

Fundamental provisions for national space laws

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1. Introduction - 'The Questions'

Whilst national space laws currently are a 'hot' topic in general discussions on space law and policy – and rightly so – one should never lose sight that 'national space law' is not something self-evident or nature-given. In each case there is a general need to justify any efforts and resources inevitably required for establishment to start with, then continuing adaptation and implementation, of a national space law.

From that perspective, the present paper tries to answer three questions which are of paramount importance. Firstly, why do we need or want national space laws in the first place? Secondly, the question follows as to what should be in such national space laws: what issues and topics should be addressed? And thirdly, would there be any role in respect of national space laws for international bodies, a topic particularly relevant in Europe in view of the existence of two relevant international European bodies, the European Union (EU)¹ and the European Space Agency (ESA)²?

2. The rationale for national (space) law

To start with the first question on the 'why', the rationale for national legislation dealing more or less specifically with space and space activities in first instance stems from international space law. Once the fundamental decision to spend resources and undertake efforts on the matter has been taken, other rationales would logically come in, notably to give due expression to national policies in the field, but the basis lies in the handful of international treaties commonly referred to as the *corpus juris spatialis*³.

In turn, the necessity to undertake such efforts stems largely from the major development of ever-increasing private participation in space activities. On the one hand, the treaties referred to are very much state-oriented: states are both the 'makers' and the 'breakers' of space law. States 'make' space law, as is the case generally in international law, by drafting treaties and then individually deciding on whether to sign and ratify them or not.

¹. See Treaty on European Union, Maastricht, done 7 February 1992, entered into force 1 November 1993; 31 ILM 247 (1992); OJ C 191/1 (1992).

². See Convention for the Establishment of a European Space Agency, Paris, done 30 May 1975, entered into force 30 October 1980; 14 ILM 864 (1975).

³. This concerns notably three of the five treaties developed within the bosom of the United Nations:

- 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), London/Moscow/Washington, done 27 January 1967, entered into force 10 October 1967; 610 UNTS 205; TIAS 6347; 18 UST 2410; UKTS 1968 No. 10; Cmnd. 3198; ATS 1967 No. 24; 6 ILM 386 (1967);
- Convention on International Liability for Damage Caused by Space Objects (hereafter Liability Convention), London/Moscow/Washington, done 29 March 1972, entered into force 1 September 1972; 961 UNTS 187; TIAS 7762; 24 UST 2389; UKTS 1974 No. 16; Cmnd. 5068; ATS 1975 No. 5; 10 ILM 965 (1971); and
- Convention on Registration of Objects Launched into Outer Space (hereafter Registration Convention), New York, done 14 January 1975, entered into force 15 September 1976; 1023 UNTS 15; TIAS 8480; 28 UST 695; UKTS 1978 No. 70; Cmnd. 6256; ATS 1986 No. 5; 14 ILM 43 (1975).

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In addition, they may choose to abide by customary rules of international law that are essentially distilled from their own, international and official behaviour.

On the other hand states under space law are also the 'breakers' in that the rules, rights and obligations proffered by the treaties are addressed almost exclusively to states – including cases where private entities may somehow qualify as the real actors or authors of a particular space activity. There is provision for a secondary role of international organisations⁴, but since this is expressly limited to intergovernmental organisations, it still concerns public bodies.

Private entities, by contrast, are not even mentioned as such in the key treaties. Thus, the ever increasing measure of private participation in space activities, starting with satellite communications a few decades ago but gradually spreading to such other areas as remote sensing, launching services and navigation⁵, raises two fundamental questions in this respect.

Firstly, how should it be ensured that such private entities and their activities will also be bound and forced somehow to comply with international space law and its provisions, in the absence of private parties being amongst the addressees of the relevant treaties? And from the other angle, secondly, does international space law take private interests sufficiently into account? To what extent *should* it take such interests into account, even if the general acceptance of a role for private enterprise in the world's societies may now be considered a rather widespread and generally accepted phenomenon?

3. From international to national space law

When focusing on the requirements for national space legislation stemming from international space law there are essentially two structural concepts that are key here: those of state responsibility and state liability as they were developed specifically within the *corpus juris spatialis*.

International responsibility – basically the responsibility of states 'augmented' with international responsibility by international organisations wherever they have a somewhat independent role to play – is regulated by Article VI of the Outer Space Treaty, which provides:

“States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. When activities are carried on in outer space, including the moon and other

⁴. Cf. e.g. Artt. VI, XIII, Outer Space Treaty, Art. XXII, Liability Convention, Art. VII, Registration Convention.

