State Responsibility for Non-State Actors in Times of War: Article VI of the Outer Space Treaty and the Law of Neutrality

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Abstract

The explosion of non-State actors in outer space has come with enormous corporate and inter-State complexity. Instead of a private US-based company sending a single satellite into orbit, multi-national corporations have plans to send thousands. In-orbit satellites are being bought and sold by companies incorporated in different States. Foreign military departments are putting communications payloads on non-State actor satellites. This thesis looks at the implications of these non-State actors in space performing actions that could affect the neutrality of their licensing State. Article VI of the 1967 Outer Space Treaty attributes all actions of non-State actors in Space to the State responsible for them. The law of neutrality outlines the appropriate conduct of States who are part of an international conflict, or belligerents, and States not part of an international conflict, or neutrals. Therefore, if there were a conflict and a non-State actor from a neutral State were to provide military communications to a belligerent, the non-State actor's licensing State's neutrality could be implicated. The analysis herein looks at the corporate structures, the services, and the licensing mechanisms used by various States vis a vis international outer space law and the law of neutrality. I argue that in space, because all actions are attributed to the State and because corporations have increased in complexity, there should be a higher threshold for States to be declared belligerent if their non-State actors provide space-based services to a State at war.

Résumé

La croissance rapide du nombre d'acteurs non-étatiques dans l'espace extra-atmosphérique soulève une énorme complexité corporative et inter-étatique. Les lancements d'uniques satellites par des sociétés privées américaines seront bientôt remplacés par des projets multinationaux qui ont l'intention d'en envoyer des milliers. Les satellites déjà en orbite sont sujets aux transactions entre sociétés constituées dans différents États. De plus, les ministères de défense de pays étranger placent des charges utiles de télécommunications sur des satellites d'acteurs non-étatiques. Cette thèse examine les conséquences des activités spatiales de ces acteurs non-étatiques en ce qui concerne la neutralité de leur État d'autorisation. L'article VI du Traité sur l'espace extra-atmosphérique de 1967 attribue toutes les actions des acteurs non-étatiques dans l'espace à l'État responsable. Le droit de la neutralité règle la conduite des États participants à un conflit international, soit les belligérants, et des États qui ne font pas partie du conflit international, soit les neutres. Par conséquent, en cas d'un conflit international dont un acteur non-étatique d'un État neutre fourni des communications militaires à un belligérant, la neutralité de l'État d'autorisation de l'acteur non-étatique pourrait être compromise. L'analyse porte sur les structures d'entreprise, les services et les mécanismes de licences utilisés par divers États vis-à-vis du droit international de l'espace extra-atmosphérique et le droit de la neutralité. Je propose que dans l'espace, parce que toutes les actions sont attribuées à l'État et que les entreprises ont augmenté en complexité, un seuil plus élevé devrait être franchi afin que les États soient déclarés belligérants dans le cas ou leurs acteurs non-étatiques fournissent des services spatiaux à un État en guerre.

Acronyms and Abbreviations

ADF	Australian Defence Forces
AT&T	American Telephone & Telegraph
CHIRP	Commercially Hosted Infrared Payload
DoD	Department of Defense
EOSAT	Earth Observations Satellite Corporation
EUTELSAT	European Telecommunications Satellite Organization
FCC	Federal Communications Commission
INMARSAT	International Maritime Satellite Organization
INTELSAT	International Telecommunications Satellite Organization
INTERSPUTNIK	Intersputnik International Organization of Space Communications
ITU	International Telecommunications Union
MDA	MacDonald, Dettwiler, and Associates
NASA	National Aeronautics and Space Administration
NOAA	National Oceanographic and Atmospheric Administration
SES	Société Européenne des Satellites
UHF	Ultra-High Frequency
UN	United Nations
US	United States

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Introduction

Article VI of the Outer Space Treaty states that States are responsible for all actions of their non-State actors. In this thesis, I argue that there should be a higher threshold than the plain text of Article VI of the Outer Space Treaty would indicate for States to be declared belligerents if their non-State actors provide space-based services to a State at war.

In space, all non-State actions are attributed to the State that licenses and oversees them. Modern corporate structures, mergers, and buyouts can create situations where multiple States could be considered responsible for a single non-State space endeavor.

Under general international law, the conduct of a private person or corporation typically must have some connection to their state if the conduct is to be attributed to that State.[1] Under the law of neutrality States maintain certain rights when two other States (belligerents) are at war so long as the neutral State does not take State action in favor of either of the belligerent States. Combining these two premises, a neutral State is not usually at risk of losing its neutral status and being declared a belligerent if a corporation or person of that state provides some service to a belligerent state, so long as that person or corporation is not acting on behalf of their state.

In international space law, however, all private actions are attributed to the State. Article VI of the Outer Space Treaty states that States are responsible "whether such activities are carried on by governmental agencies or by non-governmental entities."[2] A private corporation

[1] International Law Commission & others, "Draft articles on Responsibility of States for internationally wrongful acts" (2001) Rep Int Law Comm Work Its Fifty-Third Sess at 39 "the general rule is that the only conduct attributed to the State at the international level is that of its organs of government, or of others who have acted under the direction, instigation or control of those organs, i.e. as agents of the State."

[2] *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*, 27 January 1967, 610 UNTS 205 [*Outer Space Treaty*] (entered into force 10 October 1967).

that provides space-based services to a belligerent State does not just risk its own assets and personnel, it also risks having its sponsoring state declared a belligerent.

This State responsibility requirement worked well for the first 40+ years of non-State actors in space. More recently, however, non-State actors are increasingly both more common and complex.

For example, in 2012, IntelSat, LLC, a US company wholly owned by IntelSat Global, SA, a Luxembourg company, launched IntelSat-22, a geosynchronous telecommunications satellite into orbit. The Australian Defense Forces contracted to put an ultra-high frequency (UHF) communications payload on this satellite for the purpose of military communications.[3] The overall satellite was licensed by the United States, but the payload was licensed by Australia.[4] Which State(s) is/are internationally responsible for the UHF payload if Australia were to go to war?

Another recent example occurred in 2017 when MacDonald, Detwiler, and Associates (MDA), a Canadian company that owns and operates its own remote sensing satellite, purchased DigitalGlobe[5], a US company that owns and operates a constellation of five remote sensing satellites. MDA indicated that they would set up a US subsidiary to own and operate the five recently acquired satellites. Which State(s) is/are internationally responsible for the five-satellite constellation if the company provides military intelligence to a belligerent?

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[3] Jeff Foust, "An opening door for hosted payloads", (30 October 2012), online: *SpaceNews.com* <http://spacenews.com/an-opening-door-for-hosted-payloads/>; Intelsat General Corporation, "Hosted Payloads", online: *Intelsat Gen Corp* <http://www.intelsatgeneral.com/hosted-payloads/>.

[4] United States, Federal Communications Commission, *Intelsat-22 Grant of Application for Satellite Space Systems Authorization with Attachment to Grant, IBFS File No. SAT-LOA-20110929-00193* (2012) Attachment at 1.

[5] DigitalGlobe, Press Release, "MDA to Acquire DigitalGlobe, Creating Industry Leader in End-to-End Space Systems, Earth Imagery and Geospatial Solutions", (24 February 2017), online: *Digit Invest Relat* <http://investor.digitalglobe.com/phoenix.zhtml?c=70788&p=RssLanding&cat=news&id=2249168>.

In the first chapter, I give an overview of general international law and international space law in relation to states' responsibility for non-state actors to explain how attribution of non-State actor actions to its State is different in space than in general international law. The second chapter explores the law of neutrality and how certain actions, like providing telecommunications to a belligerent, could violate the law of neutrality to show the implications of how a non-State space actor could affect its State's neutrality. The third chapter looks at the history of non-State actors in space and their recent rapid expansion with a focus on the fluidity of space corporations and international conglomerates. The fourth chapter explores the present day interaction between States and non-State actors including how States license and utilize non-State actors' capabilities. The fifth and final chapter brings together the previous four. I present an analysis of which State(s) should be held responsible and what could/should happen to a State's neutrality when one of its non-state actors provides space services to a belligerent. The methodology I use is to present the case studies of Intelsat and DigitalGlobe and then analyze international law and space law with respect to the cases.

A note about the law analyzed and the case studies: though the types of space applications and the number of State and non-State actors have expanded exponentially in recent years, this paper focuses primarily on US endeavors, laws, and regulations related to telecommunications and remote sensing. I do this not because other States do not have robust space programs overseeing non-State actors, but rather because both of the recent satellite transactions that have major law of neutrality implications (the Intelsat hosted payload and the sale of DigitalGlobe) are satellites licensed by the US.

Chapter 1: State Responsibility for Non-State Actors Under General International Law and International Space Law

The purpose of this chapter is to outline the differences between general international law and international space law; to explain the intricacies of responsibility, liability, and jurisdiction in space law; and to show how the existing treaties and norms of space law appear to allow for more than one State to be responsible for a single non-State actor action. This chapter will lay the groundwork for the later analysis about which law takes precedence if there were a conflict between general international law and space law.

In this chapter, I address three issues important for this thesis: 1. Whether at least one State is internationally responsible for all non-State actor actions in outer space; 2. Whether more than one State could be responsible for the actions of a non-State actor in outer space; and 3. Whether, if there were a conflict of laws between general international law and international space law regarding an outer space endeavor, space law trumps general international law.

A: State Responsibility Under General International Law

In international law, a State is responsible for its internationally wrongful acts.[6] For an act to be internationally wrongful, a State must have failed to comply with its international responsibility. That is, if a state has violated, by either an act or omission, some type of

[6] Commission & others, *supra* note 1 at Article 1"Responsibility of a State for its internationally wrongful acts; Every internationally wrongful act of a State entails the international responsibility of that State."; *Phosphates in Morocco, Judgment*, [1938] PCIJ (Ser A/B) No 74 at 22 "We should look for the violation of international law-a definitive act which would, by itself, directly involve international responsibility."; *Corfu Channel Case* at 22, Merits, ICJ Reports 1949, referencing "State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States. ".

obligation, be it a treaty[7] or agreement or some other aspect of international law, the State is responsible.[8]

The violating State is responsible to other States who are party to the treaty, agreement, or other aspect of international law the first State violated.[9] Most important for our discussion, for a State to be responsible, the internationally wrongful action must be attributable to the State.[10]

Under general international law a State is internationally responsible when it, through one of its agencies or officials, takes some action.[11] This type of responsibility is called direct responsibility.[12]

States are typically not responsible for actions of their non-State actors in general international law unless the non-State actor was acting on behalf of the State.[13] Therefore, the conduct of purely private persons or private corporations is not generally attributable to the State. There must be some nexus between the internationally wrongful act and the State to which the

[7] *Interpretation of Peace Treaties with Bulgaria, Hungary and Romania, Second Phase, Advisory Opinion* ICJ Reports 1950 221 at 228 "it is clear that refusal to fulfil a treaty obligation involves international responsibility".
[8] *Case concerning the difference between New Zealand and France concerning the interpretation or application of two agreements, concluded on 9 July 1986 between the two States and which related to the problems arising from the Rainbow Warrior Affair* at 251 States, "the general principles of International Law concerning State responsibility are equally applicable in the case of breach of treaty obligation, since in the international law field there is no distinction between contractual and tortious responsibility, so that any violation by a State of any obligation, of whatever origin, gives rise to State responsibility"; James Crawford, *Brownlie's Principles of Public International Law (8th Edition)* (Oxford University Press, 2012) at 541.
[9] Crawford, *supra* note 8 at 540.
[10] Commission & others, *supra* note 1; *Phosphates in Morocco, Judgment*, *supra* note 6 at 28"This act being attributable to the State and described as contrary to the treaty right of another State, international responsibility would be established immediately as between the two States." ; Hans Kelsen, *Principles of international law* (The Lawbook Exchange, Ltd., 1952) at 196–197 2d Edition; Revised and Edited by RW Tucker, 1967.
[11] Crawford, *supra* note 8 at 542–3; Commission & others, *supra* note 1 at 38; Manfred Lachs, *The Law of Outer Space: An Experience in Contemporary Law-Making, by Manfred Lachs, Reissued on the Occasion of the 50th Anniversary of the International Institute of Space Law* (Martinus Nijhoff Publishers, 2010) at 115.
[12] Bin Cheng, "Article VI of the 1967 Space Treaty revisited-'International responsibility','national activities', and'the appropriate State'" (1998) 26:1 J Space Law 7 at 11.
[13] Commission & others, *supra* note 1 at 39.

act is attributed, and private individuals or corporations acting on their own behalf cannot commit internationally wrongful acts on behalf of their State.

There are two major exceptions to a State not being held responsible for its non-State actor's actions in general international law: when a State has indirect responsibility and when a State makes provisions to accept responsibility for its non-State actors.

Indirect State responsibility refers to a State's obligation "to protect foreign States and their nationals against violations of their rights committed by persons within its effective jurisdiction."[14] A State could therefore be held responsible for an action by one of its citizens even if the action were not imputable to the State.

The second exception as to whether non-State actor actions can be attributed to the actor's State is when States specifically make special provisions accepting responsibility. One manner in which States can do so is by signing and ratifying a treaty which automatically assigns responsibility to the State of its non-State actor.[15]

B: State Responsibility Under International Space Law:

International Space Law is one branch of International Law where non-government actions are attributed to States because States have voluntarily undertaken additional responsibilities for their non-State actors.

1. State Responsibility for Non-State Actors in the Outer Space Treaty

In the 1967 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), the seminal treaty on outer space law with 105 States party to the treaty and 25 additional

[14] Cheng, *supra* note 12 at 11.
[15] *Ibid* at 10.

signatories,[16] States accept international responsibility for non-State actors under Article VI which provides that:

> "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."[17]

Some of these terms require further clarification and have been the subject of much scholarship.[18] "Responsibility", here read in the context of the first sentence of Article VI, is twofold: First, responsibility means that a State is held internationally accountable and must answer for all "national activities" (a term also left open to interpretation)[19] that occur in outer space.[20] Those national activities could be governmental or non-governmental (by a non-State

[16] Committee on the Peaceful Uses of Outer Space, *Status of International Agreements relating to activities in outer space as at 1 January 2017*, UNCOPUOUS, A/AC.105/C.2/2017/CRP.7 (2017).
[17] *Outer Space Treaty*, *supra* note 2 at Article VI.
[18] Cheng, *supra* note 12; Bin Cheng, *Studies in international space law* (Clarendon Press, 1997) at 237; Duncan Blake, "The Law Applicable to Military Strategic Use of Outer Space" in *New Technol Law Armed Confl* (Springer, 2014) 115 at 121; RK WOETZEL, *Responsibility for activities in outer space with special reference to article IV of the outer Space Treaty of 1967* (1983) at 159; Martin Menter, "Legal Responsibility for Outer Space Activities Responsibility for Space Activities" (1983) 26 Proc Law Outer Space 121 at 121–123; Aldo Armando Cocca, "From Full Compensation to Total Responsibility; Responsibility for Space Activities" (1983) 26 Proc Law Outer Space 157; Motoko Uchitomi, "State Responsibility/Liability for National Space Activities: Towards Safe and Fair Competition in Private Space Activities Emerging Issues of Interpretation and Application of Space Treaties" (2001) 44 Proc Law Outer Space 51; Michel Bourely, "Rules of International Law Governing the Commercialization of Space Activities Commercialization of Space Activities" (1986) 29 Proc Law Outer Space 157; Ram S Jakhu & Steven Freeland, "Relationship between the United Nations Space Treaties and the Vienna Convention on the Law of Treaties, The 55th Colloquium on the Law of Outer Space: Session 3: The International Legal Regulation of Outer Space within the Scope of Public International Law" (2012) 55 Proc Int Inst Space Law 375 at 11–12.
[19] Blake, *supra* note 18 at 121; Lachs, *supra* note 11 at 114"The acceptance of this principle (Art VI of OST) removes all doubts concerning imputability."
[20] Cheng, *supra* note 12 at 14; Francis Lyall & Paul B Larsen, *Space law: a treatise* (Routledge, 2016) at 66–69; Krystyna Wiewiorowska, "Some Problems of State Responsibility in Outer Space Law" (1979) 7 J Space L 23 at 30; Jakhu & Freeland, *supra* note 18 at 11.

