THE DRAFT SPACE PROTOCOL AND JURISDICTION OVER COMMERCIAL SPACE ASSETS

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I. Introduction

A. Background

The focus of the space law treaties, when written, was on government operations in outer space. In the Outer Space Treaty, Art. VIII [1] the States of registry retained jurisdiction and control over their objects launched into outer space. Subsequently the activities in outer space partially shifted to private users; but the space law treaties did not change to reflect the new focus. Private operators tend to use private financing which entails different legal problems than public financing. Private operators may go bankrupt or may otherwise default on debts secured by space assets. Because we are now about to adopt a new treaty instrument (the Space Protocol) to govern private operators' financing of their space assets, [2] it is prudent to examine how the existing space law treaties , in particular the Outer Space Treaty, Art. VIII, suit the jurisdictional needs of creditors to recover secured space assets when default happens.

Drafting of the Space Protocol has proceeded on the assumption that there is no applicable jurisdictional law . One key negotiator of the Protocol writes: " Space assets are distinctive in that there is no law of any kind, national or international, governing dealings with objects in outer space." [3] The issue of jurisdiction over space assets will occur under the regime of the Protocol whenever creditors apply to national courts to issue orders enforcing finance contracts (security agreements) in order to gain control over delinquent space assets. Based on the rationale that there is no prior existing law, draft Protocol Art. 1 (3)(b) and (c) propose to assign jurisdictional authority not only to national courts in accordance with the Outer Space Treaty, Art VIII, and the Registration Convention, Art II; but draft Art. I(3) will additionally give jurisdictional authority to "the Contracting State which is the State granting a license to operate the space asset;" or to "the Contracting State on the territory of which a mission operation center for the space asset is located."[4]

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[1] The five UN space law treaties relevant to this discussion are:
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), 610 UNTS 205.
Convention on Registration of Objects Launched Into Outer Space (Registration Convention), 1923 UNTS 15.
Convention on International Liability for Damage Caused by Space Objects (Liability Convention), 961 UNTS 187.
Agreement on Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (The Rescue and Return Agreement), 672 UNTS 119.
Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Agreement), 1361 UNTS 3.

[2] Convention on International Interests in Mobile Equipment (Cape Town Convention) UNIDROIT 2011 –DCME-SP – Doc.4, Appendix. Draft Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Space Assets (Space Protocol), UNIDROIT 2011, DCME-Doc. 3.

[3] Explanatory Note, Convention on International Interests in Mobile Equipment and Draft Protocol Thereto on Matters Specific to Space Assets (Explanatory Note) UNIDROIT 2011, DCME-SP – Doc. 4, at 2.

[4] Space Protocol *supra* n. 2. The current full draft text of Art. 1(3) is as follows:
Art. 1(3): In Article[s] [1(n) and 43(1) of the Convention and Article XXII of this Protocol, references to a Contracting State on the territory of

Considering that an object in outer space may be guided and thus controlled from multiple locations as it circles the Earth, the proposed draft Art 1(3) brings into question the jurisdictional scope of the Outer Space Treaty, Art. VIII, and of the Registration, Art II. The above quoted draft provisions may be interpreted to exceed the jurisdictional scope and limitation of both space law treaties. While the drafting of the Space Protocol has proceeded on the assumption that there is no applicable jurisdictional law, there is a least ambiguity regarding jurisdiction and control over objects in outer space. Thus it would be best to resolve any jurisdictional ambiguity during the drafting process of the new Protocol rather chancing a split of opinions from various courts later on.

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which an objects or space asset is situated shall as regards a space asset when not on Earth be treated as references to any of the following:

(a) a Contracting State which registers the space asset. or on the registry of which the space asset is carried, for the purposes of:
  (i) the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies sighed at London, Moscow and Washington DC on 27 January 1967;
  (ii) The Convention on Registration of Objects Launched into Outer Space, signed at New York on 14 January 1975; or
  (iii) United Nations General Assembly Resolution 1721 (XVI B or 20 January 1961;
(b) the Contracting State which is the State granting a license to operate the space asset; or
(c) the Contracting State on the territory of which a mission operation center for the space asset is located.

(It is this author's recollection that the entire paragraph was placed into square brackets by the 2011 UNIDROIT Working Group's fifth session in its submission to the diplomatic conference scheduled in Berlin, Feb. 27 – 9 March 2012; but that is not clear from the current text for the diplomatic conference).

The purpose of the Cape Town Convention' s Space Protocol is to create and protect by treaty law a publicly accessible international registry of security interests in high value space assets.[5] The Space Protocol will also regulate financing contracts between creditors and debtors. Its intent is to establish greater certainty about the legal status of security interests in space assets. Greater certainty about enforceability of default remedies will encourage financiers to invest in space ventures and will reduce the cost of such investments to creditors, resulting in cost savings for debtors and greater availability of financing for satellite operators. When adopted, the Space Protocol would supercede the relevant domestic laws of those States that have laws on security instruments, such as the U.S. Uniform Commercial Code[6] , but only as to security interests which qualify as 'international interests.' [7] (National laws would continue to apply to space assets which do not meet the Protocol's definition of space assets.) The Space Protocol would also provide new international financing law for those States that do not have domestic security laws.[8] The draft space protocol is unique among private law treaties governing transactions in that the covered space assets often are in non-

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[5] As of 2010 the Cape Town Convention has been ratified by 40 States.

[6] The United States Uniform Commercial Code (UCC) is a uniform commercial code adopted by the individual States. It is not U.S. federal law.

[7] *I.e.* international interests as defined by the Cape Town Convention, Art 2, but limited to space assets as defined by the Space Protocol.

