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LIABILITY VERSUS RESPONSIBILITY IN SPACE LAW: MISCONCEPTION OR MISCONSTRUCTION?

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Abstract

The relation between the two legal notions of 'responsibility' and 'liability' in space law has never been dealt with in a comprehensive fashion. The paper sets out to do this, although the problem turns out to be too complex to really realize that goal. First it goes back to those notions as they are dealt with in general international law, where their relation has indeed been a topic for discussion and research. The notions are analyzed with three key concepts as guidelines: the indispensable criteria for each of the notions to become applicable; the role of 'due care' as a special problem regarding attributability in each of the two cases; and the consequences once the respective notions are found to be applicable.

This analysis leads to the conclusion, that the traditional construction of the two concepts in general international law is a misconception. The International Law Commission's efforts at redefinition of the concepts indeed manages to avoid this misconception, however, at the cost of creating a misconception.

Transferred to space law, analysis of the two notions along the same lines leads to the conclusion that here the traditional construction is followed, with only a minor improvement relating to the 'due care' concept. The consequences of this misconception are then indicated, and claimed to be not merely of theoretical and academic importance. On the other hand, it is argued that application of the ILC's misconception to space law would not solve those problems either. For these reasons finally a much more simplifying option is proposed, which would mean, however, in space law as well as in general international law, a radical change, or rather amendment to the existing rules in those respects, read Articles VI and VII of the Outer Space Treaty as to outer space.

1. Introduction: responsibility vs. liability?

'Responsibility' and 'liability' are two important terms in international law pointing to two fundamental principles; space law does not differ in this respect. Thus, Article VI of the Outer Space Treaty of 1967,¹ the Magna Charta of space law, speaks of the international responsibility of states for national activities in space to be in conformity with the treaty, and another article, Article VII of the same treaty, of the liability of states for damage towards other states or their nationals or property. The two principles seem nicely divided, no link or relation established, no trouble arising.² Thus, if states fear that they run a risk of having to pay as a consequence of some space activity under their authority having gone wrong, they take a careful look at Article VII and the ensuing Liability Convention³, and that would seem to suffice.

On closer look, however, the two principles seem far less completely and clearly independent from and unrelated to each other than suggested, although most authors on space law do not seem to be very

much aware of the fact - or care. Yet, already the fact that both the French and the Spanish languages - after all, both authentic languages as far as the Outer Space Treaty is concerned⁴ - have only one term for the two notions ("responsabilité" and "responsabilidad" respectively) should warn of such carelessness.⁵ And when one considers furthermore that Article VI defines the activities for which any one state exactly can become responsible differently from Article VII's definition of the activities for which any one state exactly can become liable, and a discussion is already going on for many years about how exactly to interpret the vague definition of Article VI - in the sense of Article VII, or indeed not? - one indeed starts to wonder: is there some kind of misconception or misconstruction at play here? After all, "[a]n inaccurate use of terminology may sometimes be of but little importance, and discussion of it may be merely a quibble. But accuracy of expression becomes important when it appears that inaccuracy is due to a confusion of thought in the understanding or application of proper rules or principles of law."⁶

2. The starting point: responsibility in general international law

When analyzing the problem thus coming to life one should start with general international law. Space law is really only a *lex specialis* when compared to the much older body of general international law, being derived from it as far as practical with an eye to the peculiarities of space as a realm of law of its own. Hence, international law provides a general background to the problem of responsibility and liability as it is in regard of space law as well, and helps interpreting that *lex generalis* where it is not clear or elaborated enough. Articles I and III of the Outer Space Treaty incorporate general international law even for the larger part explicitly in the body of space law.⁷

Let us therefore first take a look at the two principles as dealt with under international law in its more earthly configuration, and especially as dealt with by the International Law Commission, the authoritative organ established by the General Assembly of the UN to codify and develop public international law.⁸ The ILC, to be sure, also wrestled with the problem already from the beginning,⁹ and decided to deal with the two topics by way of two different sets of draft articles to be developed and ultimately presented to the General Assembly as treaties ready for signature and ratification by states. The subject of state responsibility was the first to be tackled, the First Report on the subject being completed by the ILC in 1969.

Essential for the topic as it will be dealt with in regard of space law are the following three elements of the concept. State responsibility, first, means responsibility for "internationally wrongful acts"¹⁰ towards another state. The two decisive criteria for state responsibility to arise are therefore that "a breach of an international obligation of the [responsible] State" in respect of the second state has taken place, which is called 'objective fault',¹¹ and that that breach "is attributable to the [responsible] State under international law".¹² In other words, two elements which in many domestic legal systems are (additionally) indispensable criteria for defining a wrongful act do not count on the international level: the element of subjective fault or "culpa", in the sense of knowingly or even purposefully violating a rule,¹³ and the element of damage. The mere attributable breach of an international obligation, without subjective fault and without damage (whatever the exact definition and scope of that term), is already enough to incur state responsibility.¹⁴

In this respect it must be added that the question of breach of an international obligation is in each particular case to be answered by reference to the relevant legal relation between the states involved, i.e. by finding out what treaty or customary rules, and sometimes also general principles of law, do apply.¹⁵

As a second element for our analysis however, a special problem concerning the question of attributability indeed is much more relevant. A state is responsible for "acts of the state", however defined but always involving (a degree of) state authority through some state organ or another, whereas it can not be held responsible as such for acts of private persons done in a private capacity.¹⁶

The exception here is provided for by the famous principle of 'due care' (or 'due diligence') responsibility, meaning a state can incur responsibility in case of private acts taking place on its territory or being perpetrated by its national, and amounting to violations of international obligations, if the state could reasonably have prevented such acts.¹⁷ This is the logical consequence of the jurisdiction of a state over its territory (through the territorial sovereignty principle) and its nationals, natural or juridical (through the active nationality-principle):¹⁸ a duty to use this jurisdiction as far as reasonable to prevent other state's rights from being infringed.

Thirdly and finally, another important aspect of the doctrine of state responsibility must be mentioned. To be sure, the ILC has not yet finished the part of its Draft articles dealing with this aspect, which deals with the consequences of state responsibility once it has arisen. Instead therefore we must summarily look at customary law as it has developed to a great extent in this field, and numerous judgements of courts and tribunals. Most famous among the latter of course is the Chorzów Factory Case, decided by the PCIJ in 1928.¹⁹

A breach of an international obligation incurring state responsibility according to customary law and jurisprudence can be repaired (the Chorzów Factory judgement speaks of "reparation") theoretically in three ways.²⁰ The first and most logical way is that of restitutio in integrum, i.e. of undoing the wrongdoing and restoring for the full 100% the preexisting situation. If restitutio in integrum is considered impossible (for instance, if damage has arisen as a consequence of the breach which turns out to be irreparable, such as the death of nationals) or senseless (for example in the case of nationalization of foreign assets), compensation, usually in monetary form, is an accepted substitute. That compensation is conceptually a substitute is clear from the fact that compensation-in-full should in fact be of such value as to equal the value of the damage done: compensation therefore being in a sense not restitutio in integrum in actual value but in theoretical, monetary value. The third form of reparation finally is satisfaction, for instance by way of official apologies. This kind of reparation is especially relevant in cases where no material damage has occurred as a consequence of the breach, such as by the mere intrusion of foreign aircraft in the sovereign airspace of another state.