actor) activities[21] and, if non-governmental, could implicate multiple States such as the State of registry or "the State of the nationality of the persons involved".[22] Second, the State is also responsible to ensure that governmental and non-governmental space activities comply with the Outer Space Treaty.[23]

The second sentence of Article VI adds another requirement: authorization and continued supervision of non-State actors in outer space by the "appropriate" State party to the treaty. The term "appropriate State party" is also subject to interpretation.[24] The fact that "State" is singular and "the" precedes "appropriate" would seem to indicate that the parties to the treaty intended only one State be responsible for a non-State entity.[25] However, the single responsible State idea is complicated by the last sentence in Article VI of the Outer Space Treaty, by the Liability Convention and the Registration Convention (discussed below), and the view of authors that the term "appropriate state" could encompass more than one State.[26]

[21] Cheng, *supra* note 12 at 9; John T Stewart Jr, "U.S. Private Enterprise Enters the Space Arena - The Beginning Responsibility for Space Activities" (1983) 26 Proc Law Outer Space 149; Patricia M Sterns & Leslie I Tennen, "Obligations of States in the Corpus Juris Spatials: Fathoming Unchartered Waters Responsibility for Space Activities" (1983) 26 Proc Law Outer Space 169 at 172.
[22] Cheng, *supra* note 12 at 20–22.
[23] *Outer Space Treaty*, *supra* note 2 art VI; Paul B Larsen, "Liability Limitation under National Law and the Liability Convention 53rd Colloquium on the Law of Outer Space: 5. Recent Developments in Space Law" (2010) 53 Proc Int Inst Space Law 416 at 418.
[24] Karl-Heinz Bockstiegel, "Term Appropriate State in International Space Law, The Definitional Issues in Space Law" (1994) 37 Proc Law Outer Space 77.
[25] Cheng, *supra* note 12 at 27; Paul B Larsen, "Draft Space Protocol and Jurisdiction over Commercial Space Assets, The Joint IAF-IISL Session: Policy and Law of Human Space Missions" (2011) 54 Proc Int Inst Space Law 485 at 491.
[26] Uchitomi, *supra* note 18 at 54 Noting that "the negotiating history and many authors support the idea that there can be more than one 'appropriate state' although it is expressed as singular."; Ram Jakhu, "Application and Implementation of the 1967 Outer Space Treaty" (1997), online: <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2801430> at 444; Bourely, *supra* note 18 at 159; Stephan Hobe et al, *Cologne commentary on space law: in three volumes* (Köln: Carl Heymanns, 2009) at 110 In a case of co-operation between two States' entities, "a national activity (of the governmental agency or non-governmental entity) in co-operation with another national activity (of another governmental agency or non-governmental entity). Consequently two or more States might be internationally responsible."; Cheng, *supra* note 12 at 29.

The next and final sentence of Article VI references international organizations.[27] This sentence notes that when international organizations are involved in outer space activities, both the organization and the States party to the treaty who participate in the organization bear responsibility for compliance with the treaty. Though this final sentence is narrower than the first sentence by only specifically outlining international responsibility for compliance with the Outer Space Treaty and not for the broader general international responsibility for all space actions, the sentence makes it clear that more than one State can be responsible for a single outer space entity.[28]

The overall goal of Article VI appears to be to ensure that at least one State is internationally responsible and answerable for all actions and activities that occur in outer space.[29]

Two other Articles in the Outer Space Treaty reference responsibility: Articles VII and VIII.

Article VII states that "Each State Party to the Treaty that launches or procures the launching of an object into outer space…and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty..."[30] or to its persons.

Here the Outer Space Treaty references liability instead of overall international responsibility[31] and the idea of a launching State is introduced. Instead of focusing on being held internationally accountable for all actions, this Article notes that a launching State will be

[27] *Outer Space Treaty*, *supra* note 2 art VI.
[28] Wiewiorowska, *supra* note 20 at 37.
[29] Hobe et al, *supra* note 26 at 113; Cheng, *supra* note 12 at 23; Lyall & Larsen, *supra* note 20 at 66.
[30] *Outer Space Treaty*, *supra* note 2 art VII.
[31] Cheng, *supra* note 12 at 10.

required to make whole any State party (or citizen thereof) who has damages as a result of an outer space activity.[32]

The text of Article VII appears to allow for more than one State to be held liable for a single outer space endeavor. By holding liable both "a state that launches, or procures the launch" and a "State Party from whose territory or facility an object is launched", the signatories allow for those to be two separate State Parties.[33] This article is later clarified in the Liability Convention (below).

On the other hand, Article VIII makes clear that any space object can only be registered to one State. Primarily concerned with jurisdiction, the article states that a "State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body."[34] Throughout the article, the singular "State Party" appears to only allow for one State to register and retain jurisdiction over an outer space object. This article is later clarified by the Registration Convention (below).

Two other treaties touch on international responsibility in outer space: the Liability Convention and the Registration Convention.

2. State Responsibility for Non-State Actors in the Liability Convention

Article II of the Convention on International Liability for Damage Caused by Space Objects (Liability Convention) notes that the "launching state shall be absolutely liable for

[32] Michael E Davis, "Australia's Space Treaty Obligations Legal Aspects of Navigation Satellites, GPS, Space Applications and Space Uses" (1998) 41 Proc Law Outer Space 236 at 240.
[33] Matxalen Sanchez Aranzamendi, "Who Is the Launching State: Looking for the Launching State in Current Business Models Session 5: Recent Developments in Space Law" (2011) 54 Proc Int Inst Space Law 376.
[34] *Outer Space Treaty*, *supra* note 2 art VIII.

damage caused by its space object on the surface of the Earth or to aircraft in flight."[35] "Launching State" is defined as either 1. A State which launches or procures the launching of a space object; or 2. A State from whose territory or facility a space object is launched.[36]

Therefore, if two or more non-governmental actors from different States jointly procure the launch of a space object; or if a non-governmental actor from one State procures the launch and pays a foreign State to launch the object on its land, more than one State can be considered a launching State and be held liable for a single launch.[37]

Indeed, the Liability Convention envisions the possibility of multiple responsible States.[38] Specifically, Article V references joint and several liability when two or more States jointly launch a space object.[39] Further, Article XXII notes that the Liability Convention shall "apply to any international intergovernmental organization which conducts space activities…"[40] The Article also notes that the State Members of that organization that are also members of the Liability Convention shall be jointly and severally liable for any damage caused by the international organization.[41]

Though the Liability Convention is concerned with pecuniary responsibility for damages caused by outer space actions,[42] the idea that multiple states could be held internationally responsible for a single outer space venture will be illustrative for this thesis.

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[35] *Convention on International Liability for Damage Caused by Space Objects*, 29 March 1972, 961 UNTS 187 [*Liability Convention*] art II (entered into force 1 September 1972).
[36] *Ibid* art I (c).
[37] Frans G von der Dunk, "1972 Liability Convention, Enhancing Adherence and Effective Application" (1998) 41 Proc Law Outer Space 366 at 370.
[38] Karl-Heinz Bockstiegel, "Term Launching State in International Space Law, The Definitional Issues in Space Law" (1994) 37 Proc Law Outer Space 80 at 81; Jakhu, *supra* note 26 at 444.
[39] *Liability Convention*, *supra* note 35 at Article V.
[40] *Ibid* art XXII.
[41] *Ibid* art XXII (3); Lachs, *supra* note 11 at 115.
[42] Herbert Reis, "Some Reflections on the Liability Convention for Outer Space" (1978) 6 J Space Law 125 at 128; Cocca, *supra* note 18 at 157.

3. State Responsibility for Non-State Actors in the Registration Convention

The final outer space treaty that considers responsibility is the Convention on Registration of Objects Launched into Outer Space (Registration Convention). The Registration Convention requires launching States to register space objects in orbit.[43] It uses the same definition of "launching state" as the Liability Convention[44] and, under its Article VII also allows for international intergovernmental organizations to register outer space objects as if they were States.[45]

Also like the Liability Convention, the Registration Convention envisions the idea that multiple States could be responsible for a launch of an outer space object. When there is more than one launching State, Article II(2) of the Registration Convention requires the States to jointly determine "which one of them shall register the object."[46]

Notably, Article II(2) references Article VIII (jurisdiction) of the Outer Space Treaty, stating that, when deciding which of the launching States shall register the object, the States should bear in mind the provisions of Article VIII of the Outer Space Treaty.[47] Therefore, while allowing for more than one launching State, the Registration Convention only appears to limit the registering State's jurisdictional responsibility for the object in outer space.

This clause allows for various States that are responsible for an outer space activity to make agreements among themselves as to who will register and retain jurisdiction of the object.[48] These agreements on which of the launching States retain jurisdiction and control of the space

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[43] *Convention on Registration of Objects Launched into Outer Space*, 14 January 1975, 1023 UNTS 15 [*Registration Convention*] art II (entered into force 15 September 1976).
[44] *Ibid* art I.
[45] *Ibid* art VII.
[46] *Ibid* art II (2).
[47] *Ibid*.
[48] Lyall & Larsen, *supra* note 20 at 87.

object leave open the possibility of modification as Article II(2) speaks of agreements (plural) "concluded or to be concluded."[49]

Jurisdiction of the object in space, as evidenced by registration under the Registration Convention, does not necessarily confer international responsibility of the whole activity.[50] For example, State A could license and provide continuing supervision of a non-governmental space activity, like a satellite constellation, in accordance with Article VI of the Outer Space Treaty. State B could both launch and register the satellites of that activity, making State B responsible under the Liability and Registration Conventions. In such a situation, State B would have jurisdiction over the outer space objects, but State A would be internationally responsible for the overall international accountability.[51]

An even more likely example would occur if State A licenses and provides supervision of a non-governmental space activity, such as a six-satellite constellation. State A launches and registers the first two satellites of the constellation, but then the non-governmental space activity is sold to a company in State B. State B then licenses and provides continuing supervision of the company and launches and registers the last four satellites of the constellation. Under the Liability and Registration conventions, State A still retains jurisdiction over the first two satellites as State B could never be considered the launching state; however, State B is answerable for the other responsibilities outlined in Article VI of the Outer Space Treaty, namely, overall international accountability.[52]

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[49] *Registration Convention*, *supra* note 43 art II (2); Cheng, *supra* note 18 at 628.
[50] Cheng, *supra* note 18 at 628.
[51] Setsuko Aoki, "In Search of the Current Legal Status of the Registration of Space objects 53rd Colloquium on the Law of Outer Space: 4. The Current Status of the Rule of Law with Regard to Space Activities" (2010) 53 Proc Int Inst Space Law 245 at 248 Noting a case where China launched and registered Iridium Satellites that were wholly controlled by Motorola, a US compnay.
[52] Committee on the Peaceful Uses of Outer Space, *Note verbale dated 29 July 2003 from the Permanent Mission of the Netherlands to the United Nations (Vienna) addressed to the Secretary-General,* UNCOPUOS, UN Doc

A final example draws out the complications associated with dealing with international organizations. If an international organization were to launch a satellite constellation, the organization and the member States would be responsible pursuant to Article VI of the Outer Space Treaty, Article XXII of the Liability Convention, and Article VII of the Registration Convention. If the organization were to then privatize, the State where the private company is incorporated would likely license and provide continuing supervision over the in-orbit satellites. That State, however, could not be considered the launching State for purposes of the Liability and Registration Conventions.[53]

When reading the Liability and Registration Conventions in conjunction with Article VI of the Outer Space Treaty, there is some debate as to whether assigning jurisdiction to a certain State for an outer space object carries with it all of the international responsibilities for that outer space activity.[54] It appears the majority of scholars argue that the State with jurisdiction is the only one that can bear international responsibility for that object.[55] However, here, too, it appears that more than one State can exercise jurisdiction over an outer space activity.[56] As

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A/AC.105/806 (2003) Here, a non-State Dutch enterprise acquired two in orbit satellites. The Kingdom of the Netherlands noted that it was not the "launching State", "State of registry", or "launching authority" for the purposes of the Liability and Registration Conventions, but that it does bear international responsibility under Article VI of the OST for their operation.

[53] Committee on the Peaceful Uses of Outer Space, *Information furnished in conformity with the Convention on Registration of Objects Launched into Outer Space Note verbale dated 9 September 2002 from the Permanent Mission of the United Kingdom of Great Britain and Northern Ireland to the United Nations (Vienna) addressed to the Secretary-General,* UNCOPUOS, ST/SG/SER.E/417/Rev.1 (2002) After INMARSAT's satellites transitioned from being controlled by an international organization to a non-State actor licensed by the UK, the UK noted that it could not be considered the Launching state under the Liability or Registration Conventions, but that it now licensed the activities. .

[54] Hobe et al, *supra* note 26 at 112.

[55] *Ibid*; Hanneke Louise van Traa-Engelman, *Commercial utilization of outer space: law and practice* (Martinus Nijhoff Publishers, 1993) at 52.

[56] Frans G von der Dunk, *Private enterprise and public interest in the European "spacescape": towards harmonized national space legislation for private space activities in Europe* [International Institute of Air and Space Law, Faculty of Law, Leiden University], 1998) [unpublished] at 21"Both states under whose jurisdictions a certain private activity has occurred remain internationally responsible if that activity violates international space law."; Cheng, *supra* note 18 at 622.

noted publicist Bin Cheng argues, there may well be "more than one appropriate state de facto or even de jure" under Article VI of the Outer Space Treaty.[57]

Cheng specifically provides a hierarchy of States that could be jurisdictionally responsible for a non-State space activity. The States that could be responsible (in order of precedence) are those with non-State actors that undertake a space activity from that State's jurisdiction; non-State actors that undertake a space activity from ships, aircraft, or spacecraft licensed by that State, and, finally, space activities conducted by nationals of a State, even if not done from that State's jurisdiction.[58]

Cheng's responsibility hierarchy under Article VI entails a more comprehensive State responsibility than do the Liability and Registration Conventions. Not only could at least one State be held internationally responsible, but, if that State were to fail to uphold its international obligations, a second State could be sought. His idea that international responsibility is tied to competence to act allows that "every State party should be directly responsibility(sic) for any space activity that is within its legal power or competence to control…"[59]

C. Interaction between general international law and international space law:

As seen above, imputation of non-government actions differs in general international law, where the State is not typically responsible for non-government actions, and in international space law, where the State is responsible for non-government actions.

To resolve this conflict, the concept of specialized law, known in Latin as "lex specialis derogat legi generali", is outlined in Article 55 of the Draft Articles on Responsibility of States

[57] Cheng, *supra* note 12 at 29.
[58] *Ibid* at 24–25.
[59] *Ibid* at 23.

for Internationally Wrongful Acts.[60] Specifically, the rules of general international law give way when special rules of international law apply to a certain field, like international space law.[61]

These special rules, those rules designed to govern one aspect of international law, can change what constitutes an internationally wrongful act.[62] In such instances, the general international law rule would yield to the specialized rule of law.

D. Conclusion

With the above examples in mind and taking the three space treaties together, we can draw three major conclusions illustrative for this thesis: 1. States are responsible for all non-State actors actions' in outer space; 2. More than one State can be responsible for a space endeavor; and 3. When there is a conflict between general international law and international space law over an issue in space, international space law will prevail.

The first conclusion is clear from the first part of the first sentence of Article VI of the Outer Space Treaty: States bear international responsibility for national activities in outer space including those carried on by its non-government entities.[63] Because the Outer Space Treaty is lex specialis, its provisions control over the general international law rule that requires a nexus between State and non-State actors.

The second conclusion relies on reading the Outer Space Treaty, the Liability Convention, and the Registration Convention together. Though the Outer Space Treaty mentions a singular "appropriate state", the Liability and Registration Conventions mention the possibility of more than one launching State and neither limits the responsibility of responsible governments

[60] Commission & others, *supra* note 1 Article 55.
[61] Jakhu & Freeland, *supra* note 18 at 11; H L van Traa-Engelman, "Clearness Regarding Property Rights on the Moon and Other Celestial Bodies" (1996) 39 Proc Law Outer Space 38 at 38.
[62] Commission & others, *supra* note 1 Article 55.
[63] Lyall & Larsen, *supra* note 20 at 83; Lachs, *supra* note 11 at 114.

beyond the Registration Convention's requirement to have one State register an outer space object.

