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A Litigator's Guide to the Galaxy: A Look at the Pragmatic Questions for Adjudicating Future Outer Space Disputes

Michael J. Listner

Joshua T. Smith

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A Litigator's Guide to the Galaxy: A Look at the Pragmatic Questions for Adjudicating Future Outer Space Disputes

Michael J. Listner* & Joshua T. Smith**

ABSTRACT

Since the beginnings of the space age, outer space activities have been the realm of government with ancillary involvement by non-governmental actors. The international legal framework for outer space contemplated the involvement of non-governmental actors, but in creating dispute resolution mechanisms the role of non-governmental entities was not considered ripe. The surge of direct non-governmental involvement in outer space activities in recent years again raises the issue of dispute resolution and exemplifies the lack of dispute resolution mechanisms designed to address differences between sovereign states. As the pace of non-governmental activity increases, so does the likelihood of disputes arising between non-governmental actors and therefore the need for a forum to address grievances. The US federal court system stands as a judicial institution that is capable of addressing the future needs of non-governmental litigants whose disputes reach into the sovereign-less regions of outer space.

* JD, 2001, Regent University School of Law; BS, Computer Information Systems, 1998, Franklin Pierce University. The author has been licensed to practice law in the state of New Hampshire since 2003, with a local focus on litigation matters, including motions and appellate law. The author is also a noted authority on matters involving outer space law and policy and national security and is the founder and principal of the consulting firm Space Law and Policy Solutions and the space law and policy briefing letter, *The Précis*. You may reach the author at michael@spacelawsolutions.com.

** JD, 2017, SMU Dedman School of Law; BA, Magna Cum Laude Political Science: Pre-Law and BA, Magna Cum Laude Communication: Public Relations, 2014, Virginia Tech. The author is currently licensed to practice law in Texas, with a practice area focused on business transactions, including entity formation, corporate compliance, corporate restructuring and M&A, employment, and intellectual property law. The author has been a panelist for the ABA Forum on Air and Space Law, discussing matters such as legal barriers to orbital debris mitigation. You may reach the author at smithjt@smu.edu.

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I. INTRODUCTION

The outer space environment and the activities that occur within it were historically dominated by national security and civil space activities. These two actors, which operate within the framework of international agreements, have dominated outer space for over fifty years with activities ranging from remote sensing to crewed spaceflight. However, the international framework for outer space activities also includes non-governmental entities that participate in outer space but remain subject to the authorization, supervision, and continuing jurisdiction of the non-governmental entity's host state.

The right of states to permit non-governmental entities to perform space activities imbued by international law has opened a new arena of outer space activities, which makes non-governmental entities the third participant in a triad of outer space actors.¹ In other words, non-governmental space activities are quickly becoming a significant part of outer space activities, and as a result, legal considerations are moving from academic theory to pragmatic fact. An example of this is the idea of non-governmental entities harvesting and possessing space resources and the legal questions of priority rights for these resources.² The increasing role of non-governmental entities in outer space activities incites debate over how and to what extent regulation is needed. It also raises questions about how disputes between actors will be resolved. Part I briefly discusses the current dispute paradigm that exists within the international community for outer space-related matters. In Part II, this Article delves into a dissertation of how the US federal court system can be employed to adjudicate disputes. This

1. See J.I. Gabrynowicz, *The "Province" and "Heritage" of Mankind Reconsidered: A New Beginning*, NASA CONF. PUBL'N, Apr. 5-7, 1988, at 691, 694. The view that the Outer Space Treaty permits commercial space activities by non-governmental entities was further developed when the United States adopted the policy position of the "province of all mankind" in Article I of the Outer Space Treaty, and this view is compatible with conducting and developing free enterprise and the rights of nations to determine how they share the benefits and results of their space activities. See *id.*; see also Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies art. I., *adopted* Dec. 19, 1966, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

2. The right of non-governmental entities to harvest, possess, and convert space resources is codified in the United States Code in Title 51, Chapter 513. Subsequently, the Duchy of Luxembourg and the United Arab Emirates have adopted laws similar to the one found in Title 51, Chapter 513. See *UAE Space Agency Signs MoU with Luxembourg*, ARABIAN AEROSPACE ONLINE NEWS SERV. (Oct. 11, 2017), <https://www.arabianaerospace.aero/uae-space-agency-signs-mou-with-luxembourg.html> [<https://perma.cc/PDF9-MAF8>].

Article also presents a road map for litigators in accordance with the Federal Rules of Civil Procedure. Finally, Part III offers hypotheticals to illustrate scenarios that could present themselves in future litigations. This Article does not claim to anticipate how all disputes will play out in US federal courts or how judgments will be enforced, but instead provides a baseline for litigators to introduce and adjudicate outer space-related matters into US federal courts.

II. THE FRAMEWORK OF SPACE LAW AND NON-GOVERNMENTAL ACTORS

Litigators are in the division of lawyers that infrequently interface with space law as the nature of space law has been for the most part decidedly international and the legal arena of states. However, the advent of non-governmental actors in outer space portends the need for the skills of litigators, which requires a fundamental understanding of this discipline and how it interacts with the other fields of law. Therefore, a discussion of dispute resolution for matters in outer space must begin with the definition of space law. A deep dive into this topic is outside the scope of this Article, but for the sake of foundation, space law is a field of law dealing with activities outside the Earth's atmosphere.³

Space law is often compared to maritime and aviation law.⁴ The fundamentals of space law were established by the Legal Subcommittee of the United Nations Committee for the Peaceful Uses of Outer Space (UNCOPUOS) and framed in the Declaration of Principles Governing the Activities of States in the Exploration and Use of Outer Space.⁵ These principles prohibit the national appropriation of outer space and celestial bodies, declare equal rights for all states to freely use outer space throughout its continuity, allow states to freely conduct scientific investigations of outer space, preserve states' sovereign rights over space objects they launch, and facilitate collaboration between states to render assistance to crews of spaceships in emergency situations.⁶

These principles became the foundation of the four major space law treaties: the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and

3. See generally Michael J. Listner, *The Ownership and Exploitation of Outer Space: A Look at Foundational Law and Future Legal Challenges to Current Claims*, 1 REGENT J. INT'L L. 75, 76 (2003) (discussing in depth the treaties encompassing space law).

4. *Id.*

5. *Id.*; see also G.A. Res. 1962 (XVIII), Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space (Dec. 13, 1963).

6. Listner, *supra* note 3, at 76-77 (citing I.H. PH. DIEDERIKS-VERSCHOOR, AN INTRODUCTION TO SPACE LAW 1 (Kluwer L. Int'l 2d rev. ed. 1999) (1993)).

Other Celestial Bodies (Outer Space Treaty),⁷ the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Space Objects Launched into Outer Space (Rescue Agreement),⁸ the Convention on International Liability for Damage Caused by Space Objects (Liability Convention),⁹ and the Convention of Registration of Objects Launched into Outer Space (Registration Convention).¹⁰ Each will be dealt with briefly in the sections below.¹¹

The Outer Space Treaty is currently one, if not the only, major international vehicle for governing outer space acts, and its articles are the basis for many of the other outer space-related treatises created since its inception. The Outer Space Treaty treats outer space as a *res communis* by not allowing ownership of Earth's orbit or the physical celestial bodies, such as the Moon.¹² While states may not have the ability to appropriate celestial bodies, they do retain perpetual ownership of and jurisdiction over the items they launch into space (and orbit).¹³ This includes both functional and defunct satellites launched by that state, and vehicles for the purpose of mining space resources. Complicating this picture is the fact that Articles VI and VIII of the Outer Space Treaty pertain to launching states, which are not necessarily the owners of launched spacecraft.¹⁴ After all, the launching

7. See Outer Space Treaty, *supra* note 1, at pmb1. Ratified in 1967, the Outer Space Treaty was the first international space law treaty. See U.N. OFF. FOR OUTER SPACE AFFS., UNITED NATIONS TREATIES AND PRINCIPLES ON OUTER SPACE, at v, U.N. Doc. ST/SPACE/11/Rev.2, U.N. Sales No. E.08.I.10 (2008).

8. See G.A. Res. 2345 (XXII), annex, Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (Dec. 19, 1967) [hereinafter Rescue Agreement] (outlining the duties of states towards the rescue and return of astronauts).

9. See G.A. Res. 2777 (XXVI), annex, Convention on International Liability for Damage Caused by Space Objects (Nov. 29, 1971) [hereinafter Liability Convention] (imposing a strict liability standard for damage caused by space objects).

10. See G.A. Res. 3235 (XXIX), annex, Convention on Registration of Objects Launched into Outer Space (Nov. 12, 1974) [hereinafter Registration Convention] (requiring members to register a list of all spacecraft launched and the nature of the spacecraft with the UN Secretary General).

11. There are five space law treaties, with the fifth being the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies; however, this treaty has limited participation, with only eighteen states legally committing to it. See G.A. Res. 34/68, annex, Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Dec. 5, 1979) [hereinafter Moon Agreement] (governing the use of the moon and other celestial bodies).

12. See Outer Space Treaty, *supra* note 1, at art. II; see also P.P.C. HAANAPPEL, THE LAW AND POLICY OF AIR SPACE AND OUTER SPACE: A COMPARATIVE APPROACH 11 n.60 (2003) (defining *res communis* as "a thing belonging to all that cannot be appropriated, such as the air itself").

13. See Outer Space Treaty, *supra* note 1, at art. VIII (establishing the principle that the state "on whose registry an object launched into outer space is carried shall retain jurisdiction and control" of the objects and personnel while both in outer space and on a celestial body).

14. See Al Anzaldúa & Dave Dunlop, *Overcoming Non-Technical Challenges to Cleaning Up Orbital Debris*, THE SPACE REV. (Nov. 9, 2015), <http://www.thespacereview.com/article/2863/2>

state(s) for a rocket and its payload include the country owning the satellite at the time of launch, the country owning the rocket at that time, or the country from where the rocket was launched.¹⁵ This means that any commercially launched vehicle will be required to register its launch with the launching state under Article VI of the Outer Space Treaty, and that the launching state will have responsibility over that commercially launched vehicle under Article VIII of the Outer Space Treaty. Moreover, selling and changing the registration of a space object does not transfer launching state liabilities to the new owner or registrant.¹⁶ No matter the owner, Articles VI and VIII place full responsibility for supervision, jurisdiction, and control of space objects on the launching state(s) with which the object is registered.¹⁷

Similar to Article V of the Outer Space Treaty, the Rescue Agreement “calls for the rendering of all possible assistance to astronauts in the event of accident, distress or emergency landing, the prompt and safe return of astronauts, and the return of objects launched into outer space.”¹⁸ The Liability Convention expands upon the principles of liability for damage caused by a state’s space object seen in Article VII of the Outer Space Treaty.¹⁹ The Liability Convention defines “damages” as “the loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or property of international intergovernmental organizations.”²⁰ The convention deals with two scenarios where damage could be caused by a space object.²¹ The Registration Convention expanded the scope of the United Nations Register of Objects Launched into Outer Space established by resolution 1721B (XVI).²² While this register was originally used as a means to facilitate the peaceful uses of outer space, the Registration Convention changed its purpose to aiding in identifying which states

[<https://perma.cc/E29V-79ZL>]. For example, SpaceX owns its rockets, but because it registers its launches with the United States, the United States will have jurisdiction. *See id.*

15. *See id.*

16. *See id.*

17. *See id.*

18. Rescue Agreement, *supra* note 8, at pmb1.

19. *See* Liability Convention, *supra* note 9, at pmb1.

20. *Id.* at art. I(a).

21. The first scenario, as seen in Article II, makes a launching state “absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth or to aircraft in flight.” The second scenario, as seen in Article III, makes a launching state liable to pay compensation for “damage . . . caused elsewhere than on the surface of the Earth,” such as another state’s space object in orbit or on a celestial body. *Id.* at art. II, III.

22. *See* Registration Convention, *supra* note 10, at pmb1.; *see also* G.A. Res. 1721 (XVI) B, International Co-operation in the Peaceful Uses of Outer Space (Dec. 20, 1961).

bear international responsibility and liability for space objects.²³ States are required to establish national registries that provide information on their outer space objects for the Secretary-General to include in the United Nations' register.²⁴

Together, these four treaties have become the scaffold of international space law through which sovereign states develop their own congruent domestic space laws.²⁵ Through these domestic space laws, states perform activities through civil space programs and national security programs. However, the framework of international space through enacted domestic space laws also creates an allowance for non-governmental entities to perform outer space activities.²⁶ It is these activities and others that will occur with greater frequency in the future that raise the potential for disputes and henceforth require a forum to adjudicate those differences.

III. CURRENT DISPUTE RESOLUTION PARADIGM

The current approach to adjudicating disputes relating to outer space involves two realms: international and domestic federal courts. The international realm consists of mechanisms created by treaties, including quasi-judicial bodies. The other means of dispute resolution is found in the domestic federal courts that find their authority in the existing subject matter jurisdiction of the courts.

A. International Dispute Resolution

The international aspect of the outer space legal framework lends itself to several dispute mechanisms. However, the nature of these mechanisms inherently limits the right (and power) to bring an outer space dispute to states only.²⁷ Strictly speaking, these legal devices do not apply to non-governmental entities. Three of the

23. See Registration Convention, *supra* note 10, at pmb1.; *Space Object Register*, U.N. OFF. FOR OUTER SPACE AFFS., <http://www.unoosa.org/oosa/en/spaceobjectregister/index.html> [<https://perma.cc/U4FR-GC7P>] (last updated Sept. 24, 2020).

24. *Space Object Register*, *supra* note 23; see Registration Convention, *supra* note 10, at art. II, ¶ 3.

25. See, e.g., *infra* note 185; *Loi du 20 juillet 2017 sur l'exploration et l'utilisation des ressources de l'espace*, LUX. SPACE AGENCY (July 20, 2017), https://space-agency.public.lu/en/agency/legal-framework/law_space_resources_english_translation.html [<https://perma.cc/R5MM-49NZ>].

