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The Relationship between the Outer Space Treaty and Customary International Law

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Abstract

The progress in space-related science and technology has facilitated an exponential expansion of space activities, many of which were not known at the time of adoption of currently applicable international space treaties. Yet, since the adoption of the 1979 Moon Agreement, the further development of international conventional space law has all but ceased. International geopolitics, rapid technological advancement, and the increasingly commercially competitive nature of space activities have all contributed to a move away from the establishment of treaty-based rules towards 'soft-law' guidelines that are expressed to reflect practice. It has been argued that some principles included in the United Nations space law treaties have gained the status of customary international law. A new rule of customary international law emerges only after sufficient state practice and *opinio juris* and is said by some to be capable of amending and/or invalidating certain provision(s) of a treaty, or contributing towards a revised interpretation of the legal obligations under a treaty. When a treaty provision either crystallizes into, or becomes a customary rule of international law, it may give rise to binding obligations (and corresponding rights) upon a third (non-treaty party) state. This paper will examine this issue in the context of Articles I, II, VI and VII of the Outer Space Treaty, focusing in particular upon their (in)applicability to those states that have never been, or are no longer parties to the Outer Space Treaty, with respect to off-Earth mining activities for space natural resources.

1. The Applicability of Customary International Law to Space Activities

The law of outer space has developed as a discrete body of law within general public international law. Since the launch of Sputnik 1 in 1957, this process of evolution has been remarkably rapid, largely driven by the need to agree on rules to regulate activities in this new 'frontier.' There is now a substantial

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body of international and domestic law principles dealing with many aspects of the exploration and use of outer space. These are primarily to be found in the United Nations (UN) space treaties, although UN General Assembly Resolutions, national legislation, decisions by national courts, bilateral arrangements, and determinations by Intergovernmental Organisations each also contribute to the overall framework that governs the peaceful exploration and use of outer space.

Moreover, it is clear that the rules of customary international law apply to the *lex specialis* of international space law.[1] As is well known, customary international law is one of the traditional 'sources' of international law, as specified in article 38(1)(b) of the Statute of the International Court of Justice (ICJ or 'The Court').[2] In this paper we seek to examine the relationship between articles I, II, VI and VII of the Outer Space Treaty[3] and the customary international law principles relating the peaceful exploration and use of outer space, focusing on proposed 'off-Earth mining' activities for space natural resources.

2. How Customary International Law Rules 'Emerge'

The classic description of what constitutes a rule of customary international law was given by the ICJ in the *North Sea Continental Shelf Cases*.[4] The Court confirmed that customary international law generally evolves over time,[5] and is derived from sufficient (in the circumstances) evidence of both the 'settled practice' of states, as well as *opinio juris* ('recognition as law'), the latter of which it described as 'a belief that this practice is rendered obligatory by the existence of a rule of law requiring it'.[6] This view of customary international law encompasses an objective as well as subjective or 'psychological' element.[7] Much has been written about these two elements

1 See, for example, Vladlen S Vereshchetin and Gennady M Danilenko, 'Custom as a Source of International Law of Outer Space' (1985) 13:1 *Journal of Space Law* 22.
2 1 UNTS 16. We have previously discussed the applicability, in practical terms, of each of these sources to the peaceful exploration and use of outer space: see Ram S Jakhu and Steven Freeland, 'The Sources of International Space Law' (2013) *Proceedings of the International Institute of Space Law* 461.
3 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies 610 UNTS 205 (Outer Space Treaty).
4 See [1969] ICJ Rep 3, par. 77. There have been earlier definitions of international custom, some dating back to early international law treatises: see, for example, the examples discussed in Christiana Ochoa, 'The Individual and Customary International Law Formation' (2007) 48 *Virginia Journal of International Law* 119, 122.
5 However, see part 4 of this paper.
6 [1969] ICJ Rep 3, par. 77.
7 Erik V. Koppe, *The Use of Nuclear Weapons and the Protection of the Environment During International Armed Conflict* (2006), 166.

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and how they should be properly formulated,[8] which is also relevant to the process by which state practice on the one hand, and *opinion juris* on the other, may be adduced in relation to a claim that a specific customary rule actually exists. As noted by the Court:[9]

> [i]t is of course axiomatic that the material of customary international law is to be looked for primarily in the actual practice and *opinio juris* of States.

That said, there is no longer uniform agreement among international law commentators that the two distinct elements specified by the Court in the late 1960s are still 'necessary' to prove the existence of a rule of customary international law.[10] For example, there have been suggestions that the practice of *non-state* actors is also relevant for the formation of customary international humanitarian law.[11] This is an interesting proposition (deserving of further research beyond the scope of this paper) also with respect to the emergence of customary international law in the area of the exploration and use of outer space, since the majority of space 'actors' are now private entities engaged in commercial activities involving space.[12]

Other commentators have suggested that, if one were to apply the classical definition of customary international law, some human rights norms would fail to qualify as custom, due to a lack of uniform state practice.[13] Again, in respect of certain aspects of the regulation of outer space, similar (although not identical) assertions might be raised by virtue of the fact that there has not been widespread state practice. However, despite these contrary views, for the purposes of examining the relevant customary rules in this paper,

8 See, for example, Heather Cash, 'Security Council Resolution 1593 and Conflicting Principles of International Law: How the Future of the International Criminal Court is at Stake' (2007) 45 *Brandeis Law Journal* 573, 592.

