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Diplomatic Impact in the Stars? A Review of the Impact of the Artemis Accords on Global Relationships

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DIPLOMATIC IMPACT IN THE STARS? A REVIEW OF THE IMPACT OF THE ARTEMIS ACCORDS ON GLOBAL RELATIONSHIPS

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International cooperation through multilateral and bilateral agreements is a pillar of space diplomacy and has been since humankind first ventured toward the stars. Space is inherently an international consideration for every nation and comes with added anxieties, like challenging dual-technologies or the potential to encourage arms escalation. The United States ("U.S.") is a major space power and global leader in space.[1] The decisions made by the U.S. not only draw the attention of our adversaries but may bolster or complicate those with our allies.[2]

In 2020, the U.S. began a push for a series of bilateral agreements, called the Artemis Accords.[3] These agreements underscore existing multilateral agreements, while also reinforcing U.S. interpretation of international law.[4] This turned into bilateral agreements, shadowing existing multilateral agreements, garnering international attention. Without a doubt, the Artemis Accords will alter international relationships in space, but the question is, how?

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1 *Defense Space Summary Strategy*, DEP'T OF DEF. 1 (June 2020), https://media.defense.gov/2020/Jun/17/2002317391/-1/-1/1/2020_DEFENSE_SPACE_STRATEGY_SUMMARY.PDF.

2 Erik Lin-Greenberg, *Allies and Artificial Intelligence: Obstacles to Operations and Decision-Making*, 3 TEX. NAT'L SEC. REV. 56, 61 (2020).

3 Elle Rothermich, *NASA's Artemis Accords Boost Commercial Space Activity*, REGUL. REV. (Dec. 23, 2020), https://www.theregreview.org/2020/12/23/rothermich-nasa-artemis-accords-boost-commercial-space-activity/.

4 *Id.*

I. THE U.S. SPACE LANDSCAPE: SETTING THE STAGE FOR THE ARTEMIS ACCORDS

The U.S. National Aeronautics and Space Act ("Space Act"), passed by Congress in 1958, created the National Aeronautics and Space Administration ("NASA") to conduct the nation's civil space program and grant authority to the Department of Defense for space activities relating to defense and security. [5] Since, NASA has been a globally celebrated agency dedicated to science and technology related to air and space.[6] The agency, spread over nine centers, enjoys a reputation of scientific excellence and achievements in space exploration. In fact, the past several years have seen major movement in space interest, both in the commercial and civil arena and the security and military domain.[7] This introduction seeks to "set the stage" for discussion of the Artemis Accords by briefly covering the current status of space policy and politics in the U.S.[8]

NASA is not well known as a *regulatory* administration and is fundamentally tasked with scientific endeavors.[9] Section 102(c) of the Space Act charges NASA with objectives such as, "improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical and space vehicles" and the "expansion of human knowledge of phenomena in the atmosphere and space."[10] However, in subsection 7, NASA is also tasked with a decidedly more diplomatic task, "[c]ooperation by the U.S. with other nations and groups of nations in work done pursuant to this Act and in the peaceful application of the results thereof."[11] This provision, working with several others, charges NASA with the important task of coordinating and cooperating with the world, always with peace in mind.[12] Like other administrations, NASA has an Office of General Counsel, including an International Law Practice Group ("ILPG"). This group is responsible for,

> [P]roviding legal advice and counsel regarding international matters at Headquarters and all NASA Centers. Some of the legal issues for

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5 National Aeronautics and Space Act of 1958, Pub. L. No. 87-26, §201, 75 Stat. 47 (repealed 2010).

6 *What Is NASA?*, NASA, https://www.nasa.gov/audience/forstudents/5-8/features/nasa-knows/what-is-nasa-58.html (last updated Sept. 30, 2021).

7 *Majority of Americans Believe It Is Essential That the U.S. Remain a Global Leader in Space*, PEW RSCH. CTR. (June 6, 2018), https://www.pewresearch.org/science/2018/06/06/majority-of-americans-believe-it-is-essential-that-the-u-s-remain-a-global-leader-in-space/.

8 *Infra* Part III.

9 *What Is NASA?*, *supra* note 6.

10 §102, 75 Stat. at 427.

11 *Id.*

12 *See generally* §102, 72 Stat. at 426.