[8] *Explanatory Note supra n.3. See* FRANCIS LYALL & PAUL B. LARSEN, SPACE LAW, A TREATISE, Chapter 14, (Ashgate 2009) (hereinafter Lyall and Larsen); Larsen, Future Protocol on Security Interests in Space Assets, 67 J. Air. L. & Com. 1071 (2002); and Larsen and Heilbock, UNIDROIT Project on Security Interests: How the Project Affects Space Objects, 64 J. Air . L. & Com. 703 (1999).

sovereign outer space and thus difficult to reach. [9]

This paper examines how the various space law treaties govern national courts' jurisdiction and enforcement of decisions regarding space assets that are subject to the legal regime of the Space Protocol. Jurisdiction over space objects and space assets in outer space is important because jurisdiction determines enforcement of the applicable law.[10]

A. Jurisdiction and Control over Space Objects and Space Assets.

Jurisdiction and control over space objects and assets may be divided into objects and assets within territorial jurisdiction and those in non-sovereign outer space. The following discussion focuses on jurisdiction and control over objects and assets in non-sovereign outer space that are thus subject to the Outer Space Treaty and the other space law treaties as well as customary international law. The Space Protocol, when it is adopted, will also apply to objects and assets in non-sovereign outer space. The question is when and how national courts will exercise jurisdiction and control over space objects and assets in non-sovereign outer space.

Prof. Bin Cheng describes the law on jurisdiction as follows: "By conferring its nationality on an object of international law, a State claims and treats the latter as a component of the national community." A State preserves its jurisdiction over its nationals when they are abroad; they in turn have the benefit of protection when they are abroad. "Any injury to one of its nationals by a foreign State is an injury to the State itself." [11] State jurisdictions are by customary law divided into three types: territorial jurisdiction, quasi-territorial jurisdiction and personal jurisdiction: [12] (1) Within their territories States have territorial jurisdiction over persons and things. (2) States have extraterritorial jurisdiction over ships and aircraft of their nationality, and (3) States have personal jurisdiction over their nationals in foreign countries.[13]

Article II of the Outer Space Treaty expresses that the States do not have, and cannot have, sovereignty in outer space; therefore they cannot have *territorial* jurisdiction in outer space. [14] However, Art. VIII of the treaty specifically concerns jurisdiction. It assures that the State of registry retains jurisdiction and control over its registered space objects and that the ownership of such objects is not affected by location in non-sovereign outer space.

The limited scope of Art. VIII is important. It only concerns jurisdiction over space objects when they are in outer space. It does not

[9] *Id*. Lyall & Larsen, at 448.

[10] *Id*. Bin Cheng, Studies in International Space Law (Clarendon Press, Oxford 1997), at 62e (hereinafter Cheng). The Space Protocol contains one specific provision on jurisdiction. Space Protocol draft article XXXII provides for the possibility of a waiver of sovereign immunity from jurisdiction of the courts or concerning enforcements of rights to space assets. A waiver is binding and shall effectively confer jurisdiction and allow enforcement. Such a waiver of sovereign immunity from jurisdiction must be in writing and it must describe the space assets sufficiently for their identification. Conversely, States may refuse to waive their sovereign immunity from jurisdiction as they as they are entitled to do under draft Article XXXII.

[11] Mavrommatis Palestine Conclusion, PCIJ (Jd.) at A 12 (1924), *Id*. Cheng at 477.

[12] *Id*. Cheng at 478

[13] *Id*. Cheng at 479. *See* below for further discussion on these three types of jurisdiction as they pertain to space objects in outer space.

[14] *See infra* at n. 31 for discussion of *extraterritorial* jurisdiction over ships and air planes because they have nationality. Space objects do not have nationality.

concern jurisdiction over persons or objects that are not in outer space. Furthermore, Art. VIII does not allow for other assertions of jurisdiction over space objects in outer space.

The exercise of jurisdiction by the State of registry over space objects, including persons and other space assets in outer space, is by exercise of the national courts' *personal* jurisdiction. Personal jurisdiction includes three categories. [15]

- The first category is *legislative*. It concerns State authority to adopt laws regarding property, persons or events.
- The second category is *judicial*. It is the authority of domestic courts to adjudicate disputes involving property, persons and events.
- The third category is *enforcement* of decrees.

Professor Aoki, Kaio University, Japan, concludes that under international law the exercise of Art VIII jurisdiction by the State of registry would contain all three forms of jurisdiction. A problem is that individual States have not always observed the definition of jurisdiction existing in international law.[16] Aoki mentions several examples. The first example was when the Iridium company orbited satellites launched and registered by China but controlled by Iridium. Aoki concludes that this is a dangerous precedent because it is uncertain which State has responsibility for the Iridium satellites. China has subsequently declined to register any satellite that it launches for foreign companies. [17]

Aoki states another example, that of the transfer of the New Skies Company to the Netherlands. The Netherlands declined to become the State of registry for the New Skies satellites, but at the same time accepted jurisdiction and control over the satellites.[18] Aoki is of the view that the Netherlands did not comply with the plain meaning of Art VIII.

Aoki mentions a third example in which the UK followed the Netherlands practice. When INMARSAT became privatized, the UK declined to be listed as the State of registry for the purposes of the Registration Convention, the Liability Convention and the Rescue Agreement . [19] Nevertheless, the UK claimed to have jurisdiction and control over these satellites.