3. The confusion: liability in general international law

Then as to liability in general international law. Here, immediately confusion starts, already with respect to the term itself taken in isolation.²¹ The term 'liability', just as the term 'responsibility', is an age-old term; in contrast however to (state) responsibility, liability is derived for a large part from domestic legal orders. Perhaps this already accounted for this first measure of confusion. An almost uniform element however could at least be found in the close relation of liability to the concept of damage.²²

Consequently, also international liability is closely related to damage; the ILC's Draft articles as they are being developed on this topic starting from the First Report of the ILC presented in 1980, only confirm this. Here we arrive at the first fundamental element of definition also dealt with in respect of international responsibility and find it to be radically different here, for damage is on the contrary indeed an indispensable criterion for liability to arise - as can already be deduced from the provisional title of the ILC's Draft articles,²³ but also from the numerous other treaties in international law dealing with liability.²⁴

Damage however, although not an indispensable criterion for responsibility, is far from unimportant in that concept, and it is here that more confusion arises due to the resulting partial overlap with

liability. An internationally wrongful act namely can lead to damage or consist itself of the causing of damage,²⁵ in other words and in actual fact, damage is most often an important element in defining existence of an internationally wrongful act. Thus, in cases of acts by one state causing damage to another state, its nationals or its property, both principles can become involved at the same time, with all due consequences. This became already clear in cases of transboundary environmental pollution, where the causation of damage or harm through pollution to another state's territory (and not the actual activity causing the harm) was the quintessence of the violation of an international obligation not to do so.

The ILC evaded this problem by moving towards a definition of liability where the concept of liability would only apply for damage arising out of acts not in violation of international law, excluding any overlap.²⁶ The element of breach, of objective fault, which had to be present in the case of responsibility, had to be absent in order to invoke liability. In a negative way, breach thereby became an indispensable element of liability also. As under 'traditional' liability the question of breach had been irrelevant, the ILC seemed to act clarifyingly by thus nullifying the overlap.

At the same time however another kind of confusion is actually created by this drawing of a firm borderline. For in that case, damage in case of an internationally wrongful act would be dealt with under the law of state responsibility, and damage in other cases by liability, whereas it is often very hard to precisely determine whether damage would be allowed if paid for (i.e., a case for liability) or whether damage would be illegal and this illegality would have to be redeemed by paying for it (i.e., a case for responsibility).

It becomes a matter then of how the obligation in dispute was exactly phrased, and the point is that one can phrase almost every obligation both as: you are allowed to do it, provided you pay for it, and as: you are not allowed to do it, so if you still go ahead, you'll have to pay for it. Are semantics to fulfil such a central role here?

Here we have already entered into discussion of the third element of analysis, concerning the consequences of liability when compared to responsibility. Whereas state responsibility theoretically can be redeemed in three different ways, (international) liability knows only one kind of redemption: payment of compensation for the damage.²⁷ Liability thus, in contrast to responsibility, was seen as a primary obligation under the ILC's definition, arising without need for a (prior) violation of a(nother) primary rule of international law, and being instead the simple consequence of damage.²⁸ The consequence of liability thus was, as simply, the duty to wipe out the liability itself, by repairing the damage.²⁹

The borderline drawn by the ILC between liability and responsibility, by means of defining them as primary respectively secondary obligations, however, is purely artificial. If the primary obligation, to pay for damage under liability-rules, would not be fulfilled, the secondary obligation to repair for this wrongful act of non-fulfilment of an international obligation to pay would come into play - logically consisting of a duty to pay for the damage by way of monetary compensation! Compensation could include so-called punitive damages,³⁰ whereas these would be excluded under liability because there would have been no violation of an international obligation which was to be punished for. At what point furthermore, in time or otherwise, the primary obligation becomes the secondary obligation, unless specified in treaties on liability,³¹ can only be a matter of arbitrariness.

An extra complication could moreover arise if damage would mean different things under the two different principles, in the sense e.g. of including or excluding immaterial or indirect damage. All in all, the ILC thus perhaps manages to prevent the confusion of liability and responsibility, however at the cost of having two clearly different concepts whose alternative application depends on a non-existing borderline and is thereby far from clear.

Finally the second element of analysis as dealt with in relation to responsibility, of the special problem related to attributability,³² the question of due care obligations, must be dealt with here. In respect of state responsibility, in a sense the doctrine of due care forms a certain divergence from the general theory, perceived by the ILC as being objective; objective fault being no criterion. Here "fault or negligence becomes an element of state responsibility simply because the due care obligation itself requires negligent conduct before this obligation can be

said to have been breached".³³ Thus, "Draft Article 23 [containing the due care with respect to state responsibility] (...) embraces all sorts of primary duties in the category 'to prevent an event'",³⁴ and therefore due care is itself a secondary obligation as defined by the ILC.

When turning to liability, the ambiguity once more becomes clear. Here, due care must be seen as a primary duty to prevent harm and damage as the consequence of acts of persons under its jurisdiction - where according to the ILC the mere fact of harm arising already means that the duty has been violated, that the "care" taken was less than that was "due". That means, that even if maximum care would have been taken, as soon as damage occurred the due care obligation would have been violated,³⁵ which of course makes the use of the word "due" superfluous and hollow, and effectively turns due care liability into some kind of risk liability. Thus, it really shifts the attributability: where under the doctrine of state responsibility a state can only become directly responsible for its own acts, and due care responsible for private acts only if it failed to take due care, under the doctrine of international liability a state is obliged to pay as the liable entity, no matter whether it concerns damage arising out of its own acts or out of private acts, and even if the state in question had taken all reasonable measures in the latter case to try to prevent such damage from arising! Both state responsibility and international liability for non-state acts can concern persons as well as territory under the jurisdiction of the state in question. Therefore, the ILC's borderline is necessary to prevent overlap where responsibility, potentially leading to a duty to repair by means of monetary compensation, could be taken away when due care was proven, but where liability, potentially leading to a duty to pay for the damage, could not be excused.

