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Mixing US and Dutch Approaches: Towards Curaçao's Legislation on Private Commercial Spaceflight

By Prof. Dr. Frans G. von der Dunk, Nebraska*

Abstract

One of the more advanced projects to offer private commercial spaceflights concerns Curaçao, the Dutch island in the Caribbean, from where Space Expedition Corporation (SXC) aims to start launching such flights as of 2014 with vehicles to be developed by XCOR. Not only is the island still part of the Kingdom of the Netherlands, albeit as of recently as an autonomous 'Land', SXC is a company with its origins in the Netherlands, too. On the other hand, XCOR, which is going to wet lease its vehicles to SXC, is a US company, and its operations consequently will - to the extent applicable - (also) be licensed by the US Federal Aviation Administration (FAA).

Curaçao is currently in the process of developing appropriate framework legislation for the purpose, in order *inter alia* to appropriately implement the relevant international legal obligations as well as protect applicable public interests in this specific context. Moreover, for the above reasons such legislation will likely mix the Dutch and US approaches to licensing, authorising and monitoring the commercial spaceflights at issue.

The present paper analyses in some detail the various international, US and Dutch legal interests interacting in this context, and how Curaçao legislation would best guard all those public interests while not unnecessarily burdening SXC and/or XCOR with administrative or other obstacles to a safe and potentially profitable business operation.

1. Introduction

Further to a previous paper in which some of the legal issues involved in the plans of then-Space Experience Curaçao, now Space Expedition Corporation (SXC)¹, to start launching from the Caribbean island of Curaçao were explored², this article represents an effort to analyse in greater detail how, pre-

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¹ See for the plans of SXC <http://www.spacexc.com/en/home/>; last visited 22 October 2013.

² See the author's Sun, Sea, Sand ... and Space: Launching Tourists into Outer Space from the Dutch Caribbean, in *Proceedings of the International Institute of*

sumably, both the US and the Dutch approach to handling private commercial spaceflight will combine in this particular case to, hopefully, arrive at a coherent and balanced legal regime.

Both domestic legal regimes in principle would be relevant, in view of some key facts of the planned activities. Following a referendum of 2009 Curaçao had become a 'Land' within the Kingdom of the Netherlands in October 2010, as a consequence obtaining a considerable measure of local autonomy. SXC, registered and headquartered in Curaçao, has contracted with XCOR, a US company, for the latter to develop its Lynx vehicle³ and then wet-lease it to SXC for its flights from Curaçao, which are scheduled to start in the course of 2014.⁴

As a consequence, Curaçao authorities are currently developing 'sub-national', regional legislation which is, in principle, aiming to take both legal regimes into account as much as possible. This, obviously, raises the question as to the actual compatibility of the two regimes; in order to properly answer that question, firstly the main characteristics of both respective regimes will be analysed. Prior to that, however, a brief survey of relevant international law concepts is due.

2. Key International Law Principles for Domestic Legislation with a View to Private Commercial Spaceflight

In the four core treaties of the *corpus juris spatialis internationalis*, as drafted in the late 60s and first half of the 70s, there is no specific reference to private commercial spaceflight, or even to private space activities as such. The single exception, as to the latter, concerns the reference to "the national activities in outer space (...) [of] non-governmental entities" in the 1967 Outer Space Treaty.⁵ Such activities notably gave rise to international responsibility of the state(s) concerned, whereas at least "the appropriate State" was obliged to exercise "authorization and continuing supervision" over them,⁶ which in turn suggested the establishment of specific national (space) laws for the purpose.⁷

Space Law 2010 (2011), 349-59.

³ See for further details <http://www.spacexc.com/en/space-program/spaceship/>; last visited 22 October 2013.

⁴ After a press release in the Spring of 2011 had kick-started relevant interest among target audiences, SXC is currently in the process of lining up its first customers, generally well-known public figures in Dutch society, and held its Curaçao Countdown Party on the island itself, on 1 September 2011.

⁵ Art. VI, Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty), London/Moscow/Washington, done 27 January 1967, entered into force 10 October 1967; 610 UNTS 205; TIAS 6347; 18 UST 2410; UKTS 1968 No. 10; Cmnd. 3198; ATS 1967 No. 24; 6 ILM 386 (1967).

⁶ Art. VI, Outer Space Treaty.

⁷ See further e.g. E. Back Impallomeni, Article VI of the Outer Space Treaty, in *Proceedings of the United Nations/Republic of Korea Workshop on Space Law -*

One problem here is that the core concept of ‘national activities’ in outer space has never been satisfactorily defined, and hence interpreted in various fashion. In theory at least three generic interpretations have been put forward: the first simply equates ‘national activities’ to ‘activities of nationals’,⁸ the second argues that ‘national activities in outer space’ of a state should equate with cases where that state also qualifies as a state liable for damage respectively a state registering the satellite in an effort to make the various clauses easily compatible,⁹ and the third equates national activities for which a state can be held responsible with those over which it is entitled to exercise some form of generally accepted jurisdiction.¹⁰ This absence of consensus at the international level on the precise meaning and scope of ‘national activities’ unfortunately is a recipe for states determining their own interpretation as suiting their particular interests, which makes the issue of complementarity of existing US and Dutch national space law and prospective Curaçao regional regulation a far from theoretical issue.¹¹

Actions at the National Level, ST/SPACE/22 (2004), 73-6; I. Marboe & F. Hafner, Brief Overview over National Authorization Mechanisms in Implementation of the UN International Space Treaties, in *National Space Legislation in Europe* (Ed. F.G. von der Dunk)(2011), 31 ff.

