

A NEW INTERNATIONAL CONVENTION TO GOVERN LIABILITY IN RELATION TO COMMERCIAL SPACE TOURISM – IS IT REALLY NECESSARY?

Carol Ronan-Heath

International Institute of Air and Space Law, Leiden University, United Kingdom,
c.a.ronan-heath@umail.leidenuniv.nl

In order to establish whether a new international convention to govern liability in relation to commercial space tourism is required, the author commences with an investigation into the lessons learned over the last 80 years by air carriers, governments and international organizations in the realm of liability for air carriers since the early days of flight in the early 20th century. A review of the current legal position governing liability for activities in space follows addressing, inter alia, the following issues:

1. A review of the international conventions governing activities in space to the extent that they concern liability for damage to property or loss of human life;
2. The current regime in relation to liability established by the State of New Mexico in anticipation of Virgin Galactic's inaugural sub-orbital space voyage vis-à-vis its "passengers";
3. The extent to which, if at all, insurers of space activities will influence such liability considerations or operations for future missions/excursions of a commercial nature.

The author will then, in conclusion, discuss the advantages and disadvantages of establishing a new international regime governing liability for space tourism. The author argues that, on balance, it will be necessary at some point in the near future to engage state parties, at least from space-faring nations, to work towards a new convention governing liability in relation to commercial space tourism and outlines key provisions which should be dealt with therein as well as anticipating solutions for the short to medium term. For the avoidance of doubt, this paper concentrates on sub-orbital space tourism as proposed by Virgin Galactic although acknowledges other forms of space tourism where relevant.

I. INTRODUCTION

The recent past has seen many developments towards a new era of space tourism, two of which are worthy of mention here:

(a) Dennis Tito was the first space "tourist" in April 2001 followed by 6 more who paid large amounts of money to experience space travel whilst visiting the International Space Station ("ISS"); and

(b) Earlier this year, on 21 July 2001, Shuttle-Atlantis¹ landed for the last time marking the end, for the time being, of US government funded space exploration activities.

Together, these two events mark the dawn of a new era – commercialisation of space exploration funded by

¹ <http://www.guardian.co.uk/science/final-space-shuttle-mission> (accessed on 25 August 2011).

The author is currently an LLM student at Leiden University. This paper represents the personal views of the author and not those of Leiden University or any other organisation to which she is affiliated.

private sources rather than government initiated projects on behalf of states.

Virgin Galactic's proposed commercial space flights on board SpaceShipTwo to be launched by WhiteKnightTwo whilst airborne makes sub-orbital space tourism an even closer reality with operations due to start as soon as next year. Virgin Galactic's proposal brings many interesting legal issues concerning air and space law to the fore. This paper will identify and discuss some of the many legal issues pertaining to liability in respect of "passengers" on board these proposed "flights".

II. AIR LAW LIABILITY CONSIDERATIONS - PASSENGER

Liability for passengers on board aircraft operated by carriers providing international commercial air transportation services was first considered in the early part of the 20th century.

Operators of aircraft in these early days of flight needed some level of protection from passenger liability claims, *inter alia*, in order to allow them to develop and continue operating.

Passengers were high value individuals, much like a modern day Dennis Tito, who saw themselves very much as adventurers who wanted to experience air travel.

Hobe refers to Shawcross & Beaumont which states that “there was a perceived need to unify certain aspects of law, especially liability, to protect the travelling public from unreasonable contract clauses, and to limit the liability of the carrier to protect an infant industry from potentially ruinous, possibly not insurable claims”²

The product of long deliberations culminated in the drafting of the Warsaw Convention of 1929 (“WC”) and although it has been revised several times³ and recently modernised it has largely stood the test of time. It called for State Parties to protect air carriers by, *inter alia*, implementing unbreakable liability limits for bodily injury and/or death of passengers in the event of an “accident” during “international carriage”, i.e. from the point of embarkation, during flight and until disembarkation.