These deviations are mainly caused by States' apprehensions of liability under the Liability Convention. In spite of these deviations from the plain meaning of Art. VIII, Aoki comes to the conclusion that the treaty practice which is subsequent to negotiation of Art, VIII, does not and cannot change the plain meaning and the original Party intentions concerning Art VIII. [20]

What is the meaning of the Outer Space Treaty Art. VIII, as it applies to issues of jurisdiction and control over " an object launched into outer space"?[21] The question of jurisdiction and control is important because the Space Protocol's definition of "space asset" will be broader than the term "space object" used in the Registration Convention.[22] Furthermore

[15] See Aoki, In Search of the Current Legal Status of the Registration of Space Objects, 2010 Proc. IISL at 3 (hereinafter Aoki), and Cheng, *supra* n. 10 at 477 – 482..
[16] *Id.* Aoki, at 4
[17] *Id*.
[18] *Id*. at 5.
[19] *Id.* at 6.
[20] *Id*.
[21] Note that only States, not private companies, have legal competence to exercise jurisdiction and control under Art VIII; *see* Stephan Hobe, Bernhard Schmidt-Tedd, Kai-Uwe Schrogl & Goh, COLOGNE COMMENTARY ON SPACE LAW, at 158, (Carl Heyman Verlag 2009) (hereinafter Hobe *et al*).
[22] Space objects are defined in the Registration Convention, Art. I, *supra* n. 1, as including "component parts of a space object as well as its launch vehicle and parts thereof." In the formulation of the UNIDROIT working group on default remedies: "'Space asset' means any man-made uniquely identifiable asset in space or intended to be launched into space, and comprising

"space object" becomes important because it may trigger the treaty provisions governing jurisdiction and control over space objects in the Outer Space Treaty, Art. VIII, and in all the other space law treaties.[23] It is significant that while 100 States are parties to the Outer Space Treaty, only about half as many are parties to the Registration Convention. Also, the Outer Space Treaty, Art VIII, may express customary international law,[24] but the Registration Convention's jurisdictional Article II may not. That would narrow the scope of State jurisdiction and control for the States that adhere only to the Outer Space Treaty, and not to the Registration Convention. They will be bound by a narrower scope of jurisdiction and control.

The Space Protocol's definition of space assets is broader than the definition of space assets in the Registration Convention. The aspects of the definition of space assets in the Protocol that are broader than the definition of space object in the Registration Convention may thus fall entirely outside of the Registration Convention. Where the definition is broader, we may have to look to customary international law governing mobile objects owned by a country's citizens when these objects are located outside that country's borders.

B. Priority of Space Law Treaties

It is most important to note that the Draft Space Protocol specifically accepts the priority of the space law treaties. That was the unstated basis for the early drafting of the Protocol. That later became explicit in draft article XXXIV, governing the relationship between the Cape Town Convention's Space Protocol and the space law treaties and the ITU legal instruments:

> The Convention as applied to space assets does not affect State Party rights and obligations under the existing United Nations Space Treaties or instruments of the International Telecommunication Union.

Aoki concludes "that UN registration is the exclusive legitimate source for executing jurisdiction and control over a space object and persons in, on and outside such a space object."[25]

Accordingly, neither the Cape Town Convention, specifically those provisions pertaining to jurisdiction, nor the jurisdictional provisions of the Space Protocol can change or affect the jurisdictional provision of the Outer Space Treaty, Art VIII, or of the Registration Convention as regards space assets.[26] The effect of Space Protocol, draft article XXXIV, is that the space law treaties and the ITU legal instruments will prevail whenever there is a conflict between them and the treaty provisions of the Cape Town Convention and its Space Protocol.[27] Thus it prevails on the issue of jurisdiction. Article XXXIV enables the co-

(i) any spacecraft, such as a satellite, space station, space module, space capsule, space vehicle or a reusable launch vehicle [in respect of which a registration may be effected in accordance with the regulations], whether or not including a space asset falling within (ii) or (iii)below; (ii) any payload, (whether telecommunications, navigation, observation, scientific or otherwise) in respect of which a separate registration may be effected in accordance with regulations; or (iii) a part of a spacecraft or payload such as a transponder , in respect of which a separate registration may be effected in accordance with the regulations, together with all installed, incorporated or attached accessories, parts or equipment and all data, manuals or records relating thereto."

[23] *Supra,* n.1.

[24] Cheng, *supra* n. 10 at 477 – 482; *see* his discussion Chapter 23, International Responsibility for Launch activities; and *see* further discussion below.

[25] Aoki, *supra* n. 15. Hobe, et al., Cologne Commentary on Space Law, at 156, express agreement.

[26] *Id*. Hobe*, et al*., at 97.

[27] On conflict issue, *see* discussion of Art XXIV, *supra*.

existence of the public law space treaties and the private law protocol on financing.

The plain meaning of the Outer Space Treaty, Art. VIII, is that "A State Party on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object…." Former ICJ Judge Werestschetin observes that the emphasis of this sentence is on the word retain. [28] In other words, Art VIII insures that only the national State of registry retains whatever original jurisdiction and control it had before the space object was launched into outer space. "Jurisdiction and control" remain what they were on Earth because the national State never lost it. [29]

It is also important that the Outer Space Treaty considers state jurisdiction and state control similarly and equally. [30]

From the text of Art. VIII, it is readily noted that the drafters of the Outer Space Treaty carefully avoided giving nationality to space objects in outer space. This is in contrast to the aviation and maritime treaties which clearly give nationality to ships and aircraft.[31] The reason for treating space objects differently was that the drafters of the Outer Space Treaty were preoccupied with State responsibility. [32] In 1967 they failed to foresee the future great volume of private, non-governmental commercial activities.[33]

Finally, the Registration Convention, Art. II , requires space objects to be registered and, if there are several launching States, for them to 'jointly determine which one of them shall register the object."(*emphasis added*). The Registration Convention affirms the principle of the Outer Space Treaty Art VIII that only one State can be the State of registry.