The final conclusion is drawn from the idea of lex specialis, that is, in a specialized field, those rules that specifically address that field apply over general rules.

Chapter 2: The Law of Neutrality

The purpose of this chapter is to provide a historical background of the Law of Neutrality: to trace its codification in the early 20th century, the changes to it that came about after the formation of the United Nations (UN); and its current status in the 21st century. I pay particular attention to communications systems under the law of neutrality in order to aid the analysis as to how satellite constellations should be treated if a foreign State were to become a belligerent in the 21st century.

In this chapter, I explore two areas important for this thesis: 1. Whether the law of neutrality is still valid post UN Charter; 2. How communications systems in foreign States are affected when States go to war.[64]

A. What is the Law of Neutrality?

The law of neutrality defines the rights and obligations of States involved in an international armed conflict, called belligerents, and the rights and obligations of States not involved in armed conflict, or neutrals.[65] It has developed over centuries and hearkens to a time when war was a valid means to achieve foreign policy and when States declared their war intentions while others declared their neutrality.[66] More recently, as the idea of declared war has become rare[67] and armed conflicts have insurgency or terrorist components, the law of neutrality has become more amorphous.[68]

[64] Michael Bothe, "The law of neutrality" (2008) Handb Int Humanit Law 571 at 564.
[65] Paul Seger, "The Law of Neutrality" in *Oxf Handb Int Law Armed Confl* at 248, 2014; Bothe, *supra* note 64 at 549.
[66] A R Thomas, James C Duncan & Naval War College (US), *Annotated supplement to The commander's handbook on the law of naval operations* (Newport, R.I.: Naval War College, 1999) at 365.
[67] Robert W Tucker, *The law of war and neutrality at sea* (The Lawbook Exchange, Ltd., 2005) at 201.
[68] Thomas, Duncan & Naval War College (U.S.), *supra* note 66 at 366.

This chapter is separated into two sections: 1. A historical overview of the law of neutrality through the Charter of the United Nations (UN Charter) and 2. The law of neutrality since the UN Charter.

B. Historical overview of the law of neutrality through UN Charter

The law of neutrality, borne of States' desire for more certainty of belligerents' actions in a war, can be traced back to the middle ages.[69] Both customary international law and treaties deal with the law of neutrality.[70] The right of a neutral to not participate in a war along with the obligation of a neutral to not give any assistance were formally outlined in the 18th century[71] and the law of neutrality was codified in treaties beginning in 1780.[72] Over the next century, a series of treaties followed which continued to shape the law of neutrality,[73] but it was not until the 1907 Hague Convention that a major codification of the core set of rules about neutrality were developed.[74]

The Hague Convention of 1907 was a series of 13 treaties, two of which, the Convention relative to the Rights and Duties of Neutral Powers and Persons in case of War on Land (Hague (V)) and the Convention concerning the Rights and Duties of Neutral Powers in Naval War (Hague (XIII)), outlined neutral and belligerent rights. Though they are over 100 years old, they remain the "main body of law of neutrality."[75]

[69] Seger, *supra* note 65 at 250.
[70] Bothe, *supra* note 64 at 551.
[71] Emer de Vattel et al, *The law of nations, or, Principles of the law of nature, applied to the conduct and affairs of nations and sovereigns, with three early essays on the origin and nature of natural law and on luxury* (Indianapolis, IN: Liberty Fund, 2008) at 523 Book III, Chapter VII, Of Neutrality and the Passage of Troops through a Neutral Country.
[72] Seger, *supra* note 65 at 250.
[73] *Ibid* at 250–251.
[74] *Ibid* at 251.
[75] *Ibid* at 249.

1. The Law of Neutrality Under Hague (V)

Hague (V) focuses on the rights and duties of neutrals in land wars.[76] It begins with the most fundamental right of a neutral, that its territory is inviolable, that is to say, a neutral is protected from belligerents' military actions.[77] Further, belligerents are prohibited from moving troops, munitions, or supplies through neutrals' territory.[78]

Important for the Chapter 5 discussion of satellite communications, use of in-orbit satellites, and use of ground stations in a neutral State, Article 3 of Hague (V) prohibits belligerents from erecting a "wireless telegraphy station or other apparatus for the purpose of communicating with belligerent forces."[79]

It also prohibits the use of these belligerent-run communications stations for military purposes even if they were installed before the war.[80] Beyond prohibiting belligerents from erecting and using their own communication stations, Hague (V) also requires neutrals to take actions to stop belligerents from placing communications stations on their territory. Specifically, Article 5 prohibits neutrals from allowing their territory to be used in such a fashion (i.e. neutrals must prevent belligerents from building and using communication systems on neutral's territory).[81]

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[76] *Hague Convention (V) Respecting the Rights and Duties of Neutral Powers and Persons in Case of War on Land*, 18 October 1907, 205 CTS 299 [*Hague (V)*] Preamble (entered into force 26 January 1910).
[77] Bothe, *supra* note 64 at 559"Above all, this means that the armed forces of the parties to the conflict may not enter neutral territory. They may not in any way use this territory for their military operations, or for transit or similar purposes."
[78] *Hague (V)*, *supra* note 76 art 2.
[79] *Ibid* art 3 (a).
[80] *Ibid* art 3 (b).
[81] *Ibid* art 5.

An important point throughout the law of neutrality during the early 20th century is that neutrals are to remain impartial in relation to the belligerents.[82] Therefore, although belligerents cannot move arms or supplies through a neutral's territory, a neutral can allow the transport or export of arms or munitions to a belligerent[83] by one of its non-State actors, so long as it treats both belligerents equally.[84]

Likewise, although the treaty prohibits belligerents from erecting or using their own communication systems on a neutral's territory, it gives neutrals the ability to allow belligerents to use telegraph, telephone cables, or wireless technology that belong to the neutral or private companies or individuals.[85] The only requirement is that the neutral must not favor one belligerent over another in providing these services.[86]

Important for the discussion about international general law and responsibility for non-State actors, Hague (V) notes that neutrals are not responsible for people crossing their border to assist belligerents, nor are neutrals required to prevent the export or transport of arms or munitions to belligerents.[87] On the communications front, Hague (V) also grants a neutral the right to not forbid or restrict the use on "behalf of the belligerents of telegraph or telephone cables or of wireless telegraphy apparatus belonging to it or to companies or private individuals."[88]

[82] Walter L Jr Williams, "Neutrality in Modern Armed Conflicts: A Survey of the Developing Law Symposium on International Law" (1980) 90 Mil Law Rev 9 at 21; Tucker, *supra* note 67 at 202.
[83] *Hague (V)*, *supra* note 76 art 7.
[84] *Ibid* art 9.
[85] *Ibid* art 8.
[86] *Ibid* art 9.
[87] *Ibid* arts 6-7.
[88] *Ibid* art 8.

2. The Law of Neutrality Under Hague (XIII)

Hague (XIII) focuses on neutrals' rights and responsibilities during a naval war.[89] It also begins with a proclamation that belligerents must respect the sovereignty of neutrals.[90] It states that belligerents cannot use neutral ports as a base of naval operations and that neutral powers must not favor one belligerent over another in its actions.[91] Like Hague (V), Hague (XIII) also states that a neutral power does not need to prevent the export or transit of arms to a belligerent,[92] so long as the neutral acts impartially.[93]

Hague (XIII) also references belligerents' use of wireless communications. Article 5 specifically forbids belligerents from erecting "wireless telegraphy stations or any apparatus for the purpose of communicating with the belligerent forces on land or sea."[94] Though not envisioned at the time, the broad term "any apparatus" would include any satellite ground stations put up in neutral ports.

3. The Law of Neutrality During World War II

As the twentieth century progressed, the law of neutrality changed. War was renounced as an instrument of national policy.[95] It became more difficult to determine whether States were at war.[96] During World War II, a new category outside the traditional belligerent/neutral ones

[89] *Convention concerning the Rights and Duties of Neutral Powers in Naval War*, 18 October 1907, 205 CTS 395 [*Hague (XIII)*] (entered into force 26 January 1910).
[90] *Ibid* art 1.
[91] *Ibid* arts 5, 8.
[92] *Ibid* art 7.
[93] *Ibid* art 9.
[94] *Ibid* art 5.
[95] *Treaty Between the United States and Other Powers Providing for the Renunciation of War as an Instrument of National Policy*, 27 August 1928, 94 LNTS 57 [*Kellogg-Briand Pact*] Art 1 (entered into force 24 July 1929).
[96] Christopher Greenwood, "The concept of war in modern international law" (1987) 36:02 Int Comp Law Q 283 at 285.

emerged. That category, claimed by the United States (US) prior to its entry into World War II, is that of non-belligerent.[97]

A non-belligerent references a State that is not actively involved in a war, but does not necessarily adhere to traditional notions of impartiality.[98] Such a State may provide support to one belligerent over another, which runs counter to the Hague Convention. For example, the United States provided war materiel to the Allies in World War II prior to entering the war. Though many other States have provided assistance to one belligerent over another, and at least one State has recently declared itself a non-belligerent,[99] the status of non-belligerency has not been uniform enough to be recognized as customary international law.[100]

Although the Law of Neutrality was changing, many aspects of the Hague Conventions persisted. Notably on the communications front during World War II, "practically all neutral nations prohibited the employment by belligerents of radiotelegraph and radiotelephone apparatus within their territorial sea."[101]

C. Law of Neutrality After the UN Charter

With the adoption of the Charter of the United Nations after World War II, the whole idea of neutrality changed.[102] Though the UN Charter clarified the law of neutrality by validating notions of territorial sovereignty and the inherent right to self-defense,[103] it also envisioned an

[97] Bothe, *supra* note 64 citing G. P. Politakis, Modern Aspects of the Law of Naval Warfare and Maritime Neutrality(Geneva:IUHEI/Kegan Paul International, 1998), 458 et seq.
[98] Tucker, *supra* note 67 at 192; Stephen W Preston, *Department of Defense Law of War Manual* (DTIC Document, 2015) at 931.
[99] Natalino Ronzitti & M Ragazzi, "Italy's Non-Belligerency during the Iraqi War" (2005) 197 Int Responsib Today—Essays Mem Oscar Schachter Nijhoff LeidenBoston 2005 201 at 201.
[100] Bothe, *supra* note 64 at 550.
[101] Thomas, Duncan & Naval War College (U.S.), *supra* note 66 at 373.
[102] Seger, *supra* note 65 at 251; Bothe, *supra* note 64 at 552.
[103] *Charter of the United Nations*, 26 June 1945, Can TS 1945 No 7 [*UN Charter*] arts 1, 51.

idea of international collective security[104] which in some ways allows for and in some ways obviates the idea of remaining neutral.[105]

Most importantly, the Charter attempted to prohibit war.[106] Article 2(4) requires member States to refrain from "the threat or use of force against the territorial integrity or political independence of any state."[107] Additionally, States party to the Charter are required to "give the United Nations every assistance in any action it takes in accordance with the present Charter, and shall refrain from giving assistance to any state against which the United Nations is taking preventive or enforcement action."[108] The Charter also allows for the Security Council to determine whether there has been an armed attack and which State is the aggressor.[109]

The above two articles notwithstanding, States may remain neutral in some instances as the articles allow for, but do not necessarily require any action.[110] Thus, even taking these two articles together, a State, by taking no action, could remain impartial in an international conflict where the Security Council has determined an aggressor.[111]

However, there are situations where the UN Charter leaves no room for neutrality. The UN Charter allows for the Security Council to require actions of States who are not otherwise involved in the conflict.[112] Specifically, the Security Council could require an otherwise neutral State to cease economic relations with a belligerent.[113] Important for this thesis, the Security

[104] Bothe, *supra* note 64 at 552.
[105] Seger, *supra* note 65 at 251.
[106] Kelsen, *supra* note 10 at 41–42.
[107] *UN Charter*, *supra* note 103 art 2(4).
[108] *Ibid* art 2(5).
[109] *Ibid* art 39.
[110] *Ibid* art 51.
[111] Dietrich Schindler, *Transformations in the Law of Neutrality since 1945* (1991) at 373.
[112] Kelsen, *supra* note 10 at 45.
[113] *UN Charter*, *supra* note 103 art 41.

Council could require a State to cease telegraphic, radio, and other means of communications with an aggressor.[114] The Security Council could also require military action against an aggressor.[115] If a State is required to provide armed forces members to take action against an aggressor, it follows that that State could not claim to be an impartial neutral.

All member States are required to "carry out the decisions of the Security Council."[116] If the UN worked seamlessly and collective security worked in all instances, the law of neutrality would be obsolete as there would never be a need for a neutral state.[117] However, in practice, the Security Council infrequently adopts mandatory resolutions[118] and leaves neutrality as a viable option.

Practice since the UN Charter verifies that the law of neutrality is still valid.[119] The International Court of Justice recognized that the law of neutrality, subject to the provisions of the UN Charter, was customary international law.[120] In 1995, the United Nations General Assembly recognized and supported the permanent neutrality of Turkmenistan.[121] Although war

[114] *Ibid* art 41.
[115] *Ibid* arts 42, 48.
[116] *Ibid* art 25.
[117] Seger, *supra* note 65 at 262; *Hague (V)*, *supra* note 76 art 3.
[118] George K Walker, "Information Warfare and Neutrality" (2000) 33 Vanderbilt J Transnatl Law 1079 at 1131.
[119] Williams, *supra* note 82 at 17.
[120] *Legality of the Threat or Use of Nuclear Weapons Case, Advisory Opinion,* [1996] ICJ Rep 226 at 261"The Court finds that as in the case of the principles of humanitarian law applicable in armed conflict, international law leaves no doubt that the principle of neutrality, whatever its content, which is of a fundamental character similar to that of the humanitarian principles and rules, is applicable (subject to the relevant provisions of the United Nations Charter), to al1 international armed conflict, whatever type of weapons might be used."
[121] UNGA, "*Maintenance of international security; Permanent neutrality of Turkmenistan,* 90th plenary meeting, UN Doc A/Res50/80", (2015), online: <http://www.un.org/documents/ga/res/50/a50r080.htm>.

and neutral status may not often be declared,[122] State practice, too, continues to recognize the law of neutrality as defining the relationship between belligerents and neutrals.[123]

As long as the Security Council has not determined that some action must be taken against an aggressor, a State is still free to remain impartial in an international conflict, that is, the State can maintain its neutrality.

The law of neutrality as it relates to communications also remains valid. Because it was written in 1907, Hague (V) does not address either modern satellite communications or other space based applications that could be valuable to a State at war in the 21st century. However, the communications principles outlined in Article 3 of the treaty are still viable and applicable to modern telecommunications.[124] Neutral States are still prohibited from establishing, or, if established, from allowing continued use of military communications facilities that belong to a belligerent.[125]

Further, during an armed conflict, communications systems and infrastructure used by a belligerent could constitute a proper military target.[126] So long as the communications system both makes an effective contribution to the military and provides a "definite military advantage" if attacked,[127] it would meet the two pronged-test establishing it as a proper object of attack. A

[122] Greenwood, *supra* note 96 at 3; Thomas, Duncan & Naval War College (U.S.), *supra* note 66 at 366; Tucker, *supra* note 67 at 201.
[123] U S Navy, US Marine Corps & US Coast Guard, "The Commander's handbook on the law of naval operations" (2007) Newport R I Nav War Coll Section 7.1.
[124] Bothe, *supra* note 64 at 564.
[125] Preston, *supra* note 98 at 947, 949.
[126] Thomas, Duncan & Naval War College (U.S.), *supra* note 66 at 402; Tucker, *supra* note 67 at 143; Preston, *supra* note 98 at 209.
[127] Preston, *supra* note 98 at 208.

State that would like to remain neutral, therefore, cannot allow the continued use of a foreign State's military communications system on its territory after the outbreak of hostilities.

In space, a neutral State could not, therefore, provide satellite imagery to help a belligerent plan an attack[128] unless it wanted to risk its neutral status. Likewise, a neutral State cannot allow a satellite payload used for military communications to continue to be used after the using State becomes a belligerent unless the neutral State wanted to risk its neutral status.