At the same time of course, it suddenly makes the semantic analyses of how exactly a certain international obligation was phrased, of far from academic importance - and the fact, that the ILC's creation of a distinction by speaking of primary and secondary obligations turned out to be an arbitrary and therefore by definition non-legal distinction, a fundamental practical problem. For whether a state is according to a certain rule to be held liable for damage resulting out of a perfectly legal act (and has to pay for that damage), or to be held responsible for a breach of international law resulting in damage or itself consisting of the infliction of damage (and has to provide reparation for such damage in the form of compensation) can now make all the difference, if responsibility and liability are invoked in respect of acts perpetrated by its nationals or from its territory. The best example under international law once more is the field of environmental pollution emanating from within a certain state's territory: since the famous Trail Smelter Arbitration³⁶ the borderline between environmental harm that could be bought off and thus was allowed if only compensated for, and environmental harm that amounted to an international wrong for which compensation was due, has tend to get lost time and again during analysis.³⁷

4. The ILC's matrix: misconstruction or misconception?

The ILC's effort to use the term 'liability' exclusively for acts not prohibited as such under international law indeed draws a clear borderline between cases where responsibility was involved and those involving liability - in theory. This distinction was illustrated by the provisional title of the Draft articles on International liability as proposed by ILC Rapporteur Quentin-Baxter,³⁸ and supported by the incorporation of the rule that acts precluding wrongfulness under the doctrine of state responsibility did not thereby exclude liability for damage, damage which then must have been considered to be consequential to an act as such not unlawful.³⁹

In effect, it created a definitional matrix, which could become the new rule in respect of general international liability if the scheme is to be continued in the final draft. The matrix would build upon damage and breach as the two relevant criteria, in each case attributability really being taken for granted. An act of a state involving no breach *and* no damage would be no problem, international law would not become involved any further. A breach *but* no damage would invoke responsibility, with the reparation in any case not being of the compensation type. A breach *and* damage also would invoke responsibility, this time the reparation at least including compensation.

No breach *but* damage finally would invoke liability, with the duty to compensate as a necessary corollary.

On closer look, however, the problem turned out to only have been shifted by creation of the matrix, not solved. It remained semantics, as the precise formulation of the relevant rule would provide for the decision whether to apply responsibility or liability, which in the case of damage could lead to the same kind of obligation in terms of paying for the damage yet to different outcomes as to what damages would in the end have to be paid. At the same time, the artificial borderline drawn by the ILC between liability and responsibility turned out to be even more arbitrary itself, which of course compounded that problem. And finally, these conclusions turned out to be more than academic, as an analysis of the problem of responsibility and/or liability for non-state acts, by means of due care, made clear that under responsibility states could be exempted from paying for damage if they have proven due care to try to prevent the damage arising on the hands of their nationals or emanating from its territory, whereas under liability states have to pay for damage as soon as it arises, even if they had done their utmost to prevent it.

The ILC has thus perhaps managed to avoid the misconstruction of liability and responsibility as two overlapping concepts, without borderlines and not easily distinguishable while being presented as if they were, which creates a lot of confusion by making it possible sometimes to apply two different but intricately interlinked notions to the same case - with different and therefore conflicting results. On the other hand and at the same time, this turns out to be at the cost of the misconception that having two clearly distinguishable concepts would solve the problem as their alternative application would thereby become clear, whereas in actual fact this alternative application turns out to hinge on semantics and vague or even non-existing borderlines. The two concepts therefore could still lead to fundamentally different results in respect of cases of damage, especially as far as non-state activities would be concerned.

Damage would still need to be paid for in the case of state activities, whether as compensation for an internationally wrongful act or as consequence of established liability. Even here, however, different concepts of damage in regard of responsibility and liability respectively could lead to different results. A thorough analysis of the semantic problem (being the basis of the problems resulting from the ILC's approach), in order to conclude in each case of international damage whether responsibility or liability should take account of that damage, and which could possibly rectify the misconception, has meanwhile become impossible due to the traditional misconstruction whereby both terms have been used for decades almost interchangeably in many cases and at any rate undefined most the time, by courts and expert authors as well as by treaty-negotiating governments and treaty-making diplomats.

5. The starting point: liability in space law

Now we leave this earthbound realm and enter into the lofty arena of space law, where of course responsibility and liability are also two fundamental, much discussed principles. This time it is easiest to start analysis with liability, which is in regard of space law (and in contrast to general international law) the most elaborated of the two principles as a special Liability Convention⁴⁰ was devoted to develop the provisions of Article VII of the Outer Space Treaty.

Article VII, of course, itself provides the basis. States are internationally liable for damage⁴¹ to other States, their property or persons, as far as caused by the former States' space objects - which for our purpose may be considered for a moment as being equal to damage resulting from an activity in space. As to the necessary ingredients for space liability, this leads us to the same conclusion as in respect of international liability: damage is the only, indispensable criterion,⁴² nor breach of an international obligation (objective fault), nor subjective fault in the sense of intent or negligence are necessary to invoke liability - in respect of damage on the earth or to an aircraft to begin with.⁴³

Things at first sight seem to lie differently in respect of damage inflicted in space, to (another) space object,⁴⁴ (which means it only relates to part of the liability-under-space-law concept) where fault

seems to play a role. For liability-purposes, the assessment of relative fault on the hand of the state inflicting the damage when compared to the state whose object is damaged (and most probably the states involved are *both* victim *and* inflictor of damage) is important. It is on an altogether different level however, namely between two participants in the same business, that it becomes relevant, and it has nothing to do with a breach of an international obligation, with objective fault;⁴⁵ and in effect it also does not have therefore the impact of making subjective fault a necessary criterion. The fault meant here, is not intent or negligence in respect of a rule of international law,⁴⁶ but intent or negligence to cause damage in respect of someone else active in space; hence, it becomes relative to the fault of that other someone active in space. Fault in respect of damage inflicted in space is automatic, is a given circumstance once two space objects have created such damage, only its relative division between two (or more) space actors involved is a matter for debate; whereas the fault alluded to under the previous analysis is one that can very well be absent as a whole. It therefore actually has not the effect here of creating or denying liability, only of making a difference in regard of the consequences of liability, its division between two states involved in a space accident, once it has arisen - namely as to the amount of damage which should be compensated for in respect of each other. This liability therefore really is of another kind, constituting a sort of inter-party liability as opposed to third party liability where innocent third parties are supposed to suffer.⁴⁷

