THIRD DRAFT REPORT OF THE ILA SPACE LAW COMMITTEE TO THE SEVENTY-EIGHTH CONFERENCE OF THE INTERNATIONAL LAW ASSOCIATION (Sydney, 19-24 August 2018)

PART ONE

Introduction

The Third Draft Report of the ILA Space Law Committee is based on the presentation submitted to the Legal Subcommittee of COPUOS at its 57th Annual Session held in Vienna on 9-20 April 2018, under item 5 of its agenda (Document A/AC.105/C.2/113 of 25 January 2018, 4-9). This UN Document describes our work on the topics listed in our terms of reference for submission to the Seventy-Eighth Conference of the International Law Association next August in Sydney. The Committee sadly announces the passing of longstanding member Professor Dr. Elisabeth Back-Impallomeni (Austrian Branch) on 28 June 2018. She will be greatly missed and remembered for her kindness and charm and scholarly contributions to the development of space law.

As in previous years, Part One was prepared by the Committee Chair and deals with the matters under permanent review by the Committee and two specific questions now added to our mandate not only for their importance but also their urgency and should be looked into without delay.

Part Two was drafted by our General Rapporteur, Professor Stephan Hobe, and addresses the Legal Aspects of Suborbital Activities. The objective of the Committee is to draft Guidelines for a Model Law on this matter, as was analysed and agreed in August 2016 in Johannesburg. The Final Draft on Suborbital Flight is expected for
submission to our Seventy-Ninth Conference in Kyoto, in August 2020. One first version is on the agenda for
discussion during the Sydney working session. In March 2019, at the 58th Annual Session of the Legal
Subcommittee of COPUOS, the topic shall be again deeply discussed with a possible Conference Room Paper
by the ILA to be tabled on the occasion.

This Third Report is now being posted to the ILA website for submission to the Sydney Conference. From then
on Committee members -particularly those unable to be present in the Conference venue- are welcome to send
their additional comments and further suggestions for discussion at the Sydney working session. What follows
is therefore the Third Draft Report of the ILA Space Law Committee comprising Part One by the Committee
Chair and Part Two by the General Rapporteur.

Main activities of the Committee during 2017

The activities of the ILA Space Law Committee during 2017 were mainly dedicated to the preparation of its
Third Report, addressing our central topics and specific questions -seen by the Committee as new
developments- which, in accordance with our current mandate (2016-2020), should be considered immediately.

Our Committee is known for its permanent contribution to the study of recent technological achievements and
their impact on international law giving way, in turn, to the progressive development of the law of outer space.
Attention is also drawn by the Committee to topics on the agenda of other ILA International Committees,
sharing common objectives. Such is the case of the Committee on International Law and Sea Level Rise where
the role of first generation space technologies is of major importance in our quest for realistic solutions. In the
same way, we notice that the role of non-state actors and their responsibilities under today’s international law is
an illustrative example as far as space security and cyber security issues are concerned.

Similarly, the ILA Committee has been liaising with intergovernmental institutions involved in the study of
newly developed issues of contemporary international law, such as the International Law Commission (ILC,
United Nations) and its work on, inter alia, state responsibility and effective control of international
organisations, the Permanent Court of Arbitration (PCA) where the ILA Committee officers and some of its
members have been appointed ‘specialised arbitrators’ in the field of dispute settlement relating to outer space
activities and the International Civil Aviation Organisation (ICAO) for the analysis of current trends of thought
and common problems, especially in the fields of suborbital flight. Naturally, we also work in close cooperation
with UN COPUOS and both its Subcommittees.

The recurrent note in this Report will undoubtedly be the 2018 celebrations surrounding UNISPACE+50 in
Vienna, which is now a focal point for meeting our Space Law Committee members in the aftermath of the 2016
Johannesburg Conference and as part of the United Nations bodies and agendas. Special thanks to them all for
their interest and valuable cooperation.

UNISPACE + 50 / Thematic priorities /Background

In June 2016, at the Fifty-ninth Annual Session of COPUOS, seven thematic priorities were established for the
implementation of UNISPACE+50 (A/71/20). From then on UNISPACE+50 began dominating the international
agendas.