In 1999, seventy years after the WC was initially signed, state parties came together and effectively modernised the WC and drafted the Montreal Convention⁴. To quote Kaiser and Meija-Kaiser “it [i.e. WC] was superceded by the Montreal Convention, which did not so much change the Warsaw foundations, but adapted it to the needs of the modern mass traveller using the services of a mature, safe and efficient airline industry. But the requirements of modern consumer protection prevail: In the improbable event of an accident, the complexity of aviation makes it very difficult for the passenger to prove the fault of the air carrier. For that reason, the liability limitation of Warsaw was abandoned and replaced by a staggered

² S. Hobe/J. Cloppenburg, *Towards a New Aerospace Convention? Selected Legal Issues of Space Tourism*, 47th Colloquium of the International Institute of Space Law (2004) (IAC-04-IISL.4.14) page 377 - Footnote 32 – Shawcross & Beaumont, *Air Law*, Vol. 1, ch. VII 128.

³ As amended at the Hague in 1955 and by Protocol No. 4 of Montreal in 1975.

⁴ Convention for the Unification of Certain Rules for International Carriage by Air (1999).

regime with strict liability up to a cap and, subject to counter-evidence, presumed unlimited liability there above⁵ (the author refers to Articles 17 and 21 of the Montreal Convention 1999 (“MC”).

The Warsaw regime (i.e. WC, as amended, and subsequently modernized and replaced by MC) has served its purpose: the international aviation industry has flourished and developed into a sophisticated, highly regulated and relatively safe method of transport which carries more than 4.5 billion passengers per annum⁶. It has largely stood the test of time despite recent erosion in some jurisdictions where the text of WC/MC has occasionally been disregarded in favour of pro-consumer / pro-claimant judgments.

III. SPACE LAW LIABILITY CONSIDERATIONS

Outer Space Treaty

The Outer Space Treaty (OST)⁷ was signed in 1966 against a very different political landscape in the middle of the Cold War. State Parties were primarily concerned about preserving equitable access to space and safeguarding its use for peaceful purposes only which is reflected in the following extracts from the preamble:

“Inspired by the great prospects opening up before mankind as a result of man’s entry into outer space”

“Recognizing the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes”

“Believing that the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development”

Article 1 sets out the concept of equality for all states and that outer space “shall be the province of all mankind”. Further, it goes on to state that outer space shall be “free for exploration and use by all States

⁵ S. Kaiser/M. Meija-Kaiser, *Space Passenger Liability*, 46 *Space Law Colloquim* (2005) (IAC-05-E.6.3.04), page 207 (208).

⁶ Source: ACI World Airport Traffic Report (2009).

⁷ Treaty on Principles Governing the Activities of States in the Exploration and use of Outer Space, including the Moon and other Celestial Bodies – adopted by the General Assembly in its resolution 2222 (XXI) of 19 December 1966.

The author is currently an LL.M student at Leiden University. This paper represents the personal views of the author and not those of Leiden University or any other organisation to which she is affiliated.

without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies”.

Article 6 stipulates that “a national state responsibility for outer space activities” regardless of the actor, i.e. governmental or not which appears to allow commercial activity in outer space. Note however, that the OST also states that activities carried on by non-governmental entities are to be regulated by the relevant State Party whose nationals are engaging in such activities by stating that “[such] 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.”

The concept of liability is initially referred to at Article 7 OST, whereby “[e]ach 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 space or in outer space, including the Moon and other celestial bodies.”

Article 8 OST states that only that a State “on whose registry an object is carried shall retain jurisdiction and control over such object and over any personnel thereof”, which, according to Hobe, establishes “some kind of quasi-territorial jurisdiction”⁸.

Liability Convention⁹

The OST was followed relatively quickly by the signing of the Liability Convention in 1971, the preamble of which sets out clearly its intentions:

“Taking into consideration that, notwithstanding the precautionary measures to be taken by States and international intergovernmental organizations involved

⁸ Hobe/Cloppenburg, *supra*, page 381.

⁹ Convention on International Liability for Damage Caused by Space Objects – adopted by the General Assembly in its resolution 2777 (XXVI) of 29 November 1971.

in the launching of space objects, *damage may on occasion be caused by such objects*¹⁰,

“Recognizing the need to elaborate effective international rules and procedures concerning liability for damage caused by space objects”¹¹ and to ensure, in particular, the prompt payment under the terms of this Convention of a full and equitable measure of compensation to victims of such damage”.

Article 1 describes key terms used in the Liability Convention for “damage”¹², “launching”¹³, “launching State”¹⁴ and “space object”¹⁵.

Article 2¹⁶ “establishes a regime of absolute liability of the launching State for damage on the surface of the earth to aircraft in flight caused by the “space object” of a launching State”¹⁷.

