THE ARTEMIS ACCORDS: INTERPRETATION AND ASSESSMENT IN LIGHT OF EXISTING LAW

I. INTRODUCTION

On October 13, 2020, eight countries signed the Artemis Accords (Accords).[1] The Accords are a recent development in the international legal regime governing space activities and are the result of a coalition of states seeking to return to the Moon and make an eventual trek to Mars.[2] The original eight Signatory States to the agreement are Australia, Canada, Italy, Japan, Luxembourg, the United Arab Emirates, the United Kingdom of Great Britain and Northern Ireland, and the United States.[3] As of December 2022, Bahrain, Brazil, Colombia, France, Israel, Mexico, New Zealand, Nigeria, Poland, the Republic of Korea, Romania, Rwanda, Saudi Arabia, Singapore, and Ukraine are also members.[4] NASA officials expressed excitement following the initial signing, saying that "Artemis will be the broadest and most diverse international human space exploration program in history," and will allow the Signatory States to explore the Moon while "establishing vital principles that will create a safe, peaceful, and prosperous future in space for all of humanity to enjoy."[5]

[1] Rep. of the U.S. to the U.N., Letter Dated 30 December 2020 from the Permanent Representative of the United States of America to the United Nations addressed to the Secretary-General, U.N. Doc. A/75/699 (Jan. 7, 2021) [hereinafter Artemis Accords].
[2] NASA, *The Artemis Accords*, NASA, (last visited Aug. 2, 2021) https://www.nasa.gov/specials/artemis/ [hereinafter Artemis Plan] (The Program plans to send "human explorers 250,000 miles to the Moon, then 140 million miles to Mars," a feat which "requires a bold vision, effective program management, funding for modern systems development and mission operations, and support from all corners of [the United States] as well as . . . partners from across the globe").
[3] Artemis Accords, *supra* note 1, *see* annex.
[4] Artemis Plan, *supra* note 2.
[5] Press Release, Sean Potter, NASA, International Partners Advance Cooperation with First Signings of Artemis Accords (Oct. 13, 2020) available at *https://www.nasa.gov/press-release/nasa-international-partners-advance-cooperation-with-first-signings-of-artemis-accords*.

The Artemis Accords claim to reinforce and implement the Outer Space treaty by encompassing established international norms into a modern political agreement.[6] The object and purpose of the Artemis Accords is to facilitate cooperation in the peaceful use of outer space.[7] The Accords accomplish this purpose by emphasizing the use of space for peaceful purposes, stressing the importance of transparency, and developing standards for mission interoperability. However, the Artemis Accords failed to reaffirm the prohibition of weapons of mass destruction or active military uses of outer space or establish concrete requirements for compliance with the Registration Convention.

This paper reaches these conclusions by analyzing the effects of the recently signed Artemis Accords on international space law. First, Section II presents the current law of space, including the five multilateral treaties governing space. Next, Section III introduces the recently signed Artemis Accords and the provisions within. Finally, Section IV compares the Artemis Accords to prior existing law, interpreting the agreement and assessing the effects of its signing.

II. CURRENT SPACE LAW

The expansion of technology and advancement of humanity into space made the United States and the Union of Soviet Socialist Republics (USSR) interested in the military potential of space activity in the 1950s.[8] In response to these interests, space law formed.[9] The desire to

[6] Elizabeth Howell, *New Zealand Signs Artemis Accords to Urge Sustainability in Space Mining*, SPACEFLIGHT (SPACE.COM) (June 4, 2021), https://www.space.com/new-zealand-joins-artemis-accords-exploration-standards.
[7] *See infra* pp. 24-26. *See also* NASA, *Principles for a Safe, Peaceful, and Prosperous Future*, NASA, (last visited Aug. 2, 2021), https://www.nasa.gov/specials/artemis-accords/index.html.
[8] M.J. PETERSON, INTERNATIONAL REGIMES FOR THE FINAL FRONTIER 49-50 (2005).
[9] *Id.* at 1.

prevent nuclear proliferation in outer space accelerated the effort to create binding international commitments.[10]

International space law applies to celestial bodies and the outer space in between. The primary sources of international law are custom and treaties.[11] Aspects of international space law are derived from each of these sources.[12] Some rules of space law formed as customary norms during the advent of space activity.[13] Other rules of space law grew from negotiations among states and within the United Nations (U.N.) into treaties.[14]

The Limited Test Ban Treaty entered into force in 1963 and prohibits the testing of nuclear weapons in space.[15] In 1967, international codification of principles of space law began,[16] resulting in five conventions:

1. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (Outer Space Treaty) (1967);[17]
2. Agreement on the Rescue of Astronauts, the Return of Astronauts and Return of Objects Launched into Outer Space (Rescue Agreement) (1968);[18]

[10] DETLEV WOLTER, COMMON SECURITY IN OUTER SPACE AND INTERNATIONAL LAW 9-11 (2006).
[11] Statute of the International Court of Justice, art. 38.
[12] Michael J. Listner, *International Space Law: An Overview of Law and Issues*, 52 N.H. BAR. J. 62, 62 (2011).
[13] *Id.*
[14] *Id.*
[15] Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space, and Under Water, Aug. 5, 1963, 14 U.S.T. 1313, 480 U.N.T.S. 6964 [hereinafter Limited Test Ban Treaty].
[16] PETERSON, *supra* note 8, at 41.
[17] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].
[18] Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Space Objects Launched into Outer Space, Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S 119 [hereinafter Rescue Agreement].

3. Convention on International Liability for Damage Caused by Space Objects (Liability Convention) (1971);[19]
4. Convention on Registration of Objects Launched into Outer Space (Registration Convention) (1974);[20] and
5. Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Agreement) (1979).[21]

This section addresses these sources of law by discussing the treaties in chronological order, starting with the Limited Test Ban Treaty.

A. Limited Test Ban Treaty

On July 9, 1962, the United States began a series of five nuclear tests to study the effects of nuclear weapons in high altitudes.[22] The first such test was "Starfish Prime."[23] Radiation from the Starfish Prime and other high-altitude nuclear tests created "an artificial radiation belt that, together with the EMPs, damaged or destroyed as many as one third of the satellites in low Earth

[19] Convention on International Liability for Damage Caused by Space Objects, March. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187 [hereinafter Liability Convention].
[20] Convention on Registration of Objects Launched into Outer Space, Nov. 12, 1974, 28 U.S.T. 695, 1023 U.N.T.S. 15 [hereinafter Registration Convention].
[21] Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Dec. 5, 1979, 1363 U.N.T.S. 3 [hereinafter Moon Agreement].
[22] Comprehensive Nuclear Test Ban Treaty Organization "CTBTO", *9 July 1962 'Starfish Prime', Outer Space*, CTBTO (July 18, 2012), http://npsglobal.org/eng/news/23-nuclear-a-radiological/1171-9-july-1962-starfish-prime-outer-space.html [hereinafter *'Starfish Prime'*].
[23] *Id.* The test experimented with the Van Allen radiation belts located in Earth's magnetosphere. *Id.* The explosion was "approximately a hundred times that of the Hiroshima bomb." *Id.* Starfish Prime cased "a temporary alteration of the shape and intensity of the lower Van Allen belt, which created artificial aurora borealis that could be seen across the Pacific Ocean, from Hawaii to New Zealand." *Id.* Another effect of the explosion was a destructive electromagnetic pulse (EMP) that "knocked out" electric devices on the island of Oahu, Hawaii. *Id. See* Ramey, *Armed Conflict on the Final Frontier: The Law of War in Space*, 48 AIR FORCE L. REV. 1, 20 (2000) (describing how a nuclear explosion creates an EMP).

orbit at the time."[24] These atmospheric tests made a prohibition of nuclear weapons in space desirable.

On October 10, 1963, the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space, and Under Water (Limited Test Ban Treaty or LTBT)[25] entered into force.[26] The original parties to the treaty were the United States, the United Kingdom, and the USSR.[27] As of June 2021, the LTBT had 125 States Parties.[28]

Article I of the Limited Test Ban Treaty binds each State Party to prohibit and prevent any nuclear weapon test explosion in the atmosphere or beyond, including outer space.[29] The LTBT also prohibits States Parties from initiating nuclear explosions that could result in radioactive debris outside the territorial limits of the State conducting the explosion.[30]

Additionally, States Parties must "refrain from causing, encouraging, or in any way participating in" a nuclear explosion that would violate this limitation.[31] With these prohibitions, the LTBT prohibits nuclear tests in the upper atmosphere and outer space, like the Starfish Prime test, and their adverse effects.