26. See Moon Agreement, *supra* note 11, at art. VI; Outer Space Treaty, *supra* note 1, at art. VIII.

27. See Michael J. Listner, *Advancing the Jurisdiction of the US Federal Court System to Address Disputes Between Private Space Actors*, THE SPACE REV. (July 22, 2019), <https://www.thespacereview.com/article/3760/1> [<https://perma.cc/X438-JGNX>].

prominent methods of international dispute resolution include (1) the Claims Commission, (2) the Permanent Court of Arbitration, and (3) the International Court of Justice.

1. The Claims Commission

The Liability Convention is a treaty that emphasizes Article VII of the Outer Space Treaty.²⁸ The Liability Convention contains a dispute resolution mechanism, which is unique to the body of outer space law, called the Claims Commission. The Claims Commission is a last-ditch attempt for two or more states who have a dispute over liability arising out of damage caused by a space object that has otherwise faced a diplomatic impasse.²⁹ The Commission can be formed upon the request of either party, and it consists of three members: one appointed by the claimant state, one appointed by the state that launched the space object (the launching state),³⁰ and the third member, the Chairman, who is chosen by both parties jointly.³¹ If requested, the Claims Commission is tasked with deciding the merits of a claim for compensation, including whether compensation is due and, if so, in what amount.³² The Claims Commission has never been invoked; however, if it is invoked, it will only apply to disputes between states, as non-governmental entities cannot find relief under the Liability Convention or the Claims Commission. The Liability Convention has only been invoked once and was practically ignored during the incident involving the nuclear-powered Soviet Radar Ocean Reconnaissance satellite (RORSAT) Cosmos 954.³³ This incident and the nature of the Claims Commission being restricted to states portend that the Claims Commission will likely never be invoked and make this avenue for dispute resolution for non-governmental actors untenable.

2. The Permanent Court of Arbitration

The Optional Rules for Arbitration of Disputes Relating to Outer Space Activities (the Rules) were promulgated by the Permanent Court

28. Compare Outer Space Treaty, *supra* note 1, at art. VII, with Liability Convention, *supra* note 9, at art. II.

29. See Liability Convention, *supra* note 9, at art. XIV.

30. "The term 'launching State' means: A State which launches or procures the launching of a space object; A State from whose territory or facility a space object is launched." *Id.* at art. I(c).

31. *Id.* at art. XV(1).

32. See *id.* at art. XVIII.

33. See generally Alexander F. Cohen, *Cosmos 954 and the International Law of Satellite Accidents*, 10 YALE J. INT'L L. 78, 78 n.3 (1984). For a discussion of Cosmos 954 and the role of the Liability Convention, see *id.* at 79.

of Arbitration (PCA) in 2011.³⁴ The PCA is enunciated in the Convention (I) for the Pacific Settlement of International Disputes (HAGUE I) (29 July 1899) in Articles 20 to 29. Arbitral procedure for the PCA is found in Articles 30 to 57.³⁵ The purpose of the PCA is to create an arena in which international disputes can be arbitrated immediately.³⁶ Arbitrators are called to hear the matter and resolve differences, creating a Tribunal. The Arbiters are chosen from members of the PCA.³⁷ The Rules are an extension of those found in Chapter III of the Convention and symbolize the PCA's recognition of the need for specialized arbitration rules for matters relating to the intricacies of outer space. The Rules recognize that the scope of outer space activities involves not only the potential for disputes among states but also disputes among non-governmental parties whose activities occur wholly or partially in outer space. Thus, non-governmental entities could utilize the PCA for dispute resolution when the other party is a citizen of another state. Whether the binding nature of a ruling by the PCA can be enforced is salient. It is one thing to receive an arbitral award but another to convince a party to abide by the decision and whether the decision can be enforced, especially if a member of the UN Security Council vetoes the arbitral award.³⁸ This is further complicated by states' inherent power under the Outer Space Treaty, which potentially shelters non-governmental entities from adverse rulings as part of a larger policy to protect states' own national interests.³⁹ As of this writing, the Rules have yet to be tested, which brings into question their efficacy for non-governmental space actors.

3. International Court of Justice

Another mechanism for potentially resolving future disputes between private space actors from differing states is the International

34. See Michael J. Listner, *A New Paradigm for Arbitrating Disputes in Outer Space*, THE SPACE REV. (Jan. 9, 2012), <https://www.thespacereview.com/article/2002/1> [<https://perma.cc/JQ7U-HMR2>] (discussing the PCA Optional Rules); see also *Optional Rules for Arbitration of Disputes Relating to Outer Space Activities*, PERMANENT CT. OF ARBITRATION (Dec. 6, 2011), <https://pca-epa.org/wp-content/uploads/sites/6/2016/01/Permanent-Court-of-Arbitration-Optional-Rules-for-Arbitration-of-Disputes-Relating-to-Outer-Space-Activities.pdf> [<https://perma.cc/T6XS-JFYS>].

35. See 1907 Convention for the Pacific Settlement of International Disputes art. 30–57, enacted Oct. 18, 1907, 36 Stat. 2199; T.S. 536.

36. See *id.* at pmb1.

37. See *id.* at art. 44.

38. The mandate for the UN Security Council is found in Chapter V of the United Nations Charter. The primary function of the Security Council is to maintain international peace and security. See U.N. Charter art. 23, ¶ 1.

39. See Outer Space Treaty, *supra* note 1, at art. VI, VIII.

Court of Justice (ICJ). The ICJ is a judicial body of the United Nations that receives its mandate from Chapter XIV of the United Nations Charter.⁴⁰ Similar to the Claims Commission articulated in the Liability Convention, the ICJ's jurisdiction is for disputes between states. In theory, the ICJ could consider disputes between non-governmental space actors from different states through Articles VI and VIII of the Outer Space Treaty. In other words, a dispute between two non-governmental actors from different states would implicate their sponsoring states, which must authorize and supervise the outer space activities of non-governmental actors and retain jurisdiction. This would make the dispute between states and therefore within the jurisdiction of the ICJ.⁴¹ Uncertain jurisdictional questions aside, one shortcoming of using the ICJ to resolve a dispute between non-governmental actors through their sponsoring states is the probability that the court would leverage geopolitical animus to a party's detriment. ICJ rulings cannot be appealed. Moreover, an attempt by the UN Security Council to enforce a judgment could be stymied by a Security Council member that is also a party to the dispute.⁴² As part of that mandate, a member of the Security Council could also leverage a veto to aggrieve a geopolitical competitor. Considering this and other political complications, the ICJ is an impractical mechanism for outer space disputes involving non-governmental actors.

B. Dispute Resolution in the US Federal Courts

As the activities of non-governmental actors increase in outer space, legal disputes will inevitably arise. As noted above, international dispute resolution is designed for state-to-state resolution as opposed to addressing non-governmental petitioners. Although the absence of a forum to resolve private disputes is arguably not a present need, it is a foreseeable necessity.

The expectation that outer space disputes will soon be a reality is symbolized by the Commercial Space Launch and Competitiveness Act of 2015.⁴³ In that Act, Congress invokes its Article III constitutional power over the federal courts.⁴⁴ Specifically, Section 106 of the Act expands the federal district courts' subject matter jurisdiction to claims

40. See U.N. Charter, art. 92–96.

41. See *id.*

42. See U.N. Charter art. 23, ¶ 1.

43. U.S. Commercial Space Launch and Competitiveness Act § 102(a), Pub. L. No. 114–90, 129 Stat. 704 (2015) (codified as amended at 51 U.S.C. §§ 50901–50923) [hereinafter CSLCA].

44. See U.S. CONST. art. III, § 2; *id.* § 106(g).

by spaceflight participants by amending 51 U.S.C. §§ 50914 and 50914(g): “Any claim by a third party or spaceflight participant for death, bodily injury, or property damage or loss resulting from an activity carried out under the license shall be the exclusive jurisdiction of the Federal courts.”⁴⁵ 51 U.S.C. § 50914(g) grants the federal courts exclusive subject matter jurisdiction over legal claims arising out of a commercial launch or reentry license issued under Title 51, Chapter 509.⁴⁶ This means federal courts would utilize the Federal Rules of Civil Procedure to adjudicate the matters, but they would apply state substantive law to reach a decision on the merits, including dispositive motions like a Rule 12 motion to dismiss or a motion for summary judgement under Rule 56.⁴⁷

This would come into play if state limited liability laws for commercial spaceflight providers and their third-party suppliers are challenged. The scope and legality of these laws will not be adjudicated in a state court nor by a judge appointed or elected by a state but by a federal court and judge sitting on the federal bench. This is noteworthy as plaintiffs who enjoy “home court advantage” in a state court and the ability to choose a jury from a pool from a local geographic population and hence, a limited demographic, lose that advantage in federal court, where the federal courts have exclusive subject matter jurisdiction. This has the effect of leveling the playing field for defendants.⁴⁸

The extension of the federal courts’ exclusive subject matter jurisdiction to activities relating to a launch license is Congress’s first step in addressing dispute resolution for outer space related matters, but it is not the first time the federal courts have addressed issues related to outer space. Indeed, there are at least four cases in which a court exercised subject matter jurisdiction without the benefit of 51 U.S.C. § 50914(g), which might provide a legal basis for extending subject matter jurisdiction over future matters involving outer space activities.

45. CSLCA § 106(g).

46. See 51 U.S.C. § 50914(g). Title 51, Chapter 509 and related regulations govern the rules for the Federal Aviation Administration to issue a “launch license” to launch a payload into outer space. If a payload is to return to Earth, a reentry must be issued as well. Title 51, Chapter 509 does not cover so-called “on-orbit” activities, which are activities in outer space between launch and reentry, although the necessity for this authority continues to be debated. See 14 C.F.R. §§ 413.1–460.53 (2007); 51 U.S.C. § 50914(g); see generally Jeff Foust, *The Quest for On-Orbit Authority*, THE SPACE REV. (May 19, 2014), <https://thespacereview.com/article/2514/1> [<https://perma.cc/3254-4335>] (describing and discussing on-orbit authority).

47. See 28 U.S.C. § 1652; FED. R. CIV. P. 12, 56; see also 28 U.S.C. §§ 2201–2202.

48. See Michael J. Listner, *Jurisdiction of the Federal Courts: An Under-Appreciated Provision of the Commercial Space Launch Competitiveness Act*, THE SPACE REV. (Jan. 4, 2016), <https://www.thespacereview.com/article/2892/1> [<https://perma.cc/45UG-YZSQ>].

1. *Nemitz v. United States*⁴⁹

The plaintiff, Gregory Nemitz, brought this matter *pro se* in the US District Court for the District of Nevada on November 3, 2003.⁵⁰ The plaintiff filed a declaratory judgment⁵¹ asserting that he was the owner of the asteroid 433 Eros.⁵² The plaintiff's suit averred five causes of action: violations of the Fifth, Ninth, and Tenth Amendments to the US Constitution, breach of implied contract, and violation of 42 U.S.C. §§ 2451(c), (d)(9).⁵³ The suit revolved around the plaintiff's private ownership of the asteroid 433 Eros and NASA's action of landing the NEAR Shoemaker spacecraft on the surface of the asteroid on February 12, 2001. The plaintiff alleged NASA's action violated his property rights and pursued compensation from NASA. NASA refused, and this action resulted.⁵⁴ NASA filed a motion to dismiss averring that the plaintiff failed to state a claim upon which relief could be granted.⁵⁵ The plaintiff conceded all claims in his opposition to the defendant's motion to dismiss except the Fifth Amendment claim of a taking of his property interest in 433 Eros through NASA's landing of the NEAR Shoemaker spacecraft.⁵⁶ The court found that the plaintiff's filing of a security interest in 433 Eros under Article 9 of the California Uniform Commercial Code⁵⁷ and the filing of his claim on a website from the Archimedes Institute did not create a property interest.⁵⁸ The court further analyzed that the United States' status as a nonparty to the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the Moon Agreement)⁵⁹ does not by extension permit a private interest in the Moon.⁶⁰ The court granted the defendant's motion to dismiss on April 26, 2004. The plaintiff appealed the decision to the US Court of Appeals for the Ninth Circuit, which limited its

49. See generally *Nemitz v. United States*, No. CV-N030599, 2004 WL 3167042 (D. Nev. Apr. 26, 2004).

50. *Id.* at *1.

51. *Id.*; see FED. R. CIV. P. 57; see also 28 U.S.C. § 2201.

52. *Nemitz*, 2004 WL 3167042, at *1.

53. *Id.*

54. *Id.*

55. *Id.*; see FED. R. CIV. P. 12(b)(6).

56. *Nemitz*, 2004 WL 3167042, at *2.

57. *Id.* at *1. The documentation for this matter is not readily accessible from the court via PACER; however, Mr. Nemitz created a website called the Eros Project for Space Property Law. The court filings from both parties are saved as jpg images, including the UCC filing and other exhibits. Mr. Nemitz asserts copyright over the images of these documents. EROS PROJECT, <http://www.erosproject.com/> [<https://perma.cc/5DNF-MDMN>] (last visited Sept. 16, 2020).

58. *Nemitz*, 2004 WL 3167042, at *1.

59. *Id.* at *2; see generally Moon Agreement, *supra* note 11.

60. *Nemitz*, 2004 WL 3167042, at *2.

ruling to affirming the district court's decision without reiterating or commenting on the legal basis.⁶¹

2. *United States v. One Lucite Ball Containing Lunar Material*⁶²

This *in rem* matter came before the US District Court for the Southern District of Florida in 2003.⁶³ In 1994, a US citizen named Alan Rosen was approached by a Honduran military officer regarding the sale of purported lunar material encased in Lucite and mounted on a plaque, which was gifted to the then president of Honduras in 1973 as part of a program by President Nixon.⁶⁴ After lengthy negotiations, Mr. Rosen secured possession of the lunar sample in Miami, Florida.⁶⁵ Subsequently, Mr. Rosen confirmed the sample was of lunar origin, and he proceeded to attempt to sell the lunar material.⁶⁶ NASA's Officer of the Inspector General (IG) became aware of Mr. Rosen's claim about possessing the lunar material and his intent to sell it. A sting operation masked as a potential purchase by the IG's office led to a warrant being issued to seize the encased lunar material and the plaque it was affixed to.⁶⁷ The Honduran government subsequently requested the lunar material be returned, arguing that the items were stolen from the government and the people of Honduras in violation of several Honduran laws.⁶⁸ Mr. Rosen challenged the seizure, at which point the federal district court exercised *in rem* jurisdiction over the Lucite-encased lunar material and the plaque to determine whether the United States could indeed exercise civil forfeiture *in rem* of the Lucite-encased lunar material, averring both were stolen property from the Honduran government. The root of the court's analysis applied Honduran law to determine whether the Lucite-encased lunar material continued to be the property of Honduras or whether Mr. Rosen

61. *Nemitz v. Nat'l Aeronautics & Space Admin.*, No. 04-16223, 2005 WL 319010, at *1 (9th Cir. 2005).

