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A LAUNCH IS A LAUNCH IS A LAUNCH IS A LAUNCH?

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Abstract

This paper elaborates on the launching of objects from a location in outer space. The issue is discussed with regard to the applicability of the existing instruments of space law. The authors discuss whether the location of the launch, the direction of the launch, or the location of the assembly of the object, are of relevance for the legal assessment of a space launch. The conclusion is that, since any launch would have to use certain facilities, it should always be possible to identify a launching state, and thus apply the (general) rules of the existing space law instruments. As far as the applicability of the general concepts to launches in outer space is concerned, no serious problems are to be expected. And therefore "A Launch is a Launch is a Launch is a Launch".

Introduction

When we discussed the subjects of this years IISL sessions, one of us jokingly misinterpreted the specification added to the subject of session 4: legal aspects of launching space objects from non-terrestrial sites. We started naming possible non-terrestrial sites and rather quickly we found ourselves discussing new techniques and possibilities in the field of space transportation that are now studied or even under development. Many of these techniques are born out of the need

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to find less costly ways of bringing payloads into space, that is, new ways of transportation, in particular alternative means of propulsion. This includes, for example, devices that themselves remain in orbit waiting for pay-loads to bring into higher orbits, such as orbital solar power stations, solar orbital transfer vehicles, and space tethers.[1]
We all know that the costs of access to space remain one of the principal obstacles for the further exploitation of space for the benefit and in the interest of all. After all, it is remarkable, taking into account all the advances that have been made in other areas of (space) technologies (integrated chips, micro technologies, etc.), that the space transportation industry still largely depends on Expendable Launch Vehicles (ELV's), a concept which stems from technologies developed in the 1950's.

We decided that we wanted to discuss the possible legal issues that are related to more advanced ways of further exploring and exploiting outer space and one of the alternatives could be to launch from space instead of from Earth. In this respect, the International Space Station (ISS) can be viewed as a possible precursor for a future (semi-) permanent human settlement on the Moon (or even further away, both in

distance and time: on Mars).[2]
These settlements could then become themselves starting points for space exploration and travel and this made us wonder whether we could take the discussion about the legal aspects of launching from non-terrestrial sites one step further. Thus, we rephrased the question about the relevance of the location of the launching site for the applicability of the existing space treaties and principles.

There are two examples that are, albeit in different ways, of interest for our analysis. The first is the discussion, some decade ago, on the legal issues related to the aerospace plane, that confronted us, once again, with one of the lacunae in space law, namely the absence of a clear boundary between airspace and outer space. The other example that we want to

[1] For a clear overview, see e.g. Scientific American Quarterly, The Future of Space Exploration, A Guide to the Voyages Unveiling the Cosmos, Spring 1999, Volume 10, Number 1.

[2] On this subject see e.g. Proceedings of the Thirty-Fourth Colloquium on the Law of Outer Space of the ISSL (Montreal, Canada, 1991), Session II, Legal Aspects of Settlements on the Moon and Mars, 55-114.

mention is the private Sea Launch consortium that illustrated the issues raised, when it first announced and later began (test-) launching from the High Seas in an international co-operative venture with potential liabilities and responsibilities of several states.

Since we are interested in some of the underlying questions, we will not go into these two cases again, as this has already been done rather extensively in the literature. We only want to note here that the debate about the Sea Launch project, the first and quite interesting test of the existing rules, for obvious and very practical reasons, was and is very much focused on the interrelation of space law with national legislation, in particular in relation to issues of jurisdiction and control, as well as of liability and responsibility.
The next test will be the application of the existing treaties and principles to launches that originate in outer space, where a number of questions will arise which, certainly for the time being, appear much more abstract than those brought forward in the discussion around launches from the High Seas. Essentially our question is therefore: what are the main legal issues in relation to a space launch?

A first question to answer is whether the location (or place) of the launch is relevant: that is, does it make any difference whether a launch occurs from orbit around the Earth (Space Station), from a celestial body or an orbit around a celestial body, or even from some location in space, for example during a Mars mission or destinations in deep space, for example for the purpose of creating a chain of relay-stations.
A second question will then inevitably be whether the destination, or even direction of such a launch is relevant. That is, whether it is directed further into space, or into orbit, and subsequently in orbit around the Earth or around a celestial body, such as the Moon.
And then additional but very related questions also come to mind in relation to the "space object": will it make a difference when such an object is fabricated or assembled aboard a Space Station or a Lunar Station, and then launched either into deep space or an orbit around the Earth or the Moon? And what if parts are made from resources found on the Moon (let alone the entire object)? Or, another step further, what if the origin of the object is no longer the Earth but the object is produced by a second, third, whatever generation of inhabitants of such a

base? Or when it is not man-made but produced through robotics? Does international space law as we know it provide for such "indirect" application?
Clearly, once again familiar questions come up about the definitions and concepts, in particular whether these definitions and concepts also apply to these above mentioned cases.

