Terrestrial Cyber Activity of Non-Governmental Actors and State Responsibility under the Outer Space Treaty

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Abstract

Outer Space Treaty Article VI imposes State responsibility for the outer space activities of non-governmental entities subject to its jurisdiction. The intersection of outer space and cyberspace presents the issue of when a cyberspace activity constitutes a space activity for purposes of Article VI. The answer is fairly direct when a cyber activity is performed or engaged in by a satellite or other space object situated in space. The answer is not as clear when terrestrial cyber activity is deployed that has an effect in outer space.

This paper will explore when and under what circumstances terrestrial cyber activity of non-governmental actors can be deemed to be a space activity which evokes State responsibility under Article VI. This necessitates examining what constitutes a "space activity" for purposes of Article VI. Since the Outer Space Treaty does not define the term "space activity," the issue exists as to whether the term "space activity" is subject to definition by domestic legislation or whether it is subject to international definition. Although Article VI uses the mandatory term "shall," it is unclear if State responsibility is strictly applied without any exception or if factors such as the actor's intent or lack of intent, and/or the State's exercise or lack of exercise of supervision or due diligence are relevant in determining whether a State has complied with its Article VI's supervisory responsibility for terrestrial cyber activity of natural or juridical persons subject to its jurisdiction. Lastly, the paper will briefly explore whether a State can sufficiently supervise the terrestrial cyber activities of its non-governmental actors which may constitute a space activity.

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1. Introduction

The internet, generally referred to as cyberspace, is an integral part of the 21st Century and is being embedded exponentially in commerce, education, infrastructure, defense and virtually all other sectors of the economic, political and social spectrums. However, the yang emerging alongside the internet's benefits are the mischief and nefarious activities that individuals, organized groups and other non-governmental actors can visit or inflict upon others through cyberspace. Space objects and space actors are not an exception to the reliance on cyberspace and, also like other cyberspace users, are subject to cyberspace predators. Accordingly, in addition to engaging in cyber activity to communicate with and control a space object, cyber activity can also facilitate interference with a space object by jamming, hijacking or otherwise disrupting its transmissions or by facilitating the hijacking or adverse seizure of the space object's command and control functions. This presents the issue of whether terrestrial cyber activity which interfaces with a space object or space venture for any purpose, be it legitimate, nefarious, or just for fun, is a "space activity" thereby activating State responsibility under Article VI.

2. Outer Space Treaty Article VI's Imposition of State Responsibility

A State possesses international responsibility under Article VI for the space activities of its nationals and for non-governmental entities subject to its jurisdiction.[1] Article VI reads in its entirety as follows:

> States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. When activities are carried on in outer space, including the Moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization (emphasis added).

Article VI essentially means that the outer space activities of State's nationals and non-governmental entities are automatically imputed to the State.[2] Thus,

1 Article VI 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 ("Outer Space Treaty") entered into Force Oct. 10, 1967, 18 UST 2410; TIAS 6347; 610 UNTS 205; 6 ILM 386 (1967).

2 Bin Cheng, *Article VI of the 1967 Space Treaty Revisted: "International Responsibility", "National Activities", and "The Appropriate State"*, 26 Journal of Space Law 7, 15-16 (1998).

there is not any legal distinction between a space activity conducted by a State or by a State's nationals or non-governmental entities.[3] Moreover, and most important for this paper, Article VI obligates a State to assure that its nationals and non-governmental entities comply with all provisions of the Outer Space Treaty by means which include authorizing and continuously supervising their space activities.

At this juncture, it should be noted that international responsibility is not the same as liability as international responsibility has a much broader scope. State responsibility "embraces all aspects of obligations incumbent upon States vis-'a-vis other States, whether voluntarily contracted or imposed by custom."[4] State responsibility incorporates an obligation of "due diligence" which requires a State to take prophylactic measures to prevent harm or injury to another State or its nationals[5] or a part of the global commons[6] which includes outer space.[7] This due diligence obligation is not limited to State action, but it also extends to taking preventive measures in connection with the conduct of a State's nationals.[8] A breach of the due diligence standard gives rise to State responsibility and the reparations requirement.[9] Whether a State has exercised due diligence is a flexible standard which varies depending upon the particular facts and circumstances taking into

3 *Id*.

4 Sompong Sucharitkul, *State Responsibility and International Liability Under International Law*, 18 Loyola of Los Angeles International & Comparative Law Journal 821, 832 (1996).