62. *See United States v. One Lucite Ball Containing Lunar Material*, 252 F. Supp. 2d 1367 (S.D. Fla. 2003).

63. *Id.* at 1369. "The essential function of an action in rem is the determination of title to or the status of property located—physically or legally—within the court's jurisdiction. Conceptually, in rem jurisdiction operates directly on the property and the court's judgment is effective against all persons who have an interest in the property." *Cont'l Biomass Indus., Inc. v. Env't Mach. Co.*, 876 A.2d 247, 250 (N.H. 2005).

64. *Lucite*, 252 F. Supp. 2d at 1369, 1371. The lunar material gifted to Honduras and other nations were obtained during the lunar excursion of Apollo 17. *Id.* at 1371.

65. *Id.* at 1369–70. It was determined the lunar material in question was stolen from the Presidential Palace between 1990–1994. *See id.* at 1373.

66. *Id.* at 1370.

67. *Id.* at 1370–72.

68. *Id.* at 1372.

obtained the Lucite-encased lunar material through prescription⁶⁹ when it was removed from the Presidential Palace during a transition of governments.⁷⁰ The court enlisted the assistance of Professor Keith S. Rosenn, Esq., an expert in Honduran law and a law professor at the University of Miami School of Law, to conduct research on and analyze the issues of Honduran law as they related to the cultural patrimony of historic artifacts, and particularly as they related to the Lucite-encased lunar material and wooden plaque.⁷¹ Fundamental to the court's analysis was Professor Rosenn's identification of Honduran law, which categorized the legal nature of the Lucite-encased lunar material. Specifically, Professor Rosenn analyzed Article 617 of Honduran Civil Law, which treats the Lucite-encased lunar material as national property of public use.⁷² The court further determined that since the lunar material was national property of public use, it could not be sold.⁷³

3. *Carlson v. Bolden*

On February 15, 2015, Nancy Carlson won an auction for a sample bag containing lunar dust that had been used during an unspecified Apollo mission.⁷⁴ The plaintiff sent the sample bag to NASA to determine whether lunar dust was present. After a substantial period of time, NASA confirmed the presence of lunar dust.⁷⁵ Through the US Attorney's Office, NASA informed the plaintiff that the bag was being seized.⁷⁶ NASA offered the plaintiff reimbursement of the price she paid at auction plus \$1,000 as compensation, which the plaintiff refused.⁷⁷ The plaintiff filed suit in federal court on June 27, 2016, for the return of the sample bag. The matter was voluntarily dismissed by the plaintiff on October 6, 2016.⁷⁸

69. *Id.* Prescription is a preemptory and perpetual bar to every species of action, real or personal, when a creditor has been silent for a certain time without urging his claim. *See Jones v. Butler*, 346 So. 2d 790, 791 (La. Ct. App. 1977).

70. *See Lucite*, 252 F. Supp. 2d at 1372.

71. *Id.* It is notable Professor Rosenn was not an expert in outer space law. *See id.*

72. *Id.* at 1375.

73. *Id.* at 1376.

74. *See* Complaint ¶¶ 10, 13, 14, *Carlson v. Bolden*, No. 16-CV-01367 (D. Kan. June 27, 2016).

75. *Id.* ¶¶ 17–28.

76. *Id.* ¶¶ 35–37.

77. *Id.* ¶¶ 38–40.

78. Notice of Voluntary Dismissal, *Carlson v. Bolden*, No. 16-CV-01367 (D. Kan. Oct. 6, 2016). NASA apparently returned the sample bag; however, another suit filed by Carlson alleges that the lunar dust contained within the sample bag was removed. The matter ended when Carlson stipulated to a voluntary dismissal with prejudice. *See* Voluntary Dismissal with Prejudice, *Carlson v. United States*, No. 19-CV-02027 (D. Kan. Aug. 20, 2020).

4. *Cicco v. National Aeronautics and Space Administration*⁷⁹

This *in rem* matter was filed in the US District Court for the District of Kansas on June 6, 2018, seeking a declaratory judgment.⁸⁰ The plaintiff, Laura Murray Cicco, was seeking a judicial declaration that she was the owner of lunar dust that was potentially vacuumed off Neil Armstrong's lunar suit.⁸¹ That dust, Cicco claims, was originally "gifted" to Neil Armstrong and subsequently gifted by Armstrong to Cicco's father, Tom Murry. Murry's mother allegedly gave the plaintiff the vial of lunar material when the plaintiff was ten years old.⁸² NASA filed a motion to dismiss asserting a lack of subject matter jurisdiction and improper venue.⁸³ Specifically, NASA argued, the statutes⁸⁴ under which Ms. Cicco brought her action did not constitute waiver of US sovereign immunity. NASA also asserted Ms. Cicco lacked standing to sue under Article III of the Constitution "as she has not alleged any injury, traceable to any conduct by NASA, which is redressable by the Court."⁸⁵ This matter appears to have settled.

The aforementioned cases illustrate how the federal courts are presently exercising subject matter jurisdiction over outer space matters absent a congressional jurisdictional grant. But can the federal courts exercise jurisdiction over matters that occur in the "sovereign-less" reaches of outer space absent congressional action? Moreover, how will these matters be adjudicated and what are the intricacies involved? These questions are germane to the discussion of outer space activities, such as harvesting space resources, as such activities may soon become a reality. These activities will likely generate an eruption of cases in the federal courts, which may be the most practical forum for addressing these issues.

79. *Cicco v. Nat'l Aeronautics & Space Admin.*, No. 18-CV-01164, 2019 WL 1670759 (D. Kan. 2019).

80. Complaint ¶¶ 1, 5, *Cicco*, 2019 WL 1670759.

81. *Id.* ¶¶ 21, 24.

82. *Id.* ¶ 15.

83. See Memorandum in Support of Defendant NASA's Motion to Dismiss at 2, *Cicco*, 2019 WL 1670759.

84. See Declaratory Judgment Act, ch. 512, 48 Stat. 955 (1934) (codified as amended at 28 U.S.C. §§ 2201–2202); see also Lien Enforcement Statute, ch. 646, 62 Stat. 944 (1948) (codified as amended at 28 U.S.C. § 1655).

85. Memorandum in Support of Defendant NASA's Motion to Dismiss at 7, *Cicco*, 2019 WL 1670759.

IV. US JURISDICTION AND VENUE FOR OUTER SPACE ACTIVITIES

Federal courts' jurisdiction is typically broken into three different aspects: (1) prescription jurisdiction, (2) adjudicative jurisdiction, and (3) enforcement jurisdiction.⁸⁶ Prescriptive jurisdiction is otherwise imprecisely referred to as "legislative jurisdiction," and it refers to the power to make and apply law to persons or things (i.e., the major power of the legislature).⁸⁷ Adjudicative jurisdiction is "the power to subject persons or things to judicial process."⁸⁸ Both personal jurisdiction (the court's power over persons) and subject matter jurisdiction (the court's power over the subject matter of a lawsuit) are examples of how and when the court may assert adjudicative power.⁸⁹ Finally, enforcement jurisdiction refers to the court's power "to induce or compel compliance or to punish noncompliance" with the law.⁹⁰

This Article focuses on the adjudicative and enforcement jurisdictional issues that might arise in a lawsuit involving outer space activities. Under adjudicative jurisdiction, the first step is to determine whether there is personal jurisdiction, which may be asserted over the person⁹¹ if the state's jurisdictional statute is satisfied. State statutes often permit jurisdiction if a case meets the constitutional test, which asks whether the defendant has "such minimum contacts with the forum so jurisdiction does not offend traditional notions of fair play and substantial justice."⁹² In order to have "substantial contacts" with the forum, the defendant must have "purposefully availed" itself of the forum, or it must be foreseeable that the defendant could be sued in this forum.⁹³ Additionally, the defendant's contact with the forum must be related to the plaintiff's claim.⁹⁴ Once the relationship between the defendant and the forum state is examined for minimum contacts, courts examine certain factors relating to the "fair play and substantial justice" requirement.⁹⁵ These factors function "to illuminate the

86. Anthony J. Colangelo, *What is Extraterritorial Jurisdiction?*, 99 CORNELL L. REV. 1303, 1310 (2014) (citing RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW OF THE UNITED STATES § 401 (AM. LAW INST. 1987)).

87. *Id.*

88. *Id.* at 1311.

89. *Id.*

90. *Id.*

91. *Id.* "Person" being used broadly in this context to include entities and people. *Id.*

92. See *Int'l Shoe Co. v. Washington*, 326 U.S. 310, 316 (1945).

93. See *Burger King Corp. v. Rudzewicz*, 471 U.S. 462, 474-75 (1985).

94. See *Int'l Shoe Co.*, 326 U.S. at 316.

95. Such factors, known as "Gestalt Factors," include (1) the forum state's interest in adjudicating the matter; (2) the plaintiff's interest in adjudicating her dispute in a convenient forum and in obtaining effective relief; (3) the defendant's burden of appearing; (4) the judicial

equitable dimensions of a specific situation thereby ‘putting into sharper perspective the reasonableness and fundamental fairness of exercising jurisdiction’ in that situation.”⁹⁶ If the constitutional test is satisfied, then the court is considered to have specific personal jurisdiction. If the constitutional case is not satisfied, then the court is considered to have general personal jurisdiction so long as the defendant is otherwise “essentially at home” in the jurisdiction.⁹⁷ The fairness factors of jurisdiction are only relevant when the court has specific personal jurisdiction.⁹⁸

The second step in the adjudicative jurisdiction analysis is determining subject matter jurisdiction. State courts are considered to have “general” subject matter jurisdiction and can hear any type of case except for those cases falling under the exclusive jurisdiction of the federal courts. Thus, federal courts’ subject matter jurisdiction is “limited” to two kinds of cases: one where there is a diversity of citizenship, or one where the claim is brought under a federal question. Cases brought to federal court under a diversity of citizenship must satisfy two threshold requirements. The first requirement is that the case is either (a) between “citizens of different states” (i.e., diversity), or (b) between “a citizen of a state and a citizen of a foreign country” (i.e., alienage). The second requirement is that the amount in controversy must exceed \$75,000.⁹⁹ Where the plaintiff seeks equitable relief rather than monetary damages, federal courts often allow for jurisdiction if an injunction would decrease the plaintiff’s property by more than \$75,000, or if it would cost the defendant more than \$75,000 to comply with the injunction.¹⁰⁰

Cases brought under federal court that “arise under” federal law meet the federal question aspect.¹⁰¹ Federal question jurisdiction requires that the federal element appears on the face of a well-plead complaint, is a substantial component of the complainant’s claim, and

system’s interest in the efficient resolution of controversies; and (5) the common interests of the several states in promoting common social policies. *United Elec., Radio and Mach. Workers of Am. v. 163 Pleasant St. Corp.*, 960 F.2d 1080, 1088 (1st Cir. 1992).

96. *Foster-Miller, Inc. v. Babcock & Wilcox Canada*, 46 F.3d 138, 150 (1st Cir. 1995).

97. For a corporation or other entity, this is the state in which it is incorporated or the state where it has its principal place of business; for a human, this is the state in which they are domiciled. *Daimler AG v. Bauman*, 571 U.S. 117, 127 (2014); 28 U.S.C. § 1332(c)(1).

98. Such factors include the burden on the defendant and the witnesses to come to the forum, the state’s interest in the claim, and the plaintiff’s interest in suing in the selected forum. *World Wide Volkswagen Corp. v. Woodson*, 444 U.S. 286, 292, 294 (1979).

99. 28 U.S.C. § 1332.

100. *See id.*

101. 28 U.S.C. § 1331 (“The district courts shall have original jurisdiction of all civil actions arising under the Constitution, laws, or treaties of the United States.”).

is of significant federal interest.¹⁰² Unlike diversity jurisdiction, federal question jurisdiction does not require a minimum dollar amount to be in controversy. Furthermore, supplemental jurisdiction allows a federal court to adjudicate a claim over which it does not have independent subject matter jurisdiction, on the basis that the claim is related to a claim over which the federal court *does* have independent jurisdiction.¹⁰³

Although the federal jurisdictional rules are well-established legal doctrine, the question still remains whether those rules can apply to outer space activities. If they do, the federal courts will have the authority to apply US law to private individuals and property, and to subsequently enforce such holdings. The language of the Outer Space Treaty does not fully inform us of the jurisdictional bounds of US courts.¹⁰⁴ Although policies that govern outer space have typically been drafted via analogy to international governing structures for the high seas and Antarctica, outer space is different because the United States does not regard it as a “global commons.”¹⁰⁵ Regardless, US court cases analyzing the jurisdictional bounds of disputes in Antarctica may still provide analogical guidance.¹⁰⁶

A. Extraterritoriality

A litigant in any claim dealing with outer space activities would have to urge the courts to exercise their jurisdiction beyond the terrestrial construction and apply the law to this extraterritorial domain. Extraterritoriality is a:

jurisdictional concept concerning the authority of a nation to adjudicate the rights of particular parties and to establish the norms of conduct applicable to events or persons outside its borders. More specifically, the extraterritoriality principle provides that “[r]ules of the United States statutory law, whether prescribed by

102. Louisville & Nashville R.R. Co. v. Mottley, 211 U.S. 149 (1908).

103. 28 U.S.C. § 1367.

