launched it - and hence no entity would be liable under this heading. *Mutatis mutandis*, the same applies to the procurement of the launch and the availability of a launch facility for the launch.

Only on the fourth criterion, focussing on the territory of the launch, by definition states could not be replaced by private entities. Thereby, through this criterion, there would always be a state which would be held liable for an (otherwise) totally private launch - the so far theoretical cases of launches from Antarctica, the high seas, airspaces or outer space left aside.

Obviously, this provision has led those few states aware of the risks of being presented with liability claims for damage which was actually privately caused, to provide some form of national legal regulation of private launches on their territories in which (partial) derogation of international liability to the private parties concerned, in order to bridge the gap between the entity legally liable and the entity actually guilty, played the predominant role.

As we will see²³, for bridging that gap several modes have been used which have a considerable impact on the commercial market especially for launching activities.

Four states have taken care to bridge that gap at all; three by means of national legislation and a fourth by means of a special legal construction. The United States has done so, as soon as truly private launch activities were made possible, by means of the Commercial Space Launch Act of 1984²⁴, which was amended in 1988²⁵, Sweden by means

of its Act on Space Activities of 1982²⁶, and the United Kingdom by means of its Outer Space Act of 1986²⁷. France has taken the somewhat different road, partially due to the special relationship of Arianespace not only with France but also with the European Space Agency, of a Declaration of 1980.²⁸

As to responsibility under space law, Article VI of the Outer Space Treaty also establishes a dichotomy between the causator of damage, as part of an internationally wrongful act, and the accountable entity, in case of private entities' activities. A state is also responsible for such private activities, as long as they are to be considered national activities of that state. Here arises the much discussed question of which state is the "appropriate state", as the state whose "national activities" are at issue.²⁹

On the other hand, private entities would only become involved on this issue to the extent their states have considered themselves "appropriate states" and consequently have taken care to include the consequences of international responsibility in their national regulation.

Another important aspect of the system of public international liability in space law from the commercial point of view concerned the focus of liability on launching. A state would be liable because it would be considered a launching state of the space object causing the damage - even if the damage was not caused by or during the launch activities, but for instance by operational activities in respect of a satellite that had been launched years before. Especially in view of the recent but growing practices of selling or leasing satellites in orbit³⁰, the result is that by contract the sellers and lessors had to take care, and indeed took care, that their potential liability (whether directly under international space law, if they were states, or indirectly through national legislation, if they were not) would be derogated to the buyers and lessees.

5. The Victimized Entity and the Right of Claiming

Mirrorwise to the third question, the fourth one becomes to what extent under international space law private entities or private persons are allowed to claim if they have been the victims of damage, or whether here again a truly public system has been chosen, potentially differentiating between actual victim and entity allowed to claim.

While the Liability Convention leaves open the possibility for private legal persons to claim in certain national courts under national laws³¹, it does not add anything in this context itself - unlike for instance the air law conventions on such topics³², which at least enlarge the possibilities for claiming by private entities and obliges states parties to open up these venues if they did not already exist.

The Liability Convention itself establishes only the possibility for states to claim even if the damage was partially or completely suffered by private entities.³³ Private entities are therefore dependent upon primarily the state whose nationality they have, if they feel it appropriate or beneficial to have their claims asserted on the international level as it is dealt with by the Liability Convention, and ultimately therefore upon the importance such a state attaches to the private interests involved in comparison with the public interests of the state itself, in terms of external policies or general economic interests.

On the other hand, once such a state is actually willing to take up such a claim, it is clear that the chances of having it honored might be considerably enlarged, in view of the practical problems of suing privately in a foreign court under foreign law, and the political weight of the state which is then behind the claim.

In conclusion, to an entity interested in undertaking commercial space activities, it is therefore important to establish to what extent it would be supported by especially its state of nationality, in case its space object is damaged by a foreign space object; which is the situation pertaining to damage of primary importance to space enterprise.