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[24] *'Starfish Prime'*, *supra* note 22.
[25] Limited Test Ban Treaty, *supra* note 15.
[26] *Test Ban Treaty (1963)*, NATIONAL ARCHIVES, (last reviewed Feb. 8, 2022), https://www.archives.gov/milestone-documents/test-ban-treaty#:~:text=On%20August%205%2C%201963%2C%20the,outer%20space%2C%20and%20under%20water.
[27] Limited Test Ban Treaty, *supra* note 15, ¶ 1. *See also Id.*
[28] *Id. See Participant, https://treaties.un.org/Pages/showDetails.aspx?objid=08000002801313d9&clang=_en.*
[29] Limited Test Ban Treaty, *supra* note 15, art. 1, par. 1.
[30] Limited Test Ban Treaty, *supra* note 15, art. 1, par. 1.
[31] Limited Test Ban Treaty, *supra* note 15, art. 1, par. 2.

B. Outer Space Treaty

In 1959, the United Nations General Assembly established the Committee on Peaceful Uses of Outer Space (Committee) "to govern the exploration and use of space for the benefit of all humanity: for peace, security and development."[32] Within the United Nations, the Committee serves as "'the focal point' of international cooperation in space" and reports to the General Assembly.[33] The Committee devised most of the founding principles regarding space activities.[34]

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[32] UNOOSA, *Committee on the Peaceful Uses of Outer Space*, UNOOSA (last visited Aug. 3, 2021), https://www.unoosa.org/oosa/en/ourwork/copuos/index.html [hereinafter *Committee on the Peaceful Uses of Outer Space*]. Prior to this permanent establishment in 1959, the General Assembly created the committee in an *ad hoc* form in 1958. UNOOSA, *COPUOS History*, UNOOSA (last visited Dec. 18, 2020), https://www.unoosa.org/oosa/en/ourwork/copuos/history.html [hereinafter *COPUOS History*].

[33] PETERSON, *supra* note 8, at 25-26. Other sub-units of the United Nations are involved in space discussions, including the International Telecommunications Union (ITU), the World Meteorological Organization (WMO), the U.N. Education, Scientific and Cultural Organization (UNESCO), and the U.N. Disarmament Commission (UNDC). The General Assembly tasked COPUOS with studying legal problems associated with space exploration and space-related activities that could be undertaken by the U.N., as well as reviewing international cooperation in peaceful uses of outer space and encouraging space research programs. *Committee on the Peaceful Uses of Outer Space*, *supra* note 32. The Secretariat for COPUOS is the United Nations Office for Outer Space Affairs (UNOOSA). UNOOSA, *Roles and Responsibilities*, UNOOSA (last visited Oct. 19, 2020), https://www.unoosa.org/oosa/en/aboutus/roles-responsibilities.html. UNOOSA also administers the United Nations Register of Objects Launched into Outer Space (U.N. Register). *Id.* Two subsidiary bodies exist under COPUOS: the Scientific and Technical Subcommittee, and the Legal Subcommittee. *Committee on the Peaceful Use of Outer Space*, *supra* note 32.

[34] Listner, *supra* note 12, at 62. COPUOS and its subsidiary bodies played a large part in the formation of the principles of outer space. *Committee on the Peaceful Use of Outer Space*, *supra* note 32. Five principles serve as the foundation for international space law:

1. No nation can make territorial claims to outer space and celestial bodies within it, Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, G.A. Res. 1962 (XIII), ¶ 3, U.N. Doc. A/RES/18/1962 (Dec. 13, 1963);
2. Nations have free access to space, G.A. Res. 1962 (XVIII), *supra* note 34, at ¶ 2;
3. Nations are free to conduct scientific investigation in space, G.A. Res. 1962 (XVIII), *supra* note 34, at ¶¶ 1-2;
4. National rights to space object launched by states are preserved, G.A. Res. 1962 (XVIII), *supra* note 34, at ¶ 7; and
5. Nations will cooperate in rendering assistance to crews of spaceships in emergencies, G.A. Res. 1962 (XVIII), *supra* note 34, at ¶ 9.

Other principles in international space law have also been addressed in U.N. Resolutions. MATTHEW J. KLEIMAN, JENIFER K. LAMIE & MARIA-VITTORIA "GIUGI" CARMINATI, THE LAWS OF SPACEFLIGHT 66 (2012). These are:

1. Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting, G.A. Res. 37/92, U.N. Doc. A/RES/37/92 (Dec. 10, 1982).

Nations then codified the founding principles into the Outer Space Treaty, which became the cornerstone of international space law.[35] The Treaty quickly entered into force on October 10, 1967.[36]

The Outer Space Treaty addressed important questions, including concerns over jurisdiction and appropriation. For example, what law should apply in outer space, and can a State establish its sovereignty over territory in space? The Outer Space Treaty answers these questions by using a "strong parallel" to the legal treatment of land, sea, and air travel.[37] It designates outer space and celestial bodies as common areas, similar to the high seas or Antarctica.[38] Article 1 of the Outer Space Treaty states that "the exploration and use of outer space . . . shall be the province of all mankind."[39] Further, outer space is free for the exploration and use by all States, including free access to celestial bodies.[40]

Article II articulates the principle of non-appropriation of territory in outer space: "Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by

2. Principles Relating to Remote Sensing of the Earth from Outer Space, G.A. Res. 41/65, U.N. Doc. A/RES/41/65 (Dec. 3, 1986).
3. Principles Relevant to the Use of Nuclear Power Sources in Outer Space, G.A. Res. 47/68, U.N. Doc. A/RES/47/68 (Dec. 14, 1992).
4. Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, G.A. Res. 51.122, U.N. Doc. A/RES/51/122 (Dec. 13, 1996).

[35] KLEIMAN ET AL., *supra* note 34, at 61.
[36] Listner, *supra* note 12, at 62; KLEIMAN ET AL., *supra* note 34, at 61.
[37] PETERSON, *supra* note 8, at 75 ("The broad outlines of the solution to the jurisdictional question were supplied by the decision to treat outer space and celestial bodies as common areas: the state launching a space vehicle or satellite or establishing a station on a celestial body would retain jurisdiction over it.").
[38] Outer Space Treaty, *supra* note 17, arts. I-II. *See* G.A. Res. 1721A (XVI), par. 1(b), Dec. 20, 1961 ("Outer space and celestial bodies are free for exploration and use by all States in conformity with international law and are not subject to national appropriation."); PETERSON, *supra* note 8, at 49-53 (discussing the reasoning behind selecting the law of the high seas as an analogy for space law).
[39] Outer Space Treaty, *supra* note 17, art. I.
[40] Outer Space Treaty, *supra* note 17, art. I.

claim of sovereignty, by means of use or occupation, or by any other means."[41] Additionally, no State can assert sovereignty over any portion of space.[42] Effectively, outer space is "owned by no one and subject to use by all."[43]

Article III of the Outer Space Treaty appoints international law to fill any gaps in the law governing space.[44] States Parties must carry on their activities in space "in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding."[45] Under this provision, any norms of customary international law apply to outer space, including *jus ad bellum*, the U.N. Charter, and the Law of Armed Conflict.[46]

Weapons of mass destruction are prohibited under Article IV of the Outer Space Treaty.[47] Further, Article IV reserves outer space "exclusively for peaceful purposes."[48] The Outer Space Treaty binds the States Parties and prohibits the "establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military [maneuvers] on celestial bodies."[49] However, military personnel are not prohibited from participating in outer space activities, such as scientific research.[50] Further, "[t]he use of any equipment or facility

[41] Outer Space Treaty, *supra* note 17, art. II.
[42] Outer Space Treaty, *supra* note 17, art. II.
[43] KLEIMAN ET AL., *supra* note 34, at 62.
[44] Outer Space Treaty, *supra* note 17, art. III.
[45] Outer Space Treaty, *supra* note 17, art. III.
[46] KLEIMAN ET AL., *supra* note 34, at 62.
[47] Outer Space Treaty, *supra* note 17, art. IV ("States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.").
[48] Outer Space Treaty, *supra* note 17, art. IV.
[49] Outer Space Treaty, *supra* note 17, art. IV.
[50] Outer Space Treaty, *supra* note 17, art. IV.

necessary for peaceful exploration of the Moon and other celestial bodies shall also not be prohibited."[51]

The designation of space for "peaceful purposes," as well as the prohibition of weapons and military installations in space, creates a dichotomy concerning military uses of outer space. A distinction in state practice emerged between military uses of outer space "that are passive and non-destructive versus those that are active and destructive."[52] Passive military systems are not weapons themselves, but systems that enhance military systems on Earth's surface.[53] Passive military uses include systems for reconnaissance, navigation, and communication.[54] Alternatively, space weapons would be a device with destructive objectives.[55] So far, the international community recognizes that outer space is "free from active military uses and in particular from the deployment of any kind of space weapons."[56]