> which ILPG is responsible include: international law, including space law; domestic law which may impact NASA's international cooperation; issues involving the United Nations or other multilateral organizations; international trade; telecommunications and use of the radiofrequency spectrum; international aspects of commercialization; export control; and national security. ILPG advises on negotiating, drafting, executing, and interpreting agreements, understandings, treaties and exchanges with all types of foreign entities (both commercial and governmental), including international organizations.[13]

In line with these objectives, NASA may enter into bilateral agreements, such as the Artemis Accords.[14] Bilateral agreements between NASA and other space programs are not entirely unheard of—for example in 1998 NASA executed a series of memorandums of understanding with the Canadian, European, Russian, and Japanese space agencies, in addition to a larger multilateral agreement regarding the International Space Station.[15]

Recalling that the Space Act delegated space security to the Department of Defense, the U.S. Air Force has also been active in the space domain since 1982.[16] Albeit that existing presence, former President Donald Trump's announcement of his desire to create a "U.S. Space Force" caused a stir internationally.[17] However, the notion of such an organization was not entirely unheard of when the President surprised the nation and the world with his announcement in 2018.[18] While the politics continued to unfold, Trump re-activated USSPACECOM, which did not require the same congressional authorization as the creation of a new branch does. [19] Eventually, the Department

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13 *International Law*, NASA, https://www.nasa.gov/offices/ogc/international/index.html (last visited Mar. 23, 2022).

14 Nick Perry, *New Zealand Latest Country to Sign Space Agreement with NASA*, N.Z. HERALD (June 1, 2021), https://www.nzherald.co.nz/nz/new-zealand-latest-country-to-sign-space-agreement-with-nasa/CI75L43FQOSV46FRZQEACZJE3Q/.

15 *International Law Resources*, NASA, https://www.nasa.gov/offices/ogc/international/Intnl_subst_areas_text.html (last visited Mar. 23, 2022).

16 Namrata Goswami, *The US 'Space Force' and Its Implications*, DIPLOMAT (June 22, 2018), https://thediplomat.com/2018/06/the-us-space-force-and-its-implications/.

17 *See generally* Reality Check Team, *Russian President Warns over Expansion of US Space Force*, BBC NEWS (Dec. 4, 2019), https://www.bbc.com/news/world-us-canada-45171311.

18 Marcia Smith, *Top Air Force Officials Punt on Trump's "Space Force"*, SPACEPOLICYONLINE.COM (Mar. 14, 2018), https://spacepolicyonline.com/news/top-air-force-officials-punt-on-trumps-space-force/.

19 Marcia Smith, *Military/National Security Space Activities*, SPACEPOLICYONLINE.COM, https://spacepolicyonline.

of Defense and the Trump administration decided to forego the concept of the Space Force as a new military *branch* and proposed that it be a sixth military *service* under the Air Force.[20]

The Trump administration also reestablished the National Space Council and has made several agency changes aimed at streamlining the regulatory hurdles space companies face.[21] The Trump administration, while largely leaving the Obama and Bush era policies in place, also produced a flurry of executive orders in its last year, aimed at everything from promoting nuclear power and propulsion, planetary protection, and most notably to this topic: space resources.[22]

This brief overview of U.S. space development is meant to show that outer space and its international nature are in the public spotlight. Global leaders have a major impact on how the world sees space. From calls for a "global commons" to a President who wanted to create a military branch (incidentally inspiring a sitcom[23]), space policy plays an integral role in international relationships.[24]

II. OVERVIEW AND INTENT OF THE ARTEMIS ACCORDS

The purpose of the Artemis Accords is the advancement of humankind in space and the advancement of international collaboration in space.[25] They also affirm the importance of complying with existing international agreements, especially the *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*, more commonly known as the "Outer Space Treaty."[26] In fact, many sections of the Accords call back to either the Outer Space Treaty or other

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com/topics/militarynational-security-space-activities/ (last visited Mar. 23, 2022).

20 *Id.*

21 *President Re-Establishes National Space Council*, OFF. OF SPACE COM. (July 3, 2017), https://www.space.commerce.gov/president-re-establishes-national-space-council/.

22 *Military/National Security Space Activities*, *supra* note 19.

23 SPACE FORCE (Netflix 2020).

24 *See generally Global Governance and Governance of the Global Commons in the Global Partnership for Development Beyond 2015*, UN 5 (Jan. 2013), https://www.un.org/en/development/desa/policy/untaskteam_undf/thinkpieces/24_thinkpiece_global_governance.pdf ("International law identifies four global commons, namely the High Seas, the Atmosphere, the Antarctica and the Outer Space."); Dr. Cassandra Steer, *Why Outer Space Matters for National and International Security*, CTR. FOR ETHICS & RULE OF L. UNI. OF PA., 1, 2 (Jan. 2020).