104. See Outer Space Treaty, *supra* note 1, at art. VI.

105. U.N. System Task Team, *U.N. System Task Team on the Post-2015 U.N. Development Agenda: Global Governance and Governance of the Global Commons in the Global Partnership for Development Beyond 2015*, UNITED NATIONS 3, 5 (Jan. 2013), https://www.un.org/en/development/desa/policy/untaskteam_undf/thinkpieces/24_thinkpiece_global_governance.pdf [<https://perma.cc/3AJL-RANJ>] (defining global commons as “those resource domains that do not fall within the jurisdiction of any one particular country, and to which all nations have access” and identifying the four major global commons as “the High Seas, the Atmosphere, the Antarctica and the Outer Space”).

106. See *Beattie v. United States*, 756 F.2d 92, 93 (D.C. Cir. 1984).

federal or state authority, apply only to conduct occurring within, or having effect within, the territory of the United States.”¹⁰⁷

As a general rule, there is a judicial presumption against extraterritoriality, which is meant “to protect against the unintended clashes between our laws and those of other nations which could result in international discord.”¹⁰⁸ However, the presumption against extraterritoriality does not apply to domains like outer space, especially where treaty law grants a state continuing jurisdiction over its own nationals. The treaty laws mitigate the potential for international discord, which the presumption is intended to avoid.¹⁰⁹ This exception to extraterritoriality facilitates legislative and regulatory control over outer space, especially in the context of commercial space activities, such as mining outer space resources.

B. Jurisdiction, the High Seas, and Antarctica

The global commons consist of the high seas, the atmosphere, Antarctica, and outer space.¹¹⁰ Because of their relationship as a “global commons,” the laws and regulations surrounding outer space have typically been analogized to and inspired by the laws and regulations of the high seas and Antarctica.

107. *Env't Def. Fund v. Massey*, 986 F.2d 528, 530 (D.C. Cir. 1993) (citing RESTATEMENT (SECOND) OF FOREIGN RELATIONS LAW OF THE UNITED STATES § 38 (AM. LAW INST. 1965); RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW OF THE UNITED STATES § 403 cmt. g (AM. LAW INST. 1987)).

108. *Massey*, 986 F.2d at 530 (citing *EEOC v. Arabian Am. Oil Co.*, 499 U.S. 244 (1991)).

109. *See Beattie v. United States*, 756 F.2d 91, 113–14 (D.C. Cir. 1984) (“The [Antarctic] Treaty itself acknowledges each treaty country’s jurisdiction over its own national.”); *see, e.g.*, Outer Space Treaty, *supra* note 1, at art. VIII (“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. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth. Such objects or component parts found beyond the limits of the State Party to the Treaty on whose registry they are carried shall be returned to that State Party, which shall, upon request, furnish identifying data prior to their return.”); *see also id.* at art. VI (“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.”).

110. U.N. System Task Team, *supra* note 105, at 5. *But see* Scott Pace, Exec. Sec’y, Nat’l Space Council, Keynote Address at the IISL Galloway Space Law Symposium: Space Development, Law, and Values (Dec. 13, 2017), <https://spacepolicyonline.com/wp-content/uploads/2017/12/Scott-Pace-to-Galloway-FINAL.pdf> [<https://perma.cc/Y6F8-52N5>].

1. The High Seas

The high seas are governed by principles and rules by which public entities, especially states, interact in maritime matters, including navigational rights, sea mineral rights, and coastal waters jurisdiction. The United Nations Convention on the Law of the Sea (UNCLOS) is generally accepted as a codification of customary international Law of the Sea.¹¹¹ Disputes are resolved at the International Tribunal for the Law of the Sea (ITLOS).¹¹² The law of the high seas has a functional similarity to the law of outer space. For instance, the “floating island” principle of the law of the high seas allows countries to extend their laws, including intellectual property laws, to their ships in international waters; in the space context, this would be a country’s registered space object.¹¹³ This legal principal is specifically described in the Outer Space Treaty, demonstrating that the law of outer space functions similarly to the laws of the sea, making it a natural point of reference.¹¹⁴ Further, both outer space and the ocean are considered *res communis*.¹¹⁵ The comparison can further be summarized with the following passage:

The version of this analogy with the most uptake in the international community asserts that outer space is like the high seas, and should therefore be treated as an open access area that can be used by everyone, but not appropriated by anyone: a *res communis*. On the high seas, states are “flag states,” responsible for enforcing regulations on their own nationals, and especially on ships registered in their state. The view that outer space was like high seas was used to define the political-geographical border between outer space (understood as high seas) and airspace (understood as territorial seas). As a result of this analogy, a significant amount of ocean governance precedent was transferred to the outer space regime, especially obligations associated with ships and crews, such as those regarding rescue, piracy, navigational aids, liability, and registration.¹¹⁶

111. See generally U.N. Convention on the Law of the Sea, *opened for signature* Dec. 10, 1982, 1833 U.N.T.S. 397 (entered into force Nov. 16, 1994).

112. See *id.* at art. XXI.

113. See MATTHEW J. KLEIMAN, *THE LITTLE BOOK OF SPACE LAW* 97 (2013) (citing FRANCIS LYALL & PAUL B. LARSEN, *SPACE LAW: A TREATISE* 124–27 (Ashgate Publ’g Ltd. 2009) (proposing that the jurisdictional control that states exert over their own space objects enables them to issue patent rights to inventors whose inventions are created within those space objects)).

114. See Outer Space Treaty, *supra* note 1, at art. VIII.

115. See HAANAPPEL, *supra* note 12.

116. Elizabeth Mendenhall, *Treating Outer Space Like a Place: A Case for Rejecting Other Domain Analogies*, 16 *ASTROPOLITICS* 97 (June 18, 2018) (citing M.J. PETERSON, *INTERNATIONAL REGIMES FOR THE FINAL FRONTIER* 67 (2005); Sven Grahn, *Why We Had Better Drop Analogies When Discussing the Role of Humans in Space*, in *HUMANS IN OUTER SPACE—INTERDISCIPLINARY ODYSSEYS* 252 (Luca Codignola & Kai-Uwe Schrogl eds., 2009); PHILIP C. JESSUP & HOWARD J. TAUBENFELD, *CONTROLS FOR OUTER SPACE AND THE ANTARCTIC ANALOGY* 212 (1959)).

The laws and regulations surrounding the high seas have been a good comparison with regard to the inception of many of the ideals governing outer space activities, but the laws governing Antarctica would be most helpful in the outer space litigation context, as US federal courts have adjudicated extraterritorial issues in this territory.

2. Antarctica

Outer space has also been compared to the global system created around Antarctica. Much like Antarctica, outer space is an area of extremes, isolation, and scientific study. Antarctica is a *de facto* condominium,¹¹⁷ governed by signatories to the Antarctic Treaty. The Antarctic Treaty and related agreements, collectively known as the Antarctic Treaty System (ATS), regulate international relations with respect to Antarctica.¹¹⁸ Much like the Outer Space Treaty, the Antarctic Treaty prohibits military activities, mineral mining, nuclear explosions, and nuclear waste disposal; it supports scientific research and promotes the exchange of scientific information among states; and it prevents state ownership of any part of Antarctica.¹¹⁹ Moreover, the Antarctic Treaty creates jurisdictional boundaries of signatory states that limit state power solely to the acts or omissions of their own nationals.¹²⁰ In a similar vein, the Outer Space Treaty puts the responsibility onto the signatory state for the actions of national and authorized non-governmental activities in outer space.¹²¹ Moreover, US

117. Louis de Gouyon Matignon, *The Legal Status of Antarctica*, SPACE LEGAL ISSUES (Jan. 25, 2019), <https://www.spacelegalissues.com/space-law-the-legal-status-of-antarctica/> [<https://perma.cc/WL93-98VF>] (“In international law, a condominium (plural either *condominia*, as in Latin, or condominiums) is a political territory (state or border area) in or over which multiple sovereign powers formally agree to share equal *dominium* (in the sense of sovereignty) and exercise their rights jointly, without dividing it into ‘national’ zone.”).

118. *Id.*

119. The Antarctic Treaty art. I–V, Dec. 1, 1959, 12 U.S.T. 794, 402 U.N.T.S. 71.

120. *Id.* at art. VIII (“In order to facilitate the exercise of their functions under the present Treaty, and without prejudice to the respective positions of the Contracting Parties relating to jurisdiction over all other persons in Antarctica, observers designated under paragraph 1 of Article VII and scientific personnel exchanged under subparagraph 1(b) of Article III of the Treaty, and members of the staffs accompanying any such persons, shall be subject only to the jurisdiction of the Contracting Party of which they are nationals in respect of all acts or omissions occurring while they are in Antarctica for the purpose of exercising their functions. Without prejudice to the provisions of paragraph 1 of this Article, and pending the adoption of measures in pursuance of subparagraph 1(e) of Article IX, the Contracting Parties concerned in any case of dispute with regard to the exercise of jurisdiction in Antarctica shall immediately consult together with a view to reaching a mutually acceptable solution.”).

121. Outer Space Treaty, *supra* note 1, at art. VI (“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

spokesmen suggested the 1959 Antarctic Treaty as a possible model for an outer space treaty during initial formulation discussions in 1965 and 1966.¹²² As such, it is clear that the ATS has provided lessons that are relevant to the governance of other extraterritorial spaces beyond sovereign jurisdictions, including outer space.¹²³

While both the high seas and Antarctica offer good academic analogies for the creation of future outer space legislation and policy, they are not practically the same. Outer space requires a new context for obtaining jurisdiction in US federal courts. Indeed, the United States considers both the high seas and Antarctica as a “global common,” or a *res communis*; but the United States does not consider outer space as such. Additionally, with the lack of federal statutes governing outer space activities, litigation in the outer space context will be ripe for jurisdictional questions, which the courts will hopefully take under their wings to provide guidance in this arena. Until we are provided with this court-made law, analogizing outer space with Antarctica could provide the stepping-stone for finding jurisdiction, as a number of US courts have dealt with Antarctica’s jurisdiction and whether US law extends to those on it.

As previously mentioned, the laws governing Antarctica provide the most help in providing guidance for litigation in the outer space context, as US federal courts have adjudicated extraterritorial issues for actions in Antarctica. In *Beattie v. United States*, an Air New Zealand aircraft crashed in Antarctica killing all aboard.¹²⁴ The plaintiffs, appointed by foreign courts as administrators of the estates of individuals killed, filed suit in the US District Court for the District of Columbia against the United States for wrongful death under the Federal Tort Claims Act (FTCA), claiming negligence by US Navy personnel on duty at two air traffic control facilities located at the McMurdo Naval Station airfield on that continent.¹²⁵ The issue before the district court was one of first impression: Is Antarctica, a continent

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.”).

122. S.H. LAY & H.J. TAUBENFELD, *THE LAW RELATING TO THE ACTIVITIES OF MAN IN SPACE* 59–60 (1970).

123. Juan Francisco Salazar, *Antarctica and Outer Space: Relational Trajectories*, 7 *POLAR J.* 259, 261 (2017).

124. *Beattie v. United States*, 756 F.2d 92, 93 (D.C. Cir. 1984).

125. *Id.*

which is not now subject to the sovereignty of any nation, a “foreign country” within the meaning of the FTCA?¹²⁶ The United States sought to dismiss the case, asserting that the claims are not cognizable under the Act, as Antarctica falls within the foreign country exception.¹²⁷ Section 2680(k) exempts from the coverage of the FTCA “any claim arising in a foreign country.”¹²⁸ By interlocutory order, the US District Court for the District of Columbia denied the government’s motion to dismiss and certified this case for consideration by the United States Court of Appeals for the District of Columbia Circuit in conformity with 28 U.S.C. § 1292(b).

The DC Court of Appeals summarized and analyzed the points within the Antarctic Treaty¹²⁹ vis-à-vis the activities of the United States in Antarctica. The United States argued that only two areas of the world exist—the United States and foreign countries. However, the court rejected this argument, as US citizens also operate in outer space, the high seas, and, as indicated in this case, Antarctica.¹³⁰ Because of the United States’ influence and presence in Antarctica, “to the extent that there is any assertion of governmental authority in Antarctica, it appears to be predominantly that of the United States.”¹³¹ The court concluded not only that Antarctica was not a foreign country under the FTCA’s “foreign country exception,” therefore stating that the current venue was proper, but also that DC law applied to the suit.¹³² In reaching this conclusion, the court analogized the laws governing Antarctica to those of the Outer Space Treaty.¹³³

A subsequent suit was filed within a decade of *Beattie*. In *Smith v. United States*, a contractor for the National Science Foundation was killed, and his widow filed a wrongful death action against the United States in the District Court for the District of Oregon under the FTCA.¹³⁴ John Emmett Smith fell through a crevasse while taking a recreational hike from McMurdo Station on Ross Island, Antarctica to Scott Base, a New Zealand outpost not far from McMurdo Station. His widow alleged that the United States was negligent in failing to provide adequate warning of the dangers posed by crevasses in areas beyond

126. *Id.*

127. *Id.*

128. 28 U.S.C. § 2680(k).

129. The Antarctic Treaty, *supra* note 119; *Beattie*, 756 F.2d at 96–98.

130. *Beattie*, 756 F.2d at 93.

131. *Id.* at 99.

132. *Id.* at 94, 104.

133. *Id.* at 100 (“[T]he basic principle is that in the sovereignless reaches of outer space, each state party to the treaty will retain jurisdiction over its own objects and persons.”).

134. *Smith v. United States*, 507 U.S. 197, 197 (1993).

the marked paths.¹³⁵ Upon the motion of the United States, the district court dismissed the petitioner's complaint for lack of subject matter jurisdiction, holding that her claim was barred by 28 U.S.C. § 2680(k), the foreign country exception to the FTCA.¹³⁶

The US Supreme Court ultimately granted certiorari in this case to decide whether the FTCA applied to tort claims arising in Antarctica in *Smith v. United States*. Writing for the majority, Chief Justice Rehnquist took the opposite approach of the DC Court of Appeals in *Beattie*, holding that the "FTCA's waiver of sovereign immunity does not apply to tort claims arising in Antarctica." In reaching this conclusion, Chief Justice Rehnquist reasoned that the 79th Congress would not have "included a desolate and extraordinarily dangerous land such as Antarctica within the scope of the FTCA."¹³⁷ However, this did not take away from the underlying jurisdictional analysis in *Beattie*.¹³⁸

As it presently stands, these Antarctica-related cases are the best resources in paving a path toward the application of US law in the sovereign-less reaches of outer space. Not only have courts made such a comparison, like in *Beattie*, but the legal and historical comparisons between the regions make strong arguments for using these cases as a guidepost moving forward.