⁸ This argument is predominantly based on Art. IX, Outer Space Treaty, where a certain responsibility of a state for activities of its nationals is expressly provided for. Cf. e.g. (with some reservations) K.H. Böckstiegel, The terms “appropriate State” and “launching State” in the space treaties - Indicators of state responsibility and liability for state and private activities, in *Proceedings of the Thirty-Fourth Colloquium on the Law of Outer Space* (1992), 13-4; A. Kerrest de Rozavel, Remarks on the responsibility and liability, in *Proceedings of the Fortieth Colloquium on the Law of Outer Space* (1998), 139; F. Lyall & P.B. Larsen, *Space Law - A Treatise* (2009), 66.

⁹ Cf. Artt. VII, VIII, Outer Space Treaty, as well as Art. I(c), Convention on International Liability for Damage Caused by Space Objects (Liability Convention), London/Moscow/Washington, done 29 March 1972, entered into force 1 September 1972; 961 UNTS 187; TIAS 7762; 24 UST 2389; UKTS 1974 No. 16; Cmnd. 5068; ATS 1975 No. 5; 10 ILM 965 (1971); and Art. I(a), Convention on Registration of Objects Launched into Outer Space (Registration Convention), New York, done 14 January 1975, entered into force 15 September 1976; 1023 UNTS 15; TIAS 8480; 28 UST 695; UKTS 1978 No. 70; Cmnd. 6256; ATS 1986 No. 5; 14 ILM 43 (1975). Further e.g. V. Kayser, An achievement of domestic law: U.S. regulation of private commercial launch services, 17 *Annals of Air and Space Law* (1991), 341-3; H.A. Wassenbergh, Public law aspects of private space activities and space transportation in the future, in *Proceedings of the Thirty-Eighth Colloquium on the Law of Outer Space* (1996), 246.

¹⁰ This would refer in particular to territorial jurisdiction, personal jurisdiction and jurisdiction over registered space objects and personnel thereof as per Art. VIII, Outer Space Treaty, and Art. II, Registration Convention. See further e.g. B. Cheng, *Studies in International Space Law* (1997), 658-63; V.S. Vereshchetin, Space activities of “non-governmental entities”: issues of international and domestic legislation, in *Proceedings of the Twenty-Sixth Colloquium on the Law of Outer Space* (1984), 263; M. Lachs, *The Law of Outer Space* (reprint 2010), 114.

¹¹ Cf. for a broader analysis e.g. Marboe & Hafner, 57-61; M. Gerhard, Article VI, in *Cologne Commentary on Space Law* (Eds. S. Hobe, B. Schmidt-Tedd & K.U.

A second key principle, already posited by Article VII of the Outer Space Treaty and further elaborated by the 1972 Liability Convention, concerns that of liability for damage caused by space activities - in this case, more precisely, caused by 'space objects'. Since such damage is allocated to the "launching State(s)" of the space object at issue,¹² regardless of any level of private involvement in development, construction, launch or operation of that space object, also this key principle at the very least suggests states to establish national means to deal especially with the international (third-party) liabilities arising as a consequence of such private involvement - whether by way of a comprehensive national space law or otherwise.

After all, if a state allows private parties to launch and operate space objects in the first place - though in today's world simply assumed, already in view of the historical role of the communist Soviet Union, which did not recognize much private ownership of major enterprises, not necessarily a given - and then can be held liable, in principle even without limit¹³, for the ensuing activities and the damage these might cause it would do well to ensure a measure of (legal) control over the operations of such private parties notably including title to (partial or complete) recovery by the states of compensation paid out in deference to the Liability Convention.

A third main concept, following from Article VIII of the Outer Space Treaty and the ensuing 1975 Registration Convention, concerns the need for these same launching state(s) to arrange for registration, both in a national register and in an international register operated by the United Nations, of space objects launched¹⁴ - including, once again, those with partially or exclusively private involvement. In contrast, however, with the general inclination to arrange for authorisation, continuing supervision and liability by way of a full-fledged, transparent and rather comprehensive licensing system as the core of a national space law, registration would often be handled through less onerous administrative means.

For example, in the United States the State Department takes care of registration with the United Nations simply basing itself on information provided by other branches of the United States government and "the official U.S. Registry of Space Objects Launched into Outer Space".¹⁵ In the Netherlands, the 2007

Schrogl), Vol. I (2009), 109, 111-4; the author's Towards 'Flags of Convenience' in Space? in *Proceedings of the International Institute of Space Law 2012* (2013), 822-6.

¹² E.g. Artt. I(c), II, III, Liability Convention. The 'launching State' is defined by Art. I(c) as "(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".

¹³ Cf. Art. XII, Liability Convention.

¹⁴ See esp. Artt. II, IV, Registration Convention; further, on Art. VIII, Outer Space Treaty, B. Schmidt-Tedd & S. Mick, Article VIII, in *Cologne Commentary on Space Law* (Eds. S. Hobe, B. Schmidt-Tedd & K.U. Schrogl), Vol. I (2009), 146 ff.

¹⁵ The register can be accessed through <https://www.usspaceobjectsregistry.state.gov/pages/home.aspx>; last visited 22 October 2013; also *Space and Advanced*

Dutch Space Law¹⁶ included Section 11 on the creation of a Dutch register, with further details elaborated by implementing regulation.

In any event, the legal framework sketched above by implication does also apply to private commercial spaceflight, calling for authorisation, continuing supervision and liability arrangements, and possibly registration requirements, most conveniently by way of a national space law, even if nothing within that legal framework specifically addressed the legal issues arising out of such private space activities now having a manned character.