5 International Law Association, *ILA Study Group on Due Diligence in International Law*, *First Report* at 29, March 7, 2014) published at http://www.ila-hq.org/download.cfm/docid/8AC4DFA1-4AB6-4687-A265FF9C0137A699 (last visited Sept. 16, 2014), citing Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Seabed Mining Advisory Opinion at 117 (Seabed Dispute Chamber of the International Tribunal of the Law of the Sea, Case No 17, 1 February 2011); Jan E. Messerschmidt, *Hackback: Permitting Retaliatory Hacking by Non-State Actors As Proportionate Countermeasures to Transboundary Cyberharm Shearman & Sterling Student Writing Prize in Comparative and International Law, Outstanding Note Aw*, 52 Colum. J. Transnat'l L. 275, 302 - 305 (2013). *See United States Diplomatic and Consular Staff in Tehran (U.S. v. Iran)*, 1980 I.C.J. 3, 61 - 67 (May 24).

6 *See* Mark Allan Gray, *The International Crime of Ecocide*, 26 Cal. W. Int'l L.J. 215, 242 (1996); Robert Rosenstock and Margo Kaplan, *The Fifty-Third Session of the International Law Commission*, 96 Am. J. Int'l L. 412, 416 (2002).

7 Frans G. von der Dunk, *Beyond What? Beyond Earth Orbit?. . .! The Applicability of the Registration Convention to Private Commercial Manned Sub-Orbital Spaceflight*, 43 Cal. W. Int'l L.J. 269, 327 (2013).

8 Mark Allan Gray, *supra* Note 6 at 243.

9 *See* Smita Narula, *The Right to Food: Holding Global Actors Accountable Under International Law*, 44 Columbia Journal of Transnational Law 691, 759 - 765 (2006).

consideration a few objective factors.[10] The objective criteria consists of 1) the degree of foreseeability or predictability of the harm, 2) the importance of the interest needing protection,[11] and 3) the State's capability.[12] Thus, due diligence is a sliding scale adjusted according to a State's ability and resources.[13] Article's VI, therefore, obligates a State to exercise due diligence in satisfying it duty to authorize and continuously supervise the space activities of its non-governmental actors.

Article VI does not use the term "space activity." Instead, it uses the phrases "national activities in outer space" and "activities of non-governmental entities in outer space." These phrases are essentially the functional equivalents to the term "space activity." Regardless of the terminology, it is unclear if a "space activity" or "activities" or nationals or non-governmental entities in outer space include terrestrial activities which have an effect in outer space or affect a space object. This is an important consideration with respect to terrestrial cyber activities as it directly implicates a State's international responsibility under Article VI to supervise the space activities of its nationals and non-governmental entities.

3. What is a Space Activity?

Neither the Outer Space Treaty nor any other international agreement defines the term "space activity." The lack of a definition at the international level presents a fundamental issue regarding the harmonization of the parameters and contours of a State's Article VI responsibility. Indeed, deferring to or relying upon individual States to separately define "space activity" causes a fragmenting of the term and undermines the concept of a uniform standard of what is a "space activity." Allowing diverse variations on what constitutes a space activity will only create a "definitional hodgepodge" wherein each State is effectively allowed to determine what acts of its nationals and non-governmental entities subject it to international responsibility under Article VI. Even more so, a State-based definitional approach places the scope of international responsibility on shifting sands as States can modify or amend its definition at any time to further its own internal and/or external political, economic, and/or legal agenda.

At the international level, the lack of a definition in the Outer Space Treaty means the term "space activity" or its functional equivalents must be derived from the treaty's plain language.[14] Based on the plain language of the Outer

10 ILA Study Group *supra* Note 5 at 2 -3.
11 *Id*.
12 Robert Rosenstock and Margo Kaplan, *supra* Note 6 at 416.
13 *Id*.; *See* ILA Study Group, *supra* Note 89, at 4 and 31.
14 Vienna Convention on the Law of Treaties Art. 31(1), May 23, 1969, 1155 U.N.T.S. 331. *See* P.J. Blount & Christian J. Robison, *One Small Step: The Impact of the U.S.*

Space Treaty, there cannot be any reasonable doubt that an act or conduct that an actor performs while physically present in outer space is a space activity. The treaty's plain language does not, however, necessarily encompass a terrestrial act as a space activity. For instance, Article IX obligates a State to refrain from engaging in acts in outer space which could potentially cause "harmful interference with another State's peaceful exploration and use of outer space and/or celestial bodies. Neither Article IX nor any other provisions of the Outer Space Treaty apparently constrain or prohibit terrestrial acts which may cause "harmful interference" with another State's exploration and use of outer space and/or celestial bodies.

The lack of clarity on if or when "space activity" can encompass terrestrial acts has resulted in some legal scholars and commentators opining that "space activity" is not a term of art, but is a "generic term and not necessarily restricted geographically or rather cosmographically to only what occurs in outer space including the moon and other celestial bodies."[15] In other words, a State's Article VI responsibility includes "all concomitant activities associated with what actually occurs" in outer space and on celestial bodies.[16] This approach seemingly employs an "effects test" as the determination of whether a terrestrial activity also constitutes a "space activity" seemingly rests on the effect a terrestrial activity has on an object, conduct, or act in outer space or on a celestial body. An "effects test" is too broad a net for a State's duty to continuously supervise space activities especially in connection with cyber activity.