On 20 June 2018, at the UNISPACE+50 High-Level Segment in Vienna, Dr. Simonetta Di Pippo, Director of
the UN Office for Outer Space Affairs, stated the following during her Opening Statement:

"UNISPACE+50 is indeed a unique event since most of the work has been done in the preparatory period
2015-2017s and contained in the UNISPACE+50 draft resolution entitled "Fiftieth anniversary of the first
United Nations Conference on the Exploration and Peaceful Uses of Outer Space: space as a driver of
sustainable development" (Document A/AC.105/L.313).

The Thematic Priorities agreed in the framework of UNISPACE+50 are as follows:

1 Information provided by the UN Office for Outer Space Affairs (Vienna).
1. Global partnership in space exploration and innovation.
2. Legal regime of outer space and global space governance: current and future perspectives.
3. Enhanced information exchange on space objects and events.
4. International framework for space weather services.
5. Strengthened space cooperation for global health.
6. International cooperation towards low-emission and resilient societies.

The International Law Association (ILA), as a non-governmental organisation and Permanent Observer to COPUOS since 1990, had the privilege of being invited to participate in the UN Action Team meetings to discuss the Thematic Priorities from the time of the preparatory work. During 2017 the ILA formed part of the UN Action Team on Exploration and Innovation (Thematic Priority 1). This activity continues in 2018.

The Chair of the ILA Space Law Committee contributed suggestions and written proposals during the drafting of a UN Document, known as A/AC.105/C.1/114 and adopted on 14 November 2017 in Dubai, on Thematic Priority 1. Global partnership in space exploration and innovation.

Following this landmark, in Vienna further comments were provided by the ILA on the updated versions of the referred Document at the time of the 57th Annual Session of the LSC on 9-20 April 2018. In the meantime other aspects had been brought up during meetings organised by the UN Action Team in Tokyo in early March 2018 and were added to the previous drafts. The final version of the Thematic Priority 1 Report is now contained in Doc.A/AC.105/1168, available in all official languages of the United Nations.

Similarly, the ILA directed its attention to analysing Thematic Priority 2 on the Legal regime of outer space and global governance: current and future perspectives (UN Doc. A/AC.105/1169 of 13 November 2017).

In these frameworks special attention was drawn by the ILA to Thematic Priority 7 on ‘capacity building for the twenty-first century’ and the need to promote efforts to encourage science, technology, engineering and mathematics education, especially for women in developing countries. This document included objectives and mechanisms, such as the promotion of the universality of the five UN Treaties on Outer Space and added more emphasis on the importance of capacity building.

On 3-7 September 2017 the UN/Austria Symposium on ‘Access to Space. Holistic capacity building for the 21st Century’ was organised by COPUOS in Graz, Austria. One of its sessions was mostly involved in capacity building questions (Session 6), and, notably, linked to Thematic Priority 7.

Interesting, for its foresight and recommendations, was a paper entitled Endevours for renewed capacity building in Space Law for Space Agenda 2030 stating that capacity building would no doubt have a positive impact for achieving the goals of Thematic Priority 2 – concerning the Legal regime of outer space and global space governance: current and future perspectives the framework of UNISPACE+50– and would encourage the development of national legal systems. In turn, it would ease the way for strengthening sustainable development.

In this context it should be further noted that UNISPACE+50 is in charge of designing Space Agenda 2030 (on Sustainable Development) and that capacity building for the 21st century is of major importance on the agenda of COPUOS. The same may be said on the UN Curriculum on Space Law, elaborated during 2007-2014 by a group of expert educators of various nationalities (including the current officers of the ILA Space Law Committee). It is a useful tool for the understanding of legal matters related to space activities in the postgraduate courses of the Regional Centres. Moreover, this is particularly important for developing countries where space legislation is still in its stormy infancy.

Further activities of the Committee officers and members

The ILA Committee officers and its members are permanently in touch with the national space agencies from the developing and industrialised world as well as universities, research centres and others and participate

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2 Cooperation from the ILA has been duly acknowledged in the UN Document of reference at pp.9-10, paragraph 71 and the later one in early 2018 (Doc. A/AC.105/1168).
3 See UN/Austria Symposium on Access to Space Holistic Capacity Building for the 2030 Agenda. The author of this presentation is Magister Laura Jamschon Mac Garry, Permanent Mission of Argentina in Vienna.
regularly in the activities of the International Institute of Space Law (IISL). On the regional level, cooperation is growing between the ILA and the Ibero American Institute (Headquarters Madrid), a Permanent Observer to COPUOS and its two Subcommittees since 2012. This institution, created in 1964, is known for its policy of openness and skill in bringing together the Spanish-speaking world involved in space activities and their regulation for over half a century now. Last April, in his presentation to the LSC in Vienna, its President, Professor Santiago Ripol Carulla, confirmed the readiness of the Institute to cooperate in the various international and regional settings on these matters.