Article III of the Liability Convention is confusingly drafted in this regard, stating liability summarily to exist "only if the damage is due to its fault or the fault of persons for whom it is responsible". That could only mean, however, that in case of "shared" fault, as we are dealing here with accidents in outer space, the liability exists to the extent of the share - which really is tantamount to saying that damage to each other has to be compensated for only to the extent of the share; liability under Article III becomes a measure of quantity instead of a qualitative principle, with relative application.⁴⁸ As explained, one fault or other has to be present for the accident in question to arise; Article III divides liability according to this kind of fault among the parties involved, *it does not change the 'total' of fault or the 'total' of liability present, it only deals with how they are to be apportioned.*

Likewise, the absolute liability of Article II of the Liability Convention can be exonerated and changed into liability based on fault when, and to the extent that, it can be established under Article VI(1) that "the damage has resulted either wholly or partially from gross negligence or from an act or omission done with the intent to cause damage on the part of a claimant state or of natural or juridical persons it represents". This confirms the aforementioned conclusion of liability being used as a quantity, as this phrase effectively turns the damage-on-earth-or-in-the-air-cases also into cases of inter-party liability, the third party no longer being an innocent party. Once more, breach is not relevant for the distinction between absolute and fault-liability, not even subjective fault with regard to the breach. Only subjective fault in respect of the damage is relevant, and this by definition means that it has become relative to the fault of the other party. So, liability as a qualitative principle exists for damage, independent of breach or subjective fault; only in cases where the other party must be deemed to have been at fault, too, does another kind of fault come into play, to "divide" the liability or more accurately of course the consequences of that liability according to relative fault.

Meanwhile we have already arrived at the issue of the consequences of liability. The Liability Convention is clear in this respect: the state found liable for the damage will have to pay for it, "in accordance with international law and the principles of justice and equity, in order to provide such reparation in respect of the damage as will restore the person (...), State or international organization (...) to the condition which would have existed if the damage had not occurred".⁴⁹ This formula presupposes full compensation for the damage as the consequence of liability, which can only mean that liability indeed relates to the total amount of damage, and not to any part of it. The damage can not suddenly be less, when it turns out that fault was 'divided' between the relevant parties; so it should not be the liability which is thereby considered diminished, but the consequence of that liability.

While the use of the term "reparation" and the fact that the height of the amount to be paid for the damage is determined by what real

restitutio in integrum would cost, seem to point confusingly towards elements of state responsibility under general international law, it may safely be said for the moment that the consequence of liability for damage under space law, being solely the duty to pay for the damage, is in line with the consequence of international liability as traditionally defined by general international law,⁵⁰ where also real restitutio in integrum and satisfaction are excluded. Thus, breach or no breach of space law, if damage occurs, one has to pay for it.

Finally as to the problem of attributability in relation to due care: as only states (and international organizations) can become liable under Article VII of the Outer Space Treaty and the Liability Convention, the question arises for what kind of acts they are liable, especially for what kind of non-state acts. Much has been written about this subject,⁵¹ wherefore a summary suffices. Article VII of the Outer Space Treaty together with Article I(c) of the Liability Convention provide for a famous fourfold definition of a "launching state", which is the liable state for the damage caused by the space object in question. Only one of the four ("a state which launches") points exclusively to an act of the state, the other three could very well (partially) include non-state acts for which the launching state(s) still can be held liable.

What must be noted especially here is again the similarity to the traditional concept of international liability which on this point has been duly elaborated by the ILC's Draft. For the application of liability it makes no difference, under the fourfold definition of "launching state", whether the launch was in many aspects a private activity or completely a state affair. As soon as damage occurs, it has to be paid for, and no amount of due care taken in respect of private activities causing the damage can excuse the launching state in this respect. Once more, the term "due care" seems to be not really appropriate.

Summarizing, liability under space law has, as much as under traditional general international law, damage as its sole criterion (apart from attributability of course); neither subjective fault (culpa, intent, negligence), nor objective fault (i.e. a mere breach of law) are necessary for liability to come into play. Logically then, the two other elements of analysis do not differ either: the only consequence of liability is the duty to pay for the damage, and due care liability is not so much contingent upon due care as it is contingent upon damage. Thus, space law in regard of liability as a whole does not conform to the ILC's matrix, but rather to the traditional concept of international liability. The consequences of adhering to that misconstruction will become clear when we now turn to responsibility as it exists in space law.

6. The confusion: responsibility in space law

Of course, responsibility in space law bases itself upon Article VI of the Outer Space Treaty,⁵² which makes states internationally responsible for national space activities. The term 'responsibility' is used in this very basic principle of space law in the same sense as in general international law, as it is being codified at the moment by the ILC, because it is added that states are responsible for these activities to be in conformity with the rules of the Outer Space Treaty (and therefore to the whole body of space law which after all is an extension and elaboration of this treaty) and international law; in other words, with the *lex specialis* of space law and the *lex generalis* of public international law.⁵³

International state responsibility, in space law as much as elsewhere, therefore arises in case of activities being in violation of relevant legal obligations, those being primary obligations of (space) law.⁵⁴ It is thus dependent, to begin with, on the first criterion, that of an internationally wrongful act. Damage (as much as subjective fault) is not a criterion, although here as much as elsewhere damage is not excluded either. The overlap arising out of the misconstruction thus will already become apparent.

The second criterion necessary for state responsibility is also included in Article VI: the question of attributability⁵⁵, and thereby we arrive at our second element of analysis. This is taken care of by the formula of "national activities in outer space", whatever its precise definition; Article VI itself only speaks of national activities as being either activities of "governmental agencies" or of "non-governmental entities". It is in as far as the latter is concerned, that the question of due care responsibility arises. In deviation from the general law of state

responsibility, states here however are directly responsible for non-state activities, instead of merely due care, as no difference is made by Article VI in respect of the kind of responsibility to be applicable in the case of "governmental agencies" on the one, respectively "non-governmental entities" on the other hand.⁵⁶

This smacks of the "due care" liability, both under space and under general law, as even if the "care" taken is found "due", responsibility will not thereby cease to exist. One effect of the misconception created by the ILC's matrix, in the sense of creating a difference between due care responsibility and due care liability in this respect, at least has been prevented in space law. Neither under responsibility, nor under liability are states able to dodge a potential duty to pay for damage by claiming to have taken due care, whereby the question of whether to apply the one or the other becomes of less practical relevance. An exception, however, already exists here in respect of remote sensing activities, where international responsibility apparently only applies for state activities,⁵⁷ and classical due care should take care of non-state activities.