II. Examination of the Treaty History of Outer Space Treaty, Art VIII, Including Review of the Registraton Convention

The Art VIII treaty provision that the state on whose registry a launched space object is carried "shall retain jurisdiction and control… while in outer space" is almost verbatim from the 1963 UNGA Declaration of Legal Principles Governing the Activities of States in the Exploration of Outer Space. [34] The implication is that when the same language was included in the 1967 Outer Space Treaty it brought along with it several years of legal practice. This was not new law. It was well recognized customary international law when the Outer Space Treaty was adopted by the treaty negotiators in 1967.[35] The following will briefly examine the intentions of the treaty negotiators, the plain

[28] W. Werestchetin, in FORSCHUNGEN SOWJETISCHER WISSENSCHAFTEN, WELTRAUM UND RECHT, at 81 (Moscow 1985).

[29] The benefit of this line of thinking is that the space object never enters into a legal vacuum. Its legal status does not change.

[30] *See* Cheng discussion *supra* n. 10.

[31] Space objects do not have nationality. The Outer Space Treaty, Art VIII, could have been a place to confer nationality, but the contracting parties deliberately left out the concept of nationality for fear of being held responsible for their registered space objects. As Aoki points out, because space objects do not have nationality the way aircraft and ships do, Art VIII registration becomes important to enable States to exercise jurisdiction and control over space objects outside of their territorial jurisdiction. Aoki *supra* n. 15, at 2.

[32] *See* discussion *infra* at II, Examination of the Treaty History of the Outer Space Treaty, Art VIII, including Review of the Registration Convention..

[33] Cheng *supra* n. 10, at 482 and also 489 - 90.

[34] The Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, adopted on 13 December 1963, UNGA Resolution 1962 (XVIII).

[35] *See* Cheng *supra* n. 10. Cheng is of the view that this provision constituted customary international law and that Art VIII was a codification of existing customary international law.

meaning of the treaty, and subsequent treaty practice[36]

A.Party Intentions

Certainly the negotiators of Art VIII were well acquainted with the relevant language of the UNGA Resolution 1962 (XVIII) adopted in 1963. When adopting the Outer Space Treaty in 1967 they deliberately decided to continue the existing formula, including its known legal meaning. [37] The negotiators simply codified the existing legal principle in order to maintain order in outer space. By attaching to the State of registry the authority to exercise jurisdiction and control over their objects in outer space, they agreed that one State, the State of registry, had this authority. Furthermore the negotiators obligated the State of registry to maintain order amongst its registered space objects, even when those space objects were outside of their sovereign territory, that is, when they were in outer space. [38]

The negotiators provided some legal tools for the States of registry to carry out and to enforce jurisdiction and control over their space objects in outer space. For that purpose they drafted Article VI of the Outer Space Treaty. [39] "The drafters intended only one State to authorize and supervise and therefore be responsible for a particular private space activity."[40] The contracting states were required to assure "that national activities are carried out in conformity with the provisions set forth in the present Treaty." [41] Towards that objective "[t]he activities of the non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty." [42] State authorization and supervision occur through licensing.[43] The parties intended and thus established a close relationship between Article VIII and Article VI. It is very important to read these two articles together in order to understand what the parties had in mind when they adopted Article VIII.

Party intention is apparent from the context of the Outer Space Treaty. All the Treaty Articles must be read together in order to understand the intention of the parties. Another very important indication of party intention is the point in time when the UNGA Resolution 1962 and the Outer Space Treaty were adopted. The original negotiators of the 1967 Outer Space Treaty thought in terms of state operation of satellites in outer space and that was the kind of operation for which they provided. Granted that Article VI accepts the existence in outer space of "non-governmental entities," that is, private companies. But the magnitude of private satellite operation that exists today was simply not foreseen in the 1960s when the two instruments were drafted. The negotiators primarily had in mind government operated satellites in outer space. [44]

B.Plain Meaning of Outer Space Treaty, Art VIII.

The plain meaning of Art. VIII is that only the State of registry has jurisdiction and control over the space object in outer space. [45] However, Hobe*, et al*. point out that Article VIII does not necessarily require common identity

[36] *See* Vienna Convention on the Law of Treaties, 1155 UNTS 331 (1980).
[37] If it is customary international law, then the formula applies to all States regardless of whether they are or are not Treaty Parties, see Lyall and Larsen, *supra* n. 8, at 70 -80; Cheng *supra, n. 10.*
[38] Cheng, *supra* n. 10, at 477-479.
[39] Art VII was similarly part of the package in UNGA Resolution 1962, *supra,* n. 31.
[40] Lyall and Larsen, *supra* n.8 at 469.
[41] Outer Space Treaty, Art. VI, *supra* n. 1.
[42] *Id.* Note that only one state may authorize and supervise private satellite operators.
[43] *See* discussion of licensing *infra* at VI, Reasons for State Exclusive Outer Space Jurisdiction and Control over Space Objects in Their Registry.
[44] The space law treaties " were drawn up primarily during the period when space activities were still very much in the exploratory state and were thought to be capable of being undertaken for a long time to come by States," Cheng *supra* n. 10, at 489-90.
[45] Hobe, *et al*., *supra* n. 21, at 151.

of the launching State and of the State of registry. They state that Art. VIII literally only requires that there be one State of registry. Furthermore, the Registration Convention, Art I, permits either the State which launches or the State which procures the launching, or the "State from whose territory or facility a space object is launched" to register a space object. Therefore any one of the four States may register. But multiple registrations of the same space object are not allowed. Under the Registration Convention, Art II, these States shall agree among themselves which one of them shall be the sole state of registry, thus satisfying the Art. VIII requirement that there be only one state of registry, which shall exercise jurisdiction and control over that space object.[46] Incidentally the four authors add that it is common practice for the payload and the launch vehicle to be registered by different states.[47]

C.Subsequent Practice.