25 The Artemis Accords: Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids for Peaceful Purposes, § 1, Oct. 13, 2020, NASA, https://www.nasa.gov/specials/artemis-accords/img/Artemis-Accords-signed-13Oct2020.pdf [hereinafter Artemis Accords].

26 *See generally id.*

notable multilateral agreements.[27] There is a clear notion of using a series of bilateral agreements to potentially bolster multilaterals ones, while also perhaps attempting to set some norms of behavior.[28]

The core substance of the Accords is in Sections 3 to 12. Section 3, "Peaceful Purposes," states that the Accords' signatories affirm that cooperative activities under the Accords will be only for peaceful purposes.[29] This section also states that these cooperative activities are to be carried out in accordance with "relevant international law," like the Outer Space Treaty.[30] In Section 4, "Transparency," the signatories commit to transparency about their national space policies and space exploration plans.[31] The Accords also commit to some sharing of scientific information they get from their activities—this sharing will be consistent with Article XI of the Outer Space Treaty, meaning the signatories will also inform the United Nations' Secretary-General.[32] The Secretary-General will be prepared to disseminate the information immediately and effectively.[33]

In Section 5, "Interoperability," the signatories agree to utilize the current interoperability standards for space-based infrastructure, to establish standards when there are none or are inadequate ones, and to follow the standards that are set.[34] This ensures that the technology that the signatories' agencies are developing and using will be compatible with each other, making cooperation easier.[35] Section 6, "Emergency Assistance," notes that the signatories will rescue personnel in outer space who are in distress, acknowledging obligations under the *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space* (the "Rescue and Return Agreement").[36]

In Section 7, "Registration of Space Objects," signatories commit to registering any relevant space objects in accordance with the *Convention on Registration of Objects Launched into Outer Space* (the "Registration Convention") and consulting with non-signatories on what they should register

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27 *See generally id.*
28 *See generally id.*
29 *Id.* at § 3.
30 *Id.*
31 *Id.* at § 4.
32 *Id.* at § 8, ¶ 2.
33 *Id.* at § 10, ¶ 3.
34 *Id.* at § 5.
35 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.
36 Artemis Accords, *supra* note 25, at § 6.

and how they should do it.[37] Section 8, "Release of Scientific Data," is similar to Section 4.[38] In this section, the signatories reaffirm their commitment to the open and timely sharing of scientific information.[39] This section allows the signatories to "retain the right to communicate and release information to the public regarding their own activities."[40] They will coordinate with each other in advance regarding the release of information that involves other signatories.[41]

Section 10, "Space Resources," starts by saying "that the utilization of space resources can benefit humankind."[42] "The extraction and utilization of space resources . . . should be executed . . . [to] compl[y] with the Outer Space Treaty and . . . support . . . safe and sustainable space activities."[43] The signatories will inform the international community of their space resource extraction activities.[44] The signatories will also contribute to efforts to further develop international practices and rules on the extraction and utilization of space resources.[45] This is the most controversial section of the Accords and is discussed in greater detail later in this paper.[46]

In Section 11, "Deconfliction of Space Activities," the signatories affirm that the exploration and use of outer space should be done with "consideration to the United Nations Guidelines for the Long-term Sustainability of Outer Space Activities adopted by the [United Nations Committee on the Peaceful Use of Outer Space ("COPUOS")] . . . in 2019."[47] However, there will be "appropriate changes to reflect the nature of the operations beyond low-Earth orbit" ("LEO").[48] Section 11 also sets up the use of "safety zones," which are temporary areas in space that signatories can carve out in order to safely conduct their operations without unintentionally causing damage to other signatories' equipment.[49]

Section 12, "Orbital Debris," addresses the issue of space junk sitting in LEO.[50] The signatories will deal with the orbital debris from their missions

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37 *Id.* at § 7.
38 *Id.* at § 8.
39 *Id.*
40 *Id.*
41 *Id.*
42 *Id.* at § 10.
43 *Id.*
44 *Id.*
45 *Id.*
46 Andrew Brooks, *The Artemis Accords: The Necessary Incentive of Space Extraction Rights*, COLUM. J. OF TRANSNAT'L L. BLOG (Nov. 9, 2020), https://www.jtl.columbia.edu/bulletin-blog/the-artemis-accords-the-necessary-incentive-of-space-extraction-rights. *See infra* Parts VI–VII.
47 Artemis Accords, *supra* note 25, at § 11.
48