Many of our Space Law Committee members are currently teaching international law/space law at public and private universities and other research centers around the world. Results are encouraging, particularly at postgraduate and doctoral thesis level. They help towards capacity building and raising awareness and reveal a choice of topics currently surfacing on the agendas of the various intergovernmental organisations.

Another academic landmark in 2017, in the field of capacity building, was the invitation to our General Rapporteur, Professor Stephan Hobe to head, together with Professor Philippe Achilleas from the University of Paris-Sud, a summer course on Space Law at The Hague Academy of International Law (International Court of Justice, The Hague). Twenty-two young scholars, mostly with PhD degrees, were selected to conduct research on “Fifty years of the Outer Space Treaty -the Outer Space Treaty in fifty years” to be published shortly.

In the following paragraphs the 2017 activities of the ILA Space Law Committee on the central topics of our mandate (2014-2020) and specific questions -now updated for the Sydney Conference- will be summarised in turn.

Central Topics

1. The settlement of space law disputes

The task of the ILA Committee during 2017 was to continue exploring the effectiveness of the PCA Optional Rules on Arbitration of Disputes relating to outer space activities (hereinafter the ‘PCA Outer Space Rules’) in different landscapes and raising awareness on their existence and advantages.

In 2017 an interesting innovation concerning the stage of evidence in dispute settlement procedures began operating. It was designed by Ray Purdy, a member of the ILA Space Law Committee, who started the company ‘Air and Space Evidence -the World’s First Space Detective Agency’ (founded in 2014 and with Headquarters in Swindon, UK). The company is offering services to clients by providing earth observation imagery from satellites, drones and aircraft to be used as evidence in dispute settlement procedures. The technology is based on research carried at University College London. The company designs satellite monitoring programmes, particularly in the field of environmental crime, and is assisting governments to confront waste crime by means of a new satellite detection device, ‘Waste from Space’, which can identify unlawful waste landfill sites thus enabling governments to catch criminals on the spot. This company was awarded the ‘European Earth Observation Product of the Year for 2017’.


This topic was further developed at the 2016 Johannesburg Conference in light of a UN Conference Room Paper submitted by the Committee Chair to the Fifty-fifth session of the LSC. The idea of liaising with ICAO is helpful as there are points to share. However, we do not entirely agree with their definition of suborbital flight, for example, when it states that ‘(suborbital flight) is a flight up to a very high altitude without sending the vehicle into orbit’. It should be noted that this definition has only received very timid support from the legal world.

At that time, the Johannesburg working session of the Space Law Committee was calling attention to the fact that no legally binding definition -or description- of suborbital flight had so far been accepted or written into a

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4 See Annual Newsletter 2017, p.1, Ray Purdy and team. Their product was selected because it supported the implementation of some of the key United Nations sustainable development goals in the most innovative way.

5 A/AC.105C.2/2016/CRP.10
legally binding instrument (Report of the Seventy-Seventh ILA Conference, 143). Rather, some Committee members suggested instead using the term ‘non-orbital’. Others, such as the Committee Chair and Rapporteur, supported the wording ‘suborbital activity’ due to its all-embracing character. The outstanding legal issues discussed by the Committee since the 2014 Washington Conference -and followed up at the 2016 Johannesburg Conference- were further looked into during 2017 having in mind, as had been the case in the past with other topics, the possible drafting of guidelines for a model law on this matter. Examples of this are space debris (1994 Buenos Aires, 66th ILA Conference), the settlement of space law disputes (1998 Taipei, 68th ILA Conference) and national space legislation (2012 Sofia, 73rd ILA Conference).

As Chair of this Committee I am pleased to announce that our general Rapporteur, Professor Stephan Hobe, has produced a most complete and agile first draft on Suborbital Activities. This can be found in Part Two of the Report where he breaks new ground clarifying a number of terminology issues and other related questions to be discussed at the Sidney working session. This is progressive development of international space law at its best.