C. US Jurisdiction for Outer Space Activities

The federal government has the right to authorize private actors to perform activities in outer space, and it holds continuing jurisdiction over the personnel performing those activities.¹³⁹ Because of the federal government's right to authorize and, therefore, to maintain its continuing jurisdiction over the authorized launches, the federal court system is the likely forum to adjudicate disputes involving US-registered private launches.

Additional evidence for the federal courts' ability to exercise jurisdiction comes in the form of the International Space Station Intergovernmental Agreement (IGA). The IGA is an international treaty signed on January 29, 1998, by the fifteen governments involved in the Space Station project.¹⁴⁰ The IGA establishes "a long term

135. *Id.* at 199.

136. *Id.*

137. *Id.* at 204–05.

138. *See Env't Def. Fund v. Massey*, 986 F.2d 528, 529 (D.C. Cir. 1993).

139. *See Outer Space Treaty*, *supra* note 1, at art. VI, VIII.

140. Agreement Concerning Cooperation on the International Space Station, Jan. 29, 1998, T.I.A.S. No. 12927 [hereinafter IGA]; *see International Space Station Legal Framework*, EUR. SPACE AGENCY, https://www.esa.int/Science_Exploration/Human_and_Robotic_Exploration/

international co-operative frame-work [*sic*] on the basis of genuine partnership, for the detailed design, development, operation, and utilization [*sic*] of a permanently inhabited civil Space Station for peaceful purposes, in accordance with international law.”¹⁴¹ Among other things, the IGA appoints NASA as the lead agency in coordinating activities on the space station. It also gives each state jurisdiction over its own module.¹⁴² Such jurisdiction, however, is granted through the applicable provisions of the Outer Space Treaty and Registration Convention.

Furthermore, the United States takes the position that the Outer Space Treaty does not advocate outer space as a “global commons” or a *res communis*.¹⁴³ Despite this, and absent specific legislation created by Congress that creates a special court to adjudicate outer space matters, the federal courts can conclude that they have subject matter jurisdiction over these matters as they pose a federal question and domestic states do not have concurrent jurisdiction.¹⁴⁴ In that sense, unlike the Antarctic and high seas analogies, litigants will have a new path for arguing that US courts have jurisdiction over these claims.

International_Space_Station/International_Space_Station_legal_framework [https://perma.cc/Y7KJ-MHCZ] (“The Intergovernmental Agreement, establishing the International Space Station cooperative framework, has been signed by fourteen governments: the United States of America, Canada, Japan, the Russian Federation, and 10 Member States of the European Space Agency (Belgium, Denmark, France, Germany, Italy, The Netherlands, Norway, Spain, Sweden and Switzerland; the UK joined in 2012, with Hungary and Luxembourg committing to the Space Station programme in 2019 as well as ESA cooperating state Slovenia).”).

141. IGA, *supra* note 140, at art. 1.

142. *Id.* at art. 5(2), 7(2); see Lawrence S. DeLucas, *International Space Law*, 38 ACTA ASTRONAUTICA 613, 615 (1996) (explaining that each signatory country will be designing, developing, and operating separate pieces of hardware, or modules, to be integrated on-orbit into a single orbital station). Specifically, the United States was and is responsible for its own habitation module, laboratory modules, and attached payload accommodation equipment, among others. See IGA, *supra* note 140, at ANNEX. For detailed information on the components and different module descriptions of the International Space Station, see *Reference Guide to the International Space Station*, NASA (Sept. 2015), <https://www.nasa.gov/sites/default/files/at-oms/files/np-2015-05-022-jsc-iss-guide-2015-update-111015-508c.pdf> [https://perma.cc/3YET-JX8G].

143. Pace, *supra* note 110 (“Finally, many of you have heard me say this before, but it bears repeating: outer space is not a ‘global commons,’ not the ‘common heritage of mankind,’ not ‘*res communis*,’ nor is it a public good. These concepts are not part of the Outer Space Treaty, and the United States has consistently taken the position that these ideas do not describe the legal status of outer space.”).

144. See U.S. CONST. art. 3, § 2; see also 51 U.S.C. § 50914(g). *But see* Beattie v. United States, 756 F.2d 92, 94 (D.C. Cir. 1984).

D. Appropriate Venue for Outer Space Activities

As previously mentioned, jurisdiction determines whether the court can hear a case over a specific person or claim based on the matter of the case. Conversely, venue helps establish *in which* specific federal court such claims may be brought. A plaintiff may assert venue in any district where (1) all defendants reside (however, if multiple defendants reside in different districts of a forum state, the plaintiff can lay venue in the district where any defendant resides) or (2) a substantial part of the claim arose. As with cases that have arisen in the Antarctic context, and because outer space is analogous to Antarctica, “it would be logical the District Court for the District of Columbia would have venue over a claim arising during the orbital portion of an orbital commercial spaceflight.”¹⁴⁵

Transfer of venue arguments could be made, however. As seen in *One Lucite Ball*, once the US District Court for the Southern District of Florida established *in rem* jurisdiction, the court applied Honduran law to determine which party had property ownership over the Lucite-encased lunar material and whether it continued to be the property of Honduras or whether Mr. Rosen obtained the Lucite-encased lunar material through prescription when it was removed from the Presidential Palace during a transition of governments. Cases brought in the federal courts will no doubt involve facts occurring outside of the United States, other than the fact these actions take place in outer space. However, defendants may be able to make a *forum non conveniens* argument based on the location of witnesses, relevant evidence and records, undue hardship on the defendant, availability of adequate alternative forums for the plaintiff, expeditious use of judicial resources, choice of law applicable to the dispute, and considerations of public policy. As certain courts become more favorable to either plaintiffs or defendants, *forum non conveniens* may be argued as plaintiffs begin to forum shop.

E. Standing

Contemporaneous with federal courts’ subject matter jurisdiction over disputes in outer space is whether the parties to a future litigation have standing in federal court. “Standing to sue” indicates whether a party in a litigation has a sufficient stake in a justiciable controversy to obtain judicial resolution.¹⁴⁶ In federal court

145. Listner, *supra* note 48.

146. See *Sierra Club v. Morton*, 405 U.S. 727, 731–32 (1972).

a party invoking federal jurisdiction bears the burden to establish standing.¹⁴⁷ To establish standing in the federal court, the plaintiff must demonstrate the following:

[T]he plaintiff must have suffered an “injury in fact”—an invasion of a legally protected interest which is (a) concrete and particularized, and (b) “actual or imminent, not ‘conjectural’ or ‘hypothetical.’” Second, there must be a causal connection between the injury and the conduct complained of—the injury has to be “fairly trace[able] to the challenged action of the defendant, and not . . . th[e] result [of] the independent action of some third party not before the court.” Third, it must be “likely,” as opposed to merely “speculative,” that the injury will be “redressed by a favorable decision.”¹⁴⁸

These elements would equally apply to non-governmental entities seeking redress in federal court, but whether a non-governmental entity will have standing depends on whether the non-governmental entity can meet them. For example, a non-governmental entity could show standing for a dispute involving the denial or revocation of a launch license by a federal agency. The non-governmental entity, after going through the required administrative appeals, could articulate an injury in fact, traceable to the action of the federal agency, and have the injury redressed through the grant or restoration of the launch license.¹⁴⁹ Conversely, if the non-governmental entity in the above example does not hold a launch license or even applied for one, the non-governmental entity would not have standing to sue. All in all, non-governmental entities have the same burden to show standing in a matter arising from outer space activities as any other potential litigant in federal court.

V. WHAT PROCEDURAL LAW COMES INTO PLAY? WHAT SUBSTANTIVE LAW?

Because most, if not all, claims related to outer space activities are governed by international treaties and, subsequently, federal statutes and regulations, the federal court will have subject matter jurisdiction, which means the next question becomes what law applies.

147. See *Lujan v. Defs. of Wildlife*, 504 U.S. 555, 561 (1992) (internal citations omitted).

148. *Id.* at 560–61.

149. In a matter such as this the non-governmental entity would file suit under the Administrative Procedures Act, which grants the federal court subject matter jurisdiction over the dispute. See 5 U.S.C. § 706. The scope of review by the court is to hold unlawful and set aside agency actions that are found to be arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law; contrary to constitutional right, power, privilege, or immunity; in excess of statutory jurisdiction, authority, or limitations, or short of statutory right; without observance of procedure required by law; unsupported by substantial evidence in a case or unwarranted by the facts to the extent that the facts are subject to trial de novo by the reviewing court. *Id.* § 706(2).

Obviously, if a federal question is the reason the court has subject matter jurisdiction, federal law will apply.¹⁵⁰ However, there will be cases where the diversity standard grants access to the federal courts. In these diversity cases, courts look to the *Erie* doctrine. In simple terms, the *Erie* doctrine states that the federal courts, when confronted with the issue of whether to apply federal or state law in a lawsuit, must apply state law on issues of substantive law.¹⁵¹ “[I]t is generally agreed that a substantive law creates, defines and regulates rights while a procedural one prescribes the method of enforcing such rights or obtaining redress.”¹⁵² When the legal question is based on a procedural issue, the federal courts should apply federal law.¹⁵³

Issues that have been determined to be clearly “substantive” include elements of a claim or defense, statute of limitations, rules for tolling statutes of limitations, and conflict (or choice) of law rules.¹⁵⁴ If the issue to be determined is not one of these four above, and there is no applicable federal law, the court must weigh certain factors to determine whether the issue is “substantive.”¹⁵⁵

A. Rule of Procedure

The Federal Rules of Civil Procedure (FRCP) apply in all cases brought in federal court—state procedural law is eclipsed under the Supremacy Clause.¹⁵⁶ Although this Article is intended to provide a roadmap for litigation in the outer space context, it will try to limit motion guidance and relevant arguments to issues the Authors believe will incite a majority of outer space disputes.

150. See *Erie R.R. Co. v. Tompkins*, 304 U.S. 64, 79 (1938).

151. See *id.* at 78.

152. *Allen v. Fisher*, 574 P.2d 1314 (Ariz. Ct. App. 1977).

153. See *id.* at 91–92.

154. See, e.g., *id.* at 90 (holding that elements of the state negligence statute governed the case); *Guar. Tr. Co. v. York*, 326 U.S. 99, 112 (1945) (holding that the New York statute of limitations be obeyed); *Atkins v. Schmutz Mfg. Co.*, 401 F.2d 731, 734 (4th Cir. 1968) (holding state tolling of statute of limitations governed the suit); *Hardin v. Straub*, 490 U.S. 536, 543–44 (1989) (holding state statutes suspending limitations periods for those under legal disability, including prisoners, until one year after disability has been removed was consistent with § 1983); *Atl. Marine Const. Co. v. U.S. Dist. Ct.*, 571 U.S. 49, 66 (2013) (holding that when parties have agreed to a valid forum selection clause, that clause should be given controlling weight in all but the most exceptional cases).

155. Such factors include whether applying or ignoring state law would affect the outcome of the case (outcome determinative), whether either federal or state systems would have a strong interest in having its rule applied (balance of interests), and if the federal court ignores state law on the issue, will it cause the parties to flock to federal court (avoid forum shopping). *Hanna v. Plumer*, 380 U.S. 460, 468 (1965).

156. See *Erie R.R. Co. v. Tompkins*, 304 U.S. 64, 92 (1964).

One issue is a defendant's response to the plaintiff's original pleadings (i.e., the complaint), or in the initial motion by the defendant. As this Article has previously discussed, subject matter jurisdiction and personal jurisdiction are nebulous in the context of outer space activity. A defendant might make a motion to dismiss under Rule 12(b)(1) and (2) for lack of subject matter jurisdiction and lack of personal jurisdiction in these cases, making such arguments that have been alluded to in the above paragraphs. While subject matter jurisdiction could be acknowledged by a court, until a hearing and an order begin to make this jurisdiction applicable to the US federal courts outside of a federal statute, these motions to dismiss are highly encouraged.¹⁵⁷

Another issue could arise when a plaintiff is seeking a motion for summary judgment in a case arising out of damage to property, such as a satellite in orbit.¹⁵⁸ In most, if not all cases, damage to a working satellite would be caused by orbital debris.¹⁵⁹ This includes debris and particulates created from explosions or collisions, tiny flecks of paint released from thermal stress or small impact particles, and debris intentionally left during a launch separation.¹⁶⁰ As of 2011, NASA estimates that the total particulate count exceeds the tens of millions, with more than five hundred thousand particles being between one and ten centimeters and twenty-two thousand objects larger than ten centimeters currently in Earth's orbit.¹⁶¹ Of these objects larger than

157. Note, however, that under the CSLCA, jurisdiction is granted to the court for claims filed under this statute. See CSLCA § 106(g).

158. Fed. R. Civ. P. 56 ("A party may move for summary judgment, identifying each claim or defense—or the part of each claim or defense—on which summary judgment is sought. The court shall grant summary judgment if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law. The court should state on the record the reasons for granting or denying the motion.").

159. See Holly Zeil, *Frequently Asked Questions: Orbital Debris*, NASA, http://www.nasa.gov/news/debris_faq.html (last updated Sept. 2, 2011) ("Orbital debris" connotes "any man-made object in orbit about Earth [that] no longer serves a useful purpose.").