Article V of the Outer Space Treaty designates astronauts as "envoys of mankind" and requires States Parties to render assistance in the event of emergencies.[57] Article VI assigns responsibility for activities in outer space to States Parties.[58] Additionally, liability is assigned to

[51] Outer Space Treaty, *supra* note 17, art. IV.
[52] WOLTER, *supra* note 10, at 25.
[53] *Id.*
[54] *Id.* at 25-26. *See also* BRUCE A. HURWITZ, THE LEGALITY OF SPACE MILITARIZATION 53-107 (Elsevier Science Publishers B.V. 1986) (discussing the development of the interpretation of "peaceful uses" to include passive, non-violent military uses and assessing uses of space under that interpretation); MAINTAINING OUTER SPACE FOR PEACEFUL USES (Nandasiri Jasentuliyana, ed., United Nations University 1984) (including the proceedings of a symposium held in the Hague in March 1984, covering topics including the historical background of "peaceful uses," a review of space law, related international law on the issue, and the prospects for demilitarization at the time).
[55] WOLTER, *supra* note 10, at 36 ("A space weapon is a device stationed in outer space . . . or in the Earth environment designed to destroy, damage or otherwise interfere with the normal functioning of an object or being in outer space, or a device stationed in outer space designed to destroy, damage or otherwise interfere with the normal functioning of an object or being in the Earth environment.").
[56] *Id.* at 25.
[57] Outer Space Treaty, *supra* note 17, art. V. This provision is expanded upon in the Rescue Agreement. *See infra* pp. 11-12.
[58] Outer Space Treaty, *supra* note 17, art. VI.

States Parties under Article VII.[59] Article VIII requires space objects to be registered to a State Party.[60] This article also states that a State Party "shall retain jurisdiction and control over [space] object[s], and over any personnel thereof, while in outer space or on a celestial body."[61]

Articles IX, X, XI, and XII provide guidance for the conduct of space activities. Article IX contains a general environmental provision governing the space activities of States Parties. [62] Article X seeks to "promote international cooperation in the exploration and use of outer space."[63] Further facilitating international cooperation, Article XI instructs States Parties "to inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of the nature, conduct, locations and results of such activities."[64] Lastly, States Parties are bound to "open to representatives of other States Parties" any "stations, installations, equipment and space vehicles on the Moon and other celestial bodies;" and any representatives "shall give reasonable advance notice of a projected visit" to ensure "that maximum precautions may be taken to assure safety and to avoid interference with normal operations in the facility to be visited."[65]

Several of the provisions within the Outer Space Treaty have been expanded upon in subsequent international agreements. Additionally, many of the provisions of the Outer Space

[59] Outer Space Treaty, *supra* note 17, art. VII. This provision is expanded upon in the Liability Convention. *See infra* pp. 12-15.
[60] Outer Space Treaty, *supra* note 17, art. VIII. This provision is expanded upon in the Registration Convention. *See infra* pp. 15-17.
[61] Outer Space Treaty, *supra* note 17, art. VIII.
[62] Outer Space Treaty, *supra* note 17, art. IX.
[63] Outer Space Treaty, *supra* note 17, art. X.
[64] Outer Space Treaty, *supra* note 17, art. XI.
[65] Outer Space Treaty, *supra* note 17, art. XII.

Treaty are considered norms of customary international law and, as such, are binding on states that are not party to the treaty.[66]

C. Rescue Agreement, Liability Convention & Registration Convention

The Rescue Agreement, Liability Convention, and Registration Convention all expand upon different provisions within the Outer Space Treaty. These subsequent agreements further define the rights and obligations of States Parties in relation to space activities.

1. Rescue Agreement

The Rescue Agreement entered into force on December 3, 1968.[67] The provisions within the Rescue Agreement are designed "to develop and give further concrete expression" to the duties contained in Article V of the Outer Space Treaty.[68] The Rescue Agreement addresses both the rescue of spacecraft personnel and the return of space objects to their rightful owner.[69]

Article 1 requires Contracting Parties to notify the launching authority and the Secretary-General of the United Nations if the Party receives or discovers information "that the personnel of a spacecraft have suffered accident or are experiencing conditions of distress" or made an emergency landing in its territory "or on the high seas or in any other place not under the jurisdiction of any State."[70]

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[66] KLEIMAN ET AL., *supra* note 34, at 61.
[67] *Id.* at 63.
[68] Rescue Agreement, supra note 18, ¶ 1.
[69] KLEIMAN ET AL., *supra* note 34, at 63.
[70] Rescue Agreement, *supra* note 18, art. 1. Further, Article 2 states:

> If owing to accident, distress, emergency or unintended landing, the personnel of a spacecraft land in territory under the jurisdiction of a Contracting Party, it shall immediately take all possible steps to rescue them and render them all necessary assistance. It shall inform the

Article 3 requires similar steps when the personnel of a spacecraft lands on "the high seas or in any other place not under the jurisdiction of any State."[71] Article 4 further obligates Contracting Parties to "safely and promptly" return any personnel of a spacecraft found "under the jurisdiction of a Contracting Party or . . . on the high seas or in any other place not under the jurisdiction of any State" to "representatives of the launching authority."[72] Article 5 outlines the obligations of the Contracting Parties in relation to space objects and the procedure for their return.[73] Lastly, Article 6 defines "launching authority" as "the State responsible for launching."[74]

2. Liability Convention

The Liability Convention governs liability for damage caused by space objects and expands upon Article VII of the Outer Space Treaty. It entered into force on September 1, 1972.[75] The Liability Convention considers that "notwithstanding the precautionary measures to be taken by States and international intergovernmental organizations involved in the launching of space objects, damage may on occasion be caused by such objects."[76] The Liability Convention

> launching authority . . . of the steps it is taking and of their progress . . . . Such operations shall be subject to the direction and control of the Contracting Party, which shall act in close and continuing consultation with the launching authority.
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> Rescue Agreement, *supra* note 18, art. 2.

[71] Rescue Agreement, *supra* note 18, art. 3.
[72] Rescue Agreement, *supra* note 18, art. 4.
[73] Rescue Agreement, *supra* note 18, art. 5. According to this procedure, a "launching authority" may request "objects launched into outer space or their component parts found beyond the territorial limits of the launching authority . . . be returned to or held at the disposal of representatives of the launching authority, which shall, upon request, furnish identifying data prior to their return." Rescue Agreement, *supra* note 18, art. 5, par. 3.
[74] Rescue Agreement, *supra* note 18, art. 6.
[75] KLEIMAN ET AL., *supra* note 34, at 64.
[76] Liability Convention, *supra* note 19, ¶ 3.

also recognizes "the need to elaborate effective international rules and procedures concerning liability for damage caused by space objects."[77]

Article I of the Liability Convention defines several key terms. First, "damage" is defined as "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."[78] Second, "launching" includes "attempted launching."[79] Third, a "launching State" may be: "a State that launches a space object; a State that procures the launching of a space object; a State from whose territory a space object is launched; or a State from whose facility a space object is launched."[80] Lastly, the Liability Convention defines "space object" to include "component parts of a space object as well as its launch vehicle and parts thereof."[81]

The Liability Convention imposes liability in two situations.[82] First, Article II states "[a] launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth or to aircraft in flight."[83] This reflects the theory that "an innocent third-party victim should not be required to establish fault" for damages caused by space objects.[84] Second, Article III establishes fault-based liability for damage to a space object, or people or property on a space object caused by another launching State's space object. [85] A State is only liable for damage due to the fault of the State or a person for whom it is

[77] Liability Convention, *supra* note 19, ¶ 4.
[78] Liability Convention, *supra* note 19, art. I, par. a.
[79] Liability Convention, *supra* note 18, art. I, par. b.
[80] KLEIMAN ET AL., *supra* note 34, at 64 (explaining Liability Convention art. I, par. c).
[81] Liability Convention, *supra* note 19, art. I, par. d.
[82] KLEIMAN, ET AL., *supra* note 34, at 64.
[83] Liability Convention, *supra* note 19, art. II.
[84] KLEIMAN ET AL., *supra* note 34, at 64.
[85] Liability Convention, *supra* note 19, art. III.

responsible.[86] In cases where more than one State jointly launched the space object giving rise to liability, the States are jointly and severally liable for the damage.[87] The Convention does not apply to damage caused by a launching State to the nationals of that State, or to foreign nationals invited by the launching State to participate in the space object's operations.[88]