9 *Continental Shelf (Libyan Arab Jamahiriya v. Malta)* (Judgment) [1985] ICJ Rep 13, par. 27.

10 See, for example, International Law Association, 'Final Report of the International Committee on the Formation of Customary (General) International Law; Principles Applicable to the Formation of General Customary International Law', in *Report of the Sixty-Ninth Conference* (2000), 712, 720-1.

11 See Jonathan Somer, 'Jungle justice: passing sentence on the equality of belligerents in non-international armed conflict' (2007) 89:867 *International Review of the Red Cross* 655, 662 and the corresponding footnotes.

12 It has been estimated that, in 2015, commercial space activities constituted approximately 76% (US$246 billion) of the global 'space economy' (US$323 billion): see Space Foundation, 22 June 2016: http://www.spacefoundation.org/media/press-releases/space-foundation-report-reveals-global-space-economy-323-billion-2015.

13 See, for example, John O. McGinnis and Ilya Somin, 'Symposium: Global Constitutionalism: Global Influence on U.S. Jurisprudence: Should International Law be Part of our Law?' (2007) 59 *Stanford Law Review* 1175, 1200.

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reference to principles of customary international law will relate to the traditional formulation.

3. The Importance of Customary International Law for Space Activities

At first glance, it might be suggested that an examination of the customary international law principles that apply to the peaceful exploration and use of outer space may be unnecessary. This assumes, however, that; (i) *all* such rules of custom are codified in the UN space treaties; and (ii) *all* relevant states are parties to those treaties. Neither of those propositions is likely to be accurate or reflect the reality of how space is being utilized, and by whom. What is not disputed is that, unlike conventional principles, which typically bind only those parties to the relevant treaty,[14] rules of customary international law bind *all* states, subject (possibly) to the so-called 'persistent objector' rule,[15] or 'localized' rules – in the form of local, bilateral, special or regional customary law – that may arise in the circumstances.[16] Consequently, the customary international law principles applicable to the exploration and use of outer space bind each and every state, regardless of any specific treaty obligations it may, or may not, have formally accepted.

It is thus important to examine the extent to which customary international law has emerged with respect to space activities. This in no way downplays the role of the UN space treaties. Rather, it highlights the accepted principle that a norm of customary international law may, in particular circumstances, be *identical* in its terms to a treaty provision.[17] It is generally regarded that several

14 See 1969 Vienna Convention on the Law of Treaties 1155 UNTS 331 (VCLT), article 34. This general rule also represents a principle of customary international law: D.J. Harris, *Cases and Materials on International Law* (6th ed, 2004), 847. Articles 35 and 36 of the VCLT respectively specify the circumstances whereby obligations and rights may be created for a third state, based on the consent of that state.

15 See *Fisheries Case* (*United Kingdom v. Norway*) (Judgment) [1951] ICJ Rep 116, page 131 (*Fisheries Case*). Some commentators have, however, cast doubt as to whether the persistent objector rule exists: see, for example, Jean-Marie Henckaerts, 'Study on customary international humanitarian law: A contribution to the understanding and respect for the rule of law in armed conflict' (2005) 87:857 *International Review of the Red Cross* 175, 181.

16 The ICJ in the *Right of Passage Over Indian Territory Case* saw 'no reason why long continued practice between the two states accepted by them as regulating their relations should not form the basis of mutual rights and obligations between the two states:' *Right of Passage over Indian Territory (Portugal v. India)* (Judgement) [1960] ICJ Rep 6, 39. Regarding special or regional customary law, see *Colombian-Peruvian Asylum Case,* (Judgment) [1950] ICJ Rep 277.

17 See, for example, *North Sea Continental Shelf Cases (Federal Republic of Germany v. Denmark and Federal Republic of Germany v. The Netherlands)* (Judgment) [1969] ICJ Rep 3, par. 71 (*North Sea Continental Shelf Cases)*: see also *Military and*

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foundational principles codified in the UN space treaties, particularly the Outer Space Treaty, are also rules of customary international law.[18] This will have implications for those states that are not parties to the relevant treaty.