Nevertheless, in view of the familiarity of due care responsibility for private activities either personally or territorially emanating from within the state's jurisdiction with the responsibility arising under Article VI for activities of non-governmental activities, linked as it is to the duty of authorization and continuing supervision by "the appropriate state" implying such jurisdiction, this may help to solve the longstanding discussion on what should be read by "national activities" and "the appropriate state".⁵⁸ In this light, national activities must be deemed to encompass *both* activities by nationals, whether natural or juridical *and* activities undertaken from within the territory of the state in question.⁵⁹ Responsibility can arise for the appropriate state to the extent that those activities thus fall under its jurisdiction, for which authorization and continuing supervision as provided for by Article VI are a sort of minimum requirements.⁶⁰

This definition of national activities of course implies that in respect of a specific activity there can be more than one appropriate state - namely to the extent that jurisdictions overlap; this problem of concurrent jurisdiction however exists in general international law as well, and various methods and techniques exist there to solve it. We need not go into that problem any further, suffice it to state here that not following this line of reasoning would both seem illogical, and not solve the problems when the comparison with liability is made - if it not even leads to more problems.

For this reason we now turn to the third element of analysis, the consequences once state responsibility has arisen. Article VI itself is silent in this respect, therefore one cannot do anything else than to turn to general international law once more to look for an explanation. Here we arrive once more at the doctrine of reparation: whatever the violation of space law invoking a state's responsibility, this responsibility can only be taken care of by restitutio in integrum, compensation and/or satisfaction. What is, in any actual situation, the right form of reparation of course depends on the content of the (primary) rule violated and the extent of the violation.

One could imagine for instance that a violation of the rule that the ownership of property like a satellite is not affected by its presence in outer space,⁶¹ by capturing the satellite with a space shuttle, can be redeemed by restitutio in integrum, meaning release and restoration of the satellite to its former place (the question of potential material damage taken apart). Likewise one could imagine that the violation of the right to freely exploit and use outer space,⁶² for example by claims of the underlying state that a satellite circling at thousands of kilometres above the earth falls under its sovereign jurisdiction, should be redeemed by the third possible form of reparation, satisfaction, for example by official apologies (once more assuming that no material damage had taken place).

The crucial point is what happens if damage does arise. Satisfaction will not be enough, either restitutio in integrum, logically costing the state providing for it the full amount necessary to restore the damage, or (monetary) compensation which allows the state suffering the damage to restore that damage to the full - and thus, conceptually and theoretically, involves the same amount of money - is necessary. Thus, states could suddenly find themselves under an obligation to pay for damage under Article VI, even if they have domestically arranged for complete coverage of the situations falling under Article VII of the Outer Space Treaty and the whole of the Liability Convention⁶³ - or if

they have taken the basic 'precaution' of not signing the Liability Convention while being a party to the Outer Space Treaty.

For this latter situation to be problematic, of course it has to be presumed that the Liability Convention has not become customary law to the same extent as the Outer Space Treaty through being a more elaboration of the latter's Article VII, thus effectively turning Article VII into a mere statement of principle. That would, of course, for fairness' sake, make Article VI a statement of principle to just the same extent (and it may well be so, as the Outer Space Treaty is very often referred to also as the 'Principles Treaty'); but where Article VII and the Liability Convention would be really necessary for creating liability-rules in space, a finding that Article VI would be a mere principle could not prevent the application anyhow of the fundamental doctrine of state responsibility as developed under general international law. Thus it would indeed make a difference.

7. Conclusion: confusion or a third approach?

What that means, becomes clear when we again take into account that the misconception as it existed has been maintained in space law; the overlap has not been deleted. In other words, why is it important, for instance, that states under space law can become liable for damage arising, having to pay for it, while at the same time they can become responsible for a breach of space law involving this same damage, seemingly meaning they have to pay for it - again. Of course, the damage should not be compensated for twice, once under the heading of state responsibility, once under the heading of international liability.⁶⁴ The misconception however would seem to point exactly in that direction. If logic would prevent it nevertheless, what would then be necessary? Should one choose? Luckily enough, the problem regarding due care at least would not be important for such a choice under space law as it would have become under general international law. The field of environmental pollution will not pose basic problems in this respect; in other words, it does not matter so much whether privately caused pollution leads to due care responsibility or to due care liability.

Unluckily, however, the same does not hold good in respect of the definitions of damage. Damage regarding liability is pretty well-defined in space law;⁶⁵ damage as a component part of state responsibility for space activities however is not. It could include, in contrast to the former, other forms of immaterial damage, indirect damages, or even punitive damages. It remains important therefore to decide on application of the one or the other - and this is exactly what the misconception turns into a haphazard and arbitrary affair.

Moreover, so far we have considered only cases where damage would fall, in principle, under both categories. What, however, if the damage could arise outside of the liability-rules, yet invoking the responsibility-rules? After all, in space law the scope of the one is defined rather differently from the scope of the other, Article VI and Article VII (of course as elaborated by the Liability Convention) do not (automatically) cover the same cases. If Article VII does not completely cover all possible Article VI-cases, states may suddenly find out they have to pay compensation for damage (even if caused by non-state, private acts) on account of responsibility where they thought they covered the whole range of possibilities by heeding Article VII and the Liability Convention.

Thus, it is necessary to look once more at the definition of 'national activities' and 'appropriate state'. If the definition of 'appropriate state' would completely coincide with the definition of 'launching state' as provided for, the problem of overlap at least would have been relegated to the realm of theory.

If it were indeed to coincide however, an explanation would be necessary for the fact that 'activities' can become so remotely linked to a launching state that it would make little sense to link responsibility so directly to a launch (although the same would hold good for liability to a large extent as well); that responsibility in space law only covers activities in outer space, where liability in space law includes launchings as far as taking place on earth also (and even launchings that never really leave earth) and trajectories through air spaces following the launchings⁶⁶; that Article VI and Article VII most assuredly use different language⁶⁷; and most important, why a specific concept of liability as different from responsibility would be needed - when its cases would turn out to be almost completely covered by the other

concept. Thus, the misconception would continue in the sense of creating confusion whether to apply one or the other of two different but intricately interlinked and partially overlapping concepts to one and the same case, with potentially conflicting results as e.g. to (the amount of compensation due for) the damage. And here again the field of environmental pollution would be a special example of these problems, the borderline between damage, allowed-if-paid-for, and damage, not allowed and thus to be compensated, being indiscernible in this field.

The difference between Articles VI and VII of the Outer Space Treaty, between "appropriate state" and "launching state" was elaborated before, being based on the logical interpretation of "national activities" as arising out of general international law. In this light, it is however certainly still possible for states to *claim damages under the heading of state responsibility in cases where they can not do so under the heading of international liability*. One need not even think of future spaceplanes or space stations to which notions of 'launching' and 'launching state' may no longer be found to, or decided upon not to apply; one can think of all space activities by non-governmental entities with respect to space objects launched from launch sites outside of territory or facilities of the state to which those entities belong and without that state procuring the launch or launching herself.⁶⁸ Those activities, of course, very well fit into the notion of 'national activities'.