The Liability Convention recognizes three types of claimants: (1) the State where damage from a space object occurred; (2) the State whose permanent residents sustained damage; and (3) "[t]he State whose national suffered damage if in another State."[89] Article IX dictates that claims under the Liability Conventions must be presented through diplomatic channels.[90] In situations where diplomatic relations do not exist between the launching State and the claimant State, the claimant State may request a third State to present its claim and represent its interest. Alternatively, the claimant State may present its claim through the Secretary-General of the United Nations if both the launching State and the claimant State are members of the U.N.[91]

Any claims for compensation must be presented within one year following the date of the damage or the identification of the liable launching State.[92] Additionally, the Liability Convention "has no requirement for prior exhaustion of local remedies nor does it interfere with private claims."[93] Only States may bring claims under the Liability Convention, individuals may not bring private claims against Launching States.[94] However, private parties may assert private

[86] Liability Convention, *supra* note 19, art. III.
[87] Liability Convention, *supra* note 19, art. V.
[88] Liability Convention, *supra* note 19, art. VII.
[89] KLEIMAN ET AL., *supra* note 34, at 65 (summarizing Liability Convention art. VIII).
[90] Liability Convention, *supra* note 19, art. IX.
[91] Liability Convention, *supra* note 19, art. IX.
[92] Liability Convention, *supra* note 19, art. X, par. 1.
[93] KLEIMAN ET AL., *supra* note 34, at 65 (summarizing Liability Convention art. XI).
[94] *Id.*

claims under domestic or international liability laws other than the Liability Convention.[95] In a claim under Article II concerning absolute liability, "exoneration from absolute liability shall be granted to the extent that a launching State establishes that the damage has resulted either wholly or partially from gross negligence . . . on the part of a claimant State or of natural or juridical persons it represents."[96] However, "[n]o exoneration whatever shall be granted in cases where the damage has resulted from activities conducted by a launching State which are not in conformity with international law including, in particular, the Charter of the United Nations and the [Outer Space Treaty]."[97]

3. Registration Convention

On September 15, 1976, the Registration Convention entered into force.[98] The Registration Convention expands upon the requirements of Article VIII of the Outer Space Treaty.[99] The terms "launching State" and "space object" are defined in the Registration Convention, matching the definitions contained in the Liability Convention.[100] "State of registry" is a new term introduced in the Registration Convention and is defined as "a launching State on whose registry a space object is carried in accordance with article II."[101]

Article II contains provisions requiring the registration of space objects. A launching State must register each space object on a national registry.[102] If there are two or more launching

[95] *Id.*
[96] Liability Convention, *supra* note 19, art. VI, par. 1.
[97] Liability Convention, *supra* note 19, art. VI, par. 2.
[98] KLEIMAN ET AL., *supra* note 34, at 65.
[99] *Id.*
[100] Registration Convention, *supra* note 20, art. I, pars. a & b.
[101] Registration Convention, *supra* note 20, art. I, par. c.
[102] Registration Convention, *supra* note 20, art. II, par. 1.

States for a single space object, the States must determine which one of them is responsible for registration.[103] Each State is responsible for its registry's contents and maintenance.[104]

Article III creates an international register in addition to these national registries.[105] This provision states that the Secretary-General of the United Nations shall maintain the register.[106] The Secretary-General delegated this responsibility to UNOOSA.[107] UNOOSA makes the register publicly available, as required by Article III, by publishing the most recent submissions to the international registry on its website and making all documents related to the register available through the U.N. Document Library.[108]

Each State submits information from its registry to the UN Register.[109] Information concerning space objects must be transmitted "as soon as practicable" and include the following: the name of launching State or States, the designator of the space object or its registration number, the date and territory or location of launch, the object's basic orbital parameters, and the space object's general function.[110] States are free to furnish the U.N. Register with additional information concerning space objects on its registry and must notify the register "to the greatest extent feasible and as soon as practicable" of space objects which are no longer in orbit.[111]

[103] Registration Convention, *supra* note 20, art. II, par. 2.
[104] Registration Convention, *supra* note 20, art. II, par. 3.
[105] Registration Convention, *supra* note 20, art. III.
[106] Registration Convention, *supra* note 20, art. III.
[107] KLEIMAN ET AL., *supra* note 34, at 65.
[108] UNOOSA, *United Nations Register of Objects Launching into Outer Space*, UNOOSA (last visited Aug. 11, 2021), https://www.unoosa.org/oosa/en/spaceobjectregister/index.html (providing access to the most recently processed submissions to the U.N. Register).
[109] Registration Convention, *supra* note 20, art. IV, par. 1.
[110] Registration Convention, *supra* note 20, art. IV, par. 1.
[111] Registration Convention, *supra* note 20, art. IV, par. 2 & 3.

In completing the reporting requirements of the Registration Convention, State practice is to provide the information at least several months after the object is launched, but normally within the first two years of the object's operation.[112] Sometimes objects stay unregistered for years, which could be the result of disagreements concerning the responsibility for registration among launching States.[113] Even when the launching State completes registration, the information furnished at registration may be too generalized to provide the intended level of transparency.[114]

D. Moon Agreement

The Moon Agreement entered into force on June 11, 1984, nearly five years after its adoption by the UN General Assembly on December 19, 1979.[115] However, the Moon Agreement is generally considered dormant because most major space powers are not parties.[116] Australia is the only country that is a party to both the Moon Agreement and the Artemis Accords.

[112] KLEIMAN ET AL., *supra* note 34, at 66; Ram S. Jakhu., et al., *Critical Issues Related to Registration of Space Objects and Transparency of Space Activities*, 143 ACTA ASTRONAUTICA 406, 409 (2018).
[113] Jack Wright Nelson, *Lost in Space? Gaps in the International Space Object Registration Regime*, EJIL: TALK! (Nov. 19, 2018), https://www.ejiltalk.org/lost-in-space-gaps-in-the-international-space-object-registration-regime/ (discussing the failure of the Netherland, the United States, and France for the registration of the satellites NNS-6 and NSS-7, which were placed into orbit in 2002, due to a disagreement on responsibility).
[114] Jakhu et al., *supra* note 112, at 410-412 (describing the Registration Convention's requirement that the general function of a satellite be provided at registration as the "most abused aspect of the Convention"). Specifically, satellites with military uses have been reported with inadequate descriptions by several companies, including the United States, Russia (and the former USSR), China, and France. *Id.* at 411.
[115] KLEIMAN ET AL., *supra* note 34, at 66.
[116] *Id*. Despite this dormant status, any portions of the Moon Agreement that reaffirm or restate prior existing international law is still legally relevant.

The drafters of the Moon Agreement sought "to prevent the Moon from becoming an area of international conflict."[117] The Agreement also recognizes the need to define and develop provisions of past international agreement to further progress in the use of outer space.[118]

Article 2 of the Moon Agreement references prior existing international law, dictating that the Moon's exploration and use "shall be carried out in accordance" with these existing laws and norms "in the interest of maintaining international peace and security and promoting international cooperation and mutual understanding."[119] Article 3 restates the principle that "[t]he Moon shall be used by all States Parties exclusively for peaceful purposes."[120] Paragraph 2 of this article states:

> Any threat or use of force or any other hostile act or threat of hostile act on the Moon is prohibited. It is likewise prohibited to use the Moon in order to commit any such act or to engage in any such threat in relation to the Earth, the Moon, spacecraft, the personnel of spacecraft or manmade space objects.[121]

Article 3 also prohibits States from placing weapons of mass destruction "in orbit around or other trajectory to or around the Moon . . . or place or use such weapons on or in the Moon."[122] Finally, Article 3 forbids the establishment of military bases, installations, and fortification, the testing of any weapons, and the conduct of military maneuvers on the Moon, but allows the use of military personnel and necessary equipment for scientific research and other peaceful purposes.[123]

[117] Moon Agreement, *supra* note 21, ¶ 4.
[118] Moon Agreement, *supra* note 21, ¶ 7.
[119] Moon Agreement, *supra* note 21, art. 2.
[120] Moon Agreement, *supra* note 21, art. 3, par. 1.
[121] Moon Agreement, *supra* note 21, art. 3, par. 2.
[122] Moon Agreement, *supra* note 21, art. 3, par. 3.
[123] Moon Agreement, *supra* note 21, art. 3, par. 4.