Importantly, if there were a conflict between some international agreement, be it the law of neutrality, the Hague Convention, or the Outer Space Treaty; and the UN Charter, the UN Charter would prevail. States accepted the supremacy of the UN Charter when they ratified it. Specifically, under Article 103, the UN Charter notes that "in the event of a conflict between the obligations of the Members of the United Nations under the present Charter and their obligations under any other international agreement, their obligations under the present Charter shall prevail."[129]

D. Conclusion:

With the above treaties and state practices in mind, we can draw two major conclusions about the law of neutrality illustrative for this thesis: 1. The Law of Neutrality is still valid though it must give way to UN Security Council Decisions; 2. While existing non-military communications systems can continue to be used after a State declares war, a neutral State must not let a belligerent construct or use a communications infrastructure on neutral land for military purposes, even if the infrastructure was built prior to the State becoming a belligerent.[130]

[128] Bothe, *supra* note 64 at 565.
[129] *UN Charter*, *supra* note 103 art 103.
[130] Bothe, *supra* note 64 at 564.

The first conclusion is clear from both State practice and relatively recent UN approval of a State's permanent neutrality. The second conclusion, though its origin is from a century-old treaty, is based on both State practice and current ideas of valid military targets.

Combining these conclusions with the conclusions from Chapter 1 on State responsibility for non-State actors in space leads to three further conclusions: 1. If a non-State actor hosts a foreign State's military payload, the State(s) responsible for the non-State actor is responsible for the payload and its neutrality could be at risk; 2. If, during an international conflict, a neutral violates the law of neutrality by allowing a belligerent's use of the neutral's non-State actor's satellite communications system, all States responsible for that non-State actor could have their neutrality questioned; and 3. In either of the above scenarios, if the UN Security Council were to approve of the support offered by the neutrals under Article 41 of the Charter, no State's neutrality would be implicated.

Chapter 3: Non-State Actors in Space

The purpose of this chapter is to give the historical background of non-State actors in space through the present day rapid expansion of both the number of non-State actors and their capabilities in space.

Outer space, once solely the purview of superpower governments, has infiltrated all aspects of life. What began in the late 50s with an orbiting metal sphere sending radio pulses to Earth has transitioned into a $330 billion/year space industry.[131] Television, radio, cellphones and broadband communications all now have space based components. Pictures of most parts of the Earth down to 30 cm resolution are now available to consumers.[132] Weather satellites allow for unprecedented forecasting accuracy and climate change monitoring.[133] Global positioning satellites allow for accurate worldwide navigation down to a few centimeters.[134]

Most importantly for this thesis is not what satellites can do, but who is procuring, launching, and maintaining those satellites. Gone are the days where two States were the only players in space. Now, in addition to the sixty-plus space faring nations, the above services are also provided by private multinational companies.

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[131] Bryce Space and Technology, *Satellite Industry Association State of the Indsutry Report* (2016) at 7.
[132] DigitalGlobe, "DigitalGlobe Resources, Product Samples 30 cm imagery", online: <https://www.digitalglobe.com/resources/product-samples/30cm-imagery>.
[133] Emma Gray Ellis, "New Weather Satellites Can Spot Floods Before They Happen", (26 January 2017), online: *WIRED* <https://www.wired.com/2017/01/new-weather-satellites-can-spot-floods-happen/>; Mike Wall, "Next-generation weather satellite launches to begin forecasting 'revolution'", (20 November 2016), online: *SpaceNews.com* <http://spacenews.com/next-generation-weather-satellite-launches-to-begin-forecasting-revolution/>.
[134] "Official U.S. government information about the Global Positioning System (GPS) and related topics: GPS Accuracy", online: <http://www.gps.gov/systems/gps/performance/accuracy/>.

A. History of non-State actors in space through the 1980s

Though a general trend of privatization has occurred in most facets of outer space endeavors including space launch (and soon to include weather satellites), I will again focus on two space technologies important to belligerents: telecommunications and remote sensing.

1. Telecommunications Satellites

The first non-State satellite in space, Telstar, was an experimental communications satellite put up by AT&T on a NASA rocket in 1962.[135] Though the satellite proved fickle,[136] non-State actors would soon become a major player in space. The US government, shortly after the launch of Telstar, proceeded with legislation that paved the way for a global, private telecommunications satellite system with the Communication Satellite Act of 1962 (Comsat Act).[137]

This United States legislation declared a policy to establish, in cooperation with other countries, a "commercial communications satellite system as part of an improved global communications network…"[138] The Comsat Act authorized the creation of a for-profit private corporation, COMSAT, to run the United States' portion of the satellite system[139] that would become INTELSAT.[140]

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[135] S Neil Hosenball, "Law Applicable to the Use of Space for Commercial Activities, The Responsibility for Space Activities" (1983) 26 Proc Law Outer Space 143 at 143; Newton N Minow, "Second Chance Essay" (1994) 47 Fed Commun Law J 299 at 302; Abram Chayes & Leonard Chazen, "Policy Problems in Direct Broadcasting from Satellites" (1970) 5 Stanf J Int Stud 4 at 4.

[136] "United States: Report of the President on Activities under the Communications Satellite Act Reports" (1964) 3 Int Leg Mater 218 at 221.

[137] *Communication Satellite Act of 1962*, 47 USC § 701 Seq [*CSA*].

[138] *Ibid* § 102(a).

[139] *Ibid* § 102(c) and 301.

[140] Joanne Irene Gabrynowicz, "One Half Century and Counting: The Evolution of U.S. National Space Law and Three Long-Term Emerging Issues General Essay" (2010) 4 Harv Law Policy Rev 405 at 409; Patrick A Salin, "Illustration of the Privatization Process of Outer Space - The Evolution of the Legal Status of the COMSAT Corporation, from Public National Satellite Communications Agency to Private Global Satellite Operator, An / Die Privatisierung der COMSAT Corporation in den USA / La Privatisation de la Compagnie COMSAT aux Etats-Unis" (2001) 50 Z Luft- Weltraumrecht - Ger J Air Space Law 217 at 219.

This private corporation could, in conjunction with foreign governments or businesses, own a commercial communication satellite system, own satellite terminals, and procure launches, so long as the launches were performed by the US government.[141]

After the Comsat Act, the US government continued to work to acquire international partners for COMSAT.[142] The resulting international consortium, named INTELSAT, launched its first satellite in 1965. This geosynchronous satellite, Intelsat 1, was launched by NASA and regular telecommunications service via commercial satellites became viable.[143] Satellite telecommunications became an immediate multi-million dollar industry. Intelsat launched four additional next generation satellites in quick succession.[144] It was against this backdrop of an international consortium where the private COMSAT corporation represented both US interests and more than half the voting shares,[145] that the Outer Space Treaty came into force. When Article VI of the Outer Space Treaty was agreed to, therefore, there were very few non-State actors in space. However, they would proliferate.

INTELSAT continued to expand and prosper.[146] It grew to more than 100 nations[147] and the US government continued to launch a series of commercial INTELSAT satellites throughout the 1980s.[148] Other international, intergovernmental organizations surfaced with similar structures: INTERSPUTNIK arose to meet the telecommunication needs of the eastern bloc countries,[149] INMARSAT came to be in the late 70s to provide maritime satellite communication

[141] *CSA*, *supra* note 137 § 305(a)(1), 305(a)(3), and 305(b)(3).
[142] Jonathan F Galloway, "INTELSAT's Markets and the New Competitors The Politics of International Telecommunications" (1986) 42 Int J 256 at 256; Francis Lyall, "On the Privatisation of INTELSAT" (2000) 28 J Space Law 101 at 103–104.
[143] Hosenball, *supra* note 135 at 143.
[144] *Ibid*.
[145] Galloway, *supra* note 142 at 256.
[146] Lyall & Larsen, *supra* note 20 at 336.
[147] Galloway, *supra* note 142 at 257.
[148] Hosenball, *supra* note 135 at 143; Galloway, *supra* note 142 at 265.
[149] Lyall & Larsen, *supra* note 20 at 364.

services;[150] and EUTELSAT, also developed in the late 70s, provided satellite communications in Europe.[151]

However, with the 1980s two significant things changed with regard to the telecommunication satellite industry: 1. More non-State actors, private companies, were being developed and looking to profit in space ventures; and 2. These non-State actors were looking to lessen COMSAT's perceived advantages borne of being the US signatory to INTELSAT.

2. Remote Sensing Satellites

Remote sensing satellites use a space platform to obtain information about the features of the earth.[152] Their military value was clear at the dawn of the space age.[153] The US started launching Corona spy satellites to take pictures of the Earth in 1959.[154] The pictures recovered from the Corona satellites showed that remote sensing had both military and non-military capabilities.[155] The commercial value of space based earth sensing, also obvious from an early stage, includes potential uses in agriculture, forestry, oil and mineral exploration[156] (military surveillance remains a valuable application[157]).

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[150] *Ibid* at 344–346.
[151] "Eutelsat, The Early Years; Our History 1977-1989", online: <http://www.eutelsat.com/en/group/our-history/1977-1989.html>.
[152] National Oceanic and Atmospheric Administration US Department of Commerce, "What is remote sensing?", online: <http://oceanservice.noaa.gov/facts/remotesensing.html>.
[153] Carl Q Christol, "Gathering and Dissemination of Space-Based Data in Time of Armed Conflict Session 5: Other Legal Matters, Telecommunications, NPS, and Military Implications" (2004) 47 Proc Law Outer Space 465 at 466 As Christol notes, when remote sensing satellites are used for military operations, they are usually called, "military surveillance" for civil operations, "remote sensing". For this paper, I use the term "remote sensing" for all satellites that gather information about the features of the earth from space. .
[154] Gabriella Sgrosso, "Military Applications and Space Law Session 4: Space Law at Times of Armed Conflict" (2006) 49 Proc Law Outer Space 311 at 315.
[155] Christol, *supra* note 153 at 465.
[156] *Remote Sensing and the Private Sector: Issues for Discussion—A Technical Memorandum (Washington, D. C.: U.S. Congress, Office of Technology Assessment, OTA-TM-ISC-20, March 1984).*; Carl Q Christol, "Remote Sensing and International Space Law" (1988) 16 J Space Law 21 at 24; Lyall & Larsen, *supra* note 20 at 411–412.
[157] Christopher C Joyner & Douglas R Miller, "Selling Satellites: The Commercialization of LANDSAT" (1985) 26 Harv Int Law J 63 at 65; Christol, *supra* note 153 at 465.

The first civil remote sensing satellite went into orbit in 1972 when the US government launched Landsat-1[158], a remote sensing satellite dedicated to civilian uses.[159] For more than a decade, the US ran the satellite and its successors in the Landsat constellation. The US made the data available to foreign States for just the cost of duplication[160] and agencies of the US government also purchased the data to assist developing nations.[161]

Privatization of the remote sensing field in the US came with the Land Remote Sensing Commercialization Act of 1984 (Commercialization Act). The act opened up the potentially lucrative field for individual companies to market the data provided by satellites.[162] Part of the Reagan administration idea of selling off non-military satellites,[163] the plan was to sell the whole Landsat system to private industry.[164]

Outside of the US, too, non-State actors in remote sensing gained traction. In the early 80s in France, Spot-Image incorporated to sell data from the French government's Spot satellite constellation even before the first satellite was launched.[165]

It was against this backdrop, prior to any non-State remote sensing satellites being in orbit, that the United Nations General Assembly passed the Principles Relating to the Remote Sensing of Earth from Space. Specifically, Principle XIV was agreed to, noting that "States operating remote sensing satellites shall bear international responsibility for their activities and assure that such activities are conducted in accordance with the provisions of the Treaty and the

[158] Joyner & Miller, *supra* note 157 at 66.
[159] *Ibid* at 65–66.
[160] *Ibid* at 68.
[161] *Ibid*.
[162] *Land Remote Sensing Commercialization Act of 1984*, 1984, 15 USC 68 § 4201 Seq [*Land Remote Sensing Commercialization Act of 1984*].
[163] Joyner & Miller, *supra* note 157 at 70.
[164] *Ibid* at 63.
[165] R Oosterlinck, "Legal Protection of Remote Sensing data Space Law and Domestic Law" (1984) 27 Proc Law Outer Space 112 at 112.

norms of international law, irrespective of whether such activities are carried out by governmental or non-governmental entities."[166] There were no non-State remote sensing corporations at the time. The United Nations General Assembly knew they would be coming.

B. Non-State Space Actors 1980s to Present

1. Telecommunications Satellites

There has been an abundance of activity and development of non-State space actors since the 1980s. In 1984, the president of the United States stated that separate international satellite communication systems (in addition to INTELSAT's) were required in the US national interest.[167] Satellite telecommunications remained extremely lucrative. New areas of telecommunications, like satellite television, radio, and broadband emerged. For-profit companies like PanAmSat, GlobalStar, SES, Iridium, and Orbcomm joined the fray.[168]

The US government's relationship with COMSAT including COMSAT's role as the US representative as the sole signatory to INTELSAT led to antitrust and monopoly allegations by these new companies.[169] One competitor, PanAmSat, sued COMSAT for anti-competitive practices in the late 1980s.[170] PanAmSat's case was dismissed twice when, seemingly bolstering

[166] "Principles relating to remote sensing of the earth from space, UNGA, 95th Plenary Meeting, UN Doc A/RES/41/65.", (1986), online: <http://www.un.org/documents/ga/res/41/a41r065.htm>.
[167] Ronald Reagan, *Presidential Determination Number 85-2 of November 28, 1984; Memorandum for the Secretary of State, the Secretary of Commerce* (1984).
[168] Stephan Hobe, "The Impact of New Developments on International Space Law (New Actors, Commercialisation, Privatisation, Increase in the Number of Space-Faring Nations)" (2010) 15 Unif Law Rev 869 at 872; Lyall & Larsen, *supra* note 20 at 379–380.
[169] Fred Landman, "Remarks Part I: Emerging Competitive Forces in International Communications: Satellites and Cables: Second Panel: Industry Viewpoints" (1985) 1985 Rep Proc Annu Meet Sect Public Util Law 43; Salin, *supra* note 140 at 220; Lyall, *supra* note 142 at 108; United States, Government Accountability Office & International Telecommunications Satellite Organization, *Telecommunications: Intelsat privatization and the implementation of the ORBIT Act : report to congressional requesters.* (Washington, D.C.: U.S. Government Accountability Office, 2004) at 6; Michael Potter, "International Satellite Organizations: From Monopoly to Cartel Emerging and Future Supplements to Space Law Specifically in the Context of the International Space Year" (1992) 35 Proc Law Outer Space 120 at 123.
[170] Salin, *supra* note 140 at 221.

PanAmSat's concerns, courts ruled that COMSAT was immune to US antitrust laws as it was the sole US INTELSAT signatory.[171] Nonetheless, PanAmSat launched its first communications satellite in 1988, becoming a direct competitor to INTELSAT.

For a myriad of reasons, including INTELSAT's inefficiency, its ability to react to market forces, and fairness to other non-State actors,[172] pressure grew to move INTELSAT (and the other international satellite organizations mentioned above) from a multinational intergovernmental organization to a private corporation.[173] In the late-90s, INTELSAT spun off a private company, headquartered in the Netherlands, called New Skies,[174] and transferred five satellites to it.[175] This move was just the beginning of privatization.

In 2000, the US amended the Comsat Act by passing the Open-market Reorganization for Betterment of International Telecommunications Act (ORBIT Act). The act aimed to make a competitive satellite communication market and fully privatize INTELSAT.[176] The ORBIT Act addressed PanAmSat's concerns head-on by requiring that INTELSAT's resultant corporation not be afforded any privileges or immunities by any national governments.[177] In July of 2001, INTELSAT privatized, transferring its holdings to Intelsat, Ltd.[178]

Both the number of satellites and the private companies providing telecommunications services have increased since Intelsat's privatization. Today, there are more than 500 operational satellites dedicated to commercial communications, more than in any other field.[179] Single

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[171] *Ibid*.
[172] Lyall & Larsen, *supra* note 20 at 382.
[173] Lyall, *supra* note 142 at 105–108; Lyall & Larsen, *supra* note 20 at 337, 380–381.
[174] Lyall, *supra* note 142 at 110.
[175] Lyall & Larsen, *supra* note 20 at 337.
[176] *Open-market Reorganization for Betterment of International Telecommunications Act (ORBIT Act)*, 17 March 2000 [*Open-market Reorganization for Betterment of International Telecommunications Act (ORBIT Act)*] § 2.
[177] *Ibid* § 621 (3)(B).
[178] United States, Government Accountability Office & International Telecommunications Satellite Organization, *supra* note 169 at 8.
[179] Bryce Space and Technology, *supra* note 131 at 8.

companies like SES (44),[180] Orbcomm (27),[181] and Intelsat (50+)[182] operate dozens of satellites. Other companies like OneWeb, Boeing, and SpaceX have plans to launch constellations of hundreds or even thousands of satellites[183] with the Federal Communications Commission (FCC) recently approving OneWeb's 720 satellite constellation for the US market.[184] The value of space based telecommunications continues to expand[185] and private telecommunications companies now dominate the market.