Therefore, perhaps the matrix of the ILC is to be preferred: liability, Article VII and the Liability Convention only becoming invoked as long as the damaging activity in itself is in conformity with international law, in other cases damage remaining to be redeemed through compensation for internationally wrongful acts. Apart from all the other difficulties with such an approach as analyzed before, once more especially the fact that the misconception that had arisen for the first time by the drafting of the Outer Space Treaty has taken root so forcefully through the Liability Convention itself, will however prevent the ILC's matrix from becoming reality. And even if that were not the case, it would make the matrix malfunctioning by creating misconceptions, as the borderlines between application of the one or the other principle would depend on semantics and vague or non-existing borderlines - and the Liability Convention to a large extent would become useless!

Perhaps then, finally, it would be the best idea to amend the Liability Convention in order to widen its scope to all activities one way or another under the jurisdiction of an appropriate state, and delete the notion of launching state as far more activities then suggested or perceived can involve possible damage under space law where the actual link to the launching seems very remote. By thus making the jurisdiction of a state the pivotal point of attribution, the second element of analysis, that of attributability including due care, would have been taken care of.

At the same time, Article VI of the Outer Space Treaty should be elaborated to the extent that for material damages, recourse would have to be had to Article VII of the Outer Space Treaty plus the Liability Convention, whereas for other kinds of damages, including the immaterial damage caused by the mere violation of a legal obligation of one state towards another, Article VI itself then would remain effective to the extent of providing for possibilities of restitution in integrum, compensation for non-material damage (including for instance punitive damage) - which need not be monetary compensation - and satisfaction. This would solve the problems arising from the third element of analysis, that of the consequences of responsibility and liability.

It is the other way round from what the ILC's misconception would suggest - which would amount to a need for equalizing the appropriate state to the launching state - whereas it would solve the present misconception: liability would not become a different principle, it would become part of the principle of state responsibility, taking care of all the latter's cases where (material) damage occurs. This, finally, would take care of the first element of analysis, that of the difference in constituent elements of the respective notions of responsibility and liability. At the same time it would turn around the ILC's method of construction in another sense than previously alluded to as well, for it would make rules of liability secondary, (or perhaps 'subsidiary' is a better word) to rules of responsibility instead of the other way round.⁶⁹ By making liability a subprinciple of responsibility namely, it would simply become applicable *only* once responsibility has already been found to be involved, as the main trigger, and, as a second

criterion, read secondary trigger, material damage was seen to be involved. The fundamental doctrine of 'sic utere tuo ut alienum non laedas', famous under general international law,⁷⁰ would step in to make causation of harm or damage from within one state's jurisdiction to another state's territory, property, nationals, or nationals' property, as such an international wrongful act, triggering responsibility and, by the very reason of causing damage, consequently liability therefore - just as is already in fact more or less the case in respect of transboundary environmental pollution.

The practicality and chance of realization of such a turnaround, both in general international law and in space law, may be a matter for discussion; the simplicity of this construction to my opinion preventing both the misconception of space law and the misconception of the ILC seems appealing and is certainly worth further attention.

Notes

1. 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 Jan. 27, 1967, entered into force Oct. 10, 1967; text in 610 UNTS 205, 18 UST 2410.
2. Thus, I disagree with Böckstiegel in this respect, when he states that "Article VII specifies the consequences of that principle" (namely of international responsibility); K.H. Böckstiegel, "Commercial Space Activities: their Growing Influence on Space Law", *Annals of Air and Space Law* XII (1987), pp. 175-192, at p. 182; for that would presuppose that Articles VI and VII have the same scope despite their different wording and the absence of any explicit link in the text of the Articles themselves. Cf. however H. Bittlinger, "Private Space Activities: Questions of International Responsibility", *Proceedings of the Thirtieth Colloquium on the Law of Outer Space*, Brighton, 10-17 October 1988, published Washington, 1989, pp. 191-196, who at pp. 193-194 already touches upon difficulties created by the absence of such a link; also A. Dragiev, "Legal Regulation of State Responsibility in Law of Outer Space", *Proceedings of the Thirty-Second Colloquium on the Law of Outer Space*, Malaga, 11-15 October 1989, published Washington, 1990, pp. 313-316.
3. Convention on International Liability for Damage Caused by Space Objects (hereafter Liability Convention), of March 29, 1972, entered into force Sept. 1, 1972, 10 text in ILM 965 (1971).
4. See Art. XVII, Outer Space Treaty.
5. Perhaps it may be added, that the Dutch language, although not an authentic language as far as the Outer Space Treaty is concerned, is also confusing in this respect. Whereas 'responsibility' should be translated as "verantwoordelijkheid" and 'liability' as "aansprakelijkheid", 'international state responsibility' turns out to be always translated as "staatsaansprakelijkheid"!
6. F.K. Nielsen, American Commissioner on the Mexican-United States General Claims Commission, in the International Fisheries Co. Case of 1931, Opinions of Commissioners 207, at 265-6, as quoted in B. Cheng, "The Commercial Development of Space: the Need for New Treaties", *Journal of Space Law* 19 (1991), pp. 17-44, at p. 26.
7. See e.g. B. Cheng, "Space Activities, Responsibility and Liability for", *Encyclopedia of Public International Law*, Vol. 11, Amsterdam etc., 1989, pp. 299-303.
8. See e.g. S. Sucharitkul, "The Role of the International Law Commission in the Decade of International Law", *Leiden Journal of International Law* 3 (1990), Special Issue, pp. 15-42, at p. 18.