6. The Mechanism to Deal with Liability Claims

The aforementioned problems with the potential differentiation of actual victim and legal claimant already points forward to the fifth point of interest, the actual mechanism chosen by space law for dealing with liability claims. It is a very appropriate solution for a public liability document such as the Liability Convention, but thereby suffers from similar disadvantages from the point of view of private commercial entities while enjoying similar advantages.

Under space law, while reiterating the basic public international duty to first undertake diplomatic negotiations in order to arrive at a settlement of the claim,³⁴ the parties can, if these diplomatic negotiations do not achieve a successful conclusion, establish a Claims Commission as a special mechanism to solve the issue.³⁵

How this mechanism works, has been elaborated upon several times,³⁶ but since it has never been actually been set into operation - the only international claim for damage, in the case of the famous Cosmos-954, was solved without explicit reference even to the Liability Convention as a whole³⁷ - the advantages and disadvantages of this system for private persons and commercial entities so far remain theory. It would most probably be a long process, drawn out over many years³⁸, which thereby places a heavy burden on any commercial undertaking involved.

7. The Relationship between the Entity Liable for the Damage and the Entity Entitled to Claim the Compensation

As the sixth aspect one should now have a closer look at a very important dichotomy with respect to liability, relating to the legal situation in which the damage takes place. This specifically concerns the relationship between the causator of the damage, or rather the entity held liable for it, and the victim of the damage, or rather the entity allowed to claim compensation for it.

This relationship can be of two kinds. Either it is explicit and already in existence at the time the relevant accident leading to damage occurs, whence that relationship is only given additional weight by the fact that damage has occurred within its framework. Or it is implicit and solely based precisely on the fact that one party is the causator of the damage sustained by the other party. In law, the latter relation is translated into that of the liable entity with the entity entitled to claim compensation, obviously a legal relationship which in space law does not cover the factual relation to the extent the entities involved as causator or victim are not states themselves.

As it had originally been developed within municipal legal systems, in the first type of cases the damage occurs in the course of an activity usually either explicitly or implicitly undertaken under a contract or agreement between the causator and the victim. This contract liability in a principled sense coincides with the inter party liability which presently is at issue in various United States court cases between participants in space activities, some of which are private.³⁹

From a legal point of view, in general dealing with inter party liability is a matter of the freedom of parties to contract between themselves. Whether fault or strict liability is decided upon to apply between parties, whether an inter party waiver of liability is included in the contract⁴⁰ or rather a very uneven division of liability⁴¹, both national legal systems and certainly international law do not infringe upon this freedom to contract, other than provide some framework conditions for the purpose of protection of the general interests of society and the public at large. International space law also does not oblige states to take any action in that respect. Even states are therefore *inter se* free to conclude any inter party liability arrangements in their commercial agreements on space activities.⁴² Interestingly enough, in some of the court cases mentioned before, the fundamental dispute was about the extent and the applicability of the freedom to contract, as much as about the evaluation and contents thereof.⁴³ It was questioned whether certain actual events between the parties to the relevant contracts related to space activities, were covered by the terms of that contract, or whether they essentially took place outside of that contract. In the latter case, conceptually speaking it

would almost amount to a case of third party liability, with one of the partners in the space activity concerned somehow in the role of the innocent and unknowing victim (namely by tort) of damage which was on the other hand somehow related to these space activities.

Of course, we have arrived here at the general issue of third party liability, presenting the second type of liability, where the damage conceptually speaking is caused to an innocent and unknowing bystander. Protecting *his* interests clearly is a public matter, to be taken care of preferably by legislative means, since by definition such bystanders could not protect their interests themselves by contract or otherwise. Usually, this sort of liability in municipal systems is equated to tort liability.⁴⁴

Hence, this is also the type of liability which a public legislative document such as the Liability Convention basically deals with, as one can discern from the way the Convention is structured. Damage on the earth or to aircraft in flight is covered by the Convention to the extent a space object of another state is the cause thereof⁴⁵, and similarly as to damage occurring in space itself, only damage of one space object caused by another falls within the scope of the Convention⁴⁶.