2. Remote Sensing Satellites

Like telecommunications, remote sensing has gone from a primarily government run service[186] to one where both governments and private corporations have large stakes.[187] The remote sensing transition, however, was not as smooth as the telecommunications transition.

Although the US intended to privatize Landsat after the Commercialization Act through competition, and a few corporations initially threw their hat in the ring, there was only one company interested after all the terms were made clear, Earth Observations Satellite Corporation

[180] SES, Press Release, "Satellites | SES", online: <https://www.ses.com/our-coverage/satellites>.
[181] Peter B de Selding, "Orbcomm Eagerly Awaits Launch of New Satellite on Next Falcon 9", (25 May 2012), online: *SpaceNews.com* <http://spacenews.com/orbcomm-eagerly-awaits-launch-new-satellite-next-falcon-9/>.
[182] Intelsat, Press Release, "Intelsat Satellite Network | Intelsat", (23 February 2016), online: *Intelsat* <http://www.intelsat.com/global-network/satellites/overview/>.
[183] Caleb Henry, "FCC approves OneWeb for US market as it considers other constellations", (23 June 2017), online: *SpaceNews.com* <http://spacenews.com/fcc-approves-oneweb-for-us-market-as-it-considers-other-constellations/> "contenders include SpaceX, which is proposing a system of more than 4,000 LEO satellites; Boeing, with up to 3,000 satellites; and ViaSat and Telesat, among others."
[184] *Ibid*.
[185] Ram Jakhu, "Legal issues of satellite telecommunications, the geostationary orbit, and space debris" (2007) 5:2 Astropolitics 173 at 173–174.
[186] Lyall & Larsen, *supra* note 20 at 414.
[187] Hobe, *supra* note 168 at 872–873.

(EOSAT).[188] EOSAT signed a ten-year contract, substantially raised prices for images, and became a federally subsidized monopoly.[189]

In 1992, the Commercialization Act was replaced with the Land Remote Sensing Policy Act of 1992 (Policy Act) where Congress found that, under EOSAT, the "cost of Landsat data has impeded the use of such data for scientific purposes, such as for global environmental change research, as well as for other public sector applications."[190] It also noted that "full commercialization of Landsat program cannot be achieved within the foreseeable future…however, commercialization of land remote sensing should remain a long-term goal of United States policy."[191] This act moved the Landsat program back into the public sphere[192] and laid out the requirements for a forthcoming successor to the Landsat remote sensing system.[193]

The successor remote sensing system could be run by the private sector, an international consortium, the US government, or a cooperative effort between the US government and the private sector.[194] In 1999, a private sector company was sought.[195] Although there were various bidders throughout the process, once again, prior to award, there was only one company that remained. This time, however, the company's proposal was rejected.[196] Additionally, the public-

[188] Joanne Irene Gabrynowicz, "The Perils of Landsat from Grassroots to Globalization: A Comprehensive Review of US Remote Sensing Law with a Few Thoughts for the Future Symposium: Issues in Space Law" (2005) 6 Chic J Int Law 45 at 54.
[189] *Ibid* at 55.
[190] *Land Remote Sensing Policy Act of 1992*, 28 October 1992, 15 USC Sec 5601 [*Land Remote Sensing Policy Act of 1992*].
[191] *Ibid* 6.
[192] Gabrynowicz, *supra* note 188 at 59.
[193] *Land Remote Sensing Policy Act of 1992*, *supra* note 190 Section 5641.
[194] *Ibid* Section 5641.
[195] Gabrynowicz, *supra* note 188 at 60.
[196] *Ibid*.

private option was also rejected.[197] Landsat remains a joint government initiative between the US Geological Survey and NASA.[198]

Aside from the US and Landsat, other States employ their own version of public/private remote sensing where the government still has a major stake in the satellite constellation. In Canada, RADARSAT-2 is owned and operated by a private corporation, MacDonald, Detwiler, and Associates, Ltd. (MDA), but the Canadian Space Agency helped fund the satellite.[199]

Additionally, France, India, Germany, and the European Space Agency all have some form of a public/private remote sensing partnership.[200] In each of these, the State maintains control not just through their Article VI Outer Space Treaty requirements, but also through actually being at least partial owners of the system.

Purely private non-State actors have also entered the scene and thrived in the remote sensing business. In 1994, Lockheed received permission from the US government to operate a high-definition remote sensing satellite system.[201] The resultant launch of the IKONOS satellite in 1999 allowed for a purely private company, DigitalGlobe, to market and sell the high resolution imagery. The first EROS satellite, a private remote sensing satellite run by an Israeli company, was launched the following year.[202]

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[197] *Ibid* at 61.
[198] "Landsat Project Description | Landsat Missions", online: <https://landsat.usgs.gov/landsat-project-description>.
[199] Canadian Space Agency Government of Canada, "RADARSAT-2", (12 September 2008), online: *Can Space Agency Website* <http://www.asc-csa.gc.ca/eng/satellites/radarsat2/Default.asp>; Michel Bourbonniere, Louis Haeck & Pierre Nadeau, "Radarsat-2 Regulatory Issues and International Law Perspectives on Commercial Remote Sensing and Military Operations Legal Issues Arising from the Commercial Availability of High Quality Remote Sensing Imagery" (2001) 44 Proc Law Outer Space 258 at 259.
[200] Hobe, *supra* note 168 at 872–873.
[201] "COMPANY NEWS; LOCKHEED WINS LICENSE FOR SATELLITE SENSING SYSTEM", *N Y Times* (26 April 1994), online: <http://www.nytimes.com/1994/04/26/business/company-news-lockheed-wins-license-for-satellite-sensing-system.html>.
[202] "Eros B & Eros C - ISI's Earth Observation Satellites", online: *ISI* <http://www.imagesatintl.com/eros-sat/>.

As the costs of building satellites and launching them into space have come down, the number of privately-owned remote sensing satellites and private companies marketing the images provided by the satellites have proliferated. Not only have the costs for launching the satellites dropped, but the quality of the images available continues to improve.[203]

As of September 2016, 10 companies operated 225 commercial remote-sensing satellites in orbit.[204] An additional 10 remote sensing companies are in some stage of developing 500+ new remote sensing satellites.[205] Indeed, satellites have become so small and relatively inexpensive to launch that a US company launched 88 remote sensing satellites on an Indian rocket in a single launch in February 2017.[206]

As important for this thesis as the sheer number of private satellites and operators, is the services they provide and the manner in which the images are marketed. In addition to agriculture and mineral exploration, the satellite company Planet, the company that put up 88 satellites in one launch, offers a Defense and Intelligence service.[207] Under this service, the marketing materials show a US Navy Yard and an airstrip on a disputed island chain. The company offers historical images and images of the same location each day.[208]

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[203] Paul B Larsen, "Limited Right of Access to Remote Sensing Data for the Prevention and Mitigation of Disasters Conference on Space Law and Space Applications for Disaster Management in the Asia Pacific Region" (2007) 50 Proc Law Outer Space 705 at 706.
[204] Bryce Space and Technology, *supra* note 131 at 15.
[205] *Ibid*.
[206] Sarah Scoles, "88 New Satellites Will Watch Earth, All the Time, All the Places", (14 February 2017), online: *WIRED* <https://www.wired.com/2017/02/88-tiny-satellites-will-watch-time-everywhere/>.
[207] "Defense and Intelligence", (9 June 2017), online: *Planet* <https://planet.com/markets/defense-and-intelligence/>.
[208] *Ibid*.

Likewise, ImageSat, the Israeli company that processes images from the EROS satellites, markets, in addition to high resolution imagery, Intelligence Reports. These reports help "monitor border areas, detect unrest and suspicious activities."[209]

The growth of private remote sensing companies should continue. New entrants, including companies from States beyond established nuclear powers, continue to "raise capital, develop satellites, and deploy their constellations."[210]

C. Iterations and Intricacies of Present Day Non-State Actors in Space

Outer-space corporations are like most corporations, fluid and market based. Therefore, they acquire other (possibly foreign based) corporations, they combine with other (again, possibly foreign based) corporations, and they sign joint ventures.[211] Unlike other fields, however, when space non-State actors combine or are overtaken with little to no international responsibility implications for their respective States, the States responsible for their non-State actors in space could become internationally responsible for their actions.

Some corporations set up a series of subsidiaries, some in foreign States, and may have the foreign based subsidiary license and operate the satellite constellation. An illustrative example is Intelsat License LLC, one of the companies that resulted from the INTELSAT privatization mentioned above.

Intelsat License LLC is a Delaware (US) corporation that owns and operates certain Intelsat satellites (including Intelsat-22, discussed below and analyzed in the next chapter).[212]

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[209] ImageSat International, Press Release, "Intelligence Reports Providing Geospatial Big Data Insights", online: *ISI* <http://www.imagesatintl.com/solutions-services/intelligence-reports/>.
[210] Bryce Space and Technology, *supra* note 131 at 13.
[211] *Ibid* at 15.
[212] United States, Federal Communications Commission, *supra* note 4.

The address for Intelsat LLC, as submitted to US government regulators, is in Luxembourg.[213] Intelsat License LLC is wholly owned by Intelsat License Holdings LLC, a US company, which is wholly owned by Intelsat Jackson Holdings, S.A., a Luxembourg company.[214] Intelsat Jackson Holdings is a wholly owned subsidiary of six additional Luxembourg companies before you reach Intelsat Global Holdings, S.A, the parent company.[215]

This is just one example. As far as State responsibility is concerned, the above structure could become much more complicated when space companies are sold. When these corporations are sold, the States responsible for their space based endeavors (which could include military communications and actionable military intelligence valuable to belligerents at war) could also change.

D. Conclusion:

The relationship between States and non-State actors has become more complicated. In the telecommunications and remote-sensing realm, what began as a heavily subsidized private monopolistic near arm of government has evolved to include purely private companies that provide capacity governments lease, images governments buy, and satellite bus space on which the government pays to put their payloads.

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[213] Intelsat application to Federal Communications Commission, "APPLICATION FOR PRO FORMA ASSIGNMENT OF INTELSAT 28 SPACE STATION AUTHORIZATION", online: <licensing.fcc.gov/myibfs/download.do?attachment_key=981737>.

[214] *Ibid*.

[215] *Ibid*"Intelsat License LLC is a Delaware limited liability company that is wholly owned by Intelsat License Holdings LLC, also a Delaware limited liability company. Intelsat License Holdings LLC is wholly owned by Intelsat Jackson Holdings S.A., a Luxembourg company. Intelsat Jackson Holdings S.A. is wholly owned by Intelsat (Luxembourg) S.A., a Luxembourg company. Intelsat (Luxembourg) S.A. is wholly owned by Intelsat S.A., a Luxembourg company. Intelsat S.A. is wholly owned by Intelsat Holdings S.A., a Luxembourg company. Intelsat Holdings S.A. is wholly owned by Intelsat Investment Holdings S.à r.l., a Luxembourg company. Intelsat Investment Holdings S.à r.l. is wholly owned by Intelsat Global Holdings S.A., a Luxembourg company. Each of these entities may be contacted at the following address: 4 rue Albert Borschette, L-1246 Luxembourg."

With each iteration of use, if governments allow their non-State actors to sell capacity or images to a foreign State or if a State is using a foreign non-State actor's satellite in its war effort, the implications for a State's neutrality multiply. Would a State be responsible and thus have its neutrality status implicated if its non-State actor provides previously leased telecommunications to a State that becomes a belligerent? A State whose non-State actor provides remote sensing images? What about a State that licensed a company to provide a hosted payload to a foreign State's defense forces and that State now becomes a belligerent?

Chapter 4: Present Day Interaction Between States and Non-State Actors

The purpose of this chapter is to outline how States serve their non-State actors in space and how States authorize and provide continuing supervision of non-State actors in space to the States' advantage through both licensing non-State actors and purchasing non-State actors' capabilities. The chapter shows how Article VI of the Outer Space Treaty works in practice and will be useful in explaining why non-State actors choose to incorporate foreign subsidiaries rather than attempting to change the State that provides continuing supervision. The chapter concludes with how private companies serve national governments, especially during periods of conflict.

A. States Represent Non-State Actors Internationally

Companies like Intelsat License Holdings and DigitalGlobe do not have an international personality. While they can contract with foreign companies or States, they need a State to obtain internationally recognized frequencies and orbital positions in international fora, like the United Nations.

This representation is critical for any non-State actor that wants to place a satellite in orbit. Every functioning satellite that communicates with an earth ground station will need to have both frequency allocations and an orbital position. The International Telecommunications Union (ITU), a specialized agency of the UN,[216] regulates frequency allocations and orbital positions.[217]

[216] *International Telecommunication Convention, Atlantic City, 1947, Final Protocol to the Convention Additional Protocols to the Convention Resolutions, Recommendations and Opinions*, 1947 [*ITU Convention*] annex 5 art 1.
[217] *Constitution of the International Telecommunication Union* [*ITU Constitution*] chapter I (2); Hobe, *supra* note 168 at 878.

Because only States have the international personality to request frequencies and orbital positions, non-State actors must go to their States early in their planning process. The non-State actor must ask its State to request the needed frequencies and orbital position for the non-State actor's planned satellite. The State then makes the request from the ITU. If the ITU grants the request, it grants the frequencies and orbital position to the State. The State can then assign the frequency and orbital position to its non-State actor.

B. Licensing of Non-State Actors

The licensing process will likely start well before a State petitions the ITU and will vary by State. While Article VI of the Outer Space Treaty requires States be responsible for their non-State actors, the requirement can take various forms as the Outer Space Treaty gives States discretion in overseeing their non-State actors.[218]

States have developed and implemented their national laws in a variety of ways based on their policy considerations; from Russia's concern to controlling foreign non-State actors using Russia State launch services[219] to India's goal of exporting space commercial launch services.[220] The US, still the biggest player in space, has a robust set of laws as it has been US policy since at least the early 1960s to expand the number of commercial operators in space. The US sought to commercialize fields from telecommunications,[221] to remote sensing,[222] to space launch,[223] and, most recently, weather satellites.[224]

[218] Hobe et al, *supra* note 26 at 117.
[219] Lyall & Larsen, *supra* note 20 at 484.
[220] *Ibid* at 481; Ram Jakhu, "International Law Governing the Acquisition and Dissemination of Satellite Imagery" (2003) 29 J Space Law 65 at 81.
[221] *CSA*, *supra* note 137.
[222] Joyner & Miller, *supra* note 157 at 63.
[223] *Commercial Space Launch Act of 1984*, 30 October 1984, 51 USC § 50901 Seq [*CSLA 1984*].
[224] Jeff Foust, "President signs commercial satellite weather bill", (21 April 2017), online: *SpaceNews.com* <http://spacenews.com/president-signs-commercial-satellite-weather-bill/>.

The US placed responsibility for implementation of the above laws in different agencies depending on their function. Here, too, I will focus on telecommunications and remote sensing satellites. The FCC issues regulations and licenses associated with telecommunications satellites. The National Oceanographic and Atmospheric Administration (NOAA) issues regulations and licenses related to remote sensing satellites. Both agencies provide the authorization and continuing supervision of non-State actors.