9. See for a very illustrative account N.L.J.T. Horbach, "The Confusion about State Responsibility and International Liability", *Leiden Journal of International Law* 4 (1991), pp. 47-74. Much of what follows on the general international law-concepts of responsibility and liability, as well as the role of the ILC in this respect, is based on her survey. See also D.B. Magraw, "Transboundary Harm: the International Law Commission's Study of 'International Liability'", *American Journal of International Law* 80 (1986), pp. 305-330.
10. Art. 1, Draft articles on State responsibility, Part 1, II-2 Y.B. Int'l L. Comm'n, UN Doc. A/35/10/1980. Part 1 of the Draft articles has been unanimously adopted by the General Assembly and may be deemed to constitute customary international law. Cf. also e.g. M.N. Shaw, *International Law*, 2nd ed., Cambridge, 1986, pp. 407 ff.; I. Brownlie, *Principles of Public International Law*, 3rd ed., Oxford, 1979, p. 432.
11. See e.g. E. Jiménez de Aréchaga, "International Responsibility", *Manual of Public International Law*, ed. M. Sørensen, London etc., 1968, pp. 531-603, at pp. 534-537; Shaw, pp. 409-410; Brownlie, pp. 436-439.
12. Art. 3, Draft articles on State responsibility, Part 1. See also e.g. Shaw, pp. 411-412; Brownlie, pp. 445-454.
13. See e.g. Jiménez de Aréchaga, pp. 534-536; Shaw, pp. 409-410; Brownlie, pp. 439-441.
14. As to the role of damage in respect of state responsibility, cf. e.g. Jiménez de Aréchaga, p. 534, who includes damage as a constituent element, however, then goes on to define damage in this respect in such a broad manner that it effectively amounts to the mere fact of breach of an obligation: "the concept of damage does not however have an essentially material or patrimonial character. Unlawful action against non-material interests must receive adequate reparation, even if they have not resulted in a pecuniary or material loss for the claiming state". See also K. Zemanek, "Responsibility of States: General Principles", *Encyclopedia of Public International Law*, Vol. 10, Amsterdam etc. 1987, pp. 362-372, at pp. 363, 365; Horbach, p. 49.
15. Cf. the sources of international law, as defined in Article 38(1) of the Statute of the International Court of Justice; also Shaw, pp. 57-96; Brownlie, pp. 3-29, also pp. 443-444 on the relation between the general principles relevant here and the specific situations where they can apply. The ILC defined this as questions concerning primary rules, whereas the obligations arising out of state responsibility, to be dealt with in that framework, were secondary rules of international law; cf. e.g. II - 1 Y.B. Int'l L. Comm'n 179, para. 11 (1970); also Art. 17, Draft articles on State responsibility, Part 1.
16. See Artt. 5-15, Draft articles on State responsibility, Part 1. See also once more e.g. Brownlie, pp. 445-454; Shaw, pp. 411-414; Jiménez de Aréchaga, pp. 544-564.
17. See e.g. Art. 11(2), Art. 23, Draft articles on State responsibility, Part 1; Case Concerning United States Diplomatic and Consular Staff in Tehran (USA v. Iran), 1980 ICJ Rep. 3, paras. 61-68. Also Horbach, p. 55; Brownlie, pp. 453-454; Jiménez de Aréchaga, pp. 560-561.
18. See e.g. M. Akehurst, "Jurisdiction in International Law", *British Yearbook of International Law* 46 (1972-73), pp. 145-257, at pp. 152-157, 170-174, 179 ff.; D.W. Bowett, "Jurisdiction: Changing Patterns of Authority over Activities and Resources", *British Yearbook of International Law* 53 (1982), pp. 1-26, at pp. 4-10; F.A. Mann, "The Doctrine of International Jurisdiction Revisited After 20 Years", *Further Studies in International Law*, Oxford, 1990, pp. 1-83, at pp. 3-9; also Cheng, *Journal of Space Law*, p. 37.
19. Case of Chorzów Factory (Germany v. Poland) (Indemnity), 1928 PCIJ, Ser. A, No. 17; esp. p. 29.
20. See e.g. Brownlie, pp. 457-464; Shaw, pp. 415-417.
21. Cf. Horbach, pp. 49-50.
22. Cf. also F.V. Garcia Amador, "State Responsibility - Some New Problems", *Recueil des Cours* 94 (1958-II), pp. 369-501, at pp. 392-393; Zemanek, p. 363.
23. "International Liability for the *Injurious* Consequences Arising out of Acts Not Prohibited by International Law" (italics mine), see II-2 Y.B. Int'l L. Comm'n 14 (1978). See also Horbach, pp. 49-51, and Quentin-Baxter's Second Report on International Liability, II-1 Y.B. Int'l L. Comm'n 62, Article 1, section 1, cited on p. 62: liability covers "any human activity within the territory of control of one state which gives rise or may give rise to *loss or injury* to persons or things within the territory or control of another state" (italics mine).
24. The Liability Convention, relevant for outer space, of course will be dealt with *infra*, para. 5. Further examples are e.g. the Convention for the Unification of Certain Rules Relating to International Transportation by Air (Warsaw Convention), done Oct. 12, 1929, entered into force Febr. 13, 1933, text in LNTS 137 (1933) 11, viz. Art. 17; the Global Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention), done March 22, 1989, not yet entered into force, text in 28 ILM 649 (1989), viz. Art. 12; the United Nations Convention on the Law of the Sea (Montego Bay Convention), done Dec. 10, 1982, not yet entered into force, text in UN Doc. A/CONF. 62/122, viz. Art. 304.
25. Cf. Trail Smelter Case (USA v. Canada), 3 RIAA 1905 (1938 & 1941), in Part Three of the 1941-decision: "no State has the *right* to use or permit the use of its territory in such a manner as to cause *injury* by fumes in or to the territory of another or the property or persons therein" (italics mine); Corfu Channel Case (UK v. Albania) (Merits), 1949 ICJ Rep. 4, at 23: "Albania is *responsible* under international law for the explosions which occurred (...) in Albanian waters, and for the *damage and loss of human life* which resulted from them" (italics mine); or the general principle *sic utere tuo ut alienum non laedas*, "i.e. the duty to exercise one's *rights* in ways that do not *harm* the interests of other subjects of law"; Magraw, p. 308. See also Cheng, *Encyclopedia*, pp. 299-301.
26. See, once more, the provisional title of the ILC's Draft articles on this topic, *supra*, note 23; also Horbach, pp. 51-53.
27. Even if, in many cases, national as much as international, a limit was often placed on the compensation possibly due.
28. Cf. II-1 Y.B. Int'l L. Comm'n 203, para. 20 (1971). See also *supra*, note 15.
29. See the analysis of Horbach, pp. 51-53.
30. E.g. Brownlie, pp. 463-464; Shaw, p. 416. Cf. also Magraw, pp. 316-322.
31. As to space law, the Liability Convention does not provide for such a specification.
32. After all, this was in general of course also an indispensable element for liability, by taking care of the causal link between damage and inflictor of the damage.
33. Horbach, p. 51. Once more, the exact formulation of a certain obligation becomes of fundamental importance. Once more as well, the problematic field of transboundary environmental pollution is one example where many obligations for states are