Article 3, sets out parameters for fault based liability on the part of the tortfeasor State only if damage is caused “elsewhere than on the surface of the Earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State”.

Article 6 sets out that the notion of contributory negligence or fault on the part of the “claimant” State will minimise or negate liability of the relevant

¹⁰ Emphasis added.

¹¹ Emphasis added.

¹² (a) The term “damage” means loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or property of international intergovernmental organizations (Article 1(a) of the Liability Convention).

¹³ (b) The term “launching” includes attempted launching (Article 1(b) of the Liability Convention).

¹⁴ (c) 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;

¹⁵ (d) The term “space object” includes component parts of a space object as well as its launch vehicle and parts thereof.

¹⁶ A launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth or to aircraft in flight (Article 2 of the Liability Convention).

¹⁷ Hobe/Cloppenburg, *supra*, page 380.

The author is currently an LLM student at Leiden University. This paper represents the personal views of the author and not those of Leiden University or any other organisation to which she is affiliated.

launching State causing damage provided that such damage does not result from “activities conducted by a launching State which are not in conformity with international law including, in particular” the OST.

Article 7 sets out the exclusion of liability in respect of “damage caused by a space object of a launching State to:

(a) Nationals of that launching State;

(b) Foreign nationals during such time as they are participating in the operation of that space object from the time of its launching or at any stage thereafter until its descent, or during such time as they are in the immediate vicinity of a planned launching or recovery area as the result of an invitation by that launching State.

According to Hobe, Article 7 means that in the case of space tourism “passengers voluntarily put themselves at risk by participating in a space mission and should therefore not benefit from the provisions of the Liability Convention. Passengers and crew members of manned space missions are therefore not protected by the provisions of the Liability Convention.”¹⁸

Article 8 stipulates who can make a claim based on the Liability Convention. Article 9 stipulates how such claims must be presented, i.e. through diplomatic channels and Article 10 prescribes a 1 year limitation period in which claims must be made.

Registration Convention¹⁹

In order to facilitate exploration and use of outer space by States, the Registration Convention was signed in 1974. Again, the following preamble describes the State Parties’ intent:

“Believing that a mandatory system of registering objects launched into outer space would, in particular, assist in their identification and would contribute to the application and development of international law governing the exploration and use of outer space”

Article 2 requires launching States to register space objects launched in its territory in a specific register and

¹⁸ Ibid, p. 380.

¹⁹ Convention on Registration of Objects Launched into Outer Space – adopted by the General Assembly in its resolution 3235 (XXIX) of 12 November 1974.

The author is currently an LL.M student at Leiden University. This paper represents the personal views of the author and not those of Leiden University or any other organisation to which she is affiliated.

inform the Secretary-General of the United Nations of the establishment of such a registry.

Article 3(2) states that there will be “full and open access to the information in this Register.”

Wollersheim stated that “the breaking point for space tourism could be the definition of space objects”²⁰

However, there is no clear definition of “space object” in any of the above-referenced international instruments.

Hobe took the view that “the registration of an object in accordance with the Registration Convention is a strong indication that the vehicle is a space object”.²¹ He goes on to state: “that there is no agreement on the delimitation issue and no clear rule can be identified in international law, it is doubtful and depends on each case whether a suborbital vehicle can be considered to be a space object.”²²

IV. AIR LAW -V- SPACE LAW

In order to ascertain which of the two liability regimes/systems of international law outlined above would apply to issues arising in the context of space tourism it is necessary to look at how space tourism of the Virgin Galactic type compares to traditional aviation and space activities as currently regulated.

Freeland, quoting Hobe, states that “the term space tourism has been defined as “any commercial activity offering customers direct or indirect experience with space travel””²³. He further states, quoting O’Brien, that a space tourist is “someone who tours or travels into, to, or through space or to a celestial body for pleasure and/or recreation”²⁴.

By the very fact that this activity is (a) commercial in nature (i.e. in return for payment of consideration) and (b) is offered by non-governmental agencies (i.e. Virgin Galactic), the space law treaties referred to above have little, if no, direct application to this activity because they govern relationships between State Parties

²⁰ W. Wollersheim, Considerations Towards The Legal Framework of Space Tourism, 2nd International Symposium on Space, Bremen 21-23 April 1999

²¹ Hobe/Cloppenburger, supra, footnote 22.