160. See *id.*

161. See *id.*; see also Megan Ansdell, *Active Space Debris Removal: Needs, Implications, and Recommendations for Today's Geopolitical Environment*, 21 J. PUB. & INT'L AFFS. 7, 10 (2014) (stating that China is responsible for 42 percent, the United States for 27.5 percent, and Russia for 25.5 percent of the current orbital debris); Alexander William Salter, *Space Debris: A Law and Economics Analysis of the Orbital Commons*, 19 STAN. TECH. L. REV. 221, 224–25 (2016) (In 2007, China deliberately destroyed its Fengyun 1-C satellite in conducting an anti-satellite test; this event marked the largest new creation of debris in history up to that point. In 2009, an old Russian military satellite unintentionally collided with a then-operating Iridium Communication, Inc. satellite.); Joe Pappalardo, *Navy Missile Successful as Spy Satellite Is Shot Down*, POPULAR MECHANICS (Oct. 1, 2009), <http://www.popularmechanics.com/military/a2625/4251430/> [<https://perma.cc/5E4T-MUZ6>] (The United States responded to China's anti-satellite missiles by testing their own anti-satellite missile in 2008, shooting down one of their own defunct spy satellites); Michael W. Taylor, *Orbital Debris: Technical and Legal Issues and*

ten centimeters, only about one thousand are operational spacecraft.¹⁶² While the size of the debris does not seem daunting, their speed—between four and five miles per second in LEO—makes collisions with these operational spacecrafts a concern.¹⁶³ Outside of anti-satellite missile tests¹⁶⁴ and several docking issues,¹⁶⁵ collisions with working satellites are all but guaranteed to occur from orbital

Solutions 26–27 (Aug. 2006) (unpublished L.L.M. thesis, McGill Univ.), <https://fas.org/spp/eprint/taylor.pdf> [<https://perma.cc/L9W5-F62M>] (In 1991, a nonfunctioning Russian satellite in LEO collided with another piece of detached debris from another Russian satellite “creat[ing] many new particulates, only two of which were trackable by the SSN.” In 1996, debris from a French rocket stage collided with a functional French satellite. Lastly, in 2005, a US rocket and debris from a previously exploded Chinese rocket collided.).

162. KLEIMAN, *supra* note 113, at 71.

163. See Zeil, *supra* note 159.

164. See Mark Wade, *IS-A*, ASTRONAUTIX, <http://www.astronautix.com/i/is-a.html> [<https://perma.cc/L5WV-XWUZ>] (last visited July 10, 2020); see also Anatoly Zak, *IS Anti-Satellite System*, RUSSIANSPACEWEB.COM (July 13, 2017), <http://www.russianspaceweb.com/is.html> [<https://perma.cc/YAY2-RL8E>] (several tests conducted as part of the Soviet Union’s Istrebitel Sputnik program in the 1970s and ‘80s, involving IS-A satellites intercepting and destroying IS-P, DS-P1-M, and Lira target satellites launched specifically for the tests); Aviation.com Staff, *How to Down a Satellite: Go Back 22 Years*, LIVESCIENCE (Feb. 20, 2008), <https://www.livescience.com/4832-satellite-22-years.html> [<https://perma.cc/GYA4-79C6>] (the 1985 destruction of the USA P78-1 solar research satellite during a USA ASM-135 anti-satellite missile test); Shirley Kan, CRS Report for Congress, *China’s Anti-Satellite Weapon Test*, Order Code RS22652 (Apr. 23, 2007), <https://fas.org/sgp/crs/row/RS22652.pdf>; SHIRLEY KAN, CONG. RSCH. SERV., RS22652, CHINA’S ANTI-SATELLITE WEAPON TEST 1 (2007) (the 2007 destruction of the Chinese Fengyun FY-1C weather satellite during a Chinese anti-satellite missile test); Kristen Roberts, *Pentagon Plans to Shoot Down Disabled Satellite*, REUTERS (Feb. 14, 2008, 2:01 PM), <https://www.reuters.com/article/us-usa-satellite-missile/pentagon-plans-to-shoot-down-disabled-satellite-idUSN1447206620080214?sp=true> [<https://perma.cc/Y66V-CKBM>] (the 2008 destruction of the USA-193 military reconnaissance satellite in a decaying orbit by a USA SM-3 missile); Loren Grush, *India Shows It Can Destroy Satellites in Space, Worrying Experts About Space Debris*, VERGE (Mar. 27, 2019, 11:50 AM), <https://www.theverge.com/2019/3/27/18283730/india-anti-satellite-demonstration-asat-test-microsat-r-space-debris> [<https://perma.cc/6VJV-7PNK>] (the 2019 destruction of Microsat-R after Indian military launched an anti-satellite weapon (ASAT) to destroy an Indian telecom satellite in a move called “Mission Shakti”).

165. See Mark Wade, *Soyuz TM-17*, ASTRONAUTIX, <http://www.astronautix.com/s/soyuztm-17.html> [<https://perma.cc/JKS6-NNLB>] (last visited July 10, 2020) (the 1994 collision between the manned Soyuz TM-17 spacecraft and the Russian Mir space station); *Progress Collision with Mir Animation*, NASA, <https://history.nasa.gov/SP-4225/multimedia/progress-collision.htm> [<https://perma.cc/7XQX-M9AA>] (last visited July 10, 2020); see also Mark Wade, *Soyuz TM-25*, ASTRONAUTIX, <http://www.astronautix.com/s/soyuztm-25.html> [<https://perma.cc/86JP-SJJH>] (last visited July 20, 2020) (the 1997 low-speed collision between the Progress M-34 supply ship and the Russian Mir space station during manual docking maneuvers); *Overview of the DART Mishap Investigation Results*, NASA, https://www.nasa.gov/pdf/148072main_DART_mishap_overview.pdf [<https://perma.cc/N87T-ND9E>] (last visited July 10, 2020) (the 2005 low-speed collision between the USA DART spacecraft and the USA MUBLCOM communications satellite during orbital rendezvous maneuvers).

debris.¹⁶⁶ Coupled with the size and nature of orbital debris, uncertainties in orbital dynamics, and the current tracking system's limitations,¹⁶⁷ pinpointing the owner of such debris could be impossible.

A defendant who is alleged to have caused damage to an operational satellite in orbit can respond to a FRCP Rule 56 motion for summary judgment filed by a plaintiff and assert the evidence is not sufficient to show there is no genuine issue as to a material fact. The defendant should be able to show quite clearly that because of the limitations in tracking such debris, the plaintiff's claims against him cannot be proven by the facts alone. On the flip side, the tracking system could work in the plaintiff's favor if the debris causing such damage is clearly owned by the defendant. Indeed, the complexities of such a matter would preclude a jury trial in lieu of a bench trial and the appointment of a master.¹⁶⁸

Noteworthy in this example is the involvement of the state or states that authorize and supervise the non-governmental entities. As will be discussed in the next section, the participation in the suit is obligatory because of their roles under international law.

166. See, e.g., Mark Ward, *Satellite Injured in Space Wreck*, NEW SCIENTIST (Aug. 24, 1996), <https://www.newscientist.com/article/mg15120440-400-satellite-injured-in-space-wreck/> [<https://perma.cc/H384-MUJN>] (discussing the 1996 collision between the French Cerise military reconnaissance satellite and debris from an Ariane rocket); Becky Iannotta, *U.S. Satellite Destroyed in Space Collision*, SPACE NEWS (Feb. 11, 2009), <https://spacenews.com/u-s-satellite-destroyed-in-space-collision/> [<https://perma.cc/S5F5-HBRB>] (discussing the 2009 collision between the Iridium 33 communications satellite and the derelict Russian Kosmos 2251 spacecraft, which resulted in the destruction of both satellites); Leonard David, *Legal Action Against China Unlikely in Orbital Debris Collision*, SPACE NEWS (Mar. 13, 2013), <https://spacenews.com/legal-action-against-china-unlikely-in-orbital-debris-collision/> [<https://perma.cc/GT6S-5MYP>] (discussing the January 22, 2013, collision between debris from the Fengyun FY-1C satellite and the Russian BLITS nano-satellite); Ronnie Nader & T.S. Kelso, *The Pegasus Incident: The Loss of the First Ecuadorian Satellite and Its Recovery*, Presentation at 65th International Astronautical Congress (Oct. 3, 2014), https://www.academia.edu/8614951/THE_PEGASUS_INCIDENT_THE_LOSS_OF_THE_FIRST_ECUADORIAN_SATELLITE_AND_ITS_RECOVERY [<https://perma.cc/CH38-BZYF>] (discussing the May 22, 2013, collision between two CubeSats, Ecuador's NEE-01 Pegaso and Argentina's CubeBug-1, and the particles of a debris cloud around a Tsyklon-3 upper stage (SCN 15890) left over from the launch of Kosmos 1666).

167. The only debris monitoring system is the Space Surveillance Network (SSN), which can "collect data about objects' altitude, orbit, size, and composition." Taylor, *supra* note 161 at 19. As of 2003, the SSN's sensitivity allowed for monitoring of particulates as small as five centimeters in LEO; as altitude increases, however, the SSN's sensors' ability to detect particulates decreases. *Id.* Even still, some particulates remain so small the SSN cannot monitor their locations, requiring the use of "computer models . . . designed to estimate the quantity, type, and location of small orbital debris." *Id.* at 24 (citing OFF. OF SCI. & TECH. POL'Y, INTERAGENCY REPORT ON ORBITAL DEBRIS 16 (1995)).

168. See FED. R. CIV. P. 53(1).

B. The Role of the US Government, Joinder, and Intervention

Another consideration in a litigation between non-governmental parties is the role of the government in judicial proceedings. This is borne out in Articles VI and VIII of the Outer Space Treaty:

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.¹⁶⁹

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.¹⁷⁰

These two provisions of the Outer Space Treaty evince the federal government's responsibility to authorize and supervise the activity of the non-governmental entity, as well as its power to maintain jurisdiction. By extension, this allows the federal government to serve as a party of interest in a dispute between non-governmental actors in federal court.

1. Joinder

The federal government's role in authorizing and supervising non-governmental space activities insinuates the federal government is required to be joined as a party in a legal action between two non-governmental parties.¹⁷¹ FRCP Rule 19 states,

A person who is subject to service of process and whose joinder will not deprive the court of subject-matter jurisdiction must be joined as a party if:

(A) in that person's absence, the court cannot accord complete relief among existing parties; or

(B) that person claims an interest relating to the subject of the action and is so situated that disposing of the action in the person's absence may:

(i) as a practical matter impair or impede the person's ability to protect the interest; or

169. Outer Space Treaty, *supra* note 1, at art. VI.

170. *Id.* at art. VIII.

171. The current role of the federal government under Title 51, Chapter 509 is to issue a launch license and where applicable a reentry license. Congress has not given further authority to the executive branch to regulate activities in between launch and reentry or so called "on-orbit" authority. This Article presumes that disputes that would be litigated in the federal courts would be operating under "on-orbit" authority granted by Congress.

(ii) leave an existing party subject to a substantial risk of incurring double, multiple, or otherwise inconsistent obligations because of the interest.¹⁷²

Consider the treaty obligations of the United States in authorizing and supervising outer space activities pursuant to Article VI of the Outer Space Treaty and its continuing jurisdiction and liability under Article VIII.¹⁷³ Without the federal government's involvement, the federal courts could arguably not accord relief among the existing parties.¹⁷⁴

Furthermore, the rights and duties afforded to the government per the Outer Space Treaty also mean that, as a practical matter, disposing of the action in the absence of the government would inhibit the ability of a non-governmental litigant to protect its interest. This puts a private litigant in the position of potentially incurring inconsistent obligations in terms of liability and responsibility and potentially receiving an adverse judgment if the government is not there to represent its interests as the authorizing and supervising authority.¹⁷⁵

The government is a necessary party even in the scenario where non-governmental entities are involved because the government has the right and obligation to authorize and supervise non-governmental entities and maintain jurisdiction over their activities. Therefore, in the orbital space debris example in the prior section, presuming both parties involved are non-governmental entities, the states authorizing and supervising the non-governmental entities would be required to join the litigation.¹⁷⁶

2. Intervention

Absent required joinder under FRCP Rule 19, the federal government could motion the court to intervene. FRCP Rule 24(B)(2) permits:

On timely motion, the court may permit a federal or state governmental officer or agency to intervene if a party's claim or defense is based on:

- (A) a statute or executive order administered by the officer or agency; or
- (B) any regulation, order, requirement, or agreement issued or made under the statute or executive order.¹⁷⁷

172. FED. R. CIV. P. 19.

173. See Outer Space Treaty, *supra* note 1, at art. VI, VIII.

174. See FED. R. CIV. P. 19(A).

175. See FED. R. CIV. P. 19(B)(1–4).

176. This scenario is further elaborated in Hypothetical Seven.

177. See FED. R. CIV. P. 24(B)(2).

Given the federal government's responsibility under the Outer Space Treaty,¹⁷⁸ which has standing equal to that of a federal statute, the authorizing and supervising agency¹⁷⁹ could make a timely motion to intervene in the matter not only to protect the interests of the non-governmental litigant whose activities it has authorized and supervised but also to ensure the interests of the government are protected, including its national interests and international legal obligations.¹⁸⁰

C. Substantive Law

There are several federal (and for that matter, state) substantive laws that could apply to activities in outer space—or, in some cases, that have already been applied.¹⁸¹ One possibility would be filing the suit under the Administrative Procedures Act (APA),¹⁸² which usually involves requesting declaratory judgment to determine whether a federal act has been violated, such as the National Environmental Protection Act (NEPA).¹⁸³ Of the many laws that could be applied, this Article seeks to narrow the scope of its analysis strictly to areas of law that will be commonly applied to outer space activities. Because the activity is being performed in outer space, there is almost a guarantee that no state law will be applied, as the claims brought in these circumstances will almost always fall under a federal statute. On the other hand, if the court exercises subject matter jurisdiction under 51 U.S.C. § 50914(g), then the court would apply state limited liability laws.¹⁸⁴ Until Congress is able to flesh out the law pertaining to outer space activities, the causes of action for commercial outer space activities under federal statutes will be limited, with the Commercial

178. See Outer Space Treaty, *supra* note 1, at art. VI, VIII.

179. The “supervising agency” could exist as one or multiple agencies depending on the function of the space object being launched. For example, a space object that would use spectrum would need a license from the FCC. A space object incorporating remote-sensing capabilities would need a license from NOAA as well as the FCC. See Ian Christensen, Brian Weeden & Josh Wolny, *The FCC Takes a Leadership Role in Combating Orbital Debris*, THE SPACE REV. (Apr. 20, 2020), <https://www.thespacereview.com/article/3926/1> [<https://perma.cc/5T9M-H38K>].