There are several other reasons why an understanding of the relevant customary rules is important in considering the rights and obligations of those participating in the exploration and use of outer space. First, it has become difficult for the international community, particularly through UNCOPUOS, to negotiate binding instruments relating to outer space over the past four decades, notwithstanding the exponential evolution of space activities over that period. Indeed, no additional treaties have been concluded through UNCOPUOS since the Moon Agreement in 1979.[19] As a consequence, there has been a strong tendency towards the development of soft law guidelines / 'codes of conduct' for space-related matters, notwithstanding the inherent risks that this (potentially) brings of greater 'non-compliance'.[20]

However, this does not mean that other additional customary international rules might not have emerged in the interim, even if they are not reflected in the UN space treaties. Indeed, as the Nuremberg Military War Crimes Tribunal observed (albeit in a different context) already in 1946:[21]

> this law is not static, but by continual adaptation follows the needs of a changing world. Indeed, in many cases treaties do no more than express and define for more accurate reference the principles of law already existing.

Applying this to the context of outer space, it is apparent that the paradigms of how we use space are constantly changing, particularly due to the rapid technological developments. Simply put, space is now a completely different

Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America) (Merits) (Judgment) [1986] ICJ Rep 14, par. 177-8.

18 This may also be true of some of the terms in the various UN General Assembly Declarations relating to specific aspects of the exploration and use of outer space: see, for example, Ricky J Lee and Steven Freeland, 'The Crystallisation of General Assembly Space Declarations into Customary International Law', (2003) 46 *Proceedings of the Colloquium on the Law of Outer Space* 122.

19 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies 1363 UNTS 3 (Moon Agreement). For a detailed discussion, see Stephan Hobe, Ram Jakhu, Steven Freeland, Fabio Tronchetti and Peter Stubbe, 'The Moon Agreement' in Stephan Hobe, Bernhard Schmidt-Tedd and Kai-Uwe Schrogl (eds), *Cologne Commentary on Space Law, Volume II – Rescue Agreement, Liability Convention, Registration Convention, Moon Agreement* (2013), 325.

20 See Steven Freeland, 'For Better or For Worse? The Use of 'Soft Law' within the International Legal Regulation of Outer Space' (2011) XXXVI *Annals of Air and Space Law* 409.

21 *Judgment of the International Military Tribunal, Trial of the Major War Criminals* 1 October 1946, reprinted in (1947) 41 *American Journal of International Law* 172, 219.

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'place' than it was when the Outer Space Treaty was concluded, reflecting as it did some foundational customary principles that existed *at that time*. Thus, even though international space law is heavily influenced by treaty instruments, customary international law may still be an important part of this area of law. In fact, as is discussed in part 4 of this paper, many of the UN space treaty provisions were founded in customary law. The treaties might not encompass the full extent of the contemporary rules applicable to the exploration and use of space (an issue also warranting further research).

In addition, any relevant rules of customary international law might aid in the interpretation of applicable treaty provisions. Article 31(3)(c) of the VCLT specifies that, when interpreting a treaty in accordance with article 31(1), 'any relevant rules of international law applicable in the relationship between the parties' shall, 'together with the context', also be taken into account.[22] Thus, as noted by the ICJ, just as multilateral treaties 'may have an important role to play in recording and defining rules deriving from custom, or indeed developing them',[23] we suggest that, when interpreting a UN space treaty, the relevant customary international law principles should also be taken into account. Article 31(3)(c) appears to encompass the full gamut of applicable customary international law rules ('any'), not just those that relate solely to the specific content of the relevant treaty being interpreted.

Another reason to consider these customary rules separately from the relevant treaty provisions, even if they are identical in scope, relates to the respective nature of their development. The ICJ has confirmed that a rule that is both one of custom and also reflected as a treaty provision can emerge at different times and under differing circumstances. In the *North Sea Continental Shelf Cases*, the Court held that the relationship between a treaty and customary international law may arise in one of three ways:

1. the treaty may be declaratory or a codification of existing custom;
2. the treaty may crystallise custom as agreed by the states during its negotiation process; or
3. the treaty provisions may become accepted and followed by states as custom at some point subsequent to its adoption.

The applicable treaty and customary rules therefore can be said to have a different normative base from each other,[24] and may ultimately apply in

22 VCLT, article 31(3)(c).

23 See *Continental Shelf (Libyan Arab Jamahiriya v. Malta)* (Judgment) [1985] ICJ Rep 13, paragraph 27.

24 Iain Scobbie, 'The approach to customary international law in the Study', in Elizabeth Wilmshurst and Susan Breau (eds), *Perspectives on the ICRC Study on Customary International Humanitarian Law* (2007), 15, 47.

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varying ways in relation to a particular factual circumstance. In this regard, the Court has observed that:[25]

> even if two norms belonging to two sources of international law appear identical in content, and … the States in question are bound by these rules both on the level of treaty-law and on that of customary international law, these norms retain a separate existence … Rules which are identical in treaty law and in customary international law are also distinguishable by reference to the methods of interpretation and application.

Having therefore outlined why it is important to consider the role of customary international law with respect to the regulation of space activities, we will move on in the next part to confirm the view that a number of fundamental provisions of the Outer Space Treaty reflect (pre-existing) rules of customary international law. We then examine the implications that this may have for off-Earth mining activities.