⁵. The European second-generation satellite navigation system Galileo, which is to be operational by the end of the current decade, is intended to be a Public-Private Partnership. See Council Regulation setting up the Galileo Joint Undertaking, No. 876/2002/EC, of 21 May 2002; OJ L 138/1 (2002); and Council Regulation on the establishment of structures for the management of the European satellite radio-navigation programmes, No. 1321/2004/EC, of 12 July 2004; OJ L 246/1 (2004); further e.g. the present author's *Quis vadit cum vobis, Galileo?* – Institutional Aspects Of Europe's Own Satellite Navigation System, in *Proceedings of the Forty-Sixth Colloquium on the Law of Outer Space* (2004), 361-2.

celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization.”

Private space activities are effectively included in the phrase “activities (...) carried on (...) by non-governmental entities”. Consequently, states are held responsible on the international level for private space activities to just the same extent as if it concerned their own, governmental activities – actually, in regard of the former they are actually saddled with an additional obligation of “authorization and continuing supervision”. Obviously, states would therefore be well advised in applicable cases to ensure that legal tools exist to monitor and control such activities.

A similar situation applies to liability – once more reference is made to ‘international liability’ as adding to state liability properly speaking that of international organisations, where relevant. Here, Article VII of the Outer Space Treaty provides:

“Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air or in outer space, including the moon and other celestial bodies.”

Once more, therefore, as a matter of fact private space activities would be included in this concept, and hence might lead to liability for damage resting upon a state or a few states on the international level. The next question automatically arises from there – for *which* categories of private space activities are which states internationally responsible and/or internationally liability? And then: how would you deal with them in more detail?

4. State responsibility and private space activities

For the solution regarding the allocation of private space activities to certain states for the purpose of international responsibility, of course one should firstly revisit Article VI of the Outer Space Treaty. From this particular perspective, as a result of that Article a state is responsible for any space activities, whether undertaken by whatever private entity or not, *as long as that state qualifies as state in respect of which these activities can be defined as national activities.*

This, however, largely still begs the question – *which* activities qualify as ‘national activities’? Several options offer themselves in this respect that could basically be grouped into three versions. Firstly, one could equate ‘national activities’ to the activities of nationals of the state.⁶ Secondly, one could equate them to activities in respect of which the state qualifies as ‘launching state’, which is the criterion for dealing with liability under international space law.⁷ And thirdly, following a more theoretical but logical approach, one could equate them to activities in respect of which the state in question has jurisdiction, since in that way a state will be held responsible for exactly those sets of activities which they have the principal legal tools to control.

Such an approach would then mean that a state would be internationally responsible for (a) any activities conducted from its national territory (since it is authorised to exercise jurisdiction over them on a territorial basis), (b) any activities conducted by its nationals

⁶. Cf. e.g. Artt. VI, IX, Outer Space Treaty.

⁷. See further the Liability Convention, in particular Art. I(c), defining the ‘launching State’ criterion.

(since it is authorised to exercise jurisdiction over them on a personal basis), and (c) any activities conducted involving space objects registered (since under Article VIII of the Outer Space Treaty it is entitled to exercise jurisdiction over such space objects as well⁸). It remains to be noted, however, that in the absence of any internationally-agreed interpretation of ‘national activities’ individual states, when implementing national space law, have made their own decisions as to how to interpret this concept and define the scope of their national law accordingly.⁹

5. State liability and private space activities

Following the same approach as with international responsibility, for liability reference should first be had to Article VII of the Outer Space Treaty. As a consequence of this Article and the elaborating Liability Convention¹⁰, a state is internationally liable for any damage caused by a space object, whether owned, operated, launched or paid for by whatever private entity, *as long as that state qualifies as **launching state** of the space object concerned*. Such a definition is formally provided by the Liability Convention and of a fourfold version, as Article I(c) thereof provides:

“The term “*launching State*” means:

- (i) A state which launches or procures the launching of a space object;
- (ii) A state from whose territory or facility a space object is launched.”

While seemingly that definition leads to a much clearer picture than the phrase ‘national activities’ did in the context of responsibility, once it comes to the allocation of liability in the context of fundamental private involvement in the launch of the space object concerned, in view of the linkage of damage caused by a space object to the ‘launching state(s)’.