An interesting point in this regard is that the Liability Convention to some extent, despite the foregoing evaluation, does make a distinction related to the dichotomy between inter party and third party liability. By distinguishing between damage caused on the earth or to aircraft in flight and damage caused to another space object, and providing for a much stricter regime in regard of the former when compared with the latter⁴⁷, the Convention explicitly makes a distinction between truly innocent victims who could never have known the risks they were running and hence could never have taken factual or legal action to protect themselves against such risks, and entities which, although innocent parties strictly from the point of view of the accident causing the damage, at least undertook space activities while they were generally aware of the risks such activities entailed.

It is on third party liability also, that the Liability Convention at least strongly presumes a national 'filling in' of international liability rules for private entities, wherever relevant. Thus, indeed, the United States⁴⁸, Sweden⁴⁹, the United Kingdom⁵⁰ and France⁵¹ have each in their own way done just that.

For (private) commercial enterprise however, it has already become apparent that third party liability is a rather theoretical issue so far. It is on inter party liability questions, that companies' interests have already several times been at stake. It is on those aspects that a number of disputes have already reached courts or arbitral tribunals, notably in the United States.⁵² It is also for those reasons, that the national regulations in existence have, so to

speak on their own accord instead of as a direct consequence of international obligations arising under the Liability Convention, also taken some measures in respect of inter party liability - especially the United States.⁵³

8. The Character of Liability

This brings us logically to the seventh aspect of liability, the character of liability. On third party liability, the essential dichotomy is that between fault liability and absolute liability. The Liability Convention makes this differentiation very clearly, providing for absolute liability in case of damage sustained on the earth or by aircraft in flight, and for fault liability in case of damage inflicted upon another space object, its component parts or people present on board.⁵⁴

Generally speaking, more terms have been coined with respect to the potential character of liability than just the two mentioned in the Liability Convention, such as strict liability or risk liability. Nevertheless, the first essential distinction to be made is between a kind of liability for damage which applies irrespective of fault, and a kind of liability for damage which applies only if fault could be proven.

A subsequent issue arises as to *whose* fault should be proven, that of the liable state or that of the actual causator of the damage in case the latter is a private entity. To the extent fault does determine liability in space law, the logical conclusion should be that it is the fault of the causator which counts; once that is established, the state liable as a launching state can not disculpate itself by arguing lack of fault on its own part - or, in other words, by claiming to have taken due diligence.⁵⁵ It is a launching state, and hence it will have to pay. It could be added, that with responsibility it works the same way: once one is an appropriate state, one is responsible.⁵⁶

Only then, further distinctions come into play as to whether absolute liability is indeed absolute, or can be escaped from under certain exculpatory circumstances, to be proven by the party invoking such exceptions to liability⁵⁷, or as to whether there rather is a fault liability at issue with a reversed burden of proof⁵⁸.

On inter party liability on the other hand this dichotomy between absolute and fault liability in practice logically is not important any more. Usually, a third option is chosen, that of a waiver of liability with each party taking its own losses. The only realistic alternative here would be fault liability - which the Liability Convention provides with respect to intra-space damage - since otherwise both parties could end up paying for each other's damage, with the larger damage of the two getting the larger compensation rather than the lesser fault. Only when the question arises, in disputes arising from inter party liability issues where damage is

concerned which is sustained within a relationship of two or more participants to the same activities, whether the actual instance of damage did not rather present a case for third party liability, the issue of fault *versus* absolute liability again raises its head. Nevertheless, since the Liability Convention does not deal with these matters, it remains a matter of national tort (and/or contract) law to decided thereupon.

9. The Compensation Itself

The ultimately interesting issue for especially private entities undertaking space activities for commercial purposes of course is the eighth aspect of liability: the actual compensation to be paid once the liability claim is found to be justified. For this is what entities should insure themselves against, if national or international law allows claims to be laid at their doorstep. This is especially important for space activities in view of the extraordinary risks they still entail, both in terms of chances that accidents resulting in damage might occur, and in terms of chances that such damage might be of a catastrophic magnitude.