²² Hobe/Cloppenburger, supra, page 381.

²³ S. Freeland, The Impact of Space Tourism on the International Law of Outer Space, 48 Space Law Colloquium (2005) (IAC-05-E6.3.01) page 178 (179)

²⁴ Ibid, p. 179.

to the relevant treaty. This lack of direct cause of action under the space law treaties is quite possibly the crux of the issue in relation to the current lack of a liability framework in relation to commercial space tourism.

Further, as observed by Freeland, “[w]hile they [i.e. space tourists] could institute legal proceedings under national laws, there are limitations – such as sovereign immunity – that may represent a bar to a claim for compensation”²⁵.

Hobe envisages a system whereby air law governs the initial phase of the “flight” and space law governs the point from which the tourist cabin (i.e. SpaceShipTwo) is launched from the aircraft “carrier” (i.e. WhiteKnightTwo) and at that point becomes a space object.

He refers to “[t]he ordinary meaning of the term “aircraft” is reflected in the annexes to the Chicago Convention, where the term is defined as “all machines which can derive support in the atmosphere from the reactions of the air”²⁶.

Hobe²⁷ makes a compelling argument in relation to such space vehicles as that proposed by Virgin Galactic in that the first part of the carriage should be treated as international carriage by air governed by WC/MC as applicable. The point of separation (i.e. when the cabin carrying the “space tourists” is launched from the aircraft carrying cabin) would become the point of destination – as long as this point of destination is in a different state party to the point of take-off then it could be construed as international carriage by air. However, what if this is not the case? What if the separation takes place over the high seas or in the same national airspace as the point of take-off? Then legally WC/MC cannot apply and national air law would apply and would work against a uniform approach from a legal perspective dependent upon where the “launch” takes place geographically. International air law is not easily applied to the suborbital space flight envisaged by Virgin Galactic when it is taken as a whole, i.e. the two components together.

In a later paper, Hobe also suggests that the classification of the space craft/vehicle could be the determining factor in assessing which legal regime

²⁵ Freeland, *supra*, at p. 183.

²⁶ Hobe/Cloppenburg, *supra*, at p.379.

²⁷ *Ibid*, p. 379.

applies to any particular type of space tourism activities.²⁸

This is further assisted by Hobe’s observation which states: “[y]et both the Liability Convention and the Registration Convention, two separate treaties, make it clear that the component parts of a space object, as well as its launch vehicle and parts thereof, are clearly included in the term “space object”²⁹.

The practical impact of which could render the aircraft-carrier a component part of the cabin which is, by definition, a space object. Nevertheless, defining SpaceShipTwo as a “space object” for the purposes of international space law does not render the legal relationship in terms of liability any clearer because it does not govern relationships between private individuals (companies or persons) only those between State Parties.

Additionally, there has also been discussion in relation to different approaches taken by regulators in relation to commercial sub-orbital space tourism. For example, the US regulators have implemented regulations “in order to promote the development of the emerging commercial human space flight industry”³⁰ which will be discussed more fully later in this paper. Regulators across the Atlantic have decided to treat suborbital commercial human space flight as a subset of commercial space flight rather than aviation. To quote Mineiro³¹, “it (i.e. suborbital commercial human space flight) can be understood as the carriage of a person for compensation on a suborbital trajectory³² that passes through outer space”. Also, Mineiro notes the

²⁸ S. Hobe, *Legal Aspects of Space Tourism*, Neb. L. Rev. (2007) page 439 (442 et seq).

²⁹ *Ibid*, footnote 19.

³⁰ M.C. Mineiro, *An Intersection of Air and Space Law: Licensing and Regulating Suborbital Commercial Human Space Flight Operations*, ABA Air & Space Lawyer, Volume 22(4)(2010) page 9, footnote 5 - H.R. 5382, 107th Cong., preamble (2004). Enacted as Commercial Space Launch Amendments Act of 2004. The CLSA and related amendments are codified in Title 49, Subtitle IX, Chapter 701, of the U.S. Code.

³¹ *Ibid*, page 9.

³² *Ibid*, footnote 1: Commercial Space Launch Act of 1984, Pub. L. No. 98-575, 49 U.S.C. sec. 70102(20) (2009), defines “suborbital trajectory” as “the intentional flight path of a launch vehicle, re-entry vehicle, or any portion thereof, whose vacuum instantaneous impact point does not leave the surface of the earth”.