This comes down to the interpretation of the reference to “state” in this context: if Article I(c) of the Liability Convention provides that the first way in which a state can be qualified as a ‘launching state’ is when it “launches” the space object concerned, what if a private launch operator is actually undertaking the launch? Does this make the state of nationality and/or registration of the private launch operator liable under this criterion, or is there no state which can be held liable under this criterion, since no state “launches” in the proper sense of the word?

Similar uncertainties apply with respect to the second criterion, of a state “that procures the launching”, and the third criterion, of a state “whose facility” is used for the launch. What if the launch customer is a private company, for example a satellite communications company, or if the spaceport from which the launch occurs is owned and

⁸. Art. VIII, OST, provides: “A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth. Such objects or component parts found beyond the limits of the State Party to the Treaty on whose registry they are carried shall be returned to that State Party, which shall, upon request, furnish identifying data prior to their return.”

⁹. See for an extensive analysis of some of those aspects, e.g. the author’s Current and Future Development of National Space Law, in *Disseminating and Developing International and National Space Law: the Latin American and Caribbean Perspective* (2005), 30-46.

¹⁰. See in particular Art. I(c), which further elaborates and formalizes Art. VII, Outer Space Treaty, without however changing fundamentally its scope.

operated by a private company – as is currently the case in a handful instances within the United States?

The one criterion so far not discussed concerns that of the state “whose territory” is used for the launch. Having ‘territory’ in the international legal sense of the word is something exclusively reserved for states. Though of a different nature, an important question arises here as well: what if the launching takes place outside the territory of any state, as has now repeatedly occurred with launches conducted by the private consortium Sea Launch from its launch platform that is towed out to the high seas prior to launch?

6. The ‘Building Blocks’

When it comes to such international legal parameters for national space law, it is appropriate to refer to a major research project, called ‘Project 2001+’, conducted by the University of Cologne’s Institute of Air and Space Law and the German Space Agency DLR, with the involvement of a number of (largely European) legal and policy experts, including from the Leiden International Institute of Air and Space Law. In the context of the Project, the conclusion was drawn that international law as it stood gave rise to the need to deal with five main topics, presented as five main building blocks to be included in any proper national space law.

The first building block should deal with the authorisation of space activities, referring especially to the relevant phrase in Article VI of the Outer Space Treaty. It should deal with issues of scope, such as the interpretation of ‘space activities’, the application to activities with regard to territory and legal as well as natural persons, the observance of certain principles such as referring to contamination, the sharing of financial liability risks between the government and non-governmental actors, and the observance of the obligations regarding cooperation and mutual assistance.

The second building block refers to (continuing) supervision of space activities, that other direct obligation resulting from Article VI of the Outer Space Treaty. Here, the focus should be on periodical information either provided by the owner of an authorisation or collected by the public authority concerning the terms of the authorisation, and on sanctions in case of non-observance of the terms of the authorisation.

The third building block deals with the registration of space objects, including the application and interpretation of the notion of space object, and the setting up of a national registry and determination of the supervisory authority. It should moreover determine the contents of mandatory registration: the five pieces of information required by Article IV(1) of the Registration Convention¹¹, plus additional information such as concerning the mass of the space object or safety assessments in case nuclear power sources are involved. Finally, such issues as the registration of space objects that have re-entered the earth atmosphere, the possibility of changes being made to registered information and access to the registry should be dealt with.

The fourth building block focuses on the regulation of indemnification. It would, generally, provide for definition and implementation of a right of recourse for the launching state, once it has paid compensation under Article VII of the Outer Space

¹¹. Art. IV(1) provides for the following parameters of any particular space object launched to be notified to the UN Secretary General: (a) name of launching state(s), (b) appropriate designator of the space object or its registration number, (c) date and territory or location of launch, (d) basis orbital parameters including nodal period, inclination, apogee and perigee, and (e) general function of the space object.

Treaty and/or the Liability Convention to another state, in case the damage compensated has actually been caused solely or largely by a private party concerned. It would also, possibly, limit such indemnification to a certain fixed sum, for example to the insured sum (see further below).

The fifth building block finally would cover certain additional regulation which is submitted to be of crucial importance here as well. This refers in particular to (further) regulation of insurance and liability-related issues, patent law and other intellectual property rights issues, financial securities, transport law and dispute settlement.

7. Towards national space laws (in a strict sense)

The exercise of establishing ‘building blocks’ for national space law already indicates at least part of the answer also to the fundamental questions of why national space laws would be necessary or desirable and what should be in them. It should be added here, that the term ‘national space law’ is used in a strict sense, as referring principally only to those national laws that predominantly focus on space activities and deal principally with the consequences of private space activities with a view to the structure and contents of international space law as discussed.