The most obvious point here is the question whether compensation is unlimited or limited, and in the latter case, what those limits are and how they are applied. In space law, the Liability Convention proceeds from the idea of unlimited compensation. Space damage in principle is to be compensated to the full no matter how extensive it is, for the compensation "shall be determined in accordance with (...) justice and equity, in order to provide such reparation in respect of the damage as will restore the [entity suffering the damage] (...) to the condition which would have existed if the damage had not occurred"⁵⁹. Only those considerations of justice and equity may in first instance mitigate the duty to pay compensation otherwise only limited by the extent of the damage itself.

In second instance, another relation between the character of liability and the question of limitations becomes apparent in the Liability Convention, mitigating the extent to which compensation is only limited by the extent of the damage. In the cases where fault liability is to be applied namely the Convention requires compensation of the damage only to the extent of the fault - not to the extent of the damage. Still, there is no absolute or flexible cap posed in an objective and general manner; only the circumstances of the case can *ad hoc* determine the ultimate compensation to be paid.

Here the special circumstances in which fault liability is applied by the Liability Convention play a crucial role. Fault liability applies to damage occurring in outer space - which means: between two (or more) space objects. As already alluded to, this almost amounts to a case for inter party liability, at least conceptually, and the question concerning liability here could therefore be

rephrased as: is one party at fault, can only one party be accused of knowledgeable wrongful or reckless behaviour or even wilful misconduct - in which case the damage sustained by that party goes uncompensated and the damage sustained by the other party is to be compensated to the full - or can both parties be accused of faulty behaviour, and if so, to what respective extent, since that would supposedly then define the extent to which one party's damage would be compensated by the other party.

As the most important issue in the 'filling in' operation, all national legal regulations so far have taken care to bridge the gap on this issue as well - be it in different ways and to a different extent. Under the original Commercial Space Launch Act⁶⁰, the United States made for unlimited derogation of any international claim; it was only by the 1988 Amendments that the United States government provided, in order to stimulate private launch activities, a sort of flexible, and not really unequivocal cap on liability on the national level⁶¹.

In France, by means of the Declaration a simple cap of FF 400 million was put on the potential extent to which Arianespace would have to reimburse the French government.⁶² In Sweden and the United Kingdom on the other hand, no cap on liability was imposed nationally; the system of unlimited compensation under the Liability Convention was squarely transferred from the international to the national level.⁶³

All this, of course, concerned third party liability. Since on inter party liability states had full discretion to devise their own inter party liability systems, the extent of national divergence is at least as large as it is on third party liability. In the United States, while other cases of inter party liability were considered to fall under the inter party waiver clauses of the Commercial Space Launch Act as amended in 1988⁶⁴, the special cases where the government was involved as one of the parties were ruled by a different system⁶⁵.

The 'partnership' between France, other ESA member states and Arianespace with regard to the latter's launchings has been dealt with differently - as far as can be detected at this stage. The Declaration provided for Arianespace to have "financial responsibility for maintaining in good operational order the assets made available to it".⁶⁶ In Sweden and the United Kingdom the authorities have been left the discretion to decide in actual cases of applications for licenses upon full and unlimited compensation also of the government, while no rules on other cases of inter party liability were included - mainly because there was no *de facto* need.⁶⁷

10. Concluding Remarks

By means of the above survey of eight paramount aspects of liability at the same time a first survey has been achieved of the problems arising when it comes to liability for commercial space activities. While doing so, moreover, a few special problems related to for instance the issue of responsibility have been highlighted.

In over-viewing these summary analyses, one other general red thread may strike the eye. While commercial space activities are often, implicitly or explicitly, equated to private space activities, from a practical point of view this does not hold true. Space activities for commercial purposes can just as well be undertaken by public entities, such as ministries or special agencies and government institutions, as private entities.

Nevertheless the same regime of liability applies to both sorts of commercial activities; a difference only exists to the extent that with public entities the liable entity is more or less the same as the causator, whereas with private entities the causator in law is rather covered by a different entity being liable. The question therefore becomes what the importance is of the distinction in legal terms between public and private entities for an analysis of liability. This relevance is actually contained in the term 'level playing field', meaning a free market environment where all competitors (the 'players') operate under equal conditions.