The author is currently an LLM student at Leiden University. This paper represents the personal views of the author and not those of Leiden University or any other organisation to which she is affiliated.

differences in terminology employed by US regulators in relation to suborbital activities compared to aviation, i.e. “suborbital space flights carry paying “space flight participants”, not “passengers””. Further, “unlike aircraft passengers, space flight participants assume a significant degree of physical and legal risk.”³³

Conversely, EASA³⁴ considers that suborbital space vehicles are to be considered as aircraft per the definition in Annex 8 of the Chicago Convention which would give it regulatory authority over such vehicles and/or craft.

Mineiro concludes by stating the obvious conflict between the European approach from an aviation regulatory standpoint and the American regime specific to commercial human space flight initiatives in that a harmonized regime³⁵ will not be achievable.

In conclusion therefore, there are difficulties in applying air law and/or space law to the type of space vehicle proposed by Virgin Galactic. Amendments would have to be made to international law in order to render either system applicable to the commercial space tourism scenario and practically workable as a legal regime.

V. STATE OF NEW MEXICO

Virgin Galactic is to operate its suborbital space flights from Spaceport America based in the American state of New Mexico and must, at the time of operation, obtain the necessary state and federal licences required to operate commercial suborbital space flights in compliance with the Commercial Space Launch Amendments Act of 2004 (“CSLAA”).

US Congress confirmed, by virtue of the CSLAA, its intent to “promote the embryonic commercial human space flight industry”³⁶. The Act requires operators to provide specific information to space flight participants about the risks³⁷ involved in suborbital space flights and

³³ Ibid, page 10.

³⁴ European Aviation Safety Agency situated in Cologne, Germany established under remit from the European Union to regulate all aspects of aviation safety.

³⁵ Mineiro, *supra*, page 11.

³⁶ P. Alp, *Limitations on Liability as to Space Tourists, ABA Tort Trial Insurance, Aviation and Space Law Committee, Committee News, Summer 2011, page 1.*

³⁷ Ibid, footnote 17 – reproduced in full for ease of reference: “In particular, the Act provides that an

obtain “written informed consent to participate in the launch and re-entry”³⁸ [of the space vehicle]. Interestingly, as noted by Alp, the Act is “silent on whether these provisions, if complied with, are intended to immunize a compliant operator from tort liability” albeit that was the earlier intention as stated in earlier drafts of the legislation³⁹.

The Act gives limited authority to the FAA to regulate human space flight operations. The FAA’s view is that “the CSLAA is structured to allow the same kind of risk that mountain climbers and other adventurers seek in the context of space flight”⁴⁰ but leaves “open the issue as to how the risk is shared between operators and space tourists to the parties themselves and applicable state authorities”⁴¹.

Given the above framework, the State of New Mexico has enacted state legislation which seeks to “immunize operators from liability for negligence that results in harm to space flight participants”⁴² “resulting from the inherent risks of space flight activities”⁴³ except when “a space flight entity has actual knowledge or reasonably should have known of a dangerous condition on the land or in the facilities or equipment used ... and the danger proximately causes injury, damage, or death to the participant”⁴⁴. In practical terms, New Mexico law requires that space flight participants sign a “warning statement”⁴⁵. This legal framework creates a relatively risk-free environment for

operator, “may launch or re-enter a space flight participant only if” the operator: “has informed the space participant in writing about the risks of the launch and re-entry vehicle type...”; and “informed any space flight participant in writing, prior to receiving any compensation from the at space flight participant or (in the case of a space flight participant not providing compensation) otherwise concluding any agreement to fly that space flight participant, that the United States Government has not certified the launch vehicle as safe...”⁴⁹ U.S.C. sec 70105(b)(5)(A) and (B).

³⁸ Ibid, footnote 18.

³⁹ Ibid, footnote 19.

⁴⁰ Ibid, page 9.

⁴¹ Ibid, page 10.

⁴² Ibid, page 10.

⁴³ M-V. Carminati, *The Rules of Commercial Engagement: How does the United States regulate Private Human Spaceflight and what does it mean?* 2nd International IAA Conference on Private Human Access to Space, Arcachon, France (May 2011), page 4, footnote 28.

⁴⁴ Alp, *supra*, page 10.