Finally, beyond the three space treaties briefly discussed above the 1968 Rescue Agreement¹⁷ would enjoy some additional relevance in the field of private commercial spaceflight, as it *inter alia* addresses issues of space-farers being in distress. At the same time, the full applicability of the treaty to that sector and in particular to 'space tourists' immediately was put into doubt in view of its terminology: the rights to support and rescue were allocated to "personnel of a spacecraft", which moreover were usually equated with "astronauts" (with the lofty epithet "envoys of mankind"), as referenced in the full title of the Agreement and the underlying provisions of the Outer Space Treaty.¹⁸

3. The US Regime for handling Private Commercial Spaceflight: Key Elements

Further to general international space law, also the US regime for handling private commercial spaceflight principally bases itself, at least until now, on an adaptation of the regime for handling private commercial launches in general, as this developed from the enunciation of the 1984 Commercial Space Launch Act¹⁹ onwards.

The key elements of this regime for the present purpose, notably after the

Technology, <http://www.state.gov/e/oes/sat/index.htm>; last visited 22 October 2013.

¹⁶ Law Incorporating Rules Concerning Space Activities and the Establishment of a Registry of Space Objects (Dutch Space Law); original (in Dutch) in 80 *Staatsblad* (2007), at 1; English translation in *Nationales Weltraumrecht / National Space Law* (2008), at 201.

¹⁷ Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (Rescue Agreement), London/Moscow/Washington, done 22 April 1968, entered into force 3 December 1968; 672 UNTS 119; TIAS 6599; 19 UST 7570; UKTS 1969 No. 56; Cmnd. 3786; ATS 1986 No. 8; 7 ILM 151 (1968).

¹⁸ Artt. 2-4, Rescue Agreement, resp. Art. V, Outer Space Treaty. See further e.g. S.R. Freeland, Up, Up and ... Back: The Emergence of Space Tourism and Its Impact on the International Law of Outer Space, 6 *Chicago Journal of International Law* (2005), 10-1; S. Hobe, Space Tourism as a Challenge to the Astronaut Concept, in *The Astronauts and Rescue Agreement - Lessons Learned* (Eds. G. Laffer-randerie & S. Marchisio)(2011), 71-82.

¹⁹ Commercial Space Launch Act, Public Law 98-575, 98th Congress, H.R. 3942, 30 October 1984; 98 Stat. 3055; *Space Law - Basic Legal Documents*, E.III.3; in its current version codified as Commercial Space Transportation - Commercial Space Launch Activities, 51 U.S.C. 50901.

1988 Amendments had considerably fine-tuned the liability regime²⁰, could be summarised as follows:²¹

1. It provided for an obligation for any private company with US nationality or launching from US territory²² to obtain a license for each intended individual launch of an object into outer space from the licensing agency, which was the Office of the Associate Administrator for Commercial Space Transportation (now AST) within the Federal Aviation Administration (FAA). Also, it provided for a similar obligation for any private company intending to operate a launch site on US territory.²³ In other words: the United States applied the requirement under Article VI of the Outer Space Treaty to authorise and supervise "national activities in outer space" to launch activities conducted both under the territorial (jurisdiction) criterion and under the nationality (personal jurisdiction) one.
2. A number of conditions were imposed before a license would be granted, related to such general public interests as national security and abidance by international obligations.²⁴ As is common practice amongst those national licensing systems for space activities which have been developed, those conditions were phrased in general and broad terms; the details could and would be either provided in implementing regulations or (more often) as per the individual license in view of the idiosyncrasies often accompanying specific prospective launch activities.
3. Amongst the license requirements figured prominently an obligation to insure, up to an amount to be calculated using a rather complex process, against third-party liability claims for damage caused by the space objects to be launched, and to make sure that, in case the US government would be obliged to pay international compensation under the Liability Convention, it would be reimbursed up to that amount.²⁵ Licensees could, alternatively,

²⁰ Commercial Space Launch Act Amendments, Public Law 100-657, 100th Congress, H.R. 4399, 15 November 1988; 49 U.S.C. App. 2615; 102 Stat. 3900; *Space Law - Basic Legal Documents*, E.III.3, 13 ff. The most important changes resulted in caps on the liability of licensees, including as applicable to reimbursement of the US government in case the latter would have to pay out claims under the Liability Convention; see also *infra*, at n. 25.

²¹ See in general e.g. P. Vorwig, Regulation of Private Launch Services in the United States, in *National Regulation of Space Activities* (Ed. R.S. Jakhu)(2010), 405 ff.

²² Cf. Sec. 50904(a), Commercial Space Launch Act.

²³ See Sec. 50904(a), Commercial Space Launch Act.

²⁴ See Secc. 50905(a), (b), Commercial Space Launch Act.