That said, there is a recent landmark on suborbital activity which should not remain unnoticed, namely the UK Space Industry Act of 15 March 2018. Among the various goals in sight this brand new piece of national space legislation emphasizes, in Chapter 5, on terminology questions. Section 4 of the referred Chapter states that ‘space activity’ means (a) launching or procuring the launch or the return to earth of a space object or of an aircraft carrying a space object, (b) operating a space object or (c) any activity in outer space and ‘suborbital activity’ launching or procuring the launch of, operating or procuring the return to earth of (a) a craft to which subsection (5) applies or (b) an aircraft carrying such a craft. The Act clearly excludes space activity from the definition of suborbital activity and then indicates that Subsection (5) applies to (a) a rocket or other craft that is capable of operating above the stratosphere and to a balloon that is capable of reaching the stratosphere carrying crew or passengers.

This Act appears, no doubt, a step in the right direction.

3. Space debris in today's international settings

This is a topic under permanent review by the ILA Space Law Committee since the adoption, by its Sixty-sixth Conference in Buenos Aires (1994), of the International Instrument on the Protection of the Environment from Damage caused by Space Debris. In order to check its consistency with the current context we revise this Instrument regularly, including views from both international space lawyers and the scientific world.

The ILA Committee notes that, as far as the effectiveness of the 2007 COPUOS Guidelines on Space Debris Mitigation is concerned, results are encouraging. Moreover, the duty of states to inform OOSA of any developments for the mitigation of space debris is most welcome.

We continue alert to further developments on state practice and possibilities for space debris removal within the framework of international law. This is no easy challenge. In this sense, the ILA Committee strongly favours a closer cooperation between the STSC and the LSC on these topics where international cooperation and interdisciplinary approaches have an essential part to play.

Specific questions

1. Space security, cyber law and the need for global policies to be designed in the UN framework, given the high dependency of latest generation technologies on both space and cyber areas. This includes the current debate surrounding non-state actors, injurious acts committed through cyberspace and responsibility for malicious cyber operations.

2. Legal nature of natural resources from space and within space, and mining activities on the Moon and Celestial Bodies. This specific topic was analysed in depth at our working session in Johannesburg, especially due to the recent developments in the legal field at the time, notably the 2015 US Act on Commercial Space Launch Competitiveness and the reaction, on 20 December of that year, from the IISL Board in the form of a Statement. To this we should add other important recent developments, namely the 2017 Law on Space Resources of Luxembourg and the work of The Hague International Space Resources Governance Working Group.
Specific question 1: Security in space, cyber security and international law

The ILA considers that questions underlying space security, cyber security and space and cyber policies, albeit consistent with the international settings, will trigger a myriad of political arguments and controversy. Although at times minimised, it is an area of serious challenges and threats. Today’s ‘Global Security Threat’ and the unique characteristics of what is currently known as the ‘New War’ require a profound analysis from different standpoints in search of solid courses of action.

The doctrine is currently perturbed by the consequences for security arising from the developing and possible misuse of latest generation technologies. Study Groups are being set up in the framework of the Royal Institute of International Affairs (Chatham House London, International Security Department), the International Institute of Space Law (IISL) and the International Law Association (ILA), among others. The initial question, raised originally by IISL, is whether cyber law can be considered an entirely new chapter of international law and if, as such, it represents a self-contained regime.

A wide range of definitions and descriptions have been proposed, from different angles, in an effort to explain what should be understood by ‘cyberspace’. When it comes to choosing it is no easy task. Yet, a scientific description appears the best option, descriptions being non-exhaustive and flexible in contrast to the confining nature of definitions.

A general view concurs on the need to draw a clear line between the Internet and Cyberspace. In the first place, the Internet has a physical dimension which Cyberspace lacks. The latter is a non-physical element. Land, water and air are physical elements that can be measured whereas the non-physical characteristic of cyberspace is indisputable.

Coming back to the essence of the initial question entails establishing whether cyber law forms part -or not- of international law proper. It should be noted that harm or damage arising from the use of cyber technology makes whoever caused that damage responsible for compensation to the extent of a restitutio in integrum. At least theoretically it is clear that this general principle of law is applicable.

In a way remindful of the early stages of space law when the UN were immersed in the drafting of the Space Treaties, cyber law should be seen today as one of the youngest branches of international law departing dramatically from the traditional rules of international law applied on earth. Therefore, it is sensible to hold that international law is, in fact, applicable to cyberspace. If adapted and adjusted to apply to this new incommensurable scenario, international law may transform into lex specialis, as part of the doctrine argues. As space law, this new branch of international law -cyber law- is highly influenced by the advances of science and technology which, in turn, are introducing significant changes in the conduction of international relations in today’s world.