⁴⁵ Carminati, *supra*, page 4.

The author is currently an LLM student at Leiden University. This paper represents the personal views of the author and not those of Leiden University or any other organisation to which she is affiliated.

space flight operators who are subject to the law of the State of New Mexico.

In addition, Alp goes on to discuss two further possible limitations to liability under the relevant state law of negligence of (a) assumption of risk and (b) express waiver which could further mitigate or exonerate space flight operators from liability in relation to harm or damage caused to space flight participants⁴⁶.

It seems, therefore, prima facie at least, that Virgin Galactic – presuming its operations are subject to the state law of New Mexico – could successfully limit its liability considerably by ensuring that informed consent is given to each and every space flight participant, that each space flight participant signs an appropriately worded “warning statement” (supra) and that they also comply with any other state and federal regulatory requirements.

VI. INSURER PERSPECTIVE

Insurers will play a key role in facilitating sub-orbital space flights of the type envisaged by Virgin Galactic. The extent to which insurers will be able to effect insurance coverage to the level required to protect participants, operators and manufacturers from risk of loss remains to be seen.

Insurers are currently not able to assess risk adequately in order to calculate the level of premium required for this specific industry. The issues outlined above add to this uncertainty as outlined below:

(a) there is no “track-record” of claims history from which to calculate the likelihood of losses going forward (and hence calculate the level of premium payable by individual parties);

(b) in the early stages, space flight participants will probably be high net worth individuals who – themselves – pose a fairly significant liability risk in the event that they are harmed or injured during a space flight;

(c) the lack of an agreed applicable legal regime means that policies will be drafted on hypothetical cases in that there is no jurisprudence to guide lawyers in the insurance field as there exists in other established industries e.g. commercial aviation;

(d) the hazardous nature of space flight – especially the use of rocket-powered space vehicles – poses high

⁴⁶ Alp, supra pages 11-12.

The author is currently an LLM student at Leiden University. This paper represents the personal views of the author and not those of Leiden University or any other organisation to which she is affiliated.

risk to insurers. It is very likely that insuring the first few space flights will be either prohibitively expensive or impossible;

(e) the recent spate of catastrophic natural disasters around the world has depleted insurers’ mutual funds and may result in a period during which insurers are reluctant to make bold moves in relation to unquantifiable risks such as the emerging commercial space tourism industry.

A new international legal regime governing liability issues in relation to commercial space tourism would assist insurers by creating a framework – or at least the foundations – against which they can begin to assess the risks involved.

VII. NEW LEGAL REGIME FOR LIABILITY IN SPACE TOURISM – ADVANTAGES AND DISADVANTAGES

The current situation is far from ideal. It would appear sensible to work towards a new international regime which governs liability and allocates risk between the participants wishing to experience space tourism and the operators/manufacturers who are seeking to make these adventures a commercial reality.

Many learned commentators have expressed a view that a new regime is required in relation to passenger (or space flight participant) liability, some of which are restated below:^{47,48}

“It is submitted that a modified version of the Montreal Convention offers the best example of how this [i.e. regulating liability of space carriers] is to be achieved within outer space law”⁴⁹.

“Without a uniform set of widely accepted international rules, the development of space tourism activities will be restricted”⁵⁰.

“for the time being space passenger liability needs to be capped at a level, which can be insured with acceptable premiums. Linked to the economical assessment of the insurable risk, this liability regime

⁴⁷ Hobe/Cloppenborg, supra, page 380, 382.

⁴⁸ R. Jakhu /R. Bhattacharya, Legal Aspects of Space Tourism, 45 Space Law Colloquium (2002) (IAC-02-IISL.2.09) page 112 (129).

⁴⁹ Z.N. O’Brien, Liability for Injury, Loss or Damage to the Space Tourist, 47 Space Law Colloquium (2004) page 386.

⁵⁰ Freeland, supra, page 179.

does not need to rely on technical distinctions relating to the nature of suborbital flights. Space passenger liability needs to be regulated internationally. Otherwise national regulation will lead to segmentation, extraterritorial application of national rules and conflict of laws.”⁵¹

“The need to adapt the current legal regime to accommodate private law elements that ensue with increasing private interests and activities in space is recognized and Article VI Outer Space Treaty already foresees that activities be carried on by non-governmental entities”⁵²

“The various forms of space tourism may even serve as a catalyst for the development of a future aerospace law”⁵³.