²⁵ The process called for the calculation of the 'maximum probable loss' (MPL) potentially resulting from an accident of the space object (at least during its first phase), which would determine the reimbursable amount, unless that MPL was either higher than US\$ 500,000,000 or higher than "the maximum liability insurance available on the world market at reasonable cost"; in which cases the lower of the two latter amounts will constitute the reimbursable amount; cf. Sec. 50914(a), (c), Commercial Space Launch Act. See further e.g. A. Kerrest de Roza-

show 'financial responsibility' up to the same amount for compliance here.²⁶

4. A similar licensing requirement pertained to damage which might be inflicted on US government property in the course of such activities, which in particular looked at the use of federal launch sites by private launch operators.²⁷ Whilst the first launch license was granted by the FAA in 1989 and as of now well over 200 licenses have followed,²⁸ the first launch site license was granted in 1996 with the current tally standing at eight²⁹ - so far the overwhelming majority of private launches has indeed taken place at US government-owned launch sites.
5. There was no reference in the Act to mandatory requirements regarding the certification of the hardware involved or the licensing of operating personnel involved in the launch activities (although this could be inserted in an individual license). With a view to often-made comparisons with air law, this clearly represents a different approach from international aviation, where an extended regime calls for certificates of airworthiness and licenses of personnel.³⁰
6. With regard to contractual/inter-party liability, the Act essentially imposed an obligatory cross-waiver of liability between the launch service provider and any other contractual party: "A launch or re-entry license issued or transferred under this chapter shall contain a provision requiring the licensee or transferee to make a reciprocal waiver of claims with its contractors, subcontractors, and customers, and contractors and subcontractors of the customers, involved in launch services or reentry services under which each party to the waiver agrees to be responsible for property damage or loss it sustains, or for personal injury to, death of, or property damage or loss sustained by its own employees resulting from an activity carried out

vel & F.G. von der Dunk, *Liability and Insurance in the Context of National Authorisation in National Space Legislation in Europe* (Ed. F.G. von der Dunk)(2011), 141-50.

²⁶ See Sec. 50914(a)(3), (4), Commercial Space Launch Act.

²⁷ See Sec. 50914(a)(1)(B), (3)(A)(ii), Commercial Space Launch Act. In this case, the same formula was followed as referred to *supra*, n. 25; only the maximum cap on liability in this context was established at US\$ 100,000,000.

²⁸ See for a full list and further details http://www.faa.gov/about/office_org/headquarters_offices/ast/launch_license/licensed_launches/historical_launch/; last visited 22 October 2013.

²⁹ See *The Annual Compendium of Commercial Space Transportation: 2012*, FAA, February 2013, 38.

³⁰ See Artt. 31, 32, Convention on International Civil Aviation, Chicago, done 7 December 1944, entered into force 4 April 1947; 15 UNTS 295; TIAS 1591; 61 Stat. 1180; Cmd. 6614; UKTS 1953 No. 8; ATS 1957 No. 5; ICAO Doc. 7300; as further elaborated in Annexes 6, 'Operations Of Aircraft', and 8, 'Airworthiness Of Aircraft'.

under the applicable license.”³¹ A similar waiver was to be arranged for as between the licensee and any executive agency of the US government and its contractors.³²

7. In cases where other states are fundamentally involved in a particular launch activity outside US territory to be licensed, the application of the US licensing regime and attendant requirements may depend on an agreement between the United States and the other state concerned, *de facto* allowing the former to avoid ‘double licensing’ to the extent considered unnecessary or unwanted from the US perspective.³³ The extent to which the licensing authorities would allow for abstention from the exercise of US jurisdiction to impose a license obligation may be subject to rather severe constraints, in view of for example the extended US export controls regarding security-sensitive dual-use technology³⁴, but at least the possibility is there in principle.

When the 2004 deadline for the X-Prize contest came close, and with it the chance that somebody would actually (try to) win it, the FAA kick-started a process of regulation by allowing such flights on a one-off basis. With the victory of Scaled Composites and the ensuing establishment of Virgin Galactic this process quickly gave rise to the conclusion that the most appropriate way to handle such flights on a more consolidated basis in the future would be to adapt the regime of the Commercial Space Launch Act to the specifics of launches (and re-entries) with humans on board, rather than develop a separate regime from scratch. The result was the 2004 Commercial Space Launch Amendments Act³⁵ amending the 1984/1988 Act to achieve such goals, followed by some further legal measures as part of the Code of Federal Regulations³⁶.

Thus, in principle the above seven key elements had now become applicable to private manned spaceflight, although a few specifics were added to the existing regime to take account both of the additional issues flowing from the presence of humans on board of spacecraft launched (most fundamentally, the licensing

³¹ Sec. 50914(b)(1), Commercial Space Launch Act.

³² See Sec. 50914(b)(2), Commercial Space Launch Act.

³³ Sec. 50904(a)(3), Commercial Space Launch Act, applies US jurisdiction *in the absence of* an agreement to the contrary with another state, whereas *vice versa* Sec. 50904(a)(4) *requires* a relevant agreement to that extent to exist for the US regime to apply regarding relevant activities outside any state's territory.

³⁴ As per the Arms Export Control Act of 1976; 22 U.S.C. 2751; and the implementing International Traffic in Arms Regulations (ITARs), respectively the Export Administration Act of 1979; Public Law 96-72, 96th Congress; 50 U.S.C. 2401; 93 Stat. 503; and the implementing Export Administration Regulations (EARs).

³⁵ Commercial Space Launch Amendments Act, Public Law 108-492, 108th Congress, 23 December 2004, 49 U.S.C.; 118 Stat. 3974.

³⁶ To wit 14 C.F.R. Ch. III, Commercial Space Transportation, Federal Aviation Administration, Department of Transportation.

obligation was now also applied to re-entry, whereas formerly it only applied to launches³⁷) and the need for the FAA to stimulate, not stifle, this infant industry³⁸. In particular key elements #1 through #4 however remained applicable, albeit that the licensing obligation referred to under #1 was now dissected into a 'launch license' and an 'experimental permit'.³⁹

Most attention was paid to key elements #5 and #6, in particular since, as indicated, in the field of commercial aviation - to which the impending private commercial spaceflight efforts were often likened, or at least compared⁴⁰ - hardware certification, personnel licensing and contractual liability exposure were standard features of the applicable legal regime, noting also that the FAA had decades of experience with that sector on those issues.