Article VI's plain language does not allow for any exception to a State authorizing and continuously supervising the space activities of its nationals and non-governmental actors. Thus, identifying a terrestrial activity as a space activity does not allow for differentiating between the effect and purpose of the activity with respect to the duty to continuously supervise. This means that any terrestrial cyber activity which has an effect in outer space or uses a space object, such as accessing GPS and satellite based home entertainment, can be construed as a space activity. Pursuant to the plain language of Article VI, a State would then possess the responsibility to supervise its nationals and non-governmental entities utilizing such terrestrial cyber activity.

Moreover, the due diligence requirement of State responsibility conceivably obligates the State to continuously supervise the terrestrial cyber activity of its nationals and non-governmental entities as cyber activity can have an effect in outer space. This is especially so since due diligence necessitates a

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Commercial Space Launch Competiveness Act of 2015 on the Exploitation of Resources in Outer Space, 18 North Carolina Journal of Law & Technology 160, 186 (2016)

15 Bin Cheng, *supra*, Note 2, at 19.

16 *Id*.

State taking "prophylactic measures."[17] Thus, if terrestrial cyber activity can also be a "space activity," then a State's responsibility to undertake preventive measures means it is insufficient for a State to do nothing but simply react to specific cyber activity that has an adverse effect in outer space such as the jamming, hijacking or other interference with a space object's transmissions or controls. Due diligence would apparently command a State to strive to prohibit its nationals and non-governmental entities from using terrestrial cyber activity to interfere with the operations of a space object or a venture in outer space. This, in turn, will conceivably necessitate a State maintaining continuous surveillance of terrestrial cyber activities of its nationals and non-governmental entities. Alternatively, the effects test can potentially serve as a pretext for a State's continuously supervision or surveillance of the terrestrial cyber activity of its nationals and non-governmental entities especially as the terrestrial dependency on space based assets increases. This indicates that an effects test is simply too broad for purposes of Article VI particularly in the context of terrestrial cyber activity.

4. Terrestrial Cyber Activity Is an Instrumentality and Should Not be Deemed to be a Space Activity

An effects test is an insufficient basis for classifying terrestrial cyber activity as a space activity. Moreover, as previously pointed out, a State cannot wait until an adverse event occurs and then, after the fact, label the terrestrial act associated with or related to an adverse event in outer space or on a celestial body as a space activity. Thus, considering the Outer Space Treaty's plain language in context suggests that the phrases "national activities in outer space" and "activities of non-governmental entities in outer space" refer to nationals or non-governmental entities that own or operate a space object in outer space. This approach also appears to be consistent with Outer Space Treaty Article VII.[18]

Article VII concerns State liability for space objects it launches into outer space. It is reasoned that the terrestrial activities related to or associated with the space object before, during and after the launch constitutes a space activity.[19] Based on this, it seems that the focus should be on the terrestrial actor and the actor's relationship to a space object or space venture as opposed to the effect a terrestrial activity has or may have in outer space.

Article VI requires the owner and/or operator of a space object to be "authorized" or licensed by a State and subjects the owner and/or operator to a State's Article VI supervisory duty. Accordingly, all acts and conduct the owner and/or operator takes in connection with the space object are subject

17 *See* Note 5.
18 *See* Bin Cheng, *supra* Note 2, 26 J. Space L. at 19.
19 *Id.*

to continuous supervision. This should not broadly encompass any instrumentality or medium the owner and/or operator employs to communicate or interface with the space object. If the owner/operator uses cyberspace to communicate or interface with a space object or space venture, then that communication or interface is the space activity and not the medium sued for the communication or interface. Hence, terrestrial cyber activity is merely the instrumentality or means for the space activity, but it is not the space activity. In other words, if the owner/operator uses terrestrial radio transmissions or terrestrial smoke signals instead of cyberspace to communicate or interface with a space object or space venture, then the radio transmissions or smoke signals would not be the space activity. Consistent with this approach, terrestrial cyber activity should not be deemed a space activity for purposes of Article VI even if it affects, uses, or depends upon a space object or has any effect in outer space or on a celestial body or is related to or associated with a space venture or space activity. The space activity is the communicating or interfacing with a space object by the owner and/or operator.

Conclusion

There is a close connection between terrestrial cyber activity and communications and interfacing with space objects and space ventures. This close connection, however, should not blur the distinction between space activity and terrestrial activity. If the threshold is crossed that classifies the mere use of an instrumentality as a space activity, then that opens the door for an overly broad and unnecessary intrusive governmental supervision under Article VI. Such a result seemingly is beyond the intent and purpose of Article VI which essentially concerns itself with the status of the space actor as opposed to the instrumentality a space actor uses. Since terrestrial cyber activity is merely an instrumentality used by space actors, its use to communicate or interface with a space object or space venture for any purpose is not and should not be deemed a space activity for purposes of Article VI.