Article 5 requires States Parties to report information to the U.N. Register, as well as to the "public and the international scientific community."[124] The provision requires the transmission of information concerning the parameters of each mission to be completed "as soon as possible after launching," while the transmission of scientific results must occur after completion of the mission.[125] Lastly, Article 5 requires notification by a State Party if there are "plans to operate simultaneously in the same area of or in the same orbit around or trajectory to or around the Moon" as another State Party.[126]

Article 4 designates the "exploration and use of the Moon" as "the province of all mankind."[127] Similarly, Article 11 establishes that "[t]he Moon and its natural resources are the common heritage of mankind."[128] The Moon Agreement addresses environmental concerns in Article 7, which demands that States Parties "take measures to prevent the disruption of the existing balance of [the Moon's] environment" and "to avoid harmfully affecting the environment of the Earth through the introduction of extraterrestrial matter or otherwise."[129]

Under Article 9, States Parties may establish both manned and unmanned Moon stations, provided they comply with Article I of the Outer Space Treaty.[130] Any people on the Moon are to be treated as an astronaut, as defined in Article V of the Outer Space Treaty, and as personnel of a spacecraft, as defined in the Rescue Agreement.[131] As such, individuals on the Moon may

[124] Moon Agreement, *supra* note 21, art. 5.
[125] Moon Agreement, *supra* note 21, art. 5, par. 2.
[126] Moon Agreement, *supra* note 21, art. 5, par. 2.
[127] Moon Agreement, *supra* note 21, art. 4, par. 1.
[128] Moon Agreement, *supra* note 21, art. 11, par. 1.
[129] Moon Agreement, *supra* note 21, art. 7, par. 1.
[130] Moon Agreement, *supra* note 21, art. 9.
[131] Moon Agreement, *supra* note 21, art. 10, par. 1.

shelter in any Moon installations of States Parties "to safeguard the life and health of persons on the Moon."[132]

States Parties to the Moon Agreement "bear international responsibility for national activities on the Moon," including activities by both government and non-government entities, "and for assuring that national activities are carried out in conformity with the provisions" of the Moon Agreement.[133] Article 15 provides methods for States Parties to assure compliance with the Moon Agreement by other States Parties by scheduling visits to installations with reasonable advance notice through proper channels.[134] The remaining paragraphs within Article 15 lay out the procedures for consultations and dispute settlement in the event there is "reason to believe that [a] State Party is not fulfilling the obligations incumbent upon it pursuant to this Agreement or that [a] State Party is interfering with the rights" of another State Party.[135]

Article 1 of the Moon Agreement states that "[t]he provisions of this Agreement relating to the Moon shall also apply to other celestial bodies within the solar system, other than the Earth, except insofar as specific legal norms enter into force with respect to any of these celestial bodies."[136] Additionally, any "reference to the Moon shall include orbits around or other trajectories to or around it."[137] These two paragraphs give the Moon Agreement broad geographic scope.

[132] Moon Agreement, *supra* note 21, art. 10.
[133] Moon Agreement, *supra* note 21, art. 14, par. 1.
[134] Moon Agreement, *supra* note 21, art. 15, par. 1.
[135] Moon Agreement, *supra* note 21, art. 15.
[136] Moon Agreement, *supra* note 21, art. 1, par. 1
[137] Moon Agreement, *supra* note 21, art. 1, par. 2.

III. THE ARTEMIS ACCORDS

The Artemis Accords govern the cooperation among participants in the Artemis Program. The creation of this agreement follows a trend in space activities in which cooperative partners develop special legal regimes for large-scale projects in space.[138] The agreement seeks to "establish a political understanding regarding mutually beneficial practices for the future exploration and use of outer space."[139] The drafters of the Artemis Accords sought to develop principles for safe and sustainable outer space activities and to foster international partnerships for exploration under the Artemis Program.[140]

The principles within the Accords are meant to address issues related to the Artemis Program's mission of returning to the Moon and eventually reaching Mars.[141] Many of the principles within the Accords address practical issues, such as interoperability standards and emergency assistance, to improve international cooperation within the Artemis Program.[142] The Accords also seek to "enhance peaceful relationships among nations."[143] Ultimately, the Accords

[138] Frans Van der Dunk, *International Space* Law, contained in HANDBOOK OF SPACE LAW, 113 (Frans Van der Dunk & Fabio Tronchetti, eds., Edward Elgar 2015). "Space cooperation is something requiring both long-term agreement before any benefits might be reaped and a considerable amount of mutual trust amongst cooperating States -and both conspire to arrive regularly at a level of willingness to start cooperation without the legal certainty of a treaty formally in force, more so than in most other potential areas for international cooperation." *Id.* at 114-15.
[139] Artemis Accords, *supra* note 1, ¶ 10.
[140] U.S. Embassy & Consulates in Brazil, Fact Sheet, *Artemis Accords: United for Peaceful Exploration of Deep Space*, (last visited Aug. 8, 2021) 1, https://br.usembassy.gov/wp-content/uploads/sites/32/artemis-eng-1.pdf.
[141] Keith Cowing, *What are the Artemis Accords and Why Do We Need Them?*, SPACEREF (May 17, 2020, 20:48 PM), http://spaceref.com/artemis/what-are-the-artemis-accords-and-why-do-we-need-them.html.
[142] *Id.*
[143] Press Release, Sean Potter & Cheryl Warner, NASA, International Partners Advance Cooperation with First Signings of Artemis Accords (Oct. 13, 2020) (updated Jan. 4, 2021) (*available at* https://www.nasa.gov/press-release/nasa-international-partners-advance-cooperation-with-first-signings-of-artemis-accords).

aim to reinforce and implement the Outer Space Treaty and encompass established international norms under the Registration Convention and Rescue Agreement.[144]

Politically, the agreement has been welcomed by some and criticized by others. The current parties to the Accords include natural allies of the United States, many of whom seek Artemis Program involvement to bolster their own space industries.[145] However, some major space powers are notably missing from the agreement, including Russia and China.[146] Russian officials have criticized the Accords as too "U.S.-centric," especially as it relates to the interpretation of the Outer Space Treaty's obligations.[147] China has also criticized the United States' approach, with some experts accusing the United States of attempting to exert sovereignty over the Moon.[148] These nations, along with some professionals in the field, generally criticize the agreement because negotiations and drafting took place outside of the UN, meaning most of the international community could not contribute to the agreement's language or share their concerns.[149]

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[144] Elizabeth Howell, *supra* note 6. *See also* Jeff Foust, *NASA Announces Artemis Accords for International Cooperation in Lunar Expansion*, SPACE NEWS (May 15, 2020), https://spacenews.com/nasa-announces-artemis-accords-for-international-cooperation-in-lunar-exploration/ (describing the goals of the Artemis Accords prior to the actual language being released and signed by the Signatory States).

[145] Almudena Azcárate Ortega, *Artemis Accords: A Step Toward International Cooperation or Further Competition?*, LAWFARE (Dec. 15, 2020), https://www.lawfareblog.com/artemis-accords-step-toward-international-cooperation-or-further-competition.

[146] *Id.* Note that there is currently a United States congressional prohibition on collaboration with China. *Id.*

[147] *Id.*

[148] *Id. See also* Alexander Stirn, *Do NASA's Lunar Exploration Rules Violate Space Law?*, SCIENTIFIC AMERICAN (Nov. 12, 2020), https://www.scientificamerican.com/article/do-nasas-lunar-exploration-rules-violate-space-law/ (discussing the Accords' treatment of space resources, which follows the United States' approach to resources utilization and seemingly contradicts some portions of the space law treaties).

[149] Ortega, *supra* note 145. Russia and China are working on their own lunar mission, called the International Lunar Research Station. Rajeswari Pillai Rajagopalan, *The Artemis Accords and Global Lunar Governance*, ORF (June 8, 2021), https://www.orfonline.org/research/the-artemis-accords-and-global-lunar-governance/. The countries are seeking international partners in the endeavor, seemingly in competition with the Artemis Program. *Id.* Some nations, like India, are not currently a member of either project and do not have a clear, natural political ally to join. *Id.*

The remainder of this section will explore the language of the various provisions within the Artemis Accords and their meaning. To properly interpret the Accords, a determination of the object and purpose is necessary. Once ascertained, the object and purpose sheds light on the interpretation conducted.

A. Object and Purpose of the Accords

The interpretation of international agreements "shall be . . . in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose."[150] In order to properly interpret the terms of the agreement in good faith, its object and purpose must be ascertained.