Definitions

What constitutes a "launch" and what is understood by the term "launching"? As is well known, no definitions are given in any of the space treaties. This does not concern the question whether an attempted launch creates a situation to which the space treaties apply, because it does, as is specified in Art.I (b) of the Liability Convention[3], but much more so the elements which have to be fulfilled to qualify an activity as a launch and to fall within the terms of the space treaties. Is the intention to launch enough? Do you need ignition? Take off? Must a certain altitude be reached and if so which altitude? What if the launcher fails on the platform itself?

[3] Art.I (b) Liability Convention: "The term "launching" includes attempted launching."

The answer to our first question, whether it does make any difference when a launch occurs in outer space (even when we do not know exactly what constitutes a launch), can be very short, namely: no!
The provisions of the Space Treaties make no reference whatsoever to the place of the launch. The only exception is Article 8(2)(a) of the Moon Agreement that provides that states parties may "[l]and their space objects on the moon and launch them from the moon"[4]. This, however, does not have any

[4] Moon Agreement; Article 8:
1. States Parties may pursue their activities in the exploration and use of the moon anywhere on or below its surface, subject to the provisions of this Agreements.
2. For these purposes States Parties may, in particular:
   (a) Land their space objects on the moon and launch them from the moon;
   (b) Place their personnel, space vehicles, equipment, facilities, stations and installations anywhere on or below the surface of the moon. Personnel, space vehicles, equipment, facilities, stations and installations may move, or be moved freely over or below the surface of the moon.

Moon Agreement, Article 1:
1. The provisions of this Agreement relating to the moon shall also apply

effect on the meaning of "launch" as such.[5]
The place of the launch is of more importance for the meaning of "launching state".
The "launching state" is only described in Art. I (c) Liability Convention and in Art. I (a) Registration Convention. Both articles state that the term "launching State" means:

"A State which launches or procures the launching of a space object
A State from whose territory or facility a space object is launched."

Launching and procurement do not change in outer space. Obviously, there can not be a launch from state territory in space. This will, however, not have much impact as the facility which is included in the definition will most likely cover all cases. Neither does the place where the launch is directed to have any significance for the meaning of "launch" and "launching State" when the launch occurs in outer space.
However, it must be noted that the Moon Agreement does apply, for its contracting parties, with respect to launches from the surface of the Moon, or orbits around it.
And, interestingly, Art.1 of the Moon Agreement specifies that the provisions of the Agreement "also apply to other celestial bodies within the solar system".

A last question which has to be addressed relates to the object which is launched. The Outer Space Treaty, the Registration Convention, and the Liability Convention all use the term "space object" in a general sense. Thus, Art.VII OST speaks of an "object" and "such object or its component parts", Art. II Registration Convention applies when a "space object is launched into earth orbit or beyond", and Art.I (d) LC states that: "[t]he term "space object" includes component parts of a space object as well as its launch vehicle and parts thereof."
Taken together, this implies that the term "space object" has no

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to other celestial bodies within the solar system, other than the earth, except in so far as specific legal norms enter into force with respect to any of these celestial bodies.
2. For the purposes of this Agreement reference to the moon shall include orbits around or other trajectories to or around it.
3. This Agreement does not apply to extraterrestrial materials which reach the surface of the earth by natural means.

[5] It should be be noted that the Outer Space Treaty (OST) only mentions the actual "launching" in Art.VII, that is, in relation to liability. Art. VIII OST re. jurisdiction and control, and registration, concerns the object after its launch.

relation with the place of launch, nor with the launching entity. As stated by V. Kopal[6]:

"There may be no doubt that the term "space object", notwithstanding ... deficiencies ... is applicable to any space object, be it launched by [a] State, a State agency, or a private enterprise, and be it performing any kind of space activities, commercial or non-commercial."

Our conclusion is therefore that the definitions, inasfar as they do exist, are also applicable to launches in outer space. Interestingly, once again the vagueness of the terms of the space treaties, which can sometimes lead to ambiguities and to frustrations among space lawyers, also is the strength of space law as it still applies relatively well in fundamentally changed circumstances.

But why should we bother at all to attempt to answer these 'fairly academic' questions and why do we feel this need to clarify unclear or vague, ambiguous legal concepts? Apart from our natural urge to specify concepts so that all parties have the same understanding, the need stems much more from the underlying questions relating to the accountability for space activities. Only when this concept is clear can exploitation advance in an orderly manner, if only because a transparent legal environment is required for investors and insurers to take risks.
That having been said, what remains unanswered (at least for the moment) is the far more interesting question whether, similar to the definitions discussed above, the underlying concepts of state responsibility and liability, and of registration, as we apply them today, will also be applicable to launches in outer space.

[6] Report on the Registration Convention to the ILA Space Law Committee, 1998, p.5.