- actually phrased as due care obligations. See e.g. the citation from the Trail Smelter Case, *supra*, note 25, esp. as to "permit the use".
34. Horbach, p. 56; see also the comment of the ILC on Draft art. 23, II-2 Y.B. Int'l L. Comm'n 82-83 (1978), cited on p. 55.
 35. See Horbach, pp. 56-57.
 36. See *supra*, note 25.
 37. Cf. also the so-called 'Stockholm Principles' of the Declaration of the UN Conference on the Human Environment, of 16 June 1972, where Principle 21 announces that "States had (...) the responsibility to ensure that activities within their jurisdiction or control *did not cause damage* to the environment of other States (...)" (italics mine).
 38. See *supra*, note 23; II-1 Y.B. Int'l L. Comm'n 155 (1984).
 39. Cf. Art. 35, Draft articles on State responsibility, Part 1; also Art. 5, Draft articles on International Liability, *supra*, note 23.
 40. See *supra*, note 3.
 41. See also Artt. II, III, IV and V, Liability Convention.
 42. Apart from, of course, the question of attributability; but this is self-evident as a state can only be liable for damage it caused itself. See also Cheng, *Encyclopedia*, p. 299, speaking of no-fault liability and fault liability.
 43. The same analysis applies, at least for the time being, to damage caused on the moon or other celestial bodies; cf. Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (hereafter Moon Agreement), of Dec. 18, 1979, entered into force July 12, 1984, text in 18 ILM 1434 (1979); see Art. 14(2).
 44. See Artt. III and IV(1.b), Liability Convention.
 45. Objective fault plays a minor role in one aspect only, as Art. VI(2), Liability Convention, states: "[n]o exoneration whatever [from absolute liability] shall be granted in cases where the damage has resulted from activities conducted by a launching state which are not in conformity with international law (...)". It only makes a distinction, once liability has been accepted therefore.
 46. Pfeifer, falling in the overcrowded trap of using liability and responsibility as interchangeable terms (he states that "a State is liable for any violation of international law"), nevertheless effectively makes clear that the fault applicable in regard of liability is not to be considered as being of the same kind as fault in regard of responsibility, although he terms the former kind of fault "subjective fault" because he does not really distinguish intent or negligence with regard to a rule from intent or negligence with regard to the consequences of an act, in order not to be prevented from seeing fault as a necessary criterion for liability in the first place! J. Pfeifer, "International Liability for Damage Caused by Space Objects", *Zeitschrift für Luft- und Weltraumrecht* 30 (1981), pp. 215-257, at pp. 224 ff.
 47. Cf. e.g. the definition of the situation given by M.G. Bourély, "Quelques Particularités du Régime de la Responsabilité du Fait des Activités Spatiales", *Annales de Droit Aérien et Spatial* XV (1990), pp. 251-274, at p. 260, when he speaks of a "so-called third being a victim" for whom "the general regime of liability" (i.e. of strict liability) applies, and consequently speaking of a "specific regime" "when the inflictor of damage and the victim participate together in a space activity".
 48. One should also closely read Art. XII, Liability Convention, in this respect, which makes the same blunt, theoretically inconsistent impression.
 49. Art. XII, Liability Convention; see also Art. VIII.
 50. And in this respect, of course, the ILC's matrix is not different; in case of liability arising, once more paying for the damage is the only way of redemption.
 51. See e.g. Cheng, *Encyclopedia*; H.L. van Traa-Engelman, *Commercial Utilization of Outer Space-Legal Aspects*, Dissertation, Utrecht, 1989, pp. 44-48, 205-206; M.G. Bourély, "Quelques Réflexions sur la Commercialisation des Activités Spatiales", *Annales de Droit Aérien et Spatial* XI (1986), pp. 171-186, at pp. 177-178; He Qizhi, "Legal Aspects of Commercialization of Space Activities", *Annals of Air and Space Law* XV (1990), pp. 333-342, at p. 337; K.H. Böckstiegel, "Reconsideration of the Legal Framework for Commercial Space Activities", *Proceedings of the Thirty-Third Colloquium on the Law of Outer Space*, Dresden, 6-12 October 1990, published Washington, 1991, pp. 3-10, at p. 5.
 52. Cheng, *Journal of Space Law*, p. 21, even suggests that "this article has already passed, through general acceptance, from being a mere treaty provision binding only upon the parties into the realm of general international law binding on all States", which would illustrate only a fortiori the application of the general international legal principle of state responsibility to the realm of space. See also Cheng, *Encyclopedia*, p. 299.
 53. See e.g. Cheng, *Journal of Space Law*, p. 21; Bittlinger, pp. 191, 193; Dragiev, pp. 313-316, esp. p. 314. Cf. also, analogously, Moon Agreement, Art. 14(1).
 54. See Bittlinger, pp. 191, 193; Dragiev, pp. 314-315. The same holds good, *mutatis mutandis*, for the special cases of moon and other celestial bodies: cf. Moon Agreement, Art. 14(1).
 55. See also Dragiev, p. 315, who however does not manage to escape from the misconstruction in his analysis.
 56. See also Bittlinger, p. 191.
 57. Cf. Principle XIV, UNGA Resolution 41/65 of 3 December 1986, containing the 'Principles on Remote Sensing', and Cheng, *Journal of Space Law*, pp. 39-40.
 58. See *supra*, para. 1; also note 51 and literature mentioned therein; furthermore Cheng, *Journal of Space Law*, pp. 36-39; Bittlinger, pp. 192-193.
 59. See also Cheng, *Encyclopedia*, p. 300.
 60. Cf. again Cheng, *Encyclopedia*, p. 300; Bittlinger, pp. 191-192; Dragiev, p. 314.
 61. Art. VIII, Outer Space Treaty.
 62. Art. I, Outer Space Treaty.
 63. Which, so far, only the United States, Sweden and the United Kingdom have done; see for the former e.g. S. Gorove, "The Growth of Domestic Space Law: A U.S. Example", *Journal of Space Law* 18 (1990), pp. 99-111; for the latter two e.g. J. Reifarth, "Nationale Weltraumgesetze in Europa", *Zeitschrift für Luft- und Weltraumrecht* 36 (1987), pp. 3-16; F.G. von der Dunk, "The Swedish and British Space Acts and Private Commercial Enterprise under Public International Law", *Memoria, Conferencia Espacial de las Americas*, San José, March 1990, Vol. I, published January 1991, pp. 336-342. In general Bittlinger, pp. 193-195.

64. Cf. e.g. Gorove, p. 109, when speaking of "international responsibility for damages" (sic!).
65. See Art. I(a), Liability Convention.
66. Cf. Artt. II and IV (1.a), Liability Convention.
67. See also K. Tatsuzawa, "The Regulation of Commercial Space Activities by the Non-Governmental Entities in Space Law", *Proceedings of the Thirty-First Colloquium on the Law of Outer Space*, Bangalore, 8-15 October 1988, published Washington, 1989, pp. 341-348, at p. 344.
68. One recognizes of course the fourfold definition of 'launching state' invoking liability in the first place; Art. I(c), Liability Convention.
69. Thus, rules of liability should perhaps become 'tertiary obligations' under international law!
70. See *supra*, note 25.