Freeland envisages a bilateral system in which national space policy/regulation operates alongside “a uniform and comprehensive regime for passenger liability arising from space tourism activities [that is] developed at the international level. These rules should allow for direct private claims by passengers and operate from the launch until the return to a final destination”.

The only possible disadvantage of initiating a new international legal regime is the timeframe in which it could be achieved – normally the law follows technology very slowly. Perhaps a framework legal regime would be more acceptable with specific protocol (or schedules) dealing with the different types of activity in space. The model for this would be the Cape Town Convention⁵⁴ whereby the body of the Convention contains core principles but the detail in relation to each moveable asset (i.e. aircraft, space assets) is contained in a related Protocol.

The more likely outcome is that individual states, countries and regions will develop their own domestic or regional approach to commercial space tourism in line with national space policies and regulations especially in those states/countries which are encouraging the development of the industry which will eventually form the basis of a new international legal regime and perhaps a new international convention on

⁵¹ Kaiser/Mejia-Kaiser, *supra*, pp 211-212.

⁵² L.J. Smith/K.U. Hoerl, *Legal Parameters of Space Tourism*, 46 *Space Law Colloquium* (2003) (IAC-03-IISL.1.09) page 37 (39).

⁵³ Hobe/Cloppenburger, *supra*, p. 378.

⁵⁴ Convention on International Interests in Mobile Equipment signed in Cape Town, 2001.

liability in space tourism. The US “informed consent” model is an example of this approach.

VIII. KEY CHARACTERISTICS OF A NEW INTERNATIONAL CONVENTION ON LIABILITY IN SPACE TOURISM RESEMBLE

If we assume that a new international convention on liability for space tourism is necessary, the following issues would need to be considered and properly dealt with:

(a) When would space tourism operators go on risk? Would we mimic the WC/MC regime and make operators potentially liable from the point of embarkation by the space flight participant upon the space vehicle/object? This concept was discussed in earlier papers and it was concluded that national tort/contract law would govern incidents of damage/personal injury sustained on the ground – but up until what point? There must be a point of no return for liability in respect of space flight participants, after which point they are subject to a single legal regime of which they are already aware.

(b) What would be the trigger for liability in the event of personal injury or death of a space flight participant? Would we create a type of Article 17 “accident” or something similar to trigger strict liability on the part of the space tourism operator? A strict liability regime set at a relatively low limit restricted to certain eventualities (i.e. the “accident” trigger) may work especially if it is supported by underlying notions of informed consent type waiver documentation

(c) To what extent would early space flight participants have to assume risk for their own personal safety? It is inevitable under any new regime attempting to establish a workable system for regulating liability between space flight participants and space tourism operator that such individual participants would have to accept a certain amount of personal risk and possibly obtain their own insurance coverage. In contrast, however, a number of earlier commentaries on this issue describe a space tourist as almost risk averse e.g.: “The concept of absolute limited liability or physical injury or death could serve to discourage potential space tourists, especially where they have dependents.”⁵⁵ The author is not convinced that in the early to mid-term stages of the development of space tourism as a new industry that space tourists/space flight participants will actually be deterred by the lack of liability coverage or indemnities offered by governments and/or space tourism operators. To repeat

⁵⁵ O’Brien, *supra*, page 393.

The author is currently an LL.M student at Leiden University. This paper represents the personal views of the author and not those of Leiden University or any other organisation to which she is affiliated.

my early paragraphs above, space tourism participants are risk-takers, seekers of adventure and are willing accept the risks inherent in their chosen activities.

(d) Mandatory insurance requirements? Article 50 of MC requires that “States Parties shall require their carriers to maintain adequate insurance covering their liability under this Convention”. Presumably insurance requirements will be taken care of by any local legal licensing regime but it may be prudent to include provisions making it an obligation for space tourism operators to obtain and maintain a certain level of liability insurance coverage. Insurers will support space tourism activities to the extent that they are commercially able to dependent on the usual ebb and flow of the world’s insurance markets and other commercial considerations. In the event of a major loss or catastrophic situation, it is probable that states would ultimately become the insurer of last resort as we have seen during the aftermath of 9/11.

(e) A periodic review clause would be advisable as suggested by O’Brien to allow for technological advances. – “a five year periodic review clause would appear to be appropriate for the commercial space flight industry”⁵⁶.