The preambular paragraphs of an agreement or treaty can inform the reader of the object and purpose. The Artemis Accords' preambular paragraphs, in part, state:

> Recognizing their mutual interest in the exploration and use of outer space for peaceful purposes, and underscoring the continuing importance of existing bilateral space cooperation agreements;
>
> Noting the benefit for all humankind to be gained from cooperating in the peaceful use of outer space.[151]

The Accords go on to affirm "the importance of compliance" with the first four space treaties (the Outer Space Treaty, Rescue Agreement, Liability Convention, and the Registration Convention), "as well as the benefits of coordination via multilateral forums . . . to further efforts toward a global consensus on critical issues regarding space exploration and use."[152] Lastly, the agreement considers "the necessity of greater coordination and cooperation between and among

[150] Vienna Convention on the Law of Treaties, art. 31, par. 1, May 23, 1969, 1155 U.N.T.S. 331 [hereinafter VCLT].
[151] Artemis Accords, *supra* note 1, ¶¶ 1-2.
[152] Artemis Accords, *supra* note 1, ¶ 9.

established and emerging actors in space."[153] These preambular paragraphs emphasize international cooperation, reaffirm norms surrounding the peaceful use of outer space contained in prior existing law, and mention "mutual interest" and "mutually beneficial practices" associated with the future of space exploration.

Other factors can also be used to discern an agreement's object and purpose, such as the organization and focus of the agreement. Section 1 of the Artemis Accords outlines the purpose and scope of the agreement:

> The purpose of these Accords is to establish a common vision . . . to enhance the governance of civil exploration and use of outer space with the intention of advancing the Artemis Program. . .. The Accords represent a political commitment to the principles described herein, many of which provide for operational implementation of important obligations contained in the Outer Space Treaty and other instruments.[154]

Sections 2 and 3 further elaborate on the implementation and peaceful purposes of the Accords through Signatories' "cooperative activities."[155] Section 4 addresses transparency, a necessary element of any cooperation.[156] Additionally, Section 5 commits Signatories to "interoperability standards" in space activities.[157] Section 11, by far the longest section of the Accords, addresses "deconfliction of space activities" and delineates ways to avoid "harmful interference."[158] Each of these sections contain at least one necessary provision to facilitate cooperation in space activities and reaffirms the peaceful uses of outer space. Further, the Artemis Accords, being a relatively short agreement, spend most of its space focused on measures to facilitate cooperation

[153] Artemis Accords, *supra* note 1, ¶ 6.
[154] Artemis Accords, *supra* note 1, sect. 1.
[155] Artemis Accords, *supra* note 1, sects. 2-3.
[156] Artemis Accords, *supra* note 1, sect. 4.
[157] Artemis Accords, *supra* note 1, sect. 5.
[158] Artemis Accords, *supra* note 1, sect. 11.

among Signatories. Taking all these factors into account, the primary object and purpose of the Artemis Accords is to facilitate cooperation in the peaceful use of outer space.

B. Interpreting the Provisions of the Accords

This section will provide an interpretation of the Artemis Accords' content. The Vienna Convention on the Law of Treaties (VCLT) includes provisions concerning treaty interpretation.[159] The Artemis Accords are a political agreement rather than a treaty; therefore, interpretation using the method found within the VCLT is not determinative. However, interpretation using the rules and means found within the VCLT can be persuasive.

The Artemis Accords should be interpreted by applying the ordinary meaning to the terms of the agreement in their context and in light of its object and purpose.[160] The object and purpose of the Accords is to facilitate cooperation in the peaceful use of outer space. Article 31 of the VCLT provides further instructions in interpreting an agreement:

> There shall be taken into account, together with the context:
>
> (a) Any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;
> (b) Any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation;
> (c) Any relevant rules of international law applicable in the relations between the parties.[161]

Due to the recent establishment of the Accords, there are not any instances of subsequent agreements or practice to shed light on the interpretation. Therefore, the provisions of the

[159] VCLT, *supra* note 150, arts. 31-32.
[160] VCLT, *supra* note 150, art. 31, par. 1.
[161] VCLT, *supra* note 150, art. 31, par. 3.

Artemis Accords must be interpreted solely according to their ordinary meaning, legal context, and in light of the Accords' object and purpose.[162]

Concerning the application of the Accords, Section 1 states that "[t]he principles set out in these Accords are intended to apply to civil space activities conducted by the civil space agencies of each Signatory." This includes activities on the Moon, Mars, comets, and asteroids, in orbit of the Moon or Mars, and in transit between these locations.[163] Additionally, the text of the agreement extends beyond the Signatories' civil space agencies to the "entities acting on [their] behalf."[164] This language effectively envelops private companies working with the civil space towards the goals of the Artemis Program, facilitating cooperation among both Signatory states and private partners in space activities.[165]

Section 2 provides for the implementation of the Artemis Accords. The section states that various instruments should be enacted between Signatories for "[c]ooperative activities regarding the exploration and use of outer space" to modify any existing arrangements between Signatories.[166] Further, "[t]hese instruments should reference these Accords and include appropriate provisions for implementing the principles contained in these Accords."[167] In these instruments, Signatories "should describe the nature, scope, and objectives of the civil

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[162] *See* DANIEL H. JOYNER, INTERPRETING THE NUCLEAR NON-PROLIFERATION TREATY 26 (2011) ("The idea in VCLT Article 31 of interpreting treaty provisions in their context means of course viewing each provision for the purpose of interpretation not as an isolated rule or recognition of right, but as a part of the larger normative whole of the treaty.").
[163] Artemis Accords, *supra* note 1, sect. 1.
[164] Artemis Accords, *supra* note 1, sect. 2, par. 1(d).
[165] For example, NASA has partnerships with seventeen private companies. Press Release, Sean Potter, NASA, New NASA Partnerships to Mature Commercial Space Technologies, Capabilities (Nov. 9, 2020), *available at* https://www.nasa.gov/press-release/new-nasa-partnerships-to-mature-commercial-space-technologies-capabilities. Under this provision, each will be required to comply with the Accords through the partnership.
[166] Artemis Accords, *supra* note 1, sect. 2, par. 1.
[167] Artemis Accords, *supra* note 1, sect. 2, par. 1.

cooperative activity," contain provisions "related to liability, intellectual property, and the transfer of goods and technical data," conform to the legal obligations of each Signatory; and ensure that entities acting on behalf of Signatories comply with the principles of the Accords.[168] Through this language, Section 2 effectively lays out a procedure for Signatories to incorporate the Artemis Accords principles into existing arrangements between civil space agencies, as well as any contractual relationships with private entities. By addressing the nature, scope, and objectives of the "civil cooperative activity," Signatories will create transparent, cooperative partnerships. Additionally, important legal issues addressed by these bilateral arrangements will provide a clear understanding between parties and hopefully avoid legal disputes. Lastly, this section reaffirms the Signatories' commitment to abide by existing international law, such as the Outer Space Treaty, and ensure compliance by any private entities with whom the Signatories may cooperate.

Section 3 briefly affirms "that cooperative activities under these Accords should be exclusively for peaceful purposes and in accordance with relevant international law."[169] This section goes a step further than Section 2 by adding the "peaceful purposes" language. Within the broader context of international space law, this section invokes the common desire to keep space free of active military use and once again commits States to use outer space peacefully.

Regarding transparency, Section 4 states:

> The Signatories are committed to transparency in the broad dissemination of information regarding their national space policies and space exploration plans in accordance with their national rules and regulations.

[168] Artemis Accords, *supra* note 1, sect. 2, par. 1.
[169] Artemis Accords, *supra* note 1, sect. 3.

> The Signatories plan to share scientific information resulting from their activities pursuant to these Accords with the public and the international scientific community on a good-faith basis, and consistent with Article XI of the Outer Space Treaty.[170]

Article XI of the Outer Space Treaty requires information of "the nature, conduct, locations and results" of outer space activities be disseminated to the U.N. in addition to the international scientific community.[171]

In Section 5, the Artemis Accords further discusses how the Signatories will work together. This section commits Signatories "to use reasonable efforts to utilize current interoperability standards for space-based infrastructure, to establish such standards when current standards do not exist or are inadequate, and to follow such standards."[172] The emphasis on following standards will facilitate interoperability among Signatories in their space missions and allow Signatories to have common expectations during operations when such standards already exist. If standards "do not exist or are inadequate," the Artemis Accords allow flexibility to establish standards as needed.

Section 6 of the Accords explicitly acknowledges Signatories' obligations under the existing Rescue Agreement in the event of distress or emergency.[173] Section 7 addresses the Signatories' obligations under the Registration Convention:

> For cooperative activities under these Accords, the Signatories commit to determine which of them should register any relevant space object in accordance with the Registration Convention. For activities involving a non-Party to the

[170] Artemis Accords, *supra* note 1, sect. 4.
[171] Outer Space Treaty, *supra* note 17, art. XI.
[172] Artemis Accords, *supra* note 1, sect. 5.
[173] Artemis Accords, *supra* note 1, sect. 6.