The existence of the private commercial operators in outer space is founded on the Outer Space Treaty Arts. VI and VIII. The 100 States that are parties to the Outer Space Treaty, accept the treaty principle of Article VIII, that the State of registry has jurisdiction and control over space objects while in outer space. It is in the Parties' self interest to provide for supervision of private outer space activities. [48] Fundamentally, the commercial satellite operators can only gain lawful access to outer space through the States' right of access established in Art. I of the Outer Space Treaty. States have some additional rights to exercise jurisdiction and control over private satellite operators under the ITU Constitution, Art 44(2), which provides that radio frequencies and orbital locations are scarce resources that must be used carefully and efficiently. States can and do regulate private access to space primarily through the process of licensing launch operations, allocation of radiofrequencies and orbits and the function of each particular satellite. [49]

States have adopted varying national implementing legal regimes relating to exercise of jurisdiction. Some States, for example the United States and Australia, have adopted specific legislation. The US Commercial Space Launch Act [50] applies to both citizens and non-citizens in the United States. The US law only regulates launches and de-orbits of space objects. It does not provide for supervision of space objects while in orbit. Thus it may lack the oversight that is required by the Outer Space Treaty, Art. VI. [51] But it is not the only US domestic regulatory scheme. For example the U.S. Federal Communications Commission [52] regulates the space objects' use of radio frequencies and orbits. Other States, for

[46] *Id*. at 151.
[47] *Id*.
[48] *See* discussion in Lyall and Larsen, *supra* n. 8, at 470.

[49] *Id*. at 470. See also Aoki discussion of subsequent practice, *supra n. 15*.

[50] 49 U.S.C. 70101, *et seq*. See special United States jurisdiction in outer space defined in 18 U.S. Code §7(6) to include: Any vehicle used or designed for flight or navigation in space and on the registry of the United States pursuant to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies and the Convention on Registration of Objects Launched into Outer Space, while that vehicle is in flight, which is from the moment when all external doors are closed on Earth following embarkation until the moment when one such door is opened on Earth for disembarkation or in the case of a forced landing, until the competent authorities take over the responsibility for the vehicle and for persons and property aboard.

[51] R. Hughes and E. Rosenberg, *Space Travel Law (and Politics): the Evolution of the Commercial Space Launch Amendments Act of 2004,* 31 J. SPACE LAW. at 21.
[52] 47 U.S.C. 301, 308.

example India and China, tend to allocate space resources on an individual *ad hoc* basis relying on direct application of the space law treaties, although they have adopted regulations in specific limited areas.[53] Thus the parties to the Outer Space Treaty accept the treaty principle of Article VIII, that the State of registry has jurisdiction and control over space objects while in outer space. Furthermore, States accept the Art. VIII provision that property rights are not changed by the presence of space objects in outer space. [54]

Indeed the private commercial operators have found it to be in their interest to have uniform, predictable terms of national regulation, because then they can better plan for the risks of operating in outer space. Issues of liability exposure have been a particular concern to the commercial operators.

The Outer Space Treaty envisions continuous ownership of launched space objects while in orbit. The plain meaning of Art. VIII requires continuing exercise of jurisdiction and control of the State of registry, as it applies the liability regime under Article VII, and the oversight responsibility under Art VI. Now that private ownership of satellites is widespread, and a situation may call for a shift of ownership while a satellite is in orbit, the Outer Space Treaty's emphasis on continuous State jurisdiction and control can cause problems. [55] State oversight responsibility, exercise of jurisdiction, and liability may lead to restrictions on ordinary business practices in cases of default of the commercial satellite operators. [56]

From the point of view of States "[A]n alternative scenario could emerge when the Space Protocol to the Cape Town Convention on Security Interests in Mobile Equipment is active, should an element of the 'security' over a satellite involve the transfer of its ownership in the event of a default," because "a state cannot have unlooked for duties and potentially major liabilities imposed upon it merely by the will of commercial entities or entrepreneurs." [57] To meet this challenge, States parties have had to conclude separate bilateral agreements on jurisdiction and control in case States have been required to assume jurisdiction and control over satellites registered by other States.[58] Alternatively, the contracting parties to the Outer Space Treaty would have to consider an amendment to Article VIII.[59]

III. Relevance of Satellite Ownership to Jurisdiction and Control.

Ownership and title to an object in outer space is subject to the jurisdiction of only one State, the State of registry. [60] That State supervises and places restrictions on private uses of outer space in order to comply with the Outer Space Treaty.[61] Present problems with jurisdiction and control stem from the treaty drafters'

[53] Lyall and Larsen, *supra* n. 8, at 470. *See* also Ram Jakhu, NATIONAL REGULATION OF SPACE ACTIVITIES (Springer 2010) .

[54] Outer Space Treaty, *supra* n. 1, Art VIII.

[55] "The drafters of the existing space law treaties did not foresee changes in the private ownership of satellites in orbit." Lyall and Larsen, *supra* n. 8, at 471.

[56] *See infra* at VI, Reasons for State Exclusive Outer Space Jurisdiction and Control Over Space Objects in Their Registry.

[57] Lyall and Larsen, *supra* n. 8, at 470 - 472.

[58] See Aoki, *supra* n. 15, *re* case of UK transfer to China.

[59] Lyall & Larsen, *supra* n. 8, at 472.