Before doing this, however, we must add one important caveat. It must be noted that an elaboration of the exact scope of any customary rules, and indeed their very existence as such – as opposed to non-binding patterns of behaviour or acts done 'merely for reasons of political expediency'[26] – is often a difficult exercise. As Judge Koroma has noted, customary international law is 'notorious for its imprecision'.[27] Naturally, the terms of specific rules can much more confidently be asserted on the basis of conclusions reached by the ICJ, and perhaps other international courts and/or tribunals, which indicate that a particular customary principle has been established. It is a lot harder to definitively substantiate the existence of a customary rule in the absence of such a judicial pronouncement. We therefore discuss in this paper only rules that are widely accepted as reflecting customary international law, in order not to avoid what might be termed 'academic norm creation'.

4. The Emergence of Customary International Law for Space Activities

a) Articles I and II of the Outer Space Treaty

Although the Soviet Union had not sought the permission of any other state to undertake the Sputnik 1 mission, there were no significant international protests asserting that it had infringed a country's sovereignty as the space object circled the Earth. This international (in)action confirmed that outer space did not, from a legal perspective, possess the traditional elements of

25 *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)* (Merits) (Judgment) [1986] ICJ Rep 14, paragraph 178.

26 See *Colombian-Peruvian Asylum Case (Colombia v. Peru)* (Judgment) [1950] ICJ Rep 266, 277.

27 Dr. Abdul G. Koroma, 'Foreword', in Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law* (Volume I: Rules, 2005), xii.

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sovereignty that were already well-established under the international law principles that regulated land, sea and air space on Earth. Instead, it was assumed that outer space was an area beyond territorial sovereignty. In this sense, it has often been asserted that a principle of 'instant' customary international law emerged in the days following the Sputnik launch. This is, of course, not entirely consistent with the 'gradual' development of a rule of custom as articulated in the *North Sea Continental Shelf Cases*; however, it does highlight the unique nature of space and how the law sometimes must 'react' quickly to the rapid development of space technology.[28] As Judge Manfred Lachs has observed:[29]

> [t]he first instruments that men sent into outer space traversed the air space of States and circled above them in outer space, yet the launching States sought no permission, nor did the other States protest. This is how the freedom of movement into outer space, and in it, came to be established and recognised as law within a remarkably short period of time.

As such, almost immediately after humankind had begun its quest to explore and use outer space, several foundational international law principles were born – in particular, the 'common interest', 'freedom' and 'non-appropriation' principles.[30] These principles reflected the reality of the situation, and the practice of the (two) major space-faring nations at the time. There were no territorial claims with respect to (parts of) space and no assertion of 'ownership' rights to the natural resources that existed in space. In essence, the community of states had accepted from the outset that outer space was to be regarded as being similar to a *res communis omnium*.[31]
Indeed, by the time that the Outer Space Treaty was finalized, both the United States and the USSR had been engaged in a wide range of space activities. Neither had sought the permission of any other country to engage in those activities, nor had they made a claim to sovereignty over any part of outer space, including celestial bodies, notwithstanding the planting by the Apollo 11 astronauts of an American flag on the surface of the Moon,[32]

28 It is interesting to note that the decisions in the *North Sea Continental Shelf Cases* were rendered by the ICJ shortly after the Outer Space Treaty had entered into force.
29 Dissenting Opinion of Judge Lachs in the *North Sea Continental Shelf Cases* [1969] ICJ Rep 3, 230. Judge Lachs dissent was not related to these observations, and they were not commented upon by other judges of the Court.
30 For a detailed discussion of the non-appropriation principle as specified in Article II of the Outer Space Treaty, see Steven Freeland and Ram Jakhu, 'Article II', in Stephan Hobe, Bernhard Schmidt-Tedd and Kai-Uwe Schrogl (eds), *Cologne Commentary on Space Law, Volume I – Outer Space Treaty* (2009), 44.
31 Antonio Cassese, *International Law* (2nd ed, 2005), 95.
32 By contrast, article IV of the 1959 Antarctic Treaty 402 UNTS 71, has the effect of suspending all claims to territorial sovereignty in Antarctica, and prohibits any 'new claim, or enlargement of an existing claim'.

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which was simply a symbolic act. In this regard, the United States delegate to UNCOPUOS, Mr. Herbert Reis, reiterated the specific object and purpose of article II on 31 July 1969, just after the Apollo 11 astronauts had landed on the Moon, as follows:[33]

> The negotiating history of the Treaty shows that the purpose of this provision (i.e. article II) was to prohibit a repetition of the race for the acquisition of national sovereignty over overseas territories that developed in the sixteenth, seventeenth, eighteenth and nineteenth centuries. The Treaty makes clear that no user of space may lay claim to, or seek to establish, national sovereignty over outer space.