180. There is an argument intervention would not be just permissive for the government but rather intervention by right. See FED. R. CIV. P. 24(A).

181. See, e.g., *Cicco v. Nat'l Aeronautics & Space Admin.*, No: 18-CV-01164, 2019 WL 1670759 (D. Kan. 2019) (suit arising under the Declaratory Judgment Act and Lien Enforcement Statute); see also *Carlson v. United States*, No. 19-CV-02027 (suit arising under the Federal Torts Claims Act); Michael J. Listner, *NGSOS and the National Environmental Protection Act (NEPA)*, THE PRÉCIS (Feb. 21, 2020) (discussing potential claims under NEPA).

182. 5 U.S.C. § 706(2)(D).

183. See Listner, *supra* note 181.

184. See, e.g., VA. CODE ANN. § 8.01-227.9 (West 2007).

Space Launch Competitiveness Act (CSLCA) as the main option at the moment. This serves as an opportunity for the federal courts to begin establishing their own boundaries until applicable legislation is drafted, especially around the outer space resources law.

Most future causes of action in the outer space context will be related to torts and property. In November 2015, the United States passed the CSLCA.¹⁸⁵ The CSLCA is unprecedented, as many space law enthusiasts argue it goes against many of the provisions of the Outer Space Treaty, including whether Title IV (explained below) goes beyond the treaty's language in preventing appropriation of outer space resources.¹⁸⁶ For now, this is the only statute under which plaintiffs can file a claim for outer space activities related to property.

Sections 103 and 109 of the CSLCA, the Spurring Private Aerospace Competitiveness and Entrepreneurship Act (SPACE Act), set up an insurance and liability paradigm for both spaceflight participants and property launched from the United States formulated through studies on orbital traffic management.¹⁸⁷ Further, the CSLCA provides for the indemnification of spaceflight participants¹⁸⁸ by the US government for their claims against private space companies operating under a license granted by the CSLCA.¹⁸⁹ Most importantly, Section 106 of the CSLCA provides that “[f]ederal courts shall have exclusive jurisdiction of any claim by a third party or spaceflight participant for death, bodily injury, or property damage or loss resulting from an activity carried out under the commercial space launch or reentry license.”¹⁹⁰ This language seems to indicate that private citizens of the United States or other countries harmed by a US-registered launch vehicle might have standing to assert a cause of action in federal court that could lead to a judgment requiring that third party's debris be removed as a remedial measure.

185. See CSLCA.

186. See, e.g., Jeff Foust, *Mining Issues in Space Law*, THE SPACE REV. (May 9, 2016), <http://www.thespacereview.com/article/2981/1> [<https://perma.cc/KMW7-ZXTL>] (“At issue is Article 2, which states that celestial bodies, including asteroids, are ‘not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.’”).

187. See CSLCA §§ 103, 109.

188. See *id.* § 112(c)(4); see also 51 U.S.C. § 50902(2) (“[C]rew’ means any employee of a licensee or transferee, or of a contractor or subcontractor of a licensee or transferee, who performs activities in the course of that employment directly relating to the launch, reentry, or other operation of or in a launch vehicle or reentry vehicle that carries human beings.”); 51 U.S.C. § 50902(2) (“[S]pace flight participants’ means an individual, who is not crew or a government astronaut, carried within a launch vehicle or reentry vehicle.”).

189. See CSLCA § 103.

190. *Id.* § 106.

Moreover, “[a] United States citizen engaged in commercial recovery of an asteroid resource or a space resource shall be entitled to any asteroid resource or space resource obtained, including to possess, own, transport, use, and sell the asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of the United States.”¹⁹¹ This provision of the CSLCA serves two functions for future litigation. First, it permits a federal court to exercise subject matter jurisdiction over a case involving space resources. Second, by granting the right to “possess, own, transport, use, and sell” asteroid or space resources, the CSLCA provides a non-governmental entity the footing necessary to meet the burden of showing standing.¹⁹² That is to say, the right to perform space resource activities creates the potential of a dispute that meets the elements of standing in the federal court.¹⁹³

The CSLCA will likely be the most cited statute in bringing causes of action in the outer space context in federal courts as private companies begin mining resources. As these lawsuits begin to be filed, seeing how this act and the numerous outer space treaties interplay in courts will be important to watch as substantive law is created for this arena.

VI. HYPOTHETICALS

The principles of subject matter jurisdiction of the federal courts over outer space matters are better understood through illustration. The following hypotheticals portray potential scenarios the federal court could be called upon to adjudicate and apply the Federal Rules of Civil Procedure and the Federal Rules of Evidence. The hypotheticals discussed below assume there is a preexisting authorization or ability for an agency to authorize the actions discussed in the hypotheticals and presume the litigants have standing. The first two hypotheticals involve scenarios where subject matter jurisdiction is asserted through the CSLCA.

These hypotheticals do not account for the supplemental jurisdiction of the federal courts, where disputes brought under 51 U.S.C. § 50914(g) would allow parties to bring non-related matters before the court.¹⁹⁴ For example, presume a plaintiff files suit against a non-governmental entity related to a contracted spaceflight activity.

191. *Id.* § 402.

192. *See supra* Section IV.E; *see also* CSLCA § 402.

193. *See Lujan v. Defs. of Wildlife*, 504 U.S. 555, 560–61 (1992).

194. *See supra* Section III.B.

During the course of the activity at issue, the plaintiff's vehicle was damaged in an unrelated occurrence on the property belonging to the non-governmental entity (e.g., an employee of the non-governmental entity negligently damaged the plaintiff's vehicle in the course of his duties). The subject matter jurisdiction granted under 51 U.S.C. § 50914(g) would not permit the court to hear the matter separately; however, the court could exercise supplemental jurisdiction over the plaintiff's claim for damage to the vehicle.¹⁹⁵

A. *Hypothetical One*¹⁹⁶

State A hosts commercial suborbital flights under its jurisdiction and has a limited liability law covering these flights.¹⁹⁷ A contract dispute between the spaceflight provider and a spaceflight participant is initiated by the plaintiff because the spaceflight provider failed to reach an altitude of one hundred kilometers, which could be actionable as a breach of contract.¹⁹⁸ The plaintiff files a lawsuit in a superior court in State A, seeking damages for breach of contract, including damages related to the plaintiff's expectation interest.¹⁹⁹ However, the spaceflight provider (the defendant) files a motion to dismiss, asserting the superior court in State A lacks subject matter jurisdiction because 51 U.S.C. § 50914(g) grants the federal district court exclusive jurisdiction over any action or tort arising from a launch or license under Title 51, Chapter 509. The superior court in State A would have no choice but to dismiss the case without prejudice because it does not have the authority to adjudicate the matter under 51 U.S.C. § 50914(g). At this point, the aggrieved plaintiff could choose to drop the matter entirely or file the complaint in the federal district court for State A.

If the plaintiff decides to file in the federal district court, the complaint would include a statement that the federal district court of State A has exclusive subject matter jurisdiction over this matter per 51 U.S.C. § 50914(g). This would allow the federal district court to accept the matter, and litigation would ensue. The matter would be subject to the Federal Rules of Civil Procedure and the Federal Rules of

195. See 28 U.S.C. § 1367.

196. Listner, *supra* note 48.

197. See, e.g., COLO. REV. STAT. ANN. § 41-6-101 (West 2012); N.M. STAT. ANN. § 41-14-3 (West 2013); TEX. CIV. PRAC. & REM. CODE ANN. § 100A.002 (West 2013).

198. There is a growing consensus that the boundary between the atmosphere and outer space is actually 80 km (43.19 nautical miles). See generally Jonathan C. McDowell, *The Edge of Space: Revisiting the Karman Line*, 151 ACTA ASTRONAUTICA 668, 668 (2018) (discussing a reconsideration of the Karman Line boundary).

199. See RESTATEMENT (SECOND) OF CONTRACTS § 347 (AM. LAW INST. 1979).

Evidence. However, because there is no federal law equivalent to the state law governing the contract made between the plaintiff and the defendant for the suborbital flight, the federal district court would be required to apply the substantive contract laws of State A in order to adjudicate the matter. Similarly, if this case involved a personal injury or a tort, State A's substantive tort laws would be applied by the federal court. In other words, a case or controversy subject to the jurisdictional requirements of 51 U.S.C. § 50914(g) signifies that the federal district court would apply federal procedural and evidence rules, but it would be required to apply state substantive law.

Furthermore, if the plaintiff spaceflight participant initially brought suit in the federal district court, the defendant spaceflight provider might seek to remove the matter to the state court because it could give the defendant a more favorable venue to defend against the lawsuit.²⁰⁰ However, because 51 U.S.C. § 50914(g) grants exclusive subject matter jurisdiction over the matter to the district court, removal would fail.

*B. Hypothetical Two*²⁰¹

Presume State A has a law that limits the liability of spaceflight providers and their vendors, meaning spaceflight participants and their heirs would have little or no recourse for injuries or death sustained during a commercial spaceflight. A spaceflight participant in State A is then injured during the course of a commercial spaceflight pursuant to a launch license issued per Title 51, Chapter 509. That participant decides to test the scope and legality of State A's limited liability law. The spaceflight participant, who is the plaintiff, proceeds to file a personal injury suit in the superior court of State A, alleging the spaceflight provider's negligence was wanton and reckless and resulted in injury. The spaceflight provider, who is the defendant, responds by filing a motion to dismiss, asserting that State A's limited liability law prevents the plaintiff from recovering for the injuries sustained during the commercial spaceflight. However, in this hypothetical the defendant does not challenge the subject matter jurisdiction of the state court.

Two possible scenarios transpire. First, the superior court may *sua sponte* recognize it does not have subject matter jurisdiction over this case because of 51 U.S.C. § 50914(g). As a result, the superior court would dismiss the case without prejudice, permitting the plaintiff to file

200. See 28 U.S.C. § 1446.

201. Listner, *supra* note 48.

the case in the respective federal district court. Conversely, the lack of the court's subject matter jurisdiction may not come up and the court could reject the defendant's motion to dismiss and proceed to consider whether the limited liability law prevents the plaintiff from recovering.

As the trial progresses, the defendant may realize the court is either going to find: (1) the defendant's conduct, which resulted in the plaintiff's injury, was done with "wanton abandonment," or (2) State A's limited liability law is invalid, thereby ruling in favor of the plaintiff. The defendant, understanding the issue of subject matter jurisdiction can be raised at any point during the proceedings, asserts that the trial court does not have subject matter jurisdiction because 51 U.S.C. § 50914(g) grants exclusive jurisdiction of this matter to the federal court. The superior court would be obligated to rule on the defendant's assertion of lack of subject matter jurisdiction and dismiss or vacate the case depending on whether subject matter jurisdiction is raised before or after the court has ruled on the substantive law claims. If the superior court rejects the defendant's assertion that it lacks subject matter jurisdiction, the defendant, presuming a timely objection is made, could appeal the superior court's ruling to the appellate court in State A. In this appeal, the defendant could bring his claim that the superior court lacked subject matter jurisdiction, at which point the appellate court would likely vacate the lower court's decision. Markedly, the preclusive effect of *res judicata*²⁰² or collateral estoppel²⁰³ would not bar the plaintiff from filing his case again in the appropriate federal district court because the state court never had the authority to hear the case to begin with.

C. Hypothetical Three

The four cases highlighted in Sections I.B.1–4 illustrate when the federal court has exercised subject matter jurisdiction over issues

202. "Res judicata precludes the litigation in a later case of matters actually decided, and matters that could have been litigated, in an earlier action between the same parties for the same cause of action.' The doctrine applies when three elements are met: '(1) the parties must be the same or in privity with one another; (2) the same cause of action must be before the court in both instances; and (3) a final judgment on the merits must have been rendered in the first action.'" *Kalil v. Town of Dummer Zoning Bd. of Adjustment*, 992 A.2d 725, 730 (N.H. 2010) (internal citations omitted).

203. "At its core, the doctrine of collateral estoppel bars a party to a prior action, or a person in privity with such a party, from relitigating any issue or fact actually litigated and determined in the prior action. Three basic conditions must, then, be satisfied before collateral estoppel will arise: the issue subject to estoppel must be identical in each action, the first action must have resolved the issue finally on the merits, and the party to be estopped must have appeared as a party in the first action, or have been in privity with someone who did so." *Daigle v. City of Portsmouth*, 534 A.2d 689, 798 (N.H. 1987) (internal citations omitted).

relating to outer space without the benefit of 51 U.S.C. § 50914(g). While these cases are outliers, they reflect the possible trend of federal courts exercising subject matter jurisdiction in situations that fall outside of 51 U.S.C. § 50914(g). For example, one of the hot topic issues in outer space law is whether Article VI of the Outer Space Treaty applies to non-governmental individuals (i.e., whether the federal government has the authority to authorize and supervise non-governmental space activities).²⁰⁴ This viewpoint could theoretically be challenged in federal court. Consider the following hypothetical.

A plaintiff from the commercial space industry files for a declaratory judgment in the federal district court to answer the following question: Do the treaty obligations in the Outer Space Treaty, including Article VI, affect private individuals seeking to perform non-governmental space activities?²⁰⁵ Ancillary to that question is what are the rights and duties of the federal government under Article VI (i.e., what rights and duties does the Outer Space Treaty create in a state, in this case the US federal government). The federal court could address this issue without the benefit of 51 U.S.C. § 50914(g) as it involves a federal question.²⁰⁶ Specifically, it involves a question of interpretation of a ratified treaty.

This hypothetical illustrates where a state is a party to the litigation not because of its obligations to authorize and supervise under Article VI of the Outer Space Treaty, but because it is a party that has caused an alleged harm. This hypothetical helps to illustrate that federal courts have presently exercised subject matter jurisdiction over matters involving outer space issues outside of congressional action and even more so with Congress's action with 51 U.S.C. § 50914(g).