[60] Hobe, *et al*., *supra* n. 21 at 164, Ownership in outer space does not derive from the Outer Space Convention. Its Art. VIII does not establish ownership rights. Such rights are established by the law of the State of registry. "The legal regime relevant for any change and establishment of ownership in outer space is that of the State of registry, which follows from jurisdiction. "

[61] Lyall and Larsen, *supra* n. 8, at 471

preoccupation with the State ownership and operation of satellites that prevailed in the 1960s.[62] Art. VIII fails to provide for private satellite operators to transfer ownership to other owners. This would include transfers to creditors under the Space Protocol in the event of insolvency. The Outer Space Treaty, Art. VI, links non-governmental satellites to the authorizing state. This Article requires a government's authorization and continuing supervision of non-government operators. Supervision becomes increasingly difficult when ownership is transferred to a different State especially when the transfer is to a non-governmental entity. The Art VI oversight responsibility can best be performed by the transferee State because that State would have personal jurisdiction over the non-government owner of the satellite. The transferee State would have the greatest interest in protecting and in regulating the satellites owned by its own citizens. However, the present Article VIII provision does not have the flexibility to transfer the oversight responsibility of the launching state of registry to a different State where the new company resides. Article VIII continues to charge the launching state of registry with these responsibilities, that is, unless the transferor State and the transferee State on a bilateral basis agree to shift responsibility. The three examples described above by Aoki [63] illustrate the need for such transfers but also that such bilateral agreements are not easily procured because of all the heavy responsibilities linked by other space laws[64]

IV. UNGA Resolution 62/101: Recommendations on Enhancing the Practice of States and International Intergovernmental Organizations in Registering Space Objects, 2007.

In 2007 the United Nations General Assembly Resolution 62/101 adopted guidelines addressing improvement and efficiency in registering space objects. While the guidelines are contained in an UNGA Resolution, the Resolution is not a treaty and thus does not constitute new treaty rights and obligations, nor are the guidelines an authoritative interpretation of the Registration Convention. However, Resolution 62/101 eliminates some confusion through the formation of common procedures for registering space objects in the UN Registry. Importantly, it contributes to establishing uniformity, efficiency and certainty by providing a model registration form suggesting which country should register, thus avoiding accidental duplicate registrations. Finally, it recommends states to observe the established procedure in the Registration Convention, Art II as follows:[65]

> Where there are two or more launching States in respect of any such space object, they shall jointly determine which one of them shall register the object in accordance with paragraph 1 of the article, bearing in mind the provisions of article VIII of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, and without prejudice to appropriate agreements

[62] *See* Cheng, *supra* n. 10, at 489 - 90, on this issue.
[63] Aoki, *supra* n. 15, at 4 -7 and at 10-11.
[64] *See infra* at VI, Reasons for State Exclusive Outer Space Jurisdiction and Control over Space Objects in their Registry.

[65] Note comment by Hobe*, et al., supra* n.21, at 164, that unlike aviation and aviation law, space law does not require a change in state registration when space objects change ownership. In that situation it should also be kept in mind that the Outer Space Treaty, Art VIII, requires return of lost space objects to the State of registry, whereas the Search and Rescue Agreement, *supra* n. 1, Art 4, requires return to the launching State. A transferee State may be neither of these two States and would only be entitled to possession by separate and special bilateral agreement.

> concluded or to be concluded among the launching States on jurisdiction and control over the space object and over any personnel thereof.[66]

The meaning of this article is that only one State should become the State of registry and that when several States may be eligible to serve as the State of registry, then they "should jointly determine which State should register the space object." It must be noted that the discussion in the COPUOS leading to the 2007 UNGA resolution re-emphasized the principle that only one State should exercise jurisdiction and control, that is, the State of registry. The UN Resolution 62/101 was not extended to acceptance of multiple and simultaneous State exercises of jurisdiction and control over satellites in outer space.

Aoki concludes that the one State selected to become the State of registry should be the state that is best able to exercise control over the satellite [67] However "in practice there is a certain reluctance of space faring States to conclude such agreements."[68]

An even more cautious view is expressed in the Hobe*, et al.* comment [69]on bilateral agreements transferring ownership without change in jurisdiction and control but by which the State of purchase assumes liability. Their opinion is that: [70]

> The possibility of transferring jurisdiction and control definitely to a non-launching State would … undermine the clear regulations regarding the liability of the launching State pursuant to Article VII of the Outer Space Treaty, and weaken the protection granted to aggrieved States by means of greater complexity and transfer of responsibility. A transfer of ownership to a non-launching State would create a situation where a launching State can escape from the timely unlimited liability regime intended for launching States.

Ultimately some flexibility may be required that recognizes the owning State's need to exercise jurisdiction and control. The Registration Convention, Art. II, has tried to address this need. Whereas the Outer Space Treaty, Art. VIII, refers only to assertion of jurisdiction and control by the State of registry, the Registration Convention, Art. II, added: "When there are two or more launching States in respect of any such space object, they shall jointly determine which one of them shall register the object… bearing in mind the provisions of article VIII.. and without prejudice to appropriate agreements concluded … among the launching states." Cheng's interpretation of Registration Convention, Art II, is that it does not require the State of registry to exercise jurisdiction and control, but that the launching States can agree on alternate arrangements among themselves.[71] He concludes that States may make bilateral agreements "for the space object to be registered in State A and jurisdiction and control to be exercised in State B. A discrepancy can thus exist between registration and jurisdiction, notwithstanding Article VIII of the Space Treaty. [72] In the future States may well be better served by resorting to flexible bilateral side agreements. The alternative would be an amendment of the Registration Convention or the Outer Space Treaty. [73] Nevertheless, Cheng contemplates that only one state would exercise jurisdiction and control.

V. Unregistered Space Objects

[66] Registration Convention, *supra* n. 1, Art II.
[67] Aoki, *supra* n. 15, at 11.
[68] Hobe, et al.,, *supra* n. 21, at 153.

[69] *Id.* at 155-156
[70] *Id* at 156.

[71] Cheng, *supra* n. 10, at 484
[72] *Id*.
[73] Lyall and Larsen, *supra* n. 8, at 96.