As a result, although it was of great importance to formalize these principles into treaty form, the drafting process leading to the finalization of articles I and II of the Outer Space Treaty was relatively uncontroversial. They were widely accepted as representing binding principles as customary international law well before their codification in the treaty. There has been no tangible suggestion that these principles have in any way changed since that time, and they remain binding on all states. They may even have reached the status of principles of *jus cogens*,[34] and norms that contain *erga omnes* obligations of all states towards the international community as a whole.[35]

These fundamental rules underpinning the international space law significant depart from the rules relating to air space, which constitutes part of the 'territory' of the underlying state. The territorial nature of air space is reflected in the principal air law treaties[36] as well as under customary international law.[37] Civil / commercial aircraft have only limited rights to

33 Cited from E.N. Valters, 'Perspectives in the Emerging Law of Satellite Communications' (1970) 5:53 *Stanford Journal of International Studies* 66.

34 See VCLT, article 53.

35 The ICJ determined in the *Case Concerning the Barcelona Traction, Light and Power Company, Limited, Case (New Application: 1962) (Belgium v. Spain) (Second Phase)* (Judgment) (*Barcelona Traction* Case) that 'an essential distinction should be drawn between the obligations of a State towards the international community as a whole, and those arising vis-à-vis another state in the field of diplomatic protection. By their very nature the former are the concern of all states. In view of the importance of the rights involved, all states can be held to have a legal interest in their protection; they are obligations *erga omnes*' [1970] ICJ Rep 32, par. 33.

36 For example, reaffirming the principle already acknowledged in 1919 (Convention on the Regulation of Aerial Navigation 11 LNTS. 173), article 1 of the 1944 Convention on International Civil Aviation 15 UNTS 295 (Chicago Convention) provides that 'every state has complete and exclusive sovereignty over the air space above its territory.'

37 See *Case Concerning Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States)* (Merits) (Judgment) (*Nicaragua Case*) [1986] ICJ Rep 14, 128.

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enter the air space of another state,[38] in contrast to the freedom principle relating to outer space.[39] Even though the delimitation between air space and outer space has not yet definitively emerged, this has not in practice led to any significant confusion as to 'which law' might apply in particular circumstances, although this may change in the future.[40]

When codifying these customary principles into the Outer Space Treaty, it was appropriate that the non-appropriation principle in article II is set out immediately following article I, which elaborates on the 'common interest' and 'freedom' principles, and confirms that the exploration and use of outer space is to be undertaken 'for the benefit and in the interests of all countries'. In general terms, the primary intent of article II was to reinforce these important concepts by confirming that principles of territorial sovereignty do not apply to outer space. Not only does this reflect the practice of states from virtually the beginning of the space age,[41] but it was an important proactive step designed to protect outer space from the possibility of conflict driven by territorial or colonizing ambitions.

In summary, therefore, there is no reason to doubt that the 'common interest', 'freedom' and 'non-appropriation' principles codified in articles I and II of the Outer Space Treaty reflected principles of customary law that predated the treaty. These customary principles continue to apply today, notwithstanding that the range of space activities has grown exponentially. They are therefore relevant to a consideration of the legal position regarding proposed off-Earth mining of space resources. The implications of these customary rules on such activities are further discussed in part 5 of this paper.

b) Articles VI and VII of the Outer Space Treaty

The dawn of space age brought in several innovations and important changes in traditional international law, primarily due to the unique nature of space

38 See Chicago Convention, articles 5 and 6.

39 Of course, any space activities requiring a launch from Earth and/or a return to Earth will also involve a 'use' of air space. In this respect, the law of air space may be relevant to the legal position if, for example, the space object of one state travels through the air space of another state or through international air space over the high seas. See also article II of the 1972 Convention on International Liability for Damage Caused by Space Objects 961 UNTS 187, which applies *inter alia* to damage caused to 'aircraft in flight' (i.e. in air space).

40 For example, this issue may become relevant for the regulation of commercial sub-orbital space tourism activities: see Steven Freeland, 'Fly Me to the Moon: How Will International Law Cope with Commercial Space Tourism?' (2010) 11:1 *Melbourne Journal of International Law* 90.

41 One notable exception was the Bogota Declaration. In 1976, a number of equatorial states claimed sovereign rights over segments of the geostationary synchronous orbit above their respective territories, principally based upon the lack of an accepted delimitation between air space and outer space. For the text of Bogota Declaration, see (1978) 6 *Journal of Space Law* 193.

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activities. In matters related to state responsibility and liability, such changes have been incorporated in articles VI and VII of the Outer Space Treaty. Ian Brownlie aptly asserts that, under traditional international law, state responsibility 'only arises when the act or omission complained of is imputable to a state.'[42] This assertion is reflected in the precisely articulated and well-elaborated *Articles on Responsibility of States for Internationally Wrongful Acts* (2001) drafted by the International Law Commission.[43] However, a state party to the Outer Space Treaty may entail international responsibility, without the requirement of any imputability to that state, for the space-related acts or omissions of its public or private entities, or even of international organisations in which that state participates.[44] According to Judge Manfred Lachs:[45]

> acceptance of this principle [in article VI of the Outer Space Treaty] removes all doubts concerning imputability … States have taken upon themselves the *explicit obligation that such activity will require their 'authorization and continuing supervision'*.