D. Hypothetical Four

Similar to Hypothetical Three, Hypothetical Four illustrates where a state is a party to the litigation not because of its obligations to authorize and supervise under Article VI of the Outer Space Treaty.

Party A is a citizen of the United States and a non-governmental operator of a constellation of satellites providing phone service. The US government through an authorizing agency, Party B, advises Party A that one of its satellites could collide with a satellite registered to

204. See Outer Space Treaty, *supra* note 1, at art. VI, VIII.

205. *Id.*

206. See U.S. CONST. art. 3, § 2.

another nation.²⁰⁷ Party B is concerned a collision could cause geopolitical fallout and potential liability under international law.²⁰⁸ At this point Congress has not granted Party B “on-orbit authority” over non-governmental space activities.²⁰⁹ Regardless of this lack of “on-orbit authority,” Party B orders Party A to perform a maneuver to avoid the potential collision or else Party B will revoke the non-governmental entity’s license.

Party A complies with Party B’s order. Subsequently, Party A learns Party B’s analysis that predicted a collision was flawed, and because of that Party A was forced to expend maneuvering fuel, which decreased the operational life of Party A’s satellite. Party A files suit against Party B in federal court on two counts. First, Party A seeks a declaratory judgment as to whether Party B had the authority to order Party A to maneuver its satellite.²¹⁰ Second, Party A alleges Party B was negligent in its analysis, and Party B’s order for Party A to maneuver its satellite or else have its license revoked without due process constitutes a taking.²¹¹

In this matter, the federal court has subject matter jurisdiction because it involves two federal questions: whether Party B had the authority to order Party A to maneuver its satellite, and the constitutional question of whether Party B’s flawed analysis, upon which it based its order, is a taking under the Fifth Amendment.²¹²

*E. Hypothetical Five*²¹³

Party A and Party B are both citizens of the United States. Both parties are performing space resource activities, such as mining, on the same celestial body and have a dispute over the space resources extracted at this point as well as who has rights to the resources remaining within or upon the celestial body. Two things could happen. One possibility is that Party A or Party B could file suit as the plaintiff

207. The agency responsible would depend on the function of the satellite. In this hypothetical, since the satellite’s function involves spectrum, the responsible agency would likely be the FCC. See DANIEL MORGAN, CONG. RSCH. SERV., R45416, COMMERCIAL SPACE: FEDERAL REGULATION, OVERSIGHT, AND UTILIZATION 11–12 (2018).

208. See Liability Convention, *supra* note 9, at art. III.

209. See *Nemitz v. United States*, No. CV-N030599, 2004 WL 3167042, at *1 (D. Nev. Apr. 26, 2004).

210. See *Int’l Shoe Co v. Washington*, 326 U.S. 310, 316 (1945).

211. The argument is that the order by the agency to maneuver the satellite or face revocation of its license, which would expend fuel and shorten the operational life of the satellite, is a taking under the Constitution. See U.S. CONST. amend. V.

212. See 28 U.S.C. § 1331.

213. Listner, *supra* note 27.

in federal court. The other is the US government, per its rights under Article VI and Article VIII of the Outer Space Treaty, could file suit in federal court as the plaintiff to resolve the matter.²¹⁴ In either case, the court can exercise personal jurisdiction over both parties because they are US citizens.²¹⁵ Moreover, the US government, through its executive agencies, would have judicial standing to represent the interests of the United States, including compliance with international legal obligations, national security, and environmental or geopolitical concerns in general.

*F. Hypothetical Six*²¹⁶

This hypothetical applies the same scenario in Hypothetical Five except, where Party A is a citizen of the United States, Party B is operating under the Article VI authority and Article VIII jurisdiction of another state.²¹⁷ Party A decides to file suit in federal court to hear the matter and resolve the dispute, but the federal court does not have personal jurisdiction over Party B.²¹⁸ Party B, the state who authorized and retains jurisdiction over Party B, or both could file a special appearance to challenge personal jurisdiction and seek dismissal for the same without submitting itself to the jurisdiction of the court.²¹⁹ Unless personal jurisdiction can be established, Party B would not be subject to the federal court's jurisdiction, and the merits of Party A's complaint would not be heard and summarily dismissed.²²⁰ However, the court might exercise *in rem* jurisdiction over the space resources and attain jurisdiction over the parties.²²¹ Party B and the state authorizing and supervising its activities would be obligated to appear to hear the case on the merits or else risk a default judgment.²²² Alternatively, Party B might waive personal jurisdiction and choose to initiate a suit or file a counterclaim in federal court and submit itself to the court's jurisdiction, provided the state who has Article VI authority and Article

214. Because of the federal government's rights and obligations under the Outer Space Treaty, the government would be required to join the litigation. *See* FED. R. CIV. P. 19; *see also* Outer Space Treaty, *supra* note 1, at art. VI, VIII.

215. *See* 51 U.S.C. § 50902(1).

216. Listner, *supra* note 27.

217. *See* Outer Space Treaty, *supra* note 1, at art. VI, VIII.

218. The US government would also have to be joined as a party. *See* Foster-Miller, Inc. v. Babcock & Wilcox Can., 46 F.3d 138, 150 (1st Cir. 1995).

219. *See* FED. R. CIV. P. 12(b)(2).

220. *Id.*

221. *See* Liability Convention, *supra* note 9, at art. I, II; *see also* CSLCA § 106.

222. *See* Liability Convention, *supra* note 9, at art. I, II. *But see* 28 U.S.C. § 1604(a).

VIII jurisdiction over Party B agrees and also submits itself to the jurisdiction of the federal court.²²³

This hypothetical is simplified at best, but it still illustrates a fundamental procedural impediment to using the federal courts when a private outer space actor from a foreign jurisdiction is involved. Ultimately, the decision for a non-US party to consent to the jurisdiction of the federal court can be accomplished through diplomatic channels or might be addressed through bilateral or multilateral agreements between states.

Moreover, there is the question of whether a judgment can be enforced against a foreign national. For instance, if Party B, as a foreign national, initiated this suit in federal court against Party A and received a favorable outcome, the court has the authority to enforce the judgment against Party A and would insist the state authorizing and supervising Party A comply with the decree of the court. Alternatively, presume Party A initiates suit against Party B. Party B and the state authorizing and supervising its activities submit to the jurisdiction of the federal court but do not prevail. Party A seeks redress from Party B, but Party B refuses to comply with the court order. This poses a dilemma for Party A because the court can only enforce the judgment to the extent Party B has contacts with the United States. The issue is further complicated as to whether the federal court can enforce a judgment against Party B. By extension, the question is whether the court can compel the state, which has jurisdiction over and authorizes and supervises Party B's outer space activities, to ensure Party B complies.

G. Hypothetical Seven

This hypothetical illustrates a scenario where a state is the defendant in a matter and not acting as the authorizing and supervising state under Article VI of the Outer Space Treaty. Party A is a non-governmental operator of a constellation of communications satellites in low-Earth orbit. One of Party A's satellites collides with a defunct national security satellite belonging to Party B, which is a foreign state. Party A files suit in federal court against Party B for negligence and fault liability.²²⁴ The state, which authorizes and

223. See Outer Space Treaty, *supra* note 1, at art. VI, VIII.

224. Per the Liability Convention, damage caused by a space object other than on the surface of the earth imposes fault liability. See Liability Convention, *supra* note 9, at art. III. However, there is no consensus on the theory of fault liability that would be employed, although academia has weighed in. See, e.g., Joel A. Dennerley, *State Liability for Space Object*

supervises Party A unbeknownst to Party A, files a claim under the Liability Convention for damage caused to State A's satellite.²²⁵ Party A's launching state, through its diplomatic agency, files a timely motion to intervene per Rule 24(B)(2), citing the state under whose jurisdiction Party A is licensed has presented a timely claim through diplomatic channels for damage to Party A's satellite.²²⁶ This means Party A's suit is not ripe for adjudication.²²⁷ The court would then summarily refuse to hear the case because it lacked subject matter jurisdiction.

Same facts, except this time the launching state for Party A's satellite did not file a claim under the Liability Convention within the prescribed time.²²⁸ Party A files suit against Party B. The state, which authorizes and supervises Party A, is either joined under Rule 19 or again intervenes per Rule 24(B)(2). Party B files a special appearance challenging the court's personal jurisdiction, asserting the Foreign Sovereign Immunities Act which makes Party B immune from the court's jurisdiction.²²⁹ Furthermore, the state, which authorizes and supervises Party A, joins in Party B and files a motion asserting the Foreign Sovereign Immunities Act makes Party B immune from the court's jurisdiction.

Collisions: The Proper Interpretation of 'Fault' for the Purposes of International Space Law, 29 EUR. J. INT'L L. 281, 288 (2018).

225. "1. A State which suffers damage, or whose natural or juridical persons suffer damage, may present to a launching State a claim for compensation for such damage. 2. If the State of nationality has not presented a claim, another State may, in respect of damage sustained in its territory by any natural or juridical person, present a claim to a launching State. 3. If neither the State of nationality nor the State in whose territory the damage was sustained has presented a claim or notified its intention of presenting a claim, another State may, in respect of damage sustained by its permanent residents, present a claim to a launching State." Liability Convention, *supra* note 9, at art. VIII.

226. See Liability Convention, *supra* note 9, at art. IX, X.

227. "The ripeness doctrine 'focuses on the timing of the action.' . . . '[It] is more than a mere procedural question; it is determinative of jurisdiction. If a claim is unripe, federal courts lack subject matter jurisdiction and the complaint must be dismissed.' . . . Ripeness 'draw[s] both from Article III limitations on judicial power and from prudential reasons for refusing to exercise jurisdiction.' . . . Enforcing ripeness requirements discourages 'premature adjudication' of legal questions and judicial entanglement in abstract controversies. . . . Thus, the doctrine serves as a bar to judicial review whenever a court determines a claim is filed prematurely. The key factors to consider when assessing the ripeness of a dispute are: (1) the likelihood that the harm alleged by a party will ever come to pass; (2) the hardship to the parties if judicial relief is denied at this stage in the proceedings; and (3) whether the factual record is sufficiently developed to produce a fair adjudication of the merits." *Dealer Comput. Servs., Inc. v. Dub Herring Ford*, 623 F.3d 348, 351 (6th Cir. 2010).

228. "A claim for compensation for damage may be presented to a launching State not later than one year following the date of the occurrence of the damage or the identification of the launching State which is liable." Liability Convention, *supra* note 9, at art. X(1).

229. See 28 U.S.C. § 1604.

VII. THE ROLE OF THE COURT: ARBITER OR PSEUDO-STATE

Presuming Congress does not delineate the jurisdiction and authority of the federal courts in adjudicating these matters, the potential exists for the courts to place themselves in the stead of states when it comes to authorizing and supervising activities. In other words, by rendering a decision in a dispute between private space actors, the court would theoretically assume the authority and obligations under Article VI of the Outer Space Treaty to “authorize and supervise” the activities of non-governmental actors in place of the state. Furthermore, it would theoretically assume jurisdiction over non-governmental entities and, to an extent, over the states who are parties to the litigation.²³⁰

This question is relevant especially when the state does not extend its Article VI authority to non-governmental outer space activities between launch and reentry or so-called “on-orbit” activities.²³¹ The lack of legislative action clarifying authority for on-orbit activities and limiting the court’s role would leave the court to place itself as a state-level authority over both states in the litigation. Moreover, the lack of legislative action in both delineating the subject matter jurisdiction of the courts and legislative action with regards to on-orbit authority could place the court in the role of legislator and infer that authority from Article VI and Article VIII of the Outer Space Treaty. This concern is germane both for parties under domestic jurisdiction and for parties operating under foreign jurisdiction.²³² The answer to this dilemma lies with Congress and specifically legislation that not only demarcates the authority of the courts but strictly limits the role of the courts to arbiter, thereby ensuring the courts will not exercise Article VI authority nor assume the role of a pseudo-state and implicate Article VIII jurisdiction over both domestic and foreign parties.

VIII. CONCLUSION

The evolution of domestic laws granting non-governmental entities greater access to outer space and activities within portend a compelling shift in the archetype of litigation. As these activities increase, the role of lawyers in outer space will expand from the arena of international law and transactional law to litigation where disputes

230. Listner, *supra* note 27.

231. See *Nemitz v. United States*, CV-N030599, 2004 WL 3167042, at *1 (D. Nev. Apr. 26, 2004).

232. *Id.*

will certainly arise. The procedural path set forth by the Authors in this piece is not the do all and end all of approaching litigation and certainly this Article serves to create more questions than it answers. The legal mechanics of filing and litigating a lawsuit, including arguing in favor of subject matter jurisdiction, venue, and joinder of parties, through the tools provided by the Federal Rules of Civil Procedure will be the task of litigators on both sides to craft to persuade the court.

The court, for its part, will be tasked with not only the substance of these future lawsuits, but also whether it has the authority to hear them. Indeed, the question of subject matter jurisdiction, absent the intercession of Congress, will be left to the court to decide. Once that foundational question is answered, then the court will face the challenge of educating itself on the substance of the law, both domestic and international, that will be part of this next generation of legal matters.

The wild card in this is Congress. Congress has weighed in on the subject matter jurisdiction of the court with regards to certain matters related to non-governmental outer space activity. However, Congress's authority over the courts may not be finished as it still has not fully addressed subject matter jurisdiction or even the authority of the court. What is the court's role in these matters? Is it an adjudicator or a pseudo-state with the authority to not only determine the rights of non-governmental entities and their outer space activities and settle disputes but also to act in the stead of states with regards to their rights and obligations under international law? Moreover, do special courts need to be formed that will address disputes between non-governmental entities and states, or will the federal court in its current form suffice? Finally, Congress might consider the enforcement of judgments in these matters, in particular when a foreign litigant accepts the jurisdiction of the federal court to resolve this matter.

These and many other questions will arise as the first cases trickle into the courts along with the inevitable uncertainty. It is the desire of the Authors that this Article lay at least a rudimentary framework for those litigators with the foresight to recognize the approaching involvement of the federal courts in outer space matters and a perspective to consider for those who are not persuaded the federal court system is the proper setting to adjudicate disputes in outer space.