> Registration Convention, the Signatories intend to cooperate to consult with that non-Party to determine the appropriate means of registration.[174]

Section 8 addresses the release and sharing of scientific data collected during the course of a Signatory's activities.[175] The section also includes the Signatories' intention "to coordinate with each other in advance regarding the public release of information that relates to the other Signatories' activities under these Accords in order to provide appropriate protection for any proprietary and/or export-controlled information."[176] While Signatories "are committed to the open sharing of scientific data," this "commitment to openly share scientific data is not intended to apply to private sector operations unless such operations are being conducted on behalf of a Signatory to the Accords."[177]

Section 9 indicates an intent "to preserve outer space heritage, which [the Signatories] consider to comprise historically significant human or robotic landing sites, artifacts, spacecraft, and other evidence of activity on celestial bodies in accordance with mutually developed standards and practices."[178] Additionally, "[t]he Signatories intend to use their experience under the Accords to contribute to multilateral efforts to further develop international practices and rules applicable to preserving outer space heritage."[179]

Section 10 addresses space resources and their potential to provide "critical support for safe and sustainable operations."[180] The Signatories "emphasize that the extraction and utilization of space resources" needs to "be executed in a manner that complies with the Outer

[174] Artemis Accords, *supra* note 1, sect. 7.
[175] Artemis Accords, *supra* note 1, sect. 8.
[176] Artemis Accords, *supra* note 1, sect. 8, par. 1.
[177] Artemis Accords, *supra* note 1, sect. 8.
[178] Artemis Accords, *supra* note 1, sect. 9, par. 1.
[179] Artemis Accords, *supra* note 1, sect. 9, par. 2.
[180] Artemis Accords, *supra* note 1, sect. 10, par. 1.

Space Treaty."[181] Additionally, "[t]he Signatories intend to use their experience under the Accords to contribute to multilateral efforts to further develop international practices and rules applicable to the extraction and utilization of space resources, including through ongoing efforts at the [Committee]."[182]

Section 11 addresses "deconfliction of space activities."[183] The section sets up conditions for when a Signatory may request consultations with another Signatory "or any other Party to the Outer Space Treaty."[184] These conditions are "[c]onsistent with Article IX of the Outer Space Treaty."[185] Additionally, "[t]he Signatories commit to seek to refrain from any intentional actions that may create harmful interference with each other's use of outer space in their activities under these Accords."[186] In order to implement the "obligations under the Outer Space Treaty, the Signatories intend to provide notification of their activities and commit to coordinating with any relevant actor to avoid harmful interference."[187] Further, "[t]he Signatories intend to use their experience under the Accords to contribute to multilateral efforts to further develop international practices, criteria, and rules applicable to the definition and determination of safety zones and harmful interference."[188] Lastly, "[t]he Signatories further commit to adjust their usage of safety zones over time based on mutual experiences and consultations with each other and the

[181] Artemis Accords, *supra* note 1, sect. 10, par. 2.
[182] Artemis Accords, *supra* note 1, sect. 10, par. 4.
[183] Artemis Accords, *supra* note 1, sect. 11.
[184] Artemis Accords, *supra* note 1, sect. 11, par. 3.
[185] Artemis Accords, *supra* note 1, sect. 11, par. 3.
[186] Artemis Accords, *supra* note 1, sect. 11, par. 4.
[187] Artemis Accords, *supra* note 1, sect. 11, par. 7.
[188] Artemis Accords, *supra* note 1, sect. 11, par. 6. A "safety zone" is the area where "notification and coordination will be implemented to avoid harmful interference." Artemis Accords, *supra* note 1, sect. 11, par. 7. Section 7 goes on to list principles concerning safety zones.

international community."[189] Section 12 addresses the space environment's problem of orbital debris.[190]

Finally, the Artemis Accords build "on any consultative mechanisms in preexisting arrangements as appropriate" and Signatories "commit to periodically consult to review the implementation of the principles in these Accords, and to exchange views on potential areas of future cooperation."[191]

IV. COMPARISON AND ASSESSMENT

By comparing the Artemis Accords to existing international space law, the similarities and differences are brought to light. The results of this comparative exercise allow the Accords' impact to be reviewed and assessed more fully. The analysis that follows focuses particularly on the use of space for peaceful purposes, the military use of space, the provisions on transparency within the Accords and registration requirements for space missions, and the development of cooperation in space activities.

1. Use of Space for Peaceful Purposes

The Artemis Accords reaffirm the commitment to the peaceful use of outer space first enshrined in the Outer Space Treaty. The Artemis Accords state that all cooperative activities undertaken by the Signatory States "should be exclusively for peaceful purposes and in accordance with relevant international law."[192]

[189] Artemis Accords, *supra* note 1, sect. 11, par. 11.
[190] Artemis Accords, *supra* note 1, sect. 12, par. 1.
[191] Artemis Accords, *supra* note 1, sect. 13, par. 1.
[192] Artemis Accords, *supra* note 1, sect. 3.

The Outer Space Treaty does not explicitly prohibit non-peaceful uses of "outer space *away* from celestial bodies," but other provisions incorporate such a prohibition, including the prohibition on the use of force, by reference to the U.N. Charter and international law.[193] Compared to the Outer Space Treaty, the Artemis Accords secure the peaceful use of outer space beyond celestial bodies by including *all* activities under the Accords. The use of space "exclusively for peaceful purposes" is not limited by any proceeding language, unlike Article IV of the Outer Space Treaty.

However, the Artemis Accords does not specifically prohibit certain actions that may be considered non-peaceful. The Moon Agreement specifically prohibits the threat or use of force on the Moon, as well as the use of the Moon to carry out such a threat or act in relation to Earth, the Moon, spacecraft, spacecraft personnel, or space objects.[194] Section 3 of the Artemis Accords does not go into this detailed prohibition. Further, the Accords do not specifically prohibit the placement or use of weapons of mass destruction in outer space.

It is unlikely that the Signatories would use outer space non-peacefully during Artemis Accords activities. All the Signatories are under the obligations of the Outer Space Treaty and Australia is additionally obligated under the Moon Agreement. However, the Signatories are not bound to remain parties to these additional space treaties.

If a Signatory were to withdraw from a major space treaty, the Artemis Accords would not bind them to these specific prohibitions. Because the Artemis Accords only reference "international law," a Signatory would only be bound to established norms rising to the level of

[193] Ramey, *supra* note 23, at 82 (emphasis added).
[194] Moon Agreement, *supra* note 21, art. 3, par. 2.

customary international law and its treaty obligations. The possible implications of this relationship between the Artemis Accords and rules of customary international law are discussed in further detail below, as it relates specifically to the military use of outer space.

Should a Signatory State ever abrogate its commitment to the Outer Space Treaty, or other agreements governing peaceful uses of outer space, there is nothing binding within the Accords to hold Signatory States to specific prohibitions of non-peaceful uses. However, considering the Accords' purpose to facilitate cooperation in the peaceful use of outer space and the status of all Signatories States as parties to the Outer Space Treaty, the brief provision within Section 3 seems sufficient—for now—to reaffirm the peaceful use of outer space.

2. Military Use of Outer Space

The Artemis Accords fail to explicitly address the military use of outer space, including weapons of mass destruction. The only provision that indirectly addresses military uses of outer space is Section 3 through its reference to international law. Thus, the international law rules applicable to both military uses of outer space and weapons of mass destruction are crucial for determining the impact of the Accords in this area.

The U.N. Charter includes the customary international law rule of self-defense and may allow the use of nuclear weapons in self-defense. In an advisory opinion, the International Court of Justice stated that the use of nuclear weapons may be permissible in extreme circumstances, such as resorting to self-defense under Article 51 of the U.N. Charter.[195] Thus, by the

[195] Legality of the Threat or Use of Nuclear Weapons, 1996 I.C.J. 226, ¶¶ 96-97 (July 8).

incorporation of international law, the Artemis Accords could allow the use of weapons of mass destruction launched from space for the purposes of self-defense under the U.N. Charter.

The Outer Space Treaty prohibits the use or stationing of weapons of mass destruction in space.[196] This prohibition specifically addresses the presence of weapons of mass destruction *in orbit* and installations on celestial bodies. Thus, it would not be a violation of the Outer Space Treaty for a State Party to launch a weapon of mass destruction, transit through space, and reach its target on Earth.