Non-fulfillment of this obligation would trigger state responsibility under international law.[46] The provisions of article VI are a delicate compromise between the positions of the Soviet Union and the United States. While the former insisted that only states should be allowed to explore and use outer space, the latter preferred to allow for private entities to also engage in space activities. It was agreed that private companies might undertake space activities, but only pursuant the 'authorization and continuing supervision' by appropriate states, who would also be internationally responsible for 'assuring that national activities are carried out in conformity with the provisions set forth in the' Outer Space Treaty.[47]

42 Ian Brownlie, *Principles of Public International Law* (7th ed, 2008), 436.

43 These are generally believed to be 'legally binding statements of customary international law': see 'Legal Committee Delegates Differ On Applying Rules For State Responsibility: Convention Needed, Or Customary Law Adequate?' sixty-fifth session of the United Nations General Assembly, Sixth Committee, 15th Meeting (AM), 19 October 2010: http://www.un.org/News/Press/docs/2010/gal3395.doc.htm.

44 Outer Space Treaty, article VI.

45 Manfred Lachs, *The Law of Outer Space: An Experience in Contemporary Law-Making* (1972), 122 (emphasis added).

46 Bin Cheng stresses that 'failure to subject nongovernmental national space activities to authorization and continuing supervision would constitute an independent and separate cause of responsibility': Bin Cheng, 'Article VI Of The 1967 Space Treaty Revisited' (1998) 26 *Journal of Space Law* 7, 13-14.

47 Outer Space Treaty, article VI.

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Space activities of non-governmental (private) entities are considered to be 'national activities' of the concerned state(s).[48] International responsibility of a state is not only 'for national activities in outer space, including the moon and other celestial bodies' but also that occur in air space and on Earth, as evidenced from the growing number of national space laws of various states.

Article VI has been, and is increasingly being implemented by several major space-faring, and some non-space faring states,[49] who have enacted national space legislation / regulations in various forms and of different scope, depending upon their respective national policies and priorities. A cursory reading of these laws establishes that they have been adopted primarily to conform to a state's international obligations, particularly those under article VI. No state has expressly protested or declared its intention not to assume international responsibility for the space activities of its public / private entities. Therefore, it appears that the perquisite tests of consistent state practice and *opinio juris* have been met, and the terms of article VI have become a part of customary international space law applicable to all states.

An important implication of this is that *all* states, whether or not parties to the Outer Space Treaty, can be held responsible, and even liable, for space-related acts or omissions of their respective public / private entities, without the requirement of any imputability to them, but after establishing some 'link' between the concerned states and the entity and/or its activities. Depending on the precise circumstances, for the purpose of establishing such 'link', a standard of 'genuine link,'[50] 'effective control,'[51] 'overall control,'[52] 'nationality'[53], 'jurisdiction',[54] or 'registration,'[55] might be appropriate.

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48 See International Institute of Space Law (IISL), 'Statement by the Board of Directors Of the International Institute of Space Law On Claims to Property Rights Regarding The Moon and Other Celestial Bodies' (2004) (2004 IISL Statement): http://www.iislweb.org/docs/IISL_Outer_Space_Treaty_Statement.pdf.

49 For an analysis of national space law and regulations of fifteen states, see Ram S. Jakhu (ed.), *National Regulation of Space Activities* (2010). The texts of a number of states' national space laws are available online at: http://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/index.html.

50 *Nottebohm Case (Liechtenstein v. Guatemala) (Second Phase)* (Judgment) [1955] ICJ Rep 4.

51 See further *Nicaragua Case*.

52 See International Criminal Tribunal for the Former Yugoslavia, *Prosecutor v. Tadic,* Decision of 15 July 1999, par. 120: 'for the attribution to a State of acts of these groups it is sufficient to require that the group as a whole be under the overall control of the State': http://www.icty.org/x/cases/tadic/acjug/en/tad-aj990715e.pdf.

53 *Barcelona Traction Case*, 3.

54 Outer Space Treaty, article VIII. See also 1975 Convention on Registration of Objects Launched into Outer Space 1023 UNTS 15.

55 *Ibid.*

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Though state liability for damage can be triggered pursuant to article VI, article VII of the Outer Space Treaty specifically deals with international liability of the launching state(s). A launching state is one which '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.'[56] Only a 'launching state' can be held 'internationally liable for damage to another state party to the [Outer Space] 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.'

Many states have adopted national laws giving effect to the terms of article VII.[57] These national regulatory provisions typically impose licensing requirements, oblige licensees to reimburse the state if it is held liable because of an act or omission of the licensee, and/or require the licensee to insure against liability incurred in respect of damage or loss suffered by third parties.[58] As in the case of article VI, it appears that consistent and sufficient state practice has evolved (with the necessary *opinio juris*) to assert that the provisions of article VII have become part of customary international law. However, the nature and scope of the liability under article VII are limited as compared to under article VI. In addition, state liability under articles VI and VII, as well as under the customary international space law that emerged from them, is independent of any liability that might arise under the Liability Convention,[59] or under general international law,[60] or possibly under national law of the defendant state.