It may be added here, that during the United Nations/Republic of South Korea Workshop on Space Law it was concluded in this respect:¹²

- that a fundamental *duty* exists under Article VI of the Outer Space Treaty to provide for authorisation and continuing supervision of private space activities, the form of which was in principle left to the state concerned, and that, in view of the comprehensiveness and transparency of such an approach, a strong *recommendation* arose for such authorisation and continuing supervision to be incorporated into a broader licensing regime as part of a national (framework) law;
- that a strong *incentive* arises from Article VII of the Outer Space Treaty and the Liability Convention to arrange domestically for liability arrangements as between the state and private entities concerned in order to deal with the possibility of states being held liable to pay compensation for damage caused by relevant categories of private space activities and to provide for a mechanism ensuring reimbursement up to the desired level, again, preferably by means of establishment of a national space legislation including a licensing system;
- that another strong *incentive* for the establishment of national space legislation arises under Article VIII of the Outer Space Treaty and the Registration Convention, as presenting the best way to establish a national registry for relevant space objects and thus further ensuring jurisdiction and control over such space objects and the operators thereof; and
- that finally, especially from the liability requirements an indirect but nevertheless strong *incentive* arose to include in the licensing systems to be established by national space laws requirements for insurance to be taken by relevant licensees – since otherwise the reimbursement obligations suggested before might turn out to be rather hollow to the extent that licensees themselves would be unable to reimburse the state concerned.

¹². See e.g. the author’s Current and Future Development of National Space Law, in *Disseminating and Developing International and National Space Law: the Latin American and Caribbean Perspective* (2005), 26-7.

From this angle, most prominently national space law would be there to *control* private space activities to the extent necessary, by means of a licensing system including a list of licensing requirements, procedures for the supervision of such activities, and the establishment or proper empowerment of a central governmental (space) agency to actually undertake the relevant activities.

Referring to the other side of the coin, questions may also be raised as to the extent that, under general or more specific national economic policies, stimulation of private space activities would be due. Once the answer to such questions would be largely in the affirmative, however, national space laws seem to present the most comprehensive, transparent and efficient legal instrument for the purpose. Such stimulation could take many forms, including but not limited to subsidies for research and development or tax incentives, but also the provision of an indemnification obligation of state liability only up to a certain limit.

Finally, once the decision is made for such a national law to be established or to be developed further, coordination with other existing national laws is obviously required as well – ranging for telecommunications and intellectual property rights laws to trade, commerce, environmental and even penal laws.

8. Dealing with liability

When dealing with liability, as the most directly-material issue to be dealt with by means of national space legislation, the general approach will by now arise relatively clearly. The licensing of private activities is the key tool here: relevant private entities should have a license to undertake an activity in outer space or with a distinct space-oriented character, otherwise they should be held criminally accountable.

Further, the conditions for being licensed the state or governmental agency can then include those it considers relevant to ensure the optimum balance between allowing private entities to undertake such activities in the first place and the interests of the state and the public at large in safe, secure, sound and beneficial usage of outer space. Procedures for monitoring, read ‘continuing supervision’, and sanctioning should also be provided for. At a national level, a national space law would offer the benefits of a ‘one-stop-shopping’ regime for licenses.

Finally, since liability is essentially about money, one way or another it should deal with the issue of reimbursement under the license by the licensee of any state liability arising under Article VII of the Outer Space Treaty and/or the Liability Convention 1972. Here, there are various options available for dealing with that issue.

Firstly, with reference to the issue of reimbursement properly speaking, a state is confronted with the fundamental choice whether to relegate the unlimited liability applicable on the international level¹³ in full to the licensee – which will lead to considerable problems for the private party concerned to obtain insurance against a reasonable sum or even at all – or to limit the indemnification obligation to a certain amount – which would make the state *de facto* into a partial insurer of the space activities concerned.

Secondly, partly depending upon which option is to be implemented regarding reimbursement, further options with regard to insurance for third-party liability indemnification offer themselves. States could make such insurance mandatory, in order

¹³. See Art. XII, Liability Convention.

to ensure that, should a reimbursement obligation on the part of the licensee arise, there would actually be something for the licensee to reimburse with. Sub-options could provide for such mandatory insurance to be up to the level of the limit to reimbursement, alternatively choose a lower level – providing the state with a real guarantee that reimbursement will occur up to that lower level, and a legal guarantee that reimbursement will also be realised above that lower level up to the limit to reimbursement. Similarly, also if the reimbursement for third-party liability is unlimited, it could be contemplated to provide for a limit to mandatory insurance coverage. Of course, states could also choose to make insurance for the licensee against reimbursement obligations optional – even if it would allow for betting the company in adverse circumstances.