While liability at first sight seems to present such equal conditions as between private and public commercial undertakings, its consequences turn out to be different when it comes to the actual situations prevailing.

The role of launching and its relation with liability provides the background to this red thread. For commercial entities, not only in a legal sense but also in an actual sense launching is the focal element of all space activities. Apart from the many aspects of liability directly related to launch activities, the fact that every true space activity involves space objects to be launched lends additional importance to the existence of the global launch market, whether liberalized or very regulated or restricted.

Not accidentally therefore, one of the major problems of global commercial space activities dealt with at the political level is precisely that global launch market. Basically, at the moment two market- and private enterprise-oriented political forces, the United States and Europe, whatever its precise outline, are at odds with two formerly or presently communist, but at any rate not privately oriented economies, those of the Russian Federation (in conjunction with Kazakhstan) and the People's Republic of China.

The ultimate shape which the global market will take, obviously will be the outcome of political/economical rather than legal considerations, if a globally level playing field is to be strived after. This in its turn also applies more generally to other space markets as such as well, be

it that for liability the link with the launch remains an umbilical cord. On the issue of liability then already a few aspects can be noted which so far obstruct the establishment of any level playing field, both nationally and internationally.

Take the choice between so-called self-insurance or veritable insurance, for example. Maybe in practice those commercial entities which are public, and hence ultimately could lean on public treasuries as the deepest pockets around, alternatively on government's power to pressure partners in space activities into accepting weightier liability obligations, might tend to prefer to take chances, whereas private entities involved in commercial activities, if such liability applies to them, might rather choose insurance - as long as commercially reasonable in terms of premiums - than bet the company.

As soon as public and private entities turn out to compete in the same commercial market, distortions may arise due to such inherent (quasi-)financial advantages in relation to the actual consequences of liability of the public entities among the competitors. This, both with regard to preliminary arrangements (self-insurance against third party liability does not require payment of premiums!) and regarding the situation when it comes to the actual payment of damages.

Mirrorwise, the distinction between public and private entities on the point of state support in case of damage sustained by foreign space activities may also play a certain role with respect to the level playing field in a certain market. It is an undoubted advantage for a public entity, if and when it can more easily draw upon government support to assert its claims than a private entity - or even, if the claims themselves fail, draw upon direct financial government support as a substitute. Thus, also in respect of the actual operation of the mechanism dealing with liability claims under the Liability Convention, public entities involved in commercial activities may enjoy similar advantages of state support in utilizing the possibilities of diplomatic negotiations or Claims Commission.

That states are left free to conclude *inter se*-arrangements on inter party liability, speaking from a purely commercial point of view, might also threaten the level playing field for at least launch activities, globally speaking. After all, the freedom to contract for private parties still depends upon the parameters provided thereto by whatever national legal system they happen to belong to.

Where to a certain extent the important question for (private) commercial entities with respect to regulating liability is more one of regulating inter party liability, it might be that a global level playing field calls for internationally harmonized standards of inter party liability along the lines of the Warsaw Convention and the related treaties - especially since in the relevant fields relatively speaking still so many public entities are involved. Once more, the question ultimately arises therefore as to the desirability of a global level playing field

for launch activities, and hence indirectly for all space activities, and the importance therefore of harmonized inter party liability arrangements on the national level, as much as third party liability arrangements. Providing an answer to that question, however, is beyond the scope of this paper.

Notes:

1. *Black's Law Dictionary*, 5th ed.(1979), 823.
2. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (hereafter Outer Space Treaty), of 27 January 1967, 610 UNTS 205, 18 UST 2410. See Art. VII for the concept of liability.
3. Convention on International Liability for Damage Caused by Space Objects (hereafter Liability Convention), of 29 March 1972, 961 UNTS 197.
4. See Art. VI.
5. Cf. also the pertinent remarks of K.H. Böckstiegel, *Commercial Space Activities: Their Growing Influence on Space Law*, 12 *Annals of Air and Space Law* (1987), 182, 187-8.
6. Cf. e.g. the formulation of Art. VII, Outer Space Treaty; full title and Artt. II, III, IV, V, Liability Convention.
7. Art. I(a), Liability Convention.
8. See Inter-Government Agreement on the Permanently Manned Civil Space Station (hereafter IGA), of 29 September 1988, *Manned Space Stations - Legal Issues* (1990), ESA SP-305, 147, Art. 16(2.c). Of course, with the recent addition of Russia as a partner, the status of the IGA is even more unclear than it already was. See further e.g. T.L. Zwaan & W.W.C. de Vries, *Liability Aspects of the International Space Station Agreement of 29 September 1988*, in Proceedings of the Thirty-Second Colloquium on the Law of Outer Space, Malaga, 11-15 October 1989 (1990), 445-50; A.J. Young, *Law and Policy in the Space Station's Era* (1989), 156-64; J. Reifarth, *Rechtliche Aspekte des Übereinkommens über die Internationale Raumstation*, 38 *Zeitschrift für Luft- und Weltraumrecht* (1989), 47-8.
9. Cf. e.g. the 'damage' consisting of violation of the sovereignty of Canada by means of the

sinking of a Canadian-registered vessel by the United States coast guard in the famous *I'm Alone*-case, 3 RIAA 1609 (1935); also M.N. Shaw, *International Law*, 3rd ed.(1991), 496-7.

10. Cf. Art. VII, Outer Space Treaty; Art. II, III, IV, Liability Convention.
11. See e.g. *Space News*, 3-9 October 1994, 18.
12. See II-2 Y.B. Int'l L. Comm'n 14 (1978), and the title of the ILC Draft: "International Liability for the Injurious Consequences Arising out of Acts Not Prohibited by International Law". Cf. also e.g. N.L.J.T. Horbach, *The Confusion about State Responsibility and International Liability*, 4 *Leiden Journal of International Law* (1991), 47-74.
13. Cf. the ILC's "Draft articles on State responsibility", of which Part I has already been accepted unanimously by the General Assembly of the United Nations; II-2 Y.B. Int'l L. Comm'n, UN Doc. A/35/10/1980.
14. See e.g. E. Jiménez de Aréchaga & A. Tanzi, *International State Responsibility, in International Law: Achievements and Prospects* (1991), 348-9; K. Zemanek, *Responsibility of States: General Principles*, 10 *Encyclopedia of Public International Law* (1987), 363-5; Horbach, 49.
15. Art. VI, Outer Space Treaty.
16. Art. III, Outer Space Treaty.
17. Specifically on space law, to my knowledge no further elaboration of the operation of responsibility as a principle once it has arisen has taken place. Cf. on general public international law e.g. *Chorzow Factory*-case, PCIJ, Series A, no. 17, 1928, 29; further e.g. Jiménez de Aréchaga & Tanzi, 367-76; I. Brownlie, *Principles of Public International Law*, 3rd ed. (1979), 457-64; Shaw, 85, 481-502.
18. Art. XII, Liability Convention.
19. See e.g. Convention for the Unification of Certain Rules relating to International Carriage by Air (hereafter Warsaw Convention), of 12 October 1929, 137 LNTS 11; also I.H.P. Diederiks-Verschoor, *An Introduction to Air Law* (1993), 55-102.
20. See e.g. Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface (hereafter Rome Convention), of 7 October 1952, Shawcross & Beaumont 2 (A 130); also Diederiks-Verschoor, *Introduction*, 125-49.