(f) Limitation Period – it is submitted that a relatively short limitation period would be advisable for such a new liability regime. Following the Liability Convention, the period could be as short as one year from the date of loss or alternatively a maximum two year period if we follow the aviation industry in WC/MC. This gives insurers and operators clearer perspectives as to their risk profiles and liability exposure whilst giving respective claimants sufficient time to bring their claims through the national courts.

(g) Jurisdiction – perhaps limiting the jurisdiction in which claims can be brought would be advisable or alternatively the establishment of a tribunal specifically designed to hear claims from space flight participants/crew and third parties. A streamlined system would be preferable to avoid multiple interpretations of similar sets of facts rendering conflicting jurisprudence dependent on the national law applicable to each individual claim. Subject matter specialists would also probably be required as arbitrators/judges to hear such claims given the potential technical complexity.

⁵⁶ O’Brien, *supra*, page 395.

IX. CONCLUDING REMARKS

Commercial space tourism is a reality, Virgin Galactic will operate in the next few years. Future projects include sub-orbital point to point transportation which will take passengers from Paris to Tokyo in 3 hours or less⁵⁷ and space habitat modules which are already being developed⁵⁸. Each new project will present new legal issues.

The private legal approach to regulating this industry as seen in US is supportive of the industry but is currently untested and may prove to be naïve in terms of possible legal redress in the event of an incident which causes loss of human life or damage on earth. It is an optimistic short to medium term solution.

A longer term view would perhaps see governments who are pro-actively regulating and supporting nascent space tourism industries considering the advantages of a consolidated legal regime where states, operators, manufacturers and participants each take their own responsibility for which still remains a huge step into the unknown and the risks which apply.

Ultimately, a unified consolidated international legal regime addressing all facets of liability issues faced by the space tourism industry would be required as stated by many learned commentators and referenced in this paper.

It is submitted that the only hindrance to such a unified, consolidated international regime could be the current socio-legal context. The WC succeeded in 1929 and for many decades because private individuals were prepared to take responsibility for their own acts and actions, including participation in what was considered then a high risk activity – carriage by air. Today, a compensation culture is becoming the norm in several key jurisdictions. This, when taken with an increasing readiness of regulators to initiate legislation which is pro-consumer and/or extra-territorial in nature, makes it difficult to envisage how any international legal regime limiting liability in favour of space tourism operators would remain watertight if challenged. O’Brien refers to consumer protection issues and states that “a distinction must be drawn between payloads. The

⁵⁷ As reported at Paris Airshow, 19 June 2011 by EADS
<http://www.eads.com/eads/int/en/news/press.92323d58-24e5-4b71-aa1e-438e8c1289b0.html> (accessed on 29 September 2011)

⁵⁸ <http://www.bigelowaerospace.com/> (accessed on 29 September 2011)

The author is currently an LLM student at Leiden University. This paper represents the personal views of the author and not those of Leiden University or any other organisation to which she is affiliated.

carriage of goods, such as satellites, and the carriage of persons both involve different considerations. In the case of the latter, given the potential imbalance between the parties to the contract, limitations on liability to protect the industry must be balanced by the countervailing consideration of consumer protection, in this case of the space tourist⁵⁹.

It is submitted that such considerations are premature. The legal regime will have to adapt itself in anticipation of (or as a result of) technological advances made by operators and entrepreneurs enabling willing

⁵⁹ Z. O'Brien, Consumer Protection and the Limitation of Liability in the National Regulation of the Space Tourism Industry – Lessons from EU Law, 48th Colloquium of the International Institute of Space Law (2005) (IAC-05-E6.3.06) (abstract only).

participants to experience their dreams of space flight as envisaged by the scholars who drafted the OST. Issues pertaining to consumer protection would, arguably, only arise if and/or when commercial space flights were accessible to a significant percentage of consumers.

In this vein, and as a final note, whilst we consider how to achieve a unified legal system, it is worthwhile to remind us all that it is essential that “the underlying notions of cooperation and shared benefit remain as cornerstones in this next phase of human achievement”⁶⁰.

⁶⁰ Freeland, *supra*, page 186.

The author is currently an LLM student at Leiden University. This paper represents the personal views of the author and not those of Leiden University or any other organisation to which she is affiliated.