It was decided, explicitly on a temporary basis - a sunset clause referred first to 2012, but has since been extended to October 2015⁴¹ - by way of the 2004 amendments that certification of the craft or licensing of the crew were *not* allowed to be undertaken by the FAA (yet), essentially since it was believed that only experience with actual flights might allow it to impose realistic and relevant certification and licensing requirements, given the relative novelty of the undertaking, and premature regulation would run the risk of stifling this infant industry.⁴²

Following up on this, furthermore, with reference to key element #6 the FAA did not extend the existing cross-waiver to spaceflight passengers, but rather allowed private spaceflight operators to offer their services to the general public provided that their individual customers were informed in writing "about the risks of the launch and reentry, including the safety record of the launch or reentry vehicle type" and "that the United States Government has not certified the launch vehicle as safe for carrying crew or space flight participants" - the so-called 'informed consent'.⁴³ Thus, passenger liability was essentially left unregulated, that is left to the courts to decide, who could honour an 'in-

³⁷ Cf. the definitions of Sec. 50902, Commercial Space Launch Act, notably *sub* (4) & (13), also Sec. 50904(a).

³⁸ Cf. also Sec. 50901(7), Commercial Space Launch Act.

³⁹ See Secc. 50905, resp. 50906, Commercial Space Launch Act.

⁴⁰ Cf. e.g. P. van Fenema, Suborbital Flights and ICAO, 30 *Air and Space Law* (2005), 399-403; R. Abeyratne, Space Tourism - Parallel Synergies Between Air and Space Law?, 53 *Zeitschrift für Luft- und Weltraumrecht* (2004), 184 ff.

⁴¹ See Sec. 827, FAA Modernization and Reform Act of 2012, Public Law 112-95, 112th Congress, 14 February 2012, amending Sec. 50905(c)(3), Commercial Space Launch Act.

⁴² Cf. also Sec. 50905(c)(3), Commercial Space Launch Act: "Any such regulations shall take into consideration the evolving standards of safety in the commercial space flight industry."

⁴³ Sec. 50905(b)(5)(A), resp. (B), Commercial Space Launch Act. Further e.g. T. Knutson, What is 'Informed Consent' for Space-Flight Participants in the Soon-To-Launch Space Tourism Industry?, 33 *Journal of Space Law* (2007), 105-22, for an insightful analysis of that concept.

formed consent' based defence by the operator to bar recovery - but could also decide to ignore it. Instead of requiring compliance with a specific licensing system for the crew furthermore, the regulations provided for what effectively amounts to a toned-down 'informed consent' requirement for the crew: they should be equally informed "that the United States Government has not certified the launch vehicle as safe for carrying crew or space flight participants".⁴⁴

The underlying reason for imposing what was consequently a relatively light regulatory regime upon private spaceflight operators was, again, the mandate of the FAA not only to regulate the private space sector, but also to stimulate it - a full-fledged certification-, crew licensing- and contractual liability-regime was feared to fundamentally run counter to that mandate. This, however, also means that as soon as private spaceflight would really take off, would gradually leave its infancy-stadium behind it and would allow the FAA to build up experience with actual flights, the administration at some point would start developing a proper certification, crew-licensing and contractual liability regime.

At the same time, the US situation has meanwhile been considerably complicated by the decision of - so far - six states to draft their own statutes. In an attempt to clarify the legal baseline on contractual passenger liability, left hanging in mid-air by the federal 'informed consent' requirements, and to present themselves as attractive locations for commercial spaceflight operators and operations, these states formally and directly linked 'informed consent' to a waiver of immunity of operators operating under those respective statutes.⁴⁵ The states concerned were, in chronological order, Virginia⁴⁶, Florida⁴⁷, New Mexico⁴⁸, Texas⁴⁹, Colorado⁵⁰ and California⁵¹.

⁴⁴ Sec. 50905(b)(4)(B), Commercial Space Launch Act.

⁴⁵ See further e.g. M.J. Kleiman, J.K. Lamie & M.V. Carminati, *The Laws of Spaceflight* (2012), 107-8; the author's Federal *versus* State: Private Commercial Spaceflight Operator Immunity Regulation in the United States, to be published in *Proceedings of the International Institute of Space Law 2013* (scheduled 2014).

⁴⁶ Space Flight Liability and Immunity Act; Art. 24, Code of Virginia; Va. Code Ann. §§ 8.01-227.8 to 8.01-227.10 (2007).

⁴⁷ Space Activities Statute; Ch. 331, Sec. 501, Florida Statutes; Fla. Stat. Ann. Sec. 331-501 (2009).

⁴⁸ Space Flight Informed Consent Act; S.B. 9, 49th Leg. Reg. Sess. (N.M. 2010); as of this writing an amendment is making its way through the legislative process as per S.B. 240, 51st Leg.; Bill introduced by M.K. Papen.

⁴⁹ Space Activities Statute; S.B. 115, 82d Leg. (Tex. 2011), Tex. Civ. Prac. & Rem. Code, Title 4, Ch. 100A.

⁵⁰ Act Concerning Limited Liability for Spaceflight Activities; Colo. Rev. Stat. Ann. Sec. 41-6-101.

⁵¹ Spaceflight Liability and Immunity Act; AB 2243, Cal. Civ. Code, Div. 3, Pt. 4, Title 7, Ch. 5, Art. 5.