21. See also H.A. Wassenbergh, *Principles of Outer Space Law in Hindsight* (1991), 22-31; P. Malanczuk, *Die Haftung für Raumfahrtschäden nach Völkerrecht*, in *Handbuch des Weltraumrechts* (1991), 756-7, 772; I.H.P. Diederiks-Verschoor, *Comparison Between Air Law and Space Law Concerning Liability for Damages Caused by Aircraft and Space Objects*, 28 *Zeitschrift für Luft- und Weltraumrecht* (1979), 386-9.
22. See Art. I(c), Liability Convention.
23. *Infra*, para. 9.
24. Publ. L. No. 98-575, 98 Stat. 3055, 49 U.S.C. app. sec. 2601 (1982). See further V. Kayser, *An Achievement of Domestic Space Law: US Legislation of Private Commercial Launch Services*, 16 *Annals of Air and Space Law* (1991), 353-71; P.D. Nesgos, *Commercial Space Transportation: A New Industry Emerges*, 16 *Annals of Air and Space Law* (1991), 397-403.
25. Publ. L. No. 100-657, 102 Stat. 3900, 49 U.S.C. app. sec. 2601 (1982). See further Kayser, 371-6; Nesgos, 403-15.
26. See e.g. J. Reifarh, *Nationale Weltraumgesetze in Europa*, 36 *Zeitschrift für Luft- und Weltraumrecht* (1987), 5; text at 11-2.
27. See e.g. Reifarh, 6-7; text at 12-6.
28. Declaration of Certain European Governments Relating to the Ariane Launcher Production Phase (hereafter Declaration of 1980); text in 6 *Annals of Air and Space Law* (1981), 723 ff. This Declaration is closely linked moreover to a Convention between ESA and Arianespace. See further M.G. Bourély, *La Production du Lanceur Ariane*, 6 *Annals of Air and Space Law* (1981), 293 ff.
29. See on the discussion of the definitions of "national activities" and "appropriate state", as mentioned in Art. VI, Outer Space Treaty, e.g. Wassenbergh, 23-28; B. Cheng, *The Commercial Development of Space: the Need for New Treaties*, 19 *Journal of Space Law* (1991), 36-40; K.H. Böckstiegel, *Reconsideration of the Legal Framework for Commercial Space Activities*, in *Proceedings of the Thirty-Third Colloquium on the Law of Outer Space*, Dresden, 6-12 October 1990 (1991), 5.
30. See e.g. *Space News*, 22-28 March 1993, 8; *Space News*, 19-25 July 1993, 30; S. Chenard, *Lean Times for France?*; 8-5 *Space* (Oct.-Nov. 1992), 26.
31. Cf. Art. XI, Liability Convention, referring in this respect to the courts of the launching state or states.
32. Cf. e.g. Warsaw Convention, Art. 28(1); Rome Convention, Art. 20(1).
33. Cf. e.g. Artt. III, IV, but especially Art. VIII, referring to respectively the state whose nationals suffer the damage, the state on whose territory the damage is suffered and the state of permanent residence of the victims suffering the damage.
34. See Art. XIV, Liability Convention.
35. See further Artt. XIV-XX, Liability Convention.
36. See e.g. K.H. Böckstiegel, *Beilegung von weltraumrechtlichen Streitigkeiten*, in *Handbuch des Weltraumrechts* (1991), 806-8.
37. Cf. also Böckstiegel, 807-8.
38. Cf. already Artt. X, XIV, Liability Convention, allowing for periods of one year of inaction or lack of result before a next stage in the procedure could be entered into.
39. E.g. *Martin Marietta versus INTELSAT*; see e.g. T.L. Masson-Zwaan, *The Martin Marietta Case or How to Safeguard Private Commercial Space Activities*, in *Proceedings of the Thirty-Fifth Colloquium on the Law of Outer Space*, Washington, 28 August-5 September 1992 (1993), 239-47; Nesgos, 415-20.
40. Cf. e.g. Art. 17(5) of the contract of *Martin Marietta with INTELSAT*; see Masson-Zwaan, 240-1; Nesgos, 417.
41. Cf. the way in which United States government participation in private launch activities had been regulated in the Commercial Space Launch Act of 1984, where the Secretary of Transport could "establish requirements for liability insurance, hold harmless agreements, proof of financial responsibility, and such assurances as may be needed to protect the United States and its agencies and personnel from liability, loss, or injury as as result of a launch or operation of a launch site involving Government facilities or personnel"; Sec. 15(c).
42. See as an example the very extensive inter party waiver of liability included in the IGA on the international space station-to-be, in Art. 16.
43. Cf. again *Martin Marietta* as discussed by Masson-Zwaan, 240 ff.; Nesgos, 416-9.
44. See e.g. *Black's Law Dictionary*, 1335: tort is a "private or civil wrong or injury, other than breach of contract".