1. Telecommunications Satellites

For telecommunications, the US government requires any person who uses or operates space or earth stations for communications to have an appropriate license issued by the FCC.[225]

The applicant begins the licensing process by filing an application with the FCC. The FCC requires that the applicant adhere to numerous rules, including citizenship rules,[226] follow ITU regulations, and pay any ITU cost recovery fees.[227] The FCC will then "submit the filings to the ITU on behalf of the applicant."[228]

If the ITU approves the FCC request, the FCC can license the applicant for its space venture. However, even after a satellite system is licensed, the FCC maintains continuing supervision of its non-State satellite operators by requiring results of in-orbit testing,[229] notifications to modifications of earth and space stations,[230] and annual reporting requirements of its licensees.[231]

[225] 47 CFR § 25.102, (1991).
[226] 47 CFR § 25.105, (2016).
[227] 47 CFR § 25.111, (2016).
[228] *Ibid*.
[229] 47 CFR § 25.173, (2014).
[230] 47 CFR § 25.117, (2016).
[231] 47 CFR § 25.170, (2014).

It also allows for administrative sanctions, to include forfeiting a license, if the licensee fails to comply with the Communications Act, the terms of its license, or fails "to cooperate in Commission investigations with respect to international coordination."[232]

Most important for the discussion of non-State actors being bought or sold, the FCC requires that a company must apply for authorization to "transfer, assign, dispose…a station license, or accompanying rights…"[233] Further, the FCC will grant such an "application only if it finds that doing so will serve the public interest, convenience, and necessity."[234]

The FCC meets the US obligation of authorization and continuing supervision of telecommunications satellites. It ensures that US non-State actors comply with US policy and, if a non-State actor were to attempt to sell an in-orbit satellite, the FCC would ensure that US interests are met prior to approving the transfer of the satellite.

2. Remote Sensing Satellites

US remote sensing companies must apply for and receive a license from NOAA.[235] NOAA's stated purpose in regulating remote sensing non-State actors includes preserving "the national security" of the United States and observing "the foreign policies and international obligations of the United States."[236] Through its statutory authority,[237] NOAA confers with the Departments of Defense, State, and Treasury to ensure the private company does not jeopardize national security interests.[238]

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[232] 47 CFR § 25.160, (2016).
[233] 47 CFR § 25.119, (2016).
[234] *Ibid*.
[235] National Oceanographic and Atmospheric Administration, "About Commercial Remote Sensing Regulatory Affairs, NOAA CRSRA Compliance", online: <https://www.nesdis.noaa.gov/CRSRA/>.
[236] *Ibid*.
[237] 51 USC § 60101, et seq, (2010).
[238] National Oceanographic and Atmospheric Administration, *supra* note 235; Mike Gruss, "DigitalGlobe: No clarity on 2013 request to NOAA to sell high-res imagery", (18 May 2016), online: *SpaceNews.com* <http://spacenews.com/digitalglobe-no-clarity-on-2013-request-to-noaa-to-sell-high-res-imagery/>.

Important to this thesis and the State being implicated for the actions of its non-State actors, is the process put in place to stop data collection in the interests of national security. The restrictions on remote sensing operators appear to be somewhat stricter than those of telecommunications operators. Specifically, remote sensing operators must "maintain operational control from a location within the United States at all times, including the ability to override all commands issued by any operations centers or stations."[239]

The US law can also require the "licensee to limit data collection and/or distribution by the system during periods when national security or international obligations and/or foreign policies may be compromised, as determined by the Secretary of Defense or the Secretary of State."[240]

If the non-State actor is bought, or a license is otherwise to be transferred, NOAA approval must be sought and the Departments of Defense, State, and the Interior are given an opportunity to provide input on the proposed license transfer.[241]

B. State Use of Non-State Actors' Space Assets:

In addition to regulating non-State actors and exercising control over where they place ground stations and the types of data that can be sold, States can make use of two programs where a State may not exercise direct ownership over the satellite or the processing, but nonetheless utilize a satellite for a State interest. Most pertinent to this thesis and the focus of this section is when the government uses a private satellite for military functions. Specifically, a State can become a customer by leasing a commercial telecommunications satellite's capability

[239] 15 CFR § 960.11, (2011).
[240] 15 CFR Appendix 2 to Part 960, (2000).
[241] 15 CFR § 960.7, (2004).

or by purchasing remote sensing data; or it can have a private satellite host a government payload.

1. State as Customer

Though the military value of satellite telecommunications has been obvious since the advent of the technology and the US Department of Defense launched and operated their own satellites, the military leasing of commercial satellite telecommunications did not begin until the late 1980s.[242] Shortly after the military necessity of satellite telecommunications was proved in the first Gulf War, the DoD realized that its satellite communications requirements were greater than it could provide through military satellites.[243] It sought to augment its abilities with commercial satellite communications.[244]

In 1992, Congress directed the DoD to move toward maximizing its use of commercial satellites.[245] Although the DoD continued to procure ever more advanced military communications satellites, its communications needs outstripped its ability to procure, launch, and operate new satellites.[246] This resulted in the DoD beginning to rely more heavily on leased

[242] Patrick Rayermann, "Exploiting commercial SATCOM: A better way" (2003) 33:4 Parameters 54 at 54.
[243] U S Government Accountability Office GAO, "Military Satellite Communications: Potential for Greater Use of Commercial Satellite Capabilities" (1992) T-NSIAD-92-39, online: <http://www.gao.gov/products/T-NSIAD-92-39> at 2; H Rausch, *Jamming commercial satellite communications during wartime an empirical study* (Proceedings of the Fourth IEEE International Workshop on Information Assurance (IWIA'06), April 2006).
[244] GAO, *supra* note 242 at 3.
[245] Rayermann, *supra* note 241 at 54.
[246] Ram Jakhu & Karan Singh, "Space Security and Competition for Radio Frequencies and Geostationary Slots / Weltraumsicherheit und der Zugang zu Radiofrequenzen und Position in der Geostationaren Umlaufbahn / Securite Spatiale et la Competition Relative aux Frequences Radioelectriques et aux Positions en Orbite Geostationnaire" (2009) 58 Z Luft- Weltraumrecht - Ger J Air Space Law 74 at 82.

commercial satellite communications.[247] Now, the DoD leases the vast majority of its communications needs[248] and is the commercial industry's single biggest customer.[249]

In remote sensing, too, the US government is a major customer of commercial satellites' products. In 2003, US President George W. Bush signed the Commercial Remote Sensing Space Policy. This policy directed the US government to "rely to the maximum practical extent on U.S. commercial remote sensing space capabilities for filling imagery and geospatial needs for military, intelligence, foreign policy, homeland security, and civil users."[250]

Telecommunications and remote sensing satellites are not the only space applications valuable to the military. Most space applications are dual-use; capable of performing both military and civilian missions.[251] Thus, space launch, weather, and navigation satellites are also valuable to both military units in the field and civilian corporations looking to earn a profit.

2. Hosted Payloads

Governments, and more specifically, militaries, do not just lease satellites to meet their communications needs. They can also place their own payloads on commercial satellites. That is, when a company has a satellite they want to launch with excess space on it,[252] that company can sell that space to another company or to a government agency, including the military. The

[247] Rayermann, *supra* note 241 at 54.
[248] Clay Wilson US Congressional Research Service, *Network Centric Warfare: Background and Oversight Issues for Congress* (DTIC Document, 2004), online: <http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA476256> at 8 .
[249] Mike Gruss, "Military Satellite Communications | Panel Ties U.S. Troop Rotations to Satellite Interference Spikes", (24 June 2013), online: *SpaceNews.com* <http://spacenews.com/35948military-satellite-communications-panel-ties-us-troop-rotations-to/>.
[250] "U.S. Commercial Remote Sensing Space Policy | Office of Space Commerce", online: <http://www.space.commerce.gov/policy/u-s-commercial-remote-sensing-space-policy/>.
[251] Sarah M Mountin, "The Legality and Implications of Intentional Interference with Commercial Communication Satellite Signals" (2014) 90 Int Law Stud Ser US Nav War Coll [i] at 113; Lyall & Larsen, *supra* note 20 at 500; Howard J Taubenfeld, "Outer Space-Past Politics and Future Policy Current Developments in Air Space and Outer Space: Law, Science and Policy" (1961) 55 Am Soc Int Law Proc 176 at 176.
[252] Milton Smith & Stephen E Smith, "Legal Issues Presented by Hosted Payloads 55th Colloquium on the Law of Outer Space: Session 5: Recent Developments in Space Law" (2012) 55 Proc Int Inst Space Law 495 at 496.

government agency can then build "an instrument or package of equipment" to affix to a host spacecraft that will operate in orbit. This package of equipment, called a hosted payload can then make "use of available capabilities of that spacecraft, including mass, power, and/or communications."[253]

These hosted payloads are beneficial to both the commercial companies and the government agencies. The companies who own the satellite can use the whole satellite's capacity and earn revenue for the extra space on their satellite.[254] The government agency or entity with a hosted payload can get its payload in orbit without paying for a whole satellite or the whole cost of launch.[255] This could be an especially attractive option for a military that would like to test its next generation payloads. These payloads can be placed in orbit much quicker and for much less money than it would be to acquire and launch a dedicated satellite.[256]

The idea of hosted payloads has been around for years and militaries have been prime players in utilizing them. From the mid-80s to 1990, IntelSat launched five Leasat satellites which each had an Ultra-High Frequency (UHF) communications payload for the US Navy.[257] In 2009, US Strategic Command put an Internet Routing in Space payload on an IntelSat satellite.[258] Expanding beyond just hosting communications, the US Air Force put a Commercially Hosted Infrared Payload (CHIRP) on a commercial satellite in 2011. This payload, designed to detect missile launches, was put on a commercial satellite owned by a

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[253] Futron Corporation, "Hosted Payload Guidebook" (August 2010), online: <https://science.larc.nasa.gov/hostedpayload/HostedPayloadGuidebook_final_with_acknowledgment.pdf> at 10.
[254] Smith & Smith, *supra* note 251 at 496.
[255] *Ibid*.
[256] Northern Sky Research in MilsatMagazine, "Hosted Payloads On Commercial Satellites", (May 2010), online: <http://www.milsatmagazine.com/story.php?number=1593901906>; Smith & Smith, *supra* note 251 at 498; James D Rendleman, "Brave New World of Hosted Payloads" (2013) 39 J Space Law 129 at 151.
[257] Intelsat General Corporation, *supra* note 3.
[258] SpaceNews Staff, "After Hosted Payload Success, U.S. Air Force Plans Follow-on", (13 April 2012), online: *SpaceNews.com* <http://spacenews.com/after-hosted-payload-success-us-air-force-plans-follow/>; Smith & Smith, *supra* note 251 at 499.

company headquartered in Luxembourg.[259] Following this success, the Air Force created a new contract vehicle, the Hosted Payload Solutions program, to help place military payloads on commercial satellites.[260]

Nor is the US military the only armed forces to use hosted payloads. Australia's military, too, has taken advantage of hosted payloads. In 2012, the Australian Defense Forces put a UHF communications payload on an Intelsat communications satellite.[261] This payload connects the Australian Defense Forces to the US military fleet.[262]

Having important military communications capabilities on a foreign company owned private satellite shows two things: 1. That Australia trusts Intelsat, a US based company, to remain solvent and take care of the satellite's bus and orbit for the expected fifteen-year life of their payload and 2. That Australia trusts the government that licensed and is ultimately internationally responsible for Intelsat. This specific relationship and the repercussions for State responsibility for non-State actors is looked at in depth in the next chapter.

C. Conclusion

Through both licensing and use, States can gain enormous advantages. Particularly in times of conflict, non-State space actors can provide the critical infrastructure that a State needs to prosecute its war at a fraction of the price it would cost the State to develop, launch, and operate a dedicated constellation. Through commercial remote sensing satellites, a State gains

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[259] Mike Gruss, "U.S. Air Force Decision To End CHIRP Mission Was Budget Driven", (12 December 2013), online: *SpaceNews.com* <http://spacenews.com/38628us-air-force-decision-to-end-chirp-mission-was-budget-driven/>.
[260] Mike Gruss, "U.S. Air Force Picks 14 Companies To Support Hosted Payload Efforts", (11 July 2014), online: *SpaceNews.com* <http://spacenews.com/41223us-air-force-picks-14-companies-to-support-hosted-payload-efforts/>; Rendleman, *supra* note 255 at 158.
[261] Foust, *supra* note 3; Intelsat General Corporation, *supra* note 3; Defence Magazine, "Satellite Launch Success", online: <http://www.defence.gov.au/defencemagazine/working/issue/4/articles/8.html>.
[262] Hosted Payload Alliance, a satellite industry alliance, "Australian Defence Forces UHF Payload", online: <http://www.hostedpayloadalliance.org/Hosted-Payloads/Case-Studies/UHF,-the-Australian-Defence-Force-(ADF)-and-Intels.aspx#.WO09TIjyvIU>.

access to its enemy's locations, centers of gravity, and movements. Through commercial telecommunications satellites, a State can maintain critical lines of communication between military leaders at headquarters and field commanders. Soon, through commercial weather satellites, a State can use additional data and forecasting tools to plan or defend against attacks.[263]

In addition to the tactical advantages, being the licensing authority for a non-State satellite constellation allows a State to dictate terms that could further the State's advantage in a conflict. For example, a State that licenses a remote sensing company can include a clause that allows the licensing State to receive higher quality images than foreign customers. Therefore, if a foreign State were planning for a war and relied on a potential enemy's non-State actor for its remote sensing images, it could be relying on less accurate images than its potential adversary, the State who licensed the non-State actor.

For telecommunications satellites, a State can include a clause that either a certain portion of the bandwidth must be reserved for State Agencies or prohibit certain foreign States from using the satellite.

Perhaps most important for a State engaged in an armed conflict, are national security clauses that can be written into the licensing agreements. Many of these non-State space companies count national governments as their biggest customers. During a war, a State can stop its non-State actors from providing imagery to a potential enemy. Likewise, it could stop a non-State actor from providing satellite telecommunications or remote sensing or weather data to a belligerent State that may have come to rely on such space abilities.

[263] Paul Voosen, "NOAA issues first contracts for private weather satellites", (16 September 2016), online: *Sci AAAS* <http://www.sciencemag.org/news/2016/09/noaa-issues-first-contracts-private-weather-satellites>; Foust, *supra* note 224.

Chapter 5: Analysis of Law of Neutrality vis-à-vis Non-State Actors in Space

In this chapter, I analyze how the law of neutrality applies in outer space through real-world fact patterns of satellite licensing and ownership transition through two scenarios: one involving a telecommunications hosted payload and another involving the sale of a non-State actor remote sensing company. I conclude this chapter with recommended changes to the law and how to affect them noting that States responsible for non-State actors should be given wide latitude prior to being declared belligerents.

Bearing in mind the conclusions from the first two chapters, that States are responsible for all non-state actors' actions in outer space and that more than one State can be responsible for a space endeavor; and also that the Law of Neutrality is still valid as are the Hague Conventions prohibitions on communications, consider the following two specific examples of non-State actors:

A. The Case of Intelsat-22:

As noted in the previous chapter, the Australian Defence Forces (ADF) contracted to place a UHF communications hosted payload on Intelsat-22, a commercial telecommunications satellite, for the purpose of military communications.[264] Intelsat, LLC, a US company that is wholly owned (with nine subsidiary intermediaries) by Intelsat Global, SA, a Luxembourg company[265] placed Intelsat-22 into orbit in 2012.

Like all telecommunications satellites put up by non-State actors in the US, the FCC licensed Intelsat-22. Uniquely, the license grant notes that Intelsat is authorized to operate

[264] Foust, *supra* note 3; Intelsat General Corporation, *supra* note 3.
[265] Intelsat application to Federal Communications Commission, *supra* note 213.

Intelsat-22 but that the UHF payload "will be owned and operated by the ADF and will be licensed by the Administration of Australia."[266]

Therefore, the US licensed and exercises control over the satellite itself, including orbital location and power levels. The ITU granted the US the authorization for the frequencies and orbital position needed for the satellite (Australia likely would not have needed to go to the ITU as military communications are excluded from the purview of the ITU).[267] Indeed, the FCC stated that it would view the satellite "as a US space object for purposes of registering the satellite under the Convention on Registration of Objects Launched into Outer Space."[268] However, Australia wholly owns, operates, licenses, and controls one telecommunications payload on the satellite.