In short, the idea that international law applies to cyberspace is gradually gaining ground. In 2013 a Group of UN Experts on international security stated that international law, the UN Principles and the UN Charter applied mutatis mutandi to states involved in activities in the referred non-physical cyberspace and that, at times, international law would have to adapt in order to become consistent with the uniqueness of cyberspace. Consequently, for reasons of consistency, new law (lex specialis) is expected to develop.

Courses of action

To sum up, it is recommended that space security and cyber security policies be jointly designed within the UN framework given the high dependency of both these areas on latest generation technologies. Among the suggested topics for study, cybernetic attacks aiming at the remote control of a satellite, jamming and spoofing, policy solutions, attacks on satellites in orbit in order to cause orbit decay or collision, regional perspectives and the responsibility of non-state actors for harmful cyber activities should be addressed initially. ITU’s experience, on the governmental front, and the contributions by the Royal Institute of International Affairs, in the private field, will no doubt give way to deeper research on these challenging questions.
Finally, it is suggested to add the teaching of cyber law as a new topic of the space law and international law syllabi. As observed earlier, this is already being carried out by some of us with encouraging results, particularly at doctoral level, and would go a long way in the field of capacity building.

Specific question 2: Legal nature of natural resources from space and space mining activities.
At the ILA Seventy-Seventh Conference (Johannesburg 2016) the legal aspects of natural resources from space and the outstanding current controversy on space mining activities were thoroughly examined in light of state practice and national space legislation. The topic was introduced at the Johannesburg working session by both the Chair and Rapporteur of this Committee, in introductory Reports, and Committee member Professor Mahulena Hofmann made a special presentation on Luxembourg’s position on space mining. After lengthy analysis some general conclusions were reached, namely to be alert on further state practice and the reactions thereof in the different circles. Moreover, at this stage, the possibility of drafting general guidelines to avoid issues escalating to unmanageable levels should not be discarded. The full working session debates are published in the 2016 Report of the Seventy-Seventh Conference of the ILA, in book format (142-154) and online.

At this point in time it is rather discouraging for the international community to find itself so sharply divided on questions of this magnitude. This was clearly perceived in 2017, at the Fifty-sixth Annual Session of the LSC, by the tenor of the interventions and reactions. It should be noted, however, that Professor Hofmann, in a recent exchange of views on the matter, considered that a slight step forward was perceived since the Johannesburg working session.

For these reasons we believe that the suggested code of conduct -if merely of a recommendatory nature- would help minimise misunderstandings and pave the way towards clearer horizons.

THIRD REPORT OF THE ILA SPACE LAW COMMITTEE
SEVENTY-EIGHTH CONFERENCE OF THE INTERNATIONAL LAW ASSOCIATION, SYDNEY
(2018)

PART TWO
Draft Rules for Suborbital Activities
by Professor Stephan Hobe
Committee Rapporteur

I. Chronology of the work of the ILA Space Law Committee on the topic of suborbital activities

For the work of the ILA Space Law Committee, in 2013, the Rapporteur was tasked to draft a report on “Legal problems of private commercial manned suborbital flights”. In 2016, the Rapporteur prepared a second report for the 77th biennial conference of the ILA in Johannesburg which elaborated on the points laid down in the 2014 report and provided an update of more recent developments concerning suborbital activities, such as definitional issues, the role of existing technological concepts and projects for determining applicable rules, state practice, liability aspects and the avenues for possible evolution of commercial suborbital touristic flights to a transportation market.

During the 77th Biennial Conference in Johannesburg, South Africa, the Rapporteur has been mandated to formulate draft rules for suborbital activities which will be outlined below. Therefore, this paper does not aim at

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7 Report from the working session of the Space Law Committee, 77th biennial Conference of the International Law Association, 7-11 August 2016, Johannesburg, South Africa.
making an all-comprehensive proposal but rather at outlining points for consideration in the future legal discussion.