Which State would be entitled to exercise jurisdiction and control under the Outer Space Treaty, Art VIII, when there is no State on whose registry the object is carried? Cheng expresses the following view on unregistered space objects: "The Space Treaty would appear to have left the unregistered space object in limbo."[74] Hobe*, et al*. [75] are of the view that the ownership relationship established on Earth before launch would control: " As long as registration has not yet taken place, according to Article VIII of the Outer Space Treaty, the legal regime as established on earth remains the decisive factor in determining the status of ownership." The State of ownership may also be the most likely State to exercise general jurisdiction over the unregistered space object (1) because of customary international law, (2) by default because there is no other alternative jurisdiction, and (3) because jurisdiction and ownership are commonly recognized as following each other. However, failure to register not only leaves an element of uncertainty as to the exercise of jurisdiction. It also presents a danger to the space object and to other space objects in its vicinity where operators may not know its location and may assume a vacuum, which could be a costly mistake.[76]

In conclusion, it is apparent that it is legally possible to split state authority to exercise jurisdiction and control among several States but only by specific agreement among those States. Cheng illustrates that "a space object can be registered in State A, but the State exercising authority over it and the laws applicable on board, including criminal law, health regulation, safety regulation, intellectual property, industrial property, and so forth, could be those of State B." In his view the Registration Convention, Art II, leaves the door wide open to undesirable problems with flags of convenience, tax havens and possibly other havens. He concludes: "All in all, it does appear that the present position of the law relating to jurisdiction over space objects is highly unsatisfactory. It is inconsistent and unclear, leading to uncertainty, confusion, and possible abuse." Because of possible confusion States can easily be charged with 'responsibility and liability without even realizing it simply through failure to ensure that such jurisdiction and control are exercised."[77]

VI. Limiting Jurisdiction and Control to State of Registry Would Mitigate Many Serious Concerns.

The State of registry's exercise of jurisdiction and control established by the Outer Space Treaty is linked to so many legal obligations that States are hesitant to assume the responsibility of being the State of registry.[78] The fact that a State may not be aware of the full implications of assuming jurisdiction and control is in itself of concern. The Space Protocol recognizes the jurisdictional priority of the State in its Art. XXXVII limitation on default remedies in respect of public service satellites.[79] States'

[74] Cheng, *supra* n. 14, at 625.

[75] Hobe, *et al.*, *supra* n. 21, at 164

[76] Related to the above discussion is the right of the owner of the satellite to transfer ownership in accordance with the law of the State of registry, and in the absence of a State of registry then under the law of the State of ownership or in which the non-governmental operator is a citizen or national. The law of the State of registry applies to the sale of the space object. *See* Hobe, *et al*., *supra* n. 21, at 164. However, the law of the receiving state (whether by sale or by default of the previous owner) governs the acquisition.

[77] Cheng, *supra* n. 10, at 631

[78] *See* the three examples described by Aoki, *supra* n. 15, of the China, Netherlands, and UK cases.

[79] The current draft of the Space Protocol, Art XXVII*, supra* n. 2, provides the States the opportunity to retain control over privately owned essential satellite services by filing a public service declaration in the Registry. Such a limitation on default remedies provides the State a 6 months grace period exempting the

jurisdictional interests in space assets include the following concerns:

Not all the States are capable of oversight required by Art. VIII of the Outer Space Treaty. Questions about oversight capability " must now be raised as private enterprise enters space and seeks to incorporate and exercise its business activities in states that may lack the expertise, personnel or knowledge properly to discharge the responsibilities which Art VI enunciates."[80] This is because the Outer Space Treaty, while attempting to provide a comprehensive legal scheme through it seventeen articles, requires close monitoring through the licensing process. There have to be sufficiently trained personnel to do this. For example, to transfer control over a space asset, one government must terminate, and another government issue, a license. The firm underlying principle is that under the Outer Space Treaty, Art VI,, States are internationally responsible for their national activities in outer space.

A second jurisdictional source of States' concerns is their possible liability. As a launching state the State of registry[81] is liable to other States for damages caused by its space objects. The Outer Space Treaty, Art. VII, provides for general liability, while the Liability Convention provides for more specific liability of the launching state. Under the Liability Convention, Article II, the launching State is absolutely liable for damage caused on the Earth's surface and to aircraft in flight. Under Art III the launching State is liable for damage caused to space objects in outer space, but only upon proof of fault. Art. IV provides for joint and several liability of several launching States.

space asset from seizure by creditors. The grace period would allow the State time either to remedy the default or to arrange for substitute service before turning the space object over to the disposition of the creditors.

[80] Lyall and Larsen, *supra* n. 8, at 66.

[81] Outer Space Treaty, *supra* n. 1, Art. VII.

Liability is a burden that can be assumed by other States, for example in the event of transfer of property rights in a space asset, by bilateral agreement. But even in a bilateral transfer the original treaty obligation of liability remains in the form of a guarantee.

The liability of States for damages to other states is well established by customary international law. [82] This principle is confirmed by the Outer Space Treaty, Art. VII, and by the Liability Convention. It is noteworthy that the Liability Convention includes liability for damages caused by space objects as well as "component parts of space objects as well as its launch vehicle and parts thereof."[83] Thus States' liability for their non-governmental interests may be very extensive. In fact, it is unlimited. States may, in some cases, be able to recover compensation paid on behalf of their nongovernmental operators from these operators. But in catastrophic cases, the companies may not be able to reimburse. States need to be vigilant in authorizing launches. There needs to be continuing supervision of their commercial operators. For their own protection from liability, States have great interest in exercising jurisdiction and control over those nongovernmental operators that they carry on their registries. It is this concern with liability that caused the Netherlands to hesitate to accept the registry of the New Skies and the UK hesitate to accept the registry of the Inmarsat satellite, as Aoki describes. [84]

A third jurisdictional source of States' concern arises under the Rescue and Return Agreement, because its Art. 5 places responsibility on the launching State for removal of the hazardous substances caused by its space objects. [85] An

[82] Trail Smelter Arbitrations, (U.S. V. Canada) 1939 and 1941, 33 AJIL 182 (1939) and 35 AJIL 684 (1941); and Chorzow Factory case, (Germany v. Poland) 1928 PCIJ 4, Ser A, No. 13.