With two States functionally authorizing and providing continuing supervision over the same outer space object, what would the law of neutrality implications be for the US if Australia were to attack and declare war on State A and use the UHF payload to help prosecute the war? Could Luxembourg's neutrality, as the State where Intelsat's parent company is registered, be implicated? US Neutrality? What if State A were to declare war on Australia?

1. Australia attacks and declares war on State A

If Australia declared war on State A, the UN Security Council could, pursuant to Article 39 of the UN Charter, declare Australia to be the aggressor State.[269] The Security Council could also require measures be taken to "maintain and restore international peace and security"

[266] United States, Federal Communications Commission, *supra* note 4 Attachment, p. 1.
[267] *ITU Convention*, *supra* note 216 art 48 "Member States retain their entire freedom with regard to military radio installations."
[268] United States, Federal Communications Commission, *supra* note 4 at 7.
[269] This hypothetical here becomes far-fetched because the United States is both a member of the Security Council and the State responsible for IntelSat and its hosted payload. Though the US is first, not likely to vote Australia an aggressor and second, not going to order itself through the UN Security Council to stop the hosted payload, I nonetheless use the hypothetical to bring forth the underlying issues that could occur if a non-permanent security council member were to have a hosted payload.

pursuant to Article 41 of the Charter. One such measure could be that the US stop its non-State actor from allowing Australia to utilize its hosted payload by either cutting power to that portion of the satellite bus or deorbiting the satellite. The US would be required to comply with the directive pursuant to Article 25 of the UN Charter.

However, as the US is a member of the UN Security Council, a far more likely scenario is that the Security Council remains silent vis-à-vis Australia's aggression. If that were the case, the implications for Luxembourg and the US are as follows:

Luxembourg's neutrality should not be implicated because Luxembourg does not exercise any actual control over Intelsat-22 (the idea of actual control being required prior to neutrality being implicated is discussed in detail below in the DigitalGlobe example).

However, what are the options for the US? The US provides authorization and continuing supervision over the satellite. Is Australia violating US neutrality if it continues to use the payload? Is the US risking its own neutrality if it allows Australia to continue to use the payload? Could the US disclaim responsibility for the UHF payload because it is licensed under Australia's laws?

Both the US and Australia have some control over the UHF payload. Australia provides the licensing and continuing supervision of the UHF payload pursuant to Article VI of the OST (and thus accepts international responsibility for the payload) while the US licenses and provides continuing supervision of the Intelsat-22 satellite.

Through its FCC license, the US accepts responsibility under Article VI of the OST for all of Intelsat-22 except the ADF UHF payload. However, the US also stated that it would register Intelsat-22 on its registry pursuant to the Registration Convention. Under Article VIII of

the OST, a State "shall retain jurisdiction and control over" an object carried on its registry.[270] The US, therefore, has jurisdiction over Intelsat-22 and the UHF payload is essentially an Australian telecommunications station erected on US territory.

As discussed in Chapter 2 of this thesis, under Hague(V), Article 3, belligerents are forbidden to "erect on the territory of a neutral Power a wireless telegraphy station or other apparatus for the purpose of communicating with belligerent forces on land or sea"[271]; or if erected, belligerents are forbidden to "use any installation of this kind established by them before the war on the territory of a neutral Power for purely military purposes…"[272]

Further, Article 5 of Hague(V) establishes an obligation that a neutral power must not allow the use of a telecommunications station to occur on its territory.[273] These prohibitions survive post-UN Charter and are applicable to modern telecommunications.[274] Therefore, belligerent States cannot establish on neutral territory, or, if established, cannot continue using military communications facilities and neutrals have a duty to stop such use.[275]

Applying the above law to the case of the ADF hosted payload, the telecommunications station is under US jurisdiction pursuant to Article VIII of the OST. The UHF payload is being used for military communications from a neutral territory by a belligerent to prosecute a war. In so doing, Australia is violating the neutrality of the US. If the US continues to allow the use of the UHF payload, the US is risking being declared a belligerent by State A. If the US would like to maintain its neutrality, the US would need to exercise any control it has over Intelsat-22 to stop the ADF from using the UHF payload.

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[270] *Outer Space Treaty*, *supra* note 2 art VIII.
[271] *Hague (V)*, *supra* note 76 art 3(a).
[272] *Ibid* art 3(b).
[273] *Ibid* art 5.
[274] Bothe, *supra* note 64 at 564.
[275] Preston, *supra* note 98 at 947, 949.

The US could invoke some type of national security clause in regard to its Intelsat-22 license[276] and, if technically feasible, order Intelsat to turn off the UHF payload (if not technically feasible, the US could order Intelsat to de-orbit the satellite).

What the US could not do, is to disclaim responsibility of the one UHF payload from the Intelsat-22 satellite even though it has not licensed and does not provide continuing supervision over that payload. That is, the US cannot continue to claim its neutrality while passively allowing the ADF to use US territory to prosecute its war.

Because the US allowed a foreign State's military to put a communications station on US territory, the US should be held accountable for those actions that happen on its jurisdiction. Under the above scenario, if the US were to allow the ADF to continue to use its UHF payload, the US would risk its neutrality.

2. State A attacks and declares war on Australia

If Australia were attacked by State A and continued to use its hosted payload for military purposes, no State's neutrality is likely to be implicated. The UN Security Council would likely declare State A's actions as acts of aggression.[277] Any mandatory actions that the Security Council imposes to restore peace and security would be to rein in State A. The US could continue to assist Australia through the use of its hosted payload without having its neutrality questioned.

However, even though US neutrality would not be implicated, it may still be in the US interests to stop Australia from using its payload. The mere fact that the US allowed a non-State

[276] Though the FCC regulations regarding national security are not as clear as the NOAA regulations for remote sensing satellites, the FCC maintains authority to forfeit a license "for failure to cooperate in Commission investigations with respect to international coordination." 47 CFR § 25.160, *supra* note 232.
[277] *UN Charter*, *supra* note 103 art 39.

actor to host a foreign State's military's payload could make objects on US territory valid military targets subject to an attack.

During a conflict, the ADF would likely be using its UHF military communications payload to further its military campaign. The US' own definition of a proper military objective (objects that may be the object of attack) includes communications' stations.[278] If the hosted payload makes an effective contribution to Australia's military action and if State A gains a military advantage from attacking the hosted payload, it would be a proper military object.[279]

Therefore, if Australia insists on using the hosted payload, the whole of Intelsat-22 could be attacked.[280]

B. The case of DigitalGlobe:

DigitalGlobe is a commercial remote sensing company that owns and operates a five-satellite constellation.[281] Its satellites can provide 30cm resolution images and among its clients are more than 40 governments.[282] Like all United States remote sensing companies, NOAA licenses DigitalGlobe.[283] After coordinating with several agencies, including the Department of Defense, NOAA allowed DigitalGlobe to sell satellite imagery to a certain resolution, but allowed for better resolution satellite imagery to be sold only to agencies of the US

[278] Preston, *supra* note 98 at 209.
[279] *Ibid* at 208.
[280] This assumes that State A does not have the ability to discriminate between the UHF payload and the rest of the satellite.
[281] DigitalGlobe, Press Release, "Our Company - DigitalGlobe", online: <https://www.digitalglobe.com/about/our-company>.
[282] *Ibid*.
[283] National Oceanographic and Atmospheric Administration, *supra* note 235.

Government.[284] If DigitalGlobe would like to increase the quality of the resolution it sells, it would need to submit an application to NOAA to do so.[285]

The US government is therefore meeting its 'authorization and continuing supervision' obligations for non-State actors as required under Article VI of the OST.[286] It bears international responsibility for DigitalGlobe's actions and appears to be exercising adequate control over its private company through licensing.

Therefore, if DigitalGlobe signed a contract in compliance with its NOAA license with State A to provide daily imagery of State A's northern border with State B, the US Government has already implicitly authorized the contract in granting the license. But what would the implications be to the US if State A were to declare war on State B?

1. US Implications for DigitalGlobe Providing Military Intelligence

State A, by declaring war, would likely be a belligerent under the Law of Neutrality. It would now likely be using the imagery of its northern border to augment its military intelligence, to see troop or vehicle movements of State B. The platform providing the imagery, both DigitalGlobe's satellites and its ground stations in the US, would likely be valid military targets.[287]

If DigitalGlobe felt that it was in their company's best interest to continue to provide imagery to State A knowing that it could risk having its satellites and ground stations targeted by

[284] Gruss, *supra* note 237.
[285] Colin Clark, "DigitalGlobe, Eager for Foreign Biz, Presses NOAA For Quarter Meter Resolution", (23 August 2013), online: *Break Def* <http://breakingdefense.com/2013/08/digitalglobe-hoping-for-foreign-biz-presses-noaa-for-quarter-meter-resolution/>; Andrea Shalal, "DigitalGlobe gains U.S. govt license to sell sharper satellite imagery", *Reuters* (11 June 2014), online: <http://www.reuters.com/article/digitalglobe-imagery-idUSL2N0OR2UX20140611>.
[286] *Outer Space Treaty*, *supra* note 2 art VI.
[287] Bothe, *supra* note 64 at 564.

State B, the US would have two options: 1. Decide to invoke the national security clause of its license with DigitalGlobe to force it to stop providing the images;[288] or 2. Decide to do nothing; which risks the US' neutrality status, conceivably dragging the US into war with State B if State B were to target the satellite constellation or US based ground stations.

Whether the US government chooses to rein in its non-State actor or to allow it to continue to provide images in this scenario, would be just that, a choice. The US has accepted international responsibility for DigitalGlobe's actions. Further, the US exercises control of the images DigitalGlobe sells through its licensing process. The US could therefore weigh the value of having a successful remote sensing company, its relationship with States A and B, and any additional foreign policy/diplomatic considerations; and then make an informed decision.

Regardless of whatever decision the US makes, it, as it should, maintains sole responsibility for its neutrality through its authorization and continuing supervision of its space non-State actor.

A possible problem arises if the US does not make any decision; if it, through inertia or poor oversight just allows the contract for imagery to continue. DigitalGlobe has contracts with 40 governments.[289] The US, though it provides 'continuing supervision', may not go to such detail in that supervision that it knows what the terms are of each contract DigitalGlobe has with foreign governments. If the US were to make no decision because it was unaware of DigitalGlobe's actions, to State B, this could look like the US has decided to allow the contract

[288] 15 CFR Appendix 2 to Part 960, *supra* note 239.
[289] DigitalGlobe, Press Release, *supra* note 280 "In a rapidly changing world, the most innovative companies and more than 40 governments trust DigitalGlobe for mission-critical earth information and imagery."

to continue. State B could then attack the US and DigitalGlobe has now opened the US up to both attack and war.

The plain text of Article VI would hold that the State is accountable when the breach occurred whether or not the State approved of such a breach. Indeed, Cheng asserts that "State responsibility occurs the moment the breach is committed and not when the State is seen to have failed in its duty to prevent, suppress, or repress such a breach."[290]

I assert that this is an untenable result in post-UN Charter law of neutrality. When dealing with the law of neutrality, Article VI of the OST should be read in the context of the purpose of the UN Charter, "to maintain international peace and security."[291] Declaring the US a belligerent or attacking US assets would obviate the purpose of the Charter. As noted in Art 103 of the Charter, "conflict between the obligations of the Members of the United Nations under the present Charter and their obligations under any other international agreement, their obligations under the present Charter shall prevail." The Charter would therefore take precedence over Article VI of the OST. In the present scenario, US assets should not be subject to attack unless it takes some positive action approving or authorizing its non-State actor's actions.

A final wrinkle in the above scenario is what would happen if a non-State actor purposefully acts against the wishes of its licensing State; if DigitalGlobe, contrary to its license and direction from its State, sells data to State A to further State A's war effort. Here, too, Article VI would seem to impute DigitalGlobe's actions to the US even though the US sought to prohibit DigitalGlobe from providing the data. Though not directly on point, Cheng notes that

[290] Cheng, *supra* note 12 at 15.
[291] *UN Charter*, *supra* note 103 art I(1).

even criminal actions by non-governmental actors in outer space would be considered as having been committed by agents of the State and, therefore, attributed to the State.[292]

When dealing with the law of neutrality, because the risk is so egregious and irreversible, a State should have to take some positive step affirming its non-State Actor's actions after the outbreak of war prior to being declared a belligerent so that States are not being dragged into a war on a technicality.

2. Digital Globe's Sale to a Foreign Corporation:

Making the above scenario far more complicated is the fact that, in February 2017, MDA, the Canadian company previously mentioned that owns and operates its own remote sensing satellite, purchased DigitalGlobe.[293] The purchase is contingent upon US government regulatory approval.[294] Under the agreement, DigitalGlobe will remain a stand-alone division under MDA's US operating company, SSL MDA Holdings.[295] Because it will maintain its name, location, and remain a US company, DigitalGlobe's licenses for its five-satellite constellation would likely remain unaffected and be transferred to SSL MDA Holdings by NOAA.[296] The US would remain internationally responsible for DigitalGlobe's space venture through SSL MDA Holdings.

However, the parent corporation, MDA, which will own its US subsidiaries including its five remote sensing satellites, is already a remote sensing corporation that Canada is

[292] Cheng, *supra* note 12 at 18.
[293] Jeff Foust, "MDA to acquire DigitalGlobe", (24 February 2017), online: *SpaceNews.com* <http://spacenews.com/mda-to-acquire-digitalglobe/>; DigitalGlobe, Press Release, *supra* note 5.
[294] Stephen Clark, "Canada's MDA buys DigitalGlobe, reveals next-generation WorldView satellite fleet – Spaceflight Now", (27 February 2017), online: <https://spaceflightnow.com/2017/02/27/canadas-mda-buys-digitalglobe-reveals-next-generation-worldview-satellite-fleet/>.
[295] DigitalGlobe, Press Release, *supra* note 5.
[296] 15 CFR § 960.7, *supra* note 240.

internationally responsible for. Indeed, its RADARSAT-2 satellite was funded by the government of Canada.[297] Once the sale goes through, Canada would likely also be held internationally responsible for the entire satellite constellation run by MDA and its subsidiaries because Canada's non-State actor will own and operate all of the satellites either by itself or through its subsidiaries.

Further muddying the waters, RADARSAT-2 data has already been combined with DigitalGlobe's images to provide militarily valuable intelligence. Specifically, by combining RADARSAT's data with DigitalGlobe's new images, "new military structures and activities could be identified" with a program that compares "historical RADARSAT-2 imagery with new imagery and automatically detect(s) new man-made structures, which appear as bright spots."[298]

a. Implications of Two States Having International Responsibility for One Company

We therefore have two responsible international space faring nations; both of whom accept their Article VI of the OST responsibilities for their non-State actors. The US will likely retain responsibility for the data from the five original DigitalGlobe satellites because the resultant corporation running the DigitalGlobe constellation will be a US corporation. Even if the resultant corporation were not based in the US, the US regulatory approval process required prior to the sale going through would ensure that US laws and policies are abided by.

[297] Bourbonniere, Haeck & Nadeau, *supra* note 199.
[298] DigitalGlobe, Press Release, "DigitalGlobe Makes MDA's RADARSAT-2 Data Available on the GBDX Platform to Power Multi-source Analytic Applications at Scale", (5 June 2017), online: <http://investor.digitalglobe.com/phoenix.zhtml?c=70788&p=irol-newsArticle&ID=2278724>.

As nothing is changing with RADARSAT, Canada will retain responsibility for its RADARSAT-2 data. So the question as it pertains to the law of neutrality is, what happens if the US and Canada disagree as to what images can/should be sold during a time of conflict?

What if Canada does not believe that MDA should provide higher resolution images to US Agencies than Canadian Agencies? What if Canada believes that MDA should be allowed to both collect and disseminate high resolution satellite imagery of Israel and Israeli occupied territories even though that runs counter to US law?[299] What if Canada, in asserting its responsibility for its non-State actors, does as the Netherlands did in 2003 when its non-State actor acquired two in-orbit satellites; namely, give notice to the United Nations accepting international responsibility for the satellites even though it was not the launching state for purposes of the Registration and Liability conventions?[300]

The above scenarios may involve diplomatic conferences and high-level meetings between the two States to resolve. However, what if the above State A/State B scenario were to occur with the new corporation?