5. Implications for Off-Earth Mining for Space Resources

Recently, it has become apparent, and indeed possible, that off-Earth natural resources could be mined and exploited to fill the gaps created by rapidly-depleting natural resources on Earth. This emerging possibility necessitates a critical examination of currently applicable international space law, in order to determine whether it provides an adequate legal regime for this proposed new activity. Complex additional challenges arise given that such activities are likely, at least initially, to be mainly conducted by the private sector.[61]

The UN space treaties are based on a co-operative approach to the exploitation of space resources. It was in this vein that the terms of the Moon

56 Outer Space Treaty, article VII.
57 See *supra* note 49.
58 For example, United Kingdom, *Outer Space Act 1986*, Chapter 38, section 5.
59 1972 Convention on International Liability for Damage Caused By Space Objects 961 UNTS 187.
60 See *supra* note 43.
61 For a detailed discussion of technical, commercial and legal aspects of off-Earth mining for space resources, see Ram S. Jakhu, Joseph N. Pelton and Yaw Otu Mankata Nyampong, *Space Mining and Its Regulation* (2016).

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Agreement were negotiated. However, following the low level of ratification of the Moon Agreement, the major space-faring nations have steered away from establishing an international management regime to co-ordinate off-Earth mining activities. At the same time, several states (and private entities within their jurisdiction) have been developing the required technologies to possibly undertake missions to explore and eventually exploit off-Earth natural resources.[62]

Indeed, private entities, in particular in the United States, have called upon their respective governments to pass national laws to promote such activities. In November 2015, the American Commercial Space Launch Competitiveness Act (CSLCA) entered into law.[63] Other countries have begun to follow this example in their own national laws. Luxembourg has recently announced that it will develop 'an appropriate legal and regulatory framework for space resource utilization activities to provide private companies and investors with a secure legal environment', which is expected to be in force in 2017.[64] It has indicated that it plans to pioneer the business of mining asteroids, and that it is actively seeking and supporting private investment and expertise from other states. In addition, the UAE has also announced its plans to develop a national regulatory framework to actively promote the development of a commercial off-Earth mining industry.[65]

The United States has, in particular, been very active in developing the required space technologies, and facilitating its private sector to undertake operations for off-Earth space mining particularly by securing and enhancing its rights and interests at international level over several years, as indicated as follows:

1. On 20 July 2011, NASA published 'Recommendations to Space-Faring-Nations: How to Preserve the Historic and Scientific Value of U.S. Government Lunar Artifacts.'[66]
2. In February 2015, it was reported that the Federal Aviation Administration (FAA) would authorize Bigelow Aerospace to set up an inflatable station on the Moon.[67]
3. On 25 November 2015, the President signed into law the CSLCA, which provides that private companies may be entitled to exploit off-Earth resources and retain ownership rights over them.

62 These include the United States, the Russian Federation, various European states, China, Japan, India, and the United Arab Emirates (UAE).

63 51 USC 10101. See https://www.congress.gov/bill/114th-congress/house-bill/2262/text.

64 David Z. Morris, 'Luxembourg to Invest $227 Million in Asteroid Mining,' 5 June 2016, *Fortune Magazine*: http://fortune.com/2016/06/05/luxembourg-asteroid-mining/.

65 See Lucy Barnard, 'UAE to finalise space laws soon', *The National,* 7 March 2016: http://www.thenational.ae/business/aviation/uae-to-finalise-space-laws-soon.

66 For a copy of the Recommendations, see NASA website: http://www.nasa.gov/directorates/heo/library/reports/lunar-artifacts.html.

67 Irene Klotz, "The FAA: regulating business on the moon," 3 February, 2015, online: http://mobile.reuters.com/article/idUSKBN0L715F20150203?irpc=932.

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4. In August 2016, a private company, Moon Express, was authorized to land its robotic mission on the Moon in 2017. It is reported that the company 'aims to fly commercial missions to Earth's nearest neighbor and help exploit its resources.'[68]

For the purpose of this paper, the CSLCA is the most relevant. The act provides a domestic legal basis for U.S. citizens to engage in commercial exploration and recovery of resources from asteroids, the Moon and other celestial bodies. It directs the President, acting through the appropriate Federal agencies, to:[69]

(1) facilitate commercial exploration for and commercial recovery of space resources by United States citizens;
(2) discourage government barriers to the development in the United States of economically viable, safe, and stable industries for commercial exploration for and commercial recovery of space resources in manners consistent with the international obligations of the United States; and
(3) promote the right of United States citizens to engage in commercial exploration for and commercial recovery of space resources free from harmful interference, in accordance with the international obligations of the United States and subject to authorization and continuing supervision by the Federal Government.