II. General overview of the legal problems related to suborbital activities

The regulation of suborbital activities poses a long list of unsolved legal issues which have been discussed in fora such as ICAO, UNCOPUOS and UNOOSA on the international level, and by national authorities, e.g. the U.S. Federal Aviation Administration. They include:

- the lack of legally binding definitions clarifying relevant terms such as, e.g., ‘suborbital vehicle’, ‘suborbital flight’ and ‘suborbital activity’;
- the lack of clarity regarding the applicable international law;
- the relevance of air law and space law;
- the scope and possible elements of a potential sui generis legal order;
- the question of a competent authority for the regulation;
- the relationship between national legislation and the applicable international law to suborbital activities;
- the scope of a comprehensive liability and insurance regime for suborbital activities;
- the need for a registration regime for suborbital activities;
- the need for an extensive authorization regime guaranteeing the “air/space-worthiness” of suborbital vehicles as well as the coordination between air traffic and space traffic, including objects using the so-called meso-space (e.g. HAPS);
- policies applicable to passengers onboard a suborbital vehicle;
- the status of different categories of persons participating in suborbital activities (e.g. pilots, trained crew, passengers);
- various aspects of space transportation as an application of suborbital activities.

III. Draft rules and explanatory remarks

1. Definition of a ‘suborbital activity’

With reference to the (not legally binding) working definition of ‘suborbital flight’ proposed by ICAO, a suborbital activity could be defined as:

An activity aimed at the transportation of persons or cargo to a very high altitude, including transportation between two points on Earth that involves a parabolic flight which does not send the vehicle into orbit.

Explanatory remark: For the purpose of these draft rules, the expression ‘suborbital activity’ is used instead of the narrower term ‘suborbital flight’. The definition proposed by ICAO in 2010 for suborbital flights entails the following key elements describing a suborbital flight:

- the need to reach a ‘very high altitude’ and
- the fact that the vehicle does not necessarily have to be sent ‘into orbit’.

The exact altitude may vary for different suborbital concepts and does not define whether outer space has been reached or not as there is no legal boundary between airspace and outer space.

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8 See the Concept of Suborbital Flights: Information from the International Civil Aviation Organization (ICAO), paper A/AC.105/C.2/2010/CRP.9, presented at the 49th session of the Legal Subcommittee of UNCOPUOS, 19 March 2010.
To send a vehicle ‘into orbit’ would mean that the needed orbital speed has been reached to enable the vehicle to complete a full orbit. This is not, however, a necessary condition for a suborbital flight to be considered as such. As transportation is the most relevant application of suborbital flights, the broader term ‘suborbital activity’ is used here. It encompasses not only the physical characteristics of a non-orbital parabolic flight but also the main aim thereof, i.e. to allow persons or cargo to reach a certain altitude without going into orbit, including the possibility of reaching a different point on Earth to the initial starting point of the flight.

2. Definition of a ‘suborbital vehicle’

For the purposes of these draft rules, a suborbital vehicle could be defined as:

A vehicle used for a suborbital activity.

Explanatory remark: The neutral notion ‘suborbital vehicle’ is used in order to differentiate vehicles used for suborbital activities from aircraft and space objects without linking it to either legal regime.

Suborbital vehicles may be constructed and function according to various technological concepts (e.g. VTVL, HTHL or VTHL). This may include vehicles operating as aeroplanes for a part of the operation (i.e. horizontal take-off and/or horizontal landing), vehicles that do not classify as aircraft for any stage of the operation (i.e. vertical take-off and/or vertical landing suborbital rockets), also composite vehicles consisting of a carrier craft (aeroplane) and a rocket-engine aircraft used for the parabolic part of the flight.

As the existing concepts are non-exclusive, the proposed definition is kept general in order to encompass all possible technological varieties for vehicles which can be used for suborbital activities without aiming at defining the vehicle either as an aircraft or as a space object.

3. Applicability of international law to suborbital activities

International law is applicable to suborbital activities.

Explanatory remark: Unless a lex specialis exists, general international law is applicable to suborbital activities.

A suborbital authority is the entity, private or governmental, which carries out the suborbital activity registered in one State.

Explanatory remark: As suborbital activities take place mostly outside national territory and airspace, this involves the need to associate the entity carrying out the activity to a State (based on the concept of the launching State established in space law). This ‘attribution’ of the suborbital authority can be established on the basis of the registration of the entity in a certain State.

5. Authorisation

Every suborbital activity must be authorized by the State in which the suborbital authority has been registered.