4. The Dutch Regime for handling Private Commercial Spaceflight: Key Elements

In the course of the 1990s and early 2000s, a number of developments took place in the Dutch 'space' calling for specific domestic regulatory measures. Notably this concerned the announcement by New Skies Satellites for 2002 of the launch of new satellites to augment its fleet, the existing satellites all having been handed over at the creation of the company by INTELSAT.⁵² Hence, the Dutch government decided it had become necessary for the purpose of properly implementing the outer space treaties, in particular Articles VI, VII and VIII of the Outer Space Treaty, as well as the Liability and Registration Conventions, to establish a national law allowing for and licensing private parties interested in undertaking space activities. Thus, in 2007 the Dutch Space Law was enunciated.⁵³

The Dutch Space Law, differently from the US Commercial Space Launch Act, comprised in principle all possible activities in outer space.⁵⁴ With respect to the same seven key elements addressed in the above analysis of the US regime, the result was a framework law to be summarised as follows:

1. It provided for an obligation for anyone planning to undertake space activities from the territory of the Netherlands, Dutch ships or Dutch aircraft⁵⁵ to obtain a license ('*vergunning*') from the licensing agency, which was later determined to be the Telecom Agency within the Ministry of Transport. Thus, from the vantage point of Article VI of the Outer Space Treaty, differently from the US case Dutch authorisation and supervision was exercised on a territorial and quasi-territorial basis, but not as such on that of personal jurisdiction. The obligation could however by way of special regulation be extended in certain cases to Dutch nationals operating outside of Dutch territory properly speaking.⁵⁶ The above obligation extended also to the operation of a launch site on Dutch territory, as the 'space activities' subject to the licensing obligation included launching in general terms as well as conducting and guiding the flight.⁵⁷

⁵² See on this also the author's Implementing the United Nations Outer Space Treaties - The Case of the Netherlands, in *Nationales Weltraumrecht / National Space Law* (Eds. C. Br  nner & E. Walter) (2008), 89 ff.

⁵³ See also *supra*, n. 16.

⁵⁴ Thus, the licensing obligation *ratione materiae* applies to "the launch, the flight operation or the guidance of space objects in outer space"; Sec. 1(b), Dutch Space Law, see also Sec. 2(1).

⁵⁵ See Sec. 2(1), Dutch Space Law; also Sec. 3(1).

⁵⁶ See Sec. 2(2), Dutch Space Law; essentially this clause was included to cover cases where, in the absence of application of the Dutch Space Law under Sec. 2(1), *no* state might be held to apply its national law where the nationality of the operators nevertheless provided for a link of those activities to the Netherlands.

⁵⁷ Cf. again Sec. 1(a) in conjunction with Sec. 2, Dutch Space Law; it should be added that to the extent such launch site operations would ever take place on

2. The licensing authority was authorised (but not necessarily obliged) to impose a number of general conditions before granting a particular license; such conditions *inter alia* pertained to general public interests as public order, national security, safety and protection of the environment.⁵⁸
3. In terms of reimbursement of any international liability claims to be paid by the Dutch government as a consequence of an accident with a space object launched under a license, the licensee is required to insure himself at the highest level deemed appropriate by the responsible Minister, and if at issue, to reimburse the Dutch government up to that amount.⁵⁹ Contrary to US legislation, the Dutch regime does not provide for any particular method or approach to determine such a cap.
4. For the simple reason that the Dutch government does not itself own or operate any launch facilities, unlike the US case there was no reference whatsoever to inter-party liability *vis-à-vis* the government for use of their launch facilities - or a waiver thereof.
5. Similar to the US case, no reference to certification of hardware or licensing of personnel was included in the Law, although as appropriate the general conditions for example pertaining to safety or environmental protection could be used in individual cases for inclusion in a license of relevant obligations, further to #2 above.
6. Further to key element #5 above, as well as further to a general approach within the Dutch legal system not to limit contractual parties in such respects in their freedom to contract, also an obligatory cross-waiver amongst partners in a space venture was not to be found in the Law.
7. The scope of the Law being principally restricted *ratione loci* to space activities conducted from Dutch territory, as indicated the Law allows extension of that scope *ratione personae* by special regulation largely as might become necessary to apply Dutch jurisdiction where otherwise gaps in state control would appear,⁶⁰ which allows for a somewhat unrefined yet fundamental alignment with another state's licensing regime should that latter state become involved through *its* territory being the primary territory of operation.⁶¹

Dutch territory, it may be presumed that the particular licenses at issue would take care of any differentiation between operating a launch site and operating a launch vehicle.

⁵⁸ See Sec. 3(3), Dutch Space Law.

⁵⁹ See Sec. 3(4), in conjunction with Sec. 12, Dutch Space Law.

⁶⁰ See *supra* at #1.

⁶¹ See Sec. 2(2), Dutch Space Law, sub (a) referring to activities conducted by Dutch nationals from another state's territory, ships or aircraft if that state is not a party to the Outer Space Treaty, sub (b) referring to activities taking place outside the Netherlands but *organised* from within the Netherlands.

Like in the US case, this entire regime was originally developed with a clear focus on unmanned space activities - the Netherlands does not even have much of a history in manned spaceflight: the two Dutch nationals so far having obtained astronaut status effectively were ESA astronauts operating in the framework of ESA programmes.⁶² Rather distinct from developments in the United States, however, in the Netherlands the advent of private commercial spaceflight did not give rise to any substantial discussion as regards the proper legal approach to this new category of private space activity.