This legislation has aroused considerable discussion and disagreement amongst academia, industry and regulators, as well as at the international level, including at a recent UNCOPUOS session.[70] While explicitly proclaiming that it does not amount to an assertion of 'sovereignty or sovereign or exclusive rights or jurisdiction over, or the ownership of, any celestial body',[71] the act provides that:[72]

68 Mike Wall, "Moon Express Approved for Private Lunar Landing in 2017, a Space First" *Space.com,* 3 August 2016: http://www.space.com/33632-moon-express-private-lunar-landing-approval.html.
69 'Commercial exploration and commercial recovery', section 51302(a).
70 At the fifty-fifth session of the Legal Subcommittee of UNCOPUOS held on 4-15 April 2016, member states agreed to include on the agenda of its fifty-sixth session for consideration by the Legal Subcommittee, the following new single issue/item: 'General exchange of views on potential legal models for activities in exploration, exploitation and utilization of space resources': see Report of the Legal Subcommittee on its fifty-fifth session, held in Vienna from 4 to 15 April 2016, UN Doc A/AC.105/1113 (27 April 2016), paragraph 250.
71 Pub L 114-90 Title IV§ 403.
72 'Asteroid resource and space resource rights'. section 51303.

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> [a] U.S. citizen engaged in commercial recovery of an asteroid resource or a space resource under [the Act] shall be entitled to any asteroid resource or space resource obtained, including to possess, own, transport, use, and sell the asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of the United States.

As discussed above, articles I and II of the Outer Space Treaty now have gained universal recognition and provide for international protection of the inclusive interests of *all* states. On the other hand, unilateral efforts, like those of the U.S. through its national laws, seem to enhance and protect *exclusive* national and private interests of a state. There appears to be a contradiction between international and national law with respect to off-Earth mining. This may lead to political conflict and calls for a close scrutiny of the applicable legal principles and rules. The following points should be noted in this regard:

First, the non-appropriation rule is comprehensive in its scope and application, particularly in view of the rationale behind it, the precise terms of article II, its negotiating history, and the central role it plays in the regime created for global governance of outer space.

Secondly, an attempted appropriation of natural resources may be considered to occur without any claim of sovereignty over the superjacent 'territory'.

Thirdly, the objective of the Outer Space Treaty as a whole, and article II in particular, cannot be deduced to bar or hinder the peaceful exploration or use of outer space. The purpose of the treaty is to facilitate space activities in accordance with the established rules *for the benefit of all peoples*.

Fourthly, the prohibition of national appropriation should be understood within the context of other provisions of the Outer Space Treaty, particularly articles I and IX. The treaty establishes a *fair* balance of interests of *all* states in the peaceful exploration and use of outer space,[73] and this balance must be maintained.

Fifthly, in the United States, any purported mining and property rights for the private entities are to be accorded through national licensing processes that are yet to be established under applicable law. As noted, any such licenses would include conditions imposed upon licensees to respect 'the international obligations of the United States.'

In other words, off-Earth mining for space resources would be legal as long as it is for the benefit of all mankind. Conversely, it would not be in accordance with international space law if such mining is carried out only for

73 After the completion of the draft Outer Space Treaty in the UNCOPUOS, the U.S. delegate, Mr. Goldberg, underlined that the 'spirit of compromise shown by the space Powers and the other Powers had produced a treaty which established a *fair balance* between the interests and obligations of all concerned, including the countries which had as yet undertaken no space activities': Official Records of the U.N. General Assembly, Summary Records of Meetings, 21st Sess., 1st Comm., at 427-428 (17 December 1966) (emphasis added).

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'exclusive' interests, contrary to the terms of the Outer Space Treaty, particularly articles I, III and IX.

6. Concluding Comments

In the near future, the nature, order of magnitude, complexity of, and dependence upon space operations and services will increase exponentially, alongside the significant growth in the number and range of space stakeholders. In other words, the importance of space for humanitarian, economic, political, military and strategic purposes will continue to grow for states, communities, private enterprises and, more importantly, individuals. There will certainly be a push for exclusive interests and control over space 'benefits' as space activities become even more globalized. Coupled with this, experience over the past four decades has seen a stalemate in the conclusion of binding conventional instruments under international law relating to the peaceful exploration and use of space. This position is unlikely to change in the short-medium term.

There is therefore an increasing disconnect between the growth of space activities and space 'actors', and the need for new codification of the international rules of law governing space activities. With this backdrop, the evolution of customary international space law, based on, in particular, key provisions of the Outer Space Treaty, represent an important additional means of regulating these new activities, and further reinforce that space is not 'lawless' when it comes to issues such as the proposed commercial exploitation of space resources. It remains to be seen if such customary international space law will be adequate to maintain public order in relation to some proposed space activities, or instead a 'law of the jungle' mentality may develop, particularly when it relates to potentially very significant economic benefits.

All those associated with the regulation of the peaceful exploration and use of outer space, both at the international but also at the national level, will be called upon to play their part in objectively identifying these rules of customary international space law, and how, in particular, they both compliment and supplement the principal terms of the treaties, such as articles I, II, VI and VII of the Outer Space Treaty. This certainly presents some interesting future challenges for space lawyers!

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