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9 Vertical take-off/vertical landing (VTVL) suborbital vehicles are launched and landed like rockets. Horizontal take-off/horizontal landing (HTHL) suborbital vehicles use a runway for start and landing similar to airplanes. The combined vertical take-off/horizontal landing (VTHL) concept is used for vehicles using thrust for launch which can land on a runway.

10 The most famous example for a composite suborbital vehicle is the concept that won the X Prize in 2004, SpaceShipOne/White Knight, and its successor SpaceShipTwo/White Knight Two (in test flight since 2013, but not yet operating).
Explanatory remark: As suborbital activities involve various significant risks which may materialize on Earth, in air space or at a higher altitude, an extensive regime for governmental authorisation has to be established. Such a regime is to be designed to enable national authorities to apply strict criteria to suborbital authorities for their suborbital activities. The main elements of such a legal regime will be laid down in these draft rules.

6. Registration of suborbital activities

Suborbital activities must be registered in a specifically established international registry for suborbital activities.

Explanatory remark: This (new) international registry shall be maintained by the UN (UNOOSA?) or its special agencies (ICAO?) to allow for transparency on the number, purpose, time and duration of suborbital activities while crossing national and international airspace, meso-space and possibly touching upon orbital paths of space objects during the apogee of the parabolic flight.

A new international registry is needed as the existing registry for space objects is not suitable for suborbital vehicles.

7. Common elements of national authorisation regimes

The criteria which States shall apply when deciding on the authorisation of suborbital activities include:

- Main purpose of activity;
- Route description: altitude/time of flight/start and landing location;
- Obligation for coordination with ground air traffic control;
- Type of cargo/number of passengers;
- Safety requirements for the vehicle: Air/space worthiness, disclosure of main design features for the vehicle;
- Registration of the suborbital vehicle in a national register;
- Insurance policy;
- Conditions for recourse between the State and the suborbital authority;
- Requirement for an insurance of the vehicle and of any persons participating in the activity.

The State authorising the suborbital activity is liable for any damage caused to persons or property for the whole duration of the activity.

Explanatory remark: Similarly to space law where the Launching State is liable for damages caused by space objects to property or persons, the victims suffering damages to their property, health or life caused by suborbital activities should be able to claim compensation directly from the State and not from the (private) suborbital authority. The reasoning behind this is that suborbital activities are ultrahazardous and carry a significant damage potential during launch/take-off and re-entry/landing. The compensation for such damages might be in disproportion with the financial possibilities and scope of insurance of a private entity so the only
way to safeguard the interest of the damaged persons would be by addressing the claim for compensation against the State. In the internal relationship between the State and the suborbital authority, national legislation should set insurance as a requisite for authorization and enable the State to take regress against the private entity. As to the scope of compensation, States should consider whether a liability cap is advisable.

Different types of damages may be noted:

- Damages caused to persons involved in the suborbital activity, e.g. pilot/crew/passenger;
- Damages to persons not involved in the suborbital activity (third-party liability);
- Damages to property (of third persons).

For the consideration of specific aspects of liability, be it for third-party liability or contractual liability for suborbital activities, the experience of the air and space industry could be relevant.

### 9. Status of crew and passengers

**Explanatory remark:** No legal definition of the colloquial term ‘space tourist’ exists so far. As far as persons on board suborbital vehicles are concerned, the differentiation between trained crew and non-trained persons on board may be important in terms of the applicable laws and duties for liability and rescue missions as well as for insuring such activities and the health and life of spaceflight participants.

The US national legislation\(^{11}\) distinguishes between crew members and spaceflight participants and thereby a member of the ‘crew’ is “any employee of a licensee or transferee, or of a contractor or subcontractor of a licensee or transferee, who performs activities in the course of that employment directly relating to the launch, reentry, or other operation of or in a suborbital vehicle that carries human beings.”\(^{12}\) Space flight participants are defined as individuals who are “not crew, carried aboard a launch vehicle or re-entry vehicle”.\(^ {13}\) For crew members onboard a suborbital vehicle, a “Code of Conduct” could be elaborated, in a way similar to the current rules governing the activities of astronauts.

### 10. Legal regulation of suborbital facilities

As to the facilities used for suborbital activities, air/spaceports may be used. Details on their establishment and the legal requirements for their use must certainly be considered and could possibly be contained in some specific (statutory) legislation.

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\(^{12}\) 49 US Code § 70102.

\(^{13}\) 49 US Code § 70102; 14 CFR § 401.5.