[83] Liability Convention, *supra* n. 1, Art I.

[84] Aoki, *supra* n. 15.

[85] Rescue and Return Agreement, *supra* n. 1, Art 5(4), provides that the responsible State must

example is the disintegration of the former USSR COSMOS 954 satellite over Northern Canada.[86] The satellite contained radioactive fuel that scattered on a wide area of the Northern Canadian tundra. The costs of removing hazardous substances must be borne by the launching State, upon request of the State having jurisdiction over the territory on which the space object or its component parts were discovered. The Search and Rescue Agreement does not provide for transfer of responsibility of this burden in the event that title to the satellite is transferred to a non-governmental operator in a different State. It would be possible to conclude a bilateral transfer agreement. However the original launching State would remain a guarantor in case of default by the transferee State.

A fourth source of States' jurisdictional concern is ITU obligations. Use of satellites require use of radio frequencies and orbital slots. Satellites must be consistently monitored. Corrective instructions may be required. Extraneous interference with satellites can diminish the value of space assets significantly. The regulatory coordination of radio frequencies and orbital slots by the ITU is essential for the satellite business. [87] Thus the ITU legal instruments must be must be taken into consideration when title to satellites are transferred. The ITU legal regimes give States priority over non-governmental entities to use communication satellites for emergency search and rescue activities[88]

The ITU Constitution, Art 44(2),[89] requires States to consider that orbits are "limited natural resources and that they are to be used rationally, efficiently and economically, in conformity with the Radio Regulations so that countries or groups of countries may have equitable access to those orbits." Therefore Art. 44 gives the ITU some jurisdictional authority over use of outer space by commercial satellite operators. Historically, ITU has left enforcement of the ITU legal instruments to the member States. For example, under US law, the Federal Communication Commission (FCC) has authority to assign radio frequencies, and to issue and suspend and transfer licenses.[90] It must be kept in mind that the ITU and the individual States have some legal authority to regulate transfers of property rights to satellite assets.

A fifth jurisdictional concern of States is with safety. Space objects in outer space move at very high rates of speed. Outer Space is therefore extremely dangerous and must be continuously supervised in order to avoid accidents. Considering the increasing danger of collisions of space objects[91] and the rapid increase in outer space debris,[92] effective authorization and oversight of space objects is in the interest of all States. That occurs through exercise of jurisdiction and control by the "State party to the Treaty on whose registry an object is launched into outer space."[93] The space faring States that have the greatest investment in outer space, have the greatest interest in maintaining a high level of safety through establishment of oversight and enforcement of safety standards.

A sixth jurisdictional concern for States is with environmental problems. Under the Outer Space Treaty, Art. IX, States must avoid any harmful contamination and adverse environmental changes and shall undertake international consultation before starting

immediately eliminate hazardous or deliterious substances.

[86] Lyall and Larsen, *supra* n. 8, at 117.

[87] *Id.*, Chapter 8, Radio and the international Telecommunication Union, at 199.

[88] Weretschetin, *supra* n. 28, at 88.

[89] ITU Constitution, Art 44(2)

[90] 47 U.S.C. 301, 308, and 309. Consequently national regulators, like the FCC, may deny permission to transfer ownership and control.

[91] Lyall and Larsen regarding dangers of space debris, *supra* n. 8, at 303.

[92] *Id*.

[93] Outer Space Treaty , *supra* n. 1, Art VIII.

harmful activities. [94] The Outer Space Treaty, Art IX, requires States to insure that their State's space objects as well as their non-governmental space objects " shall conduct all their activities in outer space…with due regard to the correspondence interests of all other States Parties to the Treaty." Consequently States shall conduct outer space activities carefully so as avoid contamination and adverse changes in the Earth's environment (Art IX). States agreed in 2007 to abide by a set of voluntary guidelines for mitigation of space debris.[95] This is a new element in state supervision of those space objects which they license and over which they exercise jurisdiction.

A seventh jurisdictional concern for States is national security. National security requires that the parties know at all times where space objects are located and what they are doing. Avoidance of surprises from outer space has been a basic national security concern of states from the very beginning of the space age in 1957.

VI. Conclusions

On the Outer Space Treaty is unique. The reason is that drafters of the Treaty basically visualized only government operations in outer space. Thus the Outer Space Treaty, Art VIII, continues to provide that the States of registry retain jurisdiction and control over objects in outer space recorded in their state registry. The Treaty remained as originally drafted after much of this activity in outer space shifted to private operations. In this author's opinion it is prudent to examine how the existing space law treaties, in particular Art VIII, fit the jurisdictional needs of creditors to recover assets in outer space when default happens. Do the Outer Space Treaty, Art VIII and the Registration Convention, Art. II delimit jurisdiction over objects in outer space? Or do these treaties allow multiple States to exercise jurisdiction and control as currently allowed by Space Protocol, draft Art I(3)? A close examination shows that the language, practice and context of the two treaties may well delimit jurisdiction and control. It would be best to resolve any ambiguity during the drafting of the new private law rather than leave it to the courts to confront jurisdictional issues later on.

[94] *Id*. Art IX.
[95] Space Debris Mitigation Guidelines, UNGA RES. 62/217 (2007),