Partly, no doubt, this was due to a general tendency within the Netherlands to look for a broader solution than just a national one. This would refer either to the international context - where the International Civil Aviation Organisation (ICAO) had started to discuss the possible application of its general regime pertaining to aircraft and aviation to suborbital flight already in 2005⁶³ - or to the European context - where the European Aviation Safety Agency (EASA) likewise since a few years had been developing an approach to certification of suborbital vehicles based on its approach with respect to aircraft⁶⁴. It seems fair to say however that currently such efforts have been shelved, leaving considerable uncertainty amongst European stakeholders as to how private commercial spaceflight in the European context might come to be regulated. Moreover, as to EASA, as an agency of the European Union the scope *ratione loci* of its activities remains confined to the European territories of the EU member states, not to - for example - Curaçao.⁶⁵

It should be added, moreover, that at first none of the plans regarding 'space tourism' seemed to bear much relation to the Netherlands in any event. Thus, it did not seem necessary to address it specifically, as the general possibility of extending the scope of the Law to activities undertaken outside of the Netherlands yet organised from there was always available to include space tourism operators, if appropriate and required.⁶⁶

⁶² This concerns *Wubbo Ockels*, who flew a 1985 Spacelab-mission, and *Andre Kuipers*, both in 2004 and in 2011-12 flying missions to the International Space Station.

⁶³ See Working Paper on Concept of Suborbital Flights, ICAO Council, 175th Session, 30 May 2005, C-WP/12436.

⁶⁴ See e.g. J.B. Marciacq *et al.*, Towards Regulating Suborbital Flights: An Updated EASA Approach, *Paper IAC-10-D2.9.5*, 61st International Astronautical Congress, Prague, 2010.

⁶⁵ Cf. Art. 355(3), Treaty establishing the European Community as amended by the Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, Lisbon, done 13 December 2007, entered into force 1 December 2009; OJ C 115/47 (2009).

⁶⁶ As per Sec. 2(2), Dutch Space Law. Cf. Explanatory memorandum, at 17. The Dutch version of the Explanatory memorandum can be found in Tweede Kamer der Staten-Generaal, Vergaderjaar 2005-2006, 30 609, nr. 3. For the unofficial English translation of the explanatory memorandum, reference may be had to http://www.agentschap-telecom.nl/ep/space_activities_act_explanatory_note.pdf.

5. Towards a Regional Version of a National Space Law?

The above situation changed substantially of course with the enunciation of SXC's plans to undertake private commercial spaceflights from Curaçao, which happened to gain credence rapidly after the 2007 enunciation of the Dutch Space Law as sketched earlier.⁶⁷

The main problem rearing its head as a consequence resulted from the non-applicability for political/historical reasons of the Dutch Space Law⁶⁸ to the Caribbean parts of the Kingdom as juxtaposed with the international responsibility and liability of the Kingdom under the space treaties, notably the Outer Space Treaty and the Liability Convention, which also extended to any such outlying parts.⁶⁹

In the above context, the political decision was fundamentally taken to not to use Section 2(2) of the Dutch Space Law to directly apply the licensing system to SXC's operations from Curaçao but rather convince the regional Curaçao government of the need and desirability to develop its own legislation - all the while, keeping within the general Dutch approach to and legal regime for private space activities as reflected by the Dutch Space Law.

From the other end, both because of the key involvement of US company XCOR in the SXC plans and because the US FAA had already developed a baseline regime specifically for private commercial spaceflight as outlined above, it was equally obvious that the Curaçao regional legislation was to take that US regime into account as much as possible and sensible.

Finally, of course, the Curaçao government would through development of its own regional version of a domestic space law be able to insert into such legislation typically local concerns, for example regarding employment or the environment, and also to play into those parts of SXC's plans to back-up the spaceport operations properly speaking with an experience and 'edutainment' centre as well as a high-key technology knowledge hub.

Although the respective relationships of the Netherlands and the United States to the island of Curaçao are not at all comparable to those of the United Kingdom and the People's Republic of China to Hong Kong, the experience of the latter in some ways presented an interesting example of the possibility to draft a 'regional space law' for a special region, autonomous yet not sover-

⁶⁷ See further again the author's Sun, Sea, Sand ... and Space: Launching Tourists into Outer Space from the Dutch Caribbean, in *Proceedings of the International Institute of Space Law 2010* (2011).

⁶⁸ Sec. 2(1), Dutch Space Law, determines the scope of the Law *ratione loci* to "the Netherlands", which - differently from the term 'the Kingdom of the Netherlands' - refers to the European territory of the Kingdom only. See further § 3.8, Explanatory memorandum.

⁶⁹ See *Nederlandse Staatswetten, Editie Schuurman & Jordens*, 104a (1981), at 3, 12, 18, 29, for the respective ratifications by the Kingdom of the Netherlands of Outer Space Treaty, Rescue Agreement, Liability Convention and Registration Convention.

eign, taking care of relevant international space law obligations resting upon sovereign states.

Hong Kong had, until 1997, formed part of the British Empire, and as such had been subject to the UK Outer Space Act of 1986 regulating private space activities conducted by UK nationals including Hong Kong citizens.⁷⁰ The Outer Space Act amongst others provided for a licensing requirement including reimbursement and insurance obligations, as well as specific requirements pertinent to licenses.⁷¹

Then, in 1997 Hong Kong reverted to the People's Republic of China, which did however allow the area to retain a status as Special Administrative Region (SAR), *inter alia* meaning that private enterprise was essentially allowed the same opportunities to conduct economic activities as before - including opportunities to conduct commercial space activities. On the other hand, obviously now the PRC was to be held potentially responsible and, as the case may be, liable for such space activities conducted from Hong Kong, and in addition wanted to see its security and other national interests duly protected in that context.