Under these provisions of the U.N. Charter and the Outer Space Treaty, a Signatory to the Artemis Accords could legally launch a weapon of mass destruction into space temporarily for use in self-defense. While the "peaceful purposes" limitations on outer space, at face value, seem to instruct the contrary, States' interpretation of "peaceful purposes" supports this conclusion.

The United States, in particular, has interpreted "peaceful purposes" to include "military activity such as intelligence-gathering or even *armed defense*."[197] In 2000, the United States' National Security Strategy included the promotion of the development of space-based capabilities that protect "vital national security interests."[198] If it proved "vital" to American national security interests, space weapons could be deployed for armed defense.[199] Neither the Outer Space Treaty nor the Artemis Accords prohibit this outcome.

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[196] Outer Space Treaty, *supra* note 17, art. IV.
[197] Ramey, *supra* note 23, at 137 (emphasis added).
[198] *Id.*
[199] Nuclear-weapon-possessing States often point to security concerns as the primary reason for maintaining their nuclear arsenals. Relying on the theory of nuclear deterrence, nuclear-weapon-possessing States argue that nuclear weapons are vital to their national security interests. Brad Roberts, *Ban the Bomb? Or Bomb the Ban? Next Steps on the Ban Treaty*, EUROPEAN LEADERSHIP NETWORK, Mar. 2018, at 2-4, *available at* https://www.europeanleadershipnetwork.org/policy-brief/ban-the-bomb-or-bomb-the-ban/ (examining the reasons

The Moon Agreement, which does prohibit weapons of mass destruction in any trajectory to or around the Moon, does not apply to the United States because it is not a party. The same is true of the Moon Agreement's prohibition on military installations and testing of any weapons on the Moon or other celestial bodies. While the Artemis Accords seeks to enforce the norm of peaceful purposes in outer space, the agreement fails to address this gap in existing law.

The Accords also fails to address other military uses of space. Under the Outer Space Treaty, passive military uses are customarily allowed. Using the "most widely accepted understanding of the terms 'peaceful' and 'space weapons,'" activities currently prohibited in space include placement in orbit of weapons of mass destruction, the testing of nuclear weapons, and the establishment of military bases.[200] In contrast, certain military activities are clearly not prohibited in light of state practice, including the use of military personnel, use of satellites for combat support or military purposes, and the transiting of weapons in non-orbital trajectories.[201] The Artemis Accords fail to affirm the prohibition of military activities that are currently prohibited and allow the passive military uses of outer space, such as reconnaissance and use of military personnel in a research capacity.

A State may use military personnel for peaceful research purposes under Article IV of the Outer Space Treaty. While included in the Outer Space Treaty, it seems odd that the Accords do not address this issue at all given the possible use of military personnel in Artemis-related

that nuclear weapon states put forth in opposition for a total ban of nuclear weapons). Nuclear weapons are also seen as crucial to security alliances, such as the North Atlantic Treaty Organization. *Id.*

[200] Ramey, *supra* note 23, at 156-57 (listing military activities that are absolutely prohibited in space under existing law).

[201] *Id.* (listing military activities that are, at minimum, not prohibited in space under existing law).

missions.[202] Whatever the reason for its omission, a failure to reaffirm this tenet of space law may, in the future, be evidence of the degradation of state practice in this area.

3. Transparency Provisions & Registration Requirements

The Artemis Accords actively encourage transparency to facilitate coordination and cooperation in space activities but fail to make a meaningful impact on the legal landscape concerning the registration of space objects. Section 4 of the Accords establishes a commitment to transparency, while other sections address issues related to the release of scientific information.[203] Transparency among participants of the Artemis Program is crucial to reach the ultimate goal of establishing a human presence on Mars.

Some transparency provisions go beyond the requirements of previous agreements. The Registration Convention allows States Parties to provide the U.N. with additional information on space objects "from time to time." The Accords, instead, requires Signatories to make scientific information "available to the public and the international scientific community, as appropriate, in a timely manner."[204] This difference in language will not only make information more transparent among Signatories but will also make scientific information more widely available to the public.

Despite this positive step toward transparency, the Accords do not provide substantive provisions to improve compliance with the Registration Convention. Section 7 merely requires

[202] This is especially strange in light of the United States' creation of the United States Space Force in 2019. *About the United States Space Force*, U.S. SPACE FORCE (last visited Dec. 18, 2020), https://www.spaceforce.mil/About-Us/About-Space-Force/.
[203] *See* Artemis Accords, *supra* note 1, sect. 8.
[204] Artemis Accords, *supra* note 1, sect. 9, par. 2.

Signatories to determine which State *should* register a space object in connection with cooperative missions. The section does not include a timeline, or even a mandate, for compliance with registration obligations. Similarly, Section 4 commits the Signatories to their own national rules for disseminating space exploration plans. Again, there are no provisions mandating, nor a timeline for, compliance with the Registration Convention.

Under the Registration Convention, a launching State must maintain a registry and communicate information on that registry to the U.N. This registration must be done "as soon as practicable," but many States abuse this flexible language.[205] It often takes months or years for objects to be registered, posing both a threat of accidents due to incomplete information on record and a possible failure to monitor compliance with other treaty obligations, such as those in the LTBT. For example, the United States has covered up the true purposes of satellites by giving the program a codename and stating that the program conducted biomedical research and experiments in space.[206] The United States and other nations have also given vague descriptions with insufficient information concerning satellites, or misleadingly classified operational space objects as debris.[207] Despite the Accords' goal of improving transparency in the world surrounding space activities, the agreement fails to address the consistent state practice of non-compliance with the Registration Convention.

4. Developing Cooperation

The Artemis Accords take real steps toward improving the cooperation among space actors, especially in terms of real operability standards. Section 11 of the Accords establishes

[205] *See supra* pp. 15-17.
[206] Ramey, *supra* note 23, at 14.
[207] Jakhu et al., *supra* note 112, at 411.

"deconfliction" provisions that reaffirm the right to freedom from harmful interference in space activities. The section creates principles related to "safety zones," designed to prevent harmful interference from simultaneous space activities. The Accords also commits Signatories to refrain from *intentional* harmful interference.[208]

The Outer Space Treaty gave States Parties the opportunity to consult with each other if there is reason to believe a planned activity or experiment would cause harmful interference with space activities.[209] However, the Outer Space Treaty contains no requirement to refrain from harmful interference. The Artemis Accords goes beyond the Outer Space Treaty and establishes concrete, practical methods for protecting activities from harmful interference through the provisions in Section 11.

The Artemis Accords also create a commitment to use interoperability standards in infrastructure, or to create new standards when current standards are inadequate or nonexistent.[210] By establishing this commitment, the Accords ensure that both equipment and personnel from around the globe will be able to work together in the space environment. These new principles from the Accords will work toward the agreement's purpose of facilitating international cooperation in the use of outer space.

V. CONCLUSION

The Signatories to the Artemis Accords seek to reinforce and implement the Outer Space Treaty by encompassing established international norms into a modern political agreement.

[208] Artemis Accords, *supra* note 1, sect. 11, par. 4.
[209] Outer Space Treaty, *supra* note 17, art. IX.
[210] Artemis Accords, *supra* note 1, sect. 5.

Provisions within the Accords emphasize the use of space for peaceful purposes, stress the importance of transparency, and develop practical provisions for future space activities. The Artemis Accords successfully emphasize the use of space for peaceful purposes but fail to mention specific prohibitions contained within prior space treaties. The Accords also fail to address gaps in law concerning the use of weapons of mass destruction for self-defense and the militarization of outer space.

The Accords do contribute to transparency of space activities, particularly as that transparency relates to the dissemination of scientific information to the public and scientific community. However, the agreement fails to meaningfully contribute to the registration regime for space objects or reinforce the obligations under the Registration Convention that are often ignored. Lastly, the Accords create a solid foundation for future cooperation in space activities among the Signatories, particularly through the provisions protecting activities from harmful interference and improving interoperability of infrastructure.

It is not surprising that the Artemis Accords do not close some gaps in existing space law. The United States and other Signatories, as parties to the Outer Space Treaty, have no current incentive to articulate a list of binding rules should any Signatories rescind the Outer Space Treaty in the future. Additionally, it is unlikely that any group of states would limit their activities relative to the Artemis Program more so than other programs it carries out under the general framework of international space law. For this reason, the fact that the Artemis Accords do not impose stricter rules for compliance with existing law—particularly regarding the Registration Convention—is not surprising.

Overall, the Accords seem to achieve some goals while falling short of others. However, as Signatories undertake space activities governed by the Accords and more States become party to the agreement, the shortcomings could be addressed through further agreements, amendments, or state practice.