If MDA had a contract with State A to provide high-resolution imagery of some part of its land every 12 hours, including images that combined data from the DigitalGlobe satellites with RADARSAT-2 data allowing new military structures to be seen,[301] it would now be done pursuant to both US and Canadian licensing and both the US and Canada would have international responsibility for the non-State actor.

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[299] *National Defense Authorization Act, 1997*, Pub L No 104-201 (1997) [*Kyl-Bingaman Amendment*].
[300] Committee on the Peaceful Uses of Outer Space, *supra* note 52.
[301] DigitalGlobe, Press Release, *supra* note 297.

If State A thereafter declares war on State B, both State A and State B would be considered belligerents pursuant to the law of neutrality. If MDA continued to provide imagery to State A, both the US and Canada's neutrality could be at risk.

The analysis for the US and its neutrality is the same as it is above. The US is still exercising appropriate control over its non-State actor, now MDA's subsidiary corporation that is located in the US. If the US did not want its neutrality implicated, it could invoke the national security clause of its license and force the company to stop selling imagery to a belligerent.

However, what if Canada, after the outbreak of war, wanted MDA to stop providing images to State A, but the US had no objection to the continued sale of images? MDA, being a for-profit company with responsibilities to its shareholders and a vested interest in making as much money as it can, decides to continue to sell its images. What could Canada do and what are the implications for its neutrality?

First, Canada could require RADARSAT-2 data be stripped from any images sold to State A pursuant to its licensing agreement.[302] In so doing, the Canadian ground stations that run the RADARSAT-2 satellite would not be valid military targets.[303] However, MDA, the Canadian company, would still be providing militarily useful intelligence to a belligerent.

b. Possible Interpretations of Article VI of the OST

Three possible interpretations of Article VI of the OST would then be available: a broad interpretation that holds Canada and the US responsible; a moderate interpretation that would

[302] Government of Canada, News Release, "Government of Canada issues operating licence for RADARSAT-2 - Canada.ca", (16 November 2007), online: <https://www.canada.ca/en/news/archive/2007/11/government-canada-issues-operating-licence-radarsat-2.html?=undefined&wbdisable=true>.
[303] Government of Canada, *supra* note 199.

only hold the US responsible, and a narrow interpretation that would not hold any State responsible.

i. Broad interpretation

A broad interpretation would look at the plain language of Article VI of the OST. Such an interpretation could lead to the problematic result of Canada being held internationally responsible for its non-State actor's actions over which it has no control.

The first line of Article VI notes that States bear "international responsibility for national activities in outer space… whether such activities are carried on by governmental agencies or their non-governmental entities…"[304] There is no obviating from this responsibility. States are responsible for their private commercial operators[305] and MDA is a Canadian non-governmental entity. Canada would therefore have international responsibility for MDA, its subsidiaries, and its subsidiaries' satellite constellation even if Canada did not license the constellation.

In such a scenario, Canada may argue that it is not responsible because it does not license the DigitalGlobe satellites as they were launched prior to MDA's acquisition of DigitalGlobe. Canada could also argue that they were not the launching state under the Liability and Registration Conventions and that they do not have jurisdiction under Article VIII of the OST. Canada could bolster its claim if it did not report to the United Nations that it accepted responsibility for the constellation after its non-State actor acquired the in -orbit constellation.

In short, Canada would be arguing either that the DigitalGlobe constellation and resultant images do not constitute Canadian 'national activities' under the first sentence of Article VI of

[304] *Outer Space Treaty*, *supra* note 2 art VI.
[305] Lyall & Larsen, *supra* note 20 at 470.

the OST or Canada could be arguing that, based on the second sentence of Article VI, Canada is either not the "appropriate State" or that the US is a more "appropriate State." The second sentence states that the "activities of non-governmental entities in outer space… shall require authorization and continuing supervision by the appropriate State party."[306] Canada, by noting that the US continues to license the five-satellite constellation, would be arguing that the US is the de facto "appropriate State" for the "authorization and continuing supervision" of the constellation.

Under this broad interpretation of Article VI, these arguments fall flat. Either Canada is responsible for MDA, and all of its space activities, or it is not. If Canada were to attempt to parse out different sections of MDA's business and say that it is only responsible for that part of the business that it authorized (licensed) pursuant to the second sentence of Article VI, the plain language of Article VI would be ignored.

As it stands, and as most scholars agree, the whole point of this Article VI provision is to have a State answerable for the space activities of its nationals. Manfred Lachs noted that "States are under obligation to take appropriate steps to ensure that their natural and juridical persons engaged in outer space activity conduct it in accordance with international law."[307]

If MDA, through a subsidiary, wholly owns and operates a satellite constellation, Canada is responsible even if it is unable to exercise control over a portion of MDA's subsidiary.

[306] *Outer Space Treaty*, *supra* note 2 art VI.
[307] Lachs, *supra* note 11 at 114.

Such a reading, though technically accurate, leads to the result that Canada could lose its neutrality in a war and be subject to attack because of the uncontrollable actions of a non-State actor. This result is not tenable as a matter of international law.

Canada could be dragged into a war by one of its non-State actors; a war that, it not only did not want to enter, but one that it had attempted to stop from entering by stopping its non-State actor from selling imagery.

Under such an interpretation, it would appear that Canada, with its non-State actor acquiring an in-orbit constellation, gains all of the international responsibility without gaining any of the space benefits. Canada bears international responsibility for a satellite constellation over which it has no control. Canada cannot force its non-State actor to sell it the best quality imagery because its US license precludes such a sale. Canada cannot limit the imagery its non-State actor sells to foreign governments, even if Canada's foreign policy would dictate such a limitation. Ultimately, Canada could be dragged into a war, with no ability to stop its non-State actor.

ii. Moderate Interpretation

A moderate interpretation of Article VI would limit the meaning of the term "national activities" in the first sentence of Article VI to those activities over which a State has conceivable operational control. Likewise, the term "appropriate State" would also be limited to the State that does the actual licensing and supervision.

Under this interpretation, Canada's arguments would find footing. Its inability to control the DigitalGlobe constellation would be evidence that it is not the most appropriate state to be held internationally responsible. Its inability to tell its corporation to stop providing imagery to

State A should not lead to its neutrality being questioned. For this scenario, this moderate interpretation would lead to a more equitable result.

Though it would keep Canada from being pulled into a war, this interpretation could also be problematic in that it allows States to disclaim the actions of their non-State actors in space and it incentivizes not accepting responsibility for non-State actors who acquire in-orbit satellite constellations.

For example, in the present case, Canada would get to disclaim the actions of MDA because MDA chose to establish a subsidiary in the US to operate the satellite constellation even though Canada was aware of MDA's intentions at the time of the sale. Though this makes business sense (as the US Government is DigitalGlobe's biggest customer) this type of action could allow States to encourage their non-State actors to go "appropriate state" forum shopping. In this instance, States like Canada would get to reap the tax benefits of having a multi-national space company headquartered in their territory by allowing their corporations to incorporate subsidiaries the world over; a benefit to the corporations as they would be incentivized to set up subsidiary satellite corporations in States that have the least amount of business restrictions.

A further question this moderate interpretation raises is how long does Canada get to disclaim responsibility for a Canadian corporation that exercises ultimate control of a satellite constellation? When the next satellite in the constellation is launched (the oldest one, WorldView-1, has been in-orbit nearly ten years)[308] will the Canadian corporation get to decide if the US or Canada is internationally responsible based on which subsidiary it chooses will own the satellite? If it chooses the US, does Canada get the tax revenue generated form a multi-

[308] Digital Globe, Press Release, "Satellite Information - DigitalGlobe", (3 June 2013), online: <https://www.digitalglobe.com/resources/satellite-information>.

billion dollar corporation while accepting none of the responsibility? What if the corporation were to find an even better business environment in a third State? Does Canada have no international responsibility under the moderate interpretation of Article VI?

iii. Narrow Interpretation

A narrow interpretation would go against the text of Article VI to reach the conclusion that neither the US nor Canada is responsible for its non-State actor. Although Article VI states that "States… bear international responsibility for national activities in outer space whether such activities are carried on by governmental or non-governmental entities",[309] a narrow interpretation claims that because the Outer Space Treaty "does not say all activities require oversight". It also does not say which activities must be regulated. States are therefore free to choose which activities to regulate and not regulate.[310]

The narrow interpretation indicates that States' international obligations for non-State actors in space are not created unless and until they choose to regulate their non-State actors. Laura Montgomery, a former manager of the Space Law Branch in the Federal Aviation Administration's Office of the Chief Counsel and now a sole practitioner,[311] espoused this interpretation in recent congressional testimony.[312]

In the same testimony, she questioned, counter to the plain language of the Outer Space Treaty, whether non-State actors must abide by all of the Outer Space Treaty's provisions.[313] While this interpretation conflicts with the Vienna Convention on the Law of Treaties notion that

[309] *Outer Space Treaty*, *supra* note 2 art VI.
[310] Laura Montgomery, *Regulating Space: Innovation, Liberty, and International Obligations: Hearing Before the H. Committee on Science, Space, and Technology, Subcommittee on Space* (2017).
[311] Laura Montgomery, *Witness Biography presented at Regulating Space: Innovation, Liberty, and International Obligations: Hearing Before the H. Committee on Science, Space, and Technology, Subcommittee on Space* (2017).
[312] Montgomery, *supra* note 309.
[313] *Ibid* at 13.

a "treaty be interpreted in good faith in accordance with the ordinary meaning given to the terms…"[314] and may in fact be a detriment to US national security interests,[315] an analysis of the MDA/DigitalGlobe case above also shows the shortcomings of this interpretation.

As it stands, the United States could still be held liable if MDA/DigitalGlobe assists State A under this narrow interpretation because it has chosen to regulate remote sensing space activities.[316] Canada, too, has opened itself up to international responsibility under this interpretation because it passed the Remote Sensing Space Systems Act (RSSA) noting that "no person shall operate a remote sensing space system in any manner, directly or indirectly, except under the authority of a licence."[317] Further, the license requirement applies to actions of Canadian citizens and Canadian corporations even if they were acting outside of Canada.[318] Thus, both States could have their neutrality implicated because they voluntarily undertook to license and provide continuing supervision of their remote sensing non-State actors.

However, either State, at any time, could decide to rescind their remote sensing legislation. If they were to do so, they would no longer have any international responsibility under Article VI of the Outer Space Treaty. Such an interpretation would mean that Article VI does not impose any international obligations at all.[319]

If both States were to rescind their legislation, no State would be responsible for either DigitalGlobe or MDA nor would any State provide the required "authorization and continuing

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[314] *Vienna Convention on the Law of Treaties*, 23 May 1969, 1155 UNTS 331 [*Vienna Convention on the Law of Treaties*] art 31(1).
[315] John Goehring, "Properly Speaking, The United States Does Have an International Obligation to Authorize and Supervise Commercial Space Activity" (2017) Vol. 45, no. 2 Air Force Law Rev (Forthcoming) at 24.
[316] *Land Remote Sensing Policy Act of 1992*, *supra* note 190.
[317] *Remote Sensing Space Systems Act*, SC 2005, C 45.
[318] *Ibid*.
[319] Goehring, *supra* note 314 at 2.

supervision". This narrow interpretation goes against the intent of Article VI and would allow non-State actors to help belligerents without implicating a State's neutrality.

iv. Preferred interpretation

I advocate for a moderate interpretation of the Outer Space Treaty when dealing with the law of neutrality.

Post United Nations, all State actions must be performed in the context of Article 1 of the UN Charter which outlines the purposes of the UN. Notably, the first purpose is "to maintain international peace and security, and to that end: to take effective collective measures for the prevention and removal of threats to the peace…"[320] In short, war is different from all other State actions and responsibilities and States must act in such a way to stop wars from starting or, if started, to stop them from expanding.

The moderate interpretation of Article VI, though somewhat counter to the plain language of the Outer Space Treaty, allows for limited war and does not drag a State into war who has no ability to stop its non-State actor. This interpretation is particularly pertinent in regard to the example above, when satellites are launched pursuant to a licensing agreement from one State and then sold to a corporation from another State. When read in the context of the law of neutrality and the UN Charter, the Article VI term "national activities" should only encompass responsibility for those activities the State has a possibility of regulating and controlling.

The process of transferring in-orbit satellites could add clarity and support this interpretation. When a corporation with in-orbit space assets is sold, it, like in the case of DigitalGlobe, will be done pursuant to regulatory requirements of its licensing State. That State could make the sale contingent upon the requirement that the foreign State accept international

[320] *UN Charter*, *supra* note 103 art I (1).

responsibility for the space activities prior to allowing the sale to go through,[321] or, in the alternative, noting that the licensing State will continue to authorize and provide continuing supervision over the in-orbit satellites.

This idea of States being responsible for their nationals' activity vis a vis the law of neutrality was not envisioned when the Outer Space Treaty was signed and is difficult to implement in 21st century space endeavors. Today, multi-national public corporations can have investors the world over. Such an interpretation could lead to not only Canada being held responsible as MDA is a Canadian corporation, but other States as well. If there were MDA board members from India and China who voted to purchase DigitalGlobe or helped decide what types of satellites that MDA would launch, China and India would be responsible for their actions and, in the above example, could also be at risk of losing their neutrality.

Second, third, and fourth States should not risk attack and be labeled belligerents because their nationals are part of a multi-national space corporation at a time of conflict. Rather, the responsible State should be the State capable of making the decisions that plunge it into war.

C. Conclusion:

Because war is different, there should be a higher level Article VI responsibility standard prior to a State's neutrality being implicated. Though States remain responsible for their non-State actors' actions in space, when war erupts and States party to the conflict use space assets of other States, the other States should make an affirmative declaration that they approve of and accept the neutrality implications of their non-State actors continued support of a State at war prior to their neutrality being implicated.

[321] Michael Gerhard, "Transfer of Operation and Control with Respect to Space Objects - Problems of Responsibility and Liability of States / Ubertragung von Betrieb und Kontrolle von Weltraumgegenstanden - Probleme von Staatsverantwortlichkeit und Haftung / Le Transfer de l'Operation et du Controle des Objects Spatiaux - Problemes de la Responsabilite des Etats" (2002) 51 Z Luft- Weltraumrecht - Ger J Air Space Law 571 at 574–5.

Conclusion

Non-State space actors are more numerous and more complex than they have ever been. Foreign hosted payloads and the sale of non-State space actors to foreign States were not envisioned at the time of the signing and ratification of the space treaties.[322] These events have occurred recently and will almost certainly continue to occur.

During the time it took me to write this thesis, Intelsat both began merger talks with a startup space corporation, OneWeb,[323] and the merger subsequently fell through.[324] Ultimately, I did not include an analysis of the law of neutrality implications of this merger as OneWeb is based in the US[325] and, even if it were not, the analysis would have been similar to the Canada/US analysis with DigitalGlobe. I note it here as yet another example of how quickly space non-State actors are evolving and responding to market pressures.

The plain text of Article VI would indicate that States bear international responsibility as soon as a non-State actor acts, even if it implicates that State's neutrality. A better interpretation when issues of war are implicated, is that States must affirmatively approve of its non-State actor's actions prior to the State's neutrality being implicated. War is different. States should not be dragged into war on a technicality.

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[322] Lyall & Larsen, *supra* note 20 at 471.
[323] Caleb Henry, "Intelsat's stock soars on report of OneWeb merger", (27 February 2017), online: *SpaceNews.com* <http://spacenews.com/intelsats-stock-up-sharply-on-report-of-possible-oneweb-merger/>.
[324] Caleb Henry, "OneWeb says no steam lost despite Intelsat merger unravelling", (1 June 2017), online: *SpaceNews.com* <http://spacenews.com/oneweb-says-no-steam-lost-despite-intelsat-merger-unravelling/>.
[325] Even though OneWeb is based in the US, its biggest investor is the Japanes conglomerate Softbank. Reuters, "UPDATE 1-SoftBank to invest $1 billion in U.S. venture OneWeb as part of $50 billion pledge", online: *Bus Insid* <http://www.businessinsider.com/r-update-1-softbank-to-invest-1-billion-in-us-venture-oneweb-as-part-of-50-billion-pledge-2016-12>; "OneWeb LLC: Private Company Information - Bloomberg", online: <https://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=282689076>.

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