As a consequence, much of the substance of the Outer Space Act was preserved by means of the 1997 Outer Space Ordinance⁷² which at the same time reflected the changes necessary as a consequence of the transition from Great Britain to the People's Republic of China.⁷³

While again obviously the situation regarding Curaçao is fundamentally different in a number of respects, the principled possibility of a comprehensive regulation of private space activities applicable to just one part of a sovereign state whilst taking into account substantive law stemming from another sovereign state has been proven - and then, the legal systems of the Netherlands and the United States surely have more in common than those of the People's Republic of China and the United Kingdom. And at the end of the day, it is a matter of *internal* responsibility of the Kingdom of the Netherlands as the internationally-relevant entity to make sure also space activities from its outlying parts are compliant with its *international* responsibilities and liabilities under, for example, the UN space treaties.

⁷⁰ Outer Space Act, 18 July 1986, 1986 Chapter 38; National Space Legislation of the World, Vol. I (2001), at 293; *Space Law - Basic Legal Documents*, E.I; 36 *Zeitschrift für Luft- und Weltraumrecht* (1987), at 12.

⁷¹ See Secc. 4, 5, 10, Outer Space Act.

⁷² Outer Space Ordinance, An Ordinance to confer licensing and other powers on the Chief Executive to secure compliance with the international obligations of the People's Republic of China with respect to the launching and operation of space objects and the carrying on of other activities in outer space, 13 June 1997, as amended 1999, Chapter 523; 51 *Zeitschrift für Luft- und Weltraumrecht* (2002), at 50.

⁷³ Cf. e.g. Secc. 4(2) & (3), 5(2), 6, Outer Space Ordinance.

6. *Towards a Curaçao Mix of Dutch and US Space Law?*

In actual fact, even the *space* law systems of the United States and the Netherlands, the two states principally involved in the context of Curaçao and SXC's planned activities there, have a lot in common.

Looking at the seven key elements of the national licensing systems for private space activities analysed above, when applying them to the specifics of commercial manned spaceflight the following summary comparison should provide ample confidence that a logical and coherent solution could indeed be found - and that Curaçao regional legislation would be most likely to follow both national regime to a considerable extent.

On key element #1 both the Netherlands and the United States provide for a licensing obligation, where the Dutch is in essence narrower in primarily focusing on activities from Dutch soil as opposed to the United States applying its regime to launch activities both conducted from US soil and conducted by US nationals elsewhere. The possibilities offered respectively in both cases under key element #7 to acknowledge that another state's licensing regime could principally take care of many concerns and that 'double licensing' should be avoided as much as possible, however, allow - certainly in the case of Curaçao - an easy solution to preclude any 'double licensing' of the same precise component of an activity from occurring in this respect. It thus also allows Curaçao as appropriate to limit 'double licensing' to a minimum.

The conditions under which a license should or might be granted, under key element #2, are essentially similar in general substance, so that also in this respect any possibility to waive a license or a specific licensing obligation could streamline the licensing process and make way for appropriate Curaçao regional regulation alternatively allow Curaçao to waive certain requirements with reference to US requirements whilst staying true for all practical purposes to the substance of the Dutch regime. Key elements #3 and #4, pertaining to liability reimbursement and insurance, are relatively easily aligned as well in the context of a Curaçao regulation, in view of the fact that the Dutch regime does not provide for much detail to begin with.

This leaves only key elements #5 and #6 to be more thoroughly discussed, as to which regime to follow in the Curaçao context, alternatively to allow a license granted under it to take away the need to that extent to license in the Curaçao context.

With regard to #5, the Netherlands might have felt somewhat inhibited by the EASA efforts mentioned, and may have looked for any further legal development in the Dutch context to start from aviation certification and licensing and then try to mould that to the specifics of private commercial spaceflight. Such an approach however would run counter to the US approach to start from scratch, and only gradually build up certification and licensing requirements as the sector - and experience - grows, not to stifle the industry in its infancy. However, even regardless of whether EASA will succeed in having its views accepted (which is increasingly doubtful now in any event), as indicated Cura-

çao may formally ignore such developments as the scope of EASA - as an agency of the European Union - is confined to the European territories of the member states. Moreover, there is no question that experience with private commercial spaceflight both in the Netherlands and in Curaçao - and even in Europe as a whole - is even more minimal than in the United States.

With regard to #6, finally, the ultimate decision in Curaçao may go either way. The presumed infant-industry-friendly approach of a cross-waiver under the US national regime could, at least in principle, be preserved in the context of the Curaçao regime, as not only the local government and constituents but also the Dutch are indeed interested in stimulating this new sector. In the alternative, if the concept of a cross-waiver is considered too alien to Curaçao (and Dutch) legal habits, other means could certainly be found to address those interests in seeing private commercial spaceflight taking off.

In short: as the Curaçao government is currently pondering its options, there is certainly no need for fundamental delays because of any incompatibility between the Dutch legal order - from which the Curaçao one in general terms has evolved, and also in the space context might well be closely adhered to - and the US legal regime - the application of which is, in principle, premised on the key role of XCOR in the plans of SXC. At least from that perspective, therefore, the prospects for arriving at a suitable high-level framework regional regulation - and thus the possibilities for SXC/XCOR to actually start flying - in the course of 2014 would not face insurmountable obstacles.