In addition, once a state starts to deal with third-party liability in a fundamentally thorough manner through the establishment of a national space law, it might well consider dealing with inter-party liability issues in one go as well. This is, for example, the case in the United States in view of the usage of governmental launch facilities for most of the commercial launches.¹⁴

9. Towards international harmonisation...?

Brief reference has been made above to the absence of any authoritative interpretation at the international level of some key elements of the responsibility and liability concepts, and the resulting diverging implementations at the national level. In addition, it may be noted that apart from the dozen or so states having implemented distinct national space legislation in the stricter sense of the word, in effect a number of states are currently in the process of developing such legislation. From the impressions gained of these processes so far, there does not seem to be much reason to expect this lack of coherence will become less thereby – on the contrary.

For that reason, finally, the third question posited at the beginning becomes relevant: is there a need – and an attendant possibility – for some measure of international coordination, perhaps even harmonisation of national space laws, or at least of some of their more salient features? In other words, beyond the mere (and quite obvious) inclusion of the building blocks discussed at the abstract level, ‘as such’, is there a possibility and a desirability to also discuss harmonisation at a more substantial level, of *how* these building blocks are then actually dealt with?

It is submitted, that there would be such a need – and attendant possibility, at least in law – on two counts. One concerns the ‘structural’ issues referred to before, that is somehow delineating the scope of exercise of national jurisdiction for the purpose of a national space law and licensing system. This could be achieved largely by means of authoritative definitions of the key concepts of responsibility and liability: what should we understand by ‘national activities’, how should we interpret the various criteria for the ‘launching state’ once private companies start launching, procuring launches or offering spaceport facilities for launching of a space object?

It may be noted that recently the UN Committee On the Peaceful Uses of Outer Space has undertaken a first step in refining the concept of the ‘launching state’ with a view to dealing with fundamental private involvement, but it is submitted more would be

¹⁴. See Commercial Space Transportation – Commercial Space Launch Activities, 49 U.S.C. Subtitle IX – Commercial Space Transportation, Ch. 701, Commercial Space Launch Activities, 49 U.S.C. 70101-70119 (1994).

necessary. At the same time, it may be seen as confirmation that, indeed, COPUOS would be the best forum for taking further steps, and in principle would have the mandate to do so.

The other area where some harmonisation of national space law might be both necessary or desirable, and possible (whether through COPUOS or through other mechanisms) concerns those substantive issues which fundamentally have to do with establishment of a more or less level global playing field in terms of safety and security.

From the area of the law of the sea considerable (negative) experience has been accumulated over the years with 'flags of convenience': too often licenses would be handed out by certain states without any substantial link between the operation to be licensed, or the operator undertaking it, and the state supposedly monitoring it. This in turn led to 'license-shopping', where private operators would be tempted to look for the 'easiest licensor' to avoid any substantial screening, easily giving rise to flagrant neglect of safety, security and social standards considered 'normal' under the circumstances – and hence to considerably enhanced risks of incidents and accidents.

If COPUOS (or other instrumentalities) could initiate an effort to arrive at some generally accepted mechanisms to be (in mandatory fashion) incorporated into any national space law, whether existing or prospective, such as liability and insurance requirements as well as certain technical and operational requirements referring to the financial, technical and operational capabilities of a prospective licensee to undertake the space activities concerned as safe and secure as possible, this would already constitute an important contribution to a safer and more secure 'spacescape'. Actually, already the mere obligation to establish such a law where relevant private activities are a distinct probability would be a valuable step towards such a safer and more secure 'spacescape'.

10. Conclusion - *'The Answers'*

In conclusion, it has now become possible to answer concisely but quite clearly the three questions posed at the beginning. Why do we need or want national space laws in the first place? To implement some international obligations and protect some important legal as well financial interests of the state concerned, with a view in particular to responsibility and liability.

What elements should be included in such national space legislation? Somehow, this boils down to the Building Blocks as distilled from the Project 2001+ work, that is a licensing system allowing control and monitoring of licensed activities and prominently including provisions on liability reimbursement and attendant insurance obligations.

Finally, would and/or should there be any role in this for international bodies? Yes, especially at the level of structure – better delineation of responsibility and liability – and with regard to some substantive issues, notably as counteracting possible trends towards 'flags of convenience' and 'license-shopping'.