45. See Art. II j^o Art. VII, Liability Convention.

46. See Art. III, Liability Convention. Artt. IV and V provide for similar arrangements in cases of more than one launching state involved in the damage.

47. Namely that of absolute liability respectively fault liability. See also *infra*, para. 8.

48. Cf. Kayser, 372; Nesgos, 405-7; on Sec. 16, Commercial Space Launch Act as amended.

49. Cf. Reifarh, 5; on Sec. 6, Act on Space Activities.

50. Cf. Reifarh, 7; on Sec. 10(1), Outer Space Act.

51. Cf. Bourély, 307; on Artt. 3(8), 4(1), Declaration of 1980.

52. See again the Martin Marietta case; but also Appalachian Insurance versus McDonnellDouglas ; see on the latter e.g. Nesgos, 413-5; P.L. Meredith & G.S. Robinson, *Space Law: A Case Study for the Practitioner* (1992), 276-9.

53. See Sec. 16 of the Commercial Space Launch Act, amended version.

54. Artt. II resp. III, Liability Convention.

55. Cf. on this general principle of public international law e.g. Jiménez de Aréchaga & Tanzi, 360.

56. See Art. VI, Outer Space Treaty.

57. Cf. e.g. also Art. VI(1), Liability Convention.

58. E.g. Warsaw Convention, Art. 20(1).

59. Art. XII, Liability Convention.

60. See Sec. 16.

61. Sec. 16 of the Commercial Space Launch Act as amended provided for a flexible cap to the extent that the Secretary of Transport had 1^o to determine the maximum probable loss in respect of a specific space activity, which would provide the *prima facie* cap; 2^o to establish whether insurance would be available for such a maximum probable loss at reasonable prices, and if not, readjust the cap to the level where insurance would be available at reasonable prices; and 3^o if the cap arrived at under 1 and 2 would exceed US\$ 500 million, nevertheless establish a cap of that amount. Furthermore, the Secretary of State at its own discretion could deviate from the foregoing in the direction of further lowering the insurance- or financial responsibility-requirement and hence effectively establishing a cap of that amount. Thus, for example, amounts have

been quoted of US\$215 million for a Titan launch, US\$ 164 million for a Delta launch, and US\$ 10 million for an Orbital Sciences-launch; Meredith & Robinson, 367.

The cap on the other hand was not unequivocal to the extent that Sec. 16 actually provided that an amount of US\$ 1.5 billion above the cap - whatever its actual height - would not be derogated to the relevant private entity by the United States government, but simply swallowed by the latter. Apparently, however, that meant that any residual amount of compensation to be claimed over and above the cap-plus-US\$ 1.5 billion, under the existing legal order of the United States will again be derogated to the private entity in question; see Nesgos, 411; Kayser, 376.

62. See Artt. 3(8), 4(1), Declaration of 1980.

63. See Sec. 6, Act on Space Activities, for Sweden, resp. Sec. 10(1), Outer Space Act, for the United Kingdom.

64. Sec. 16(a)(1)(C); also Kayser, 372-5.

65. Under the original Commercial Space Launch Act, the United States government could claim full reimbursement of any damage suffered as a consequence of the activity in question, whereas *vice versa* essentially the private participants had to self-insure. In the amended version, the United States put a flexible cap along the lines of third party liability on compensation to be paid to the United States government, with the absolute maximum being set by Sec. 16 at US\$ 100 million.

66. Art. 3(3), Declaration of 1980. This would seem to suggest unlimited liability; but the question would not seem to be very relevant for potential other entities since the Declaration clearly is a singular regulation dealing explicitly with Arianespace only; in contrast to the United States' national environment where a number of private launch servicer providers have already been stimulated politically also to start operations.

67. Sec. 3, Act on Space Activities, for Sweden; Secs. 4, 5, Outer Space Act, for the United Kingdom. In the absence of any political stimulation of private launch activities, not mentioning anything specifically on caps of liability would effectively amount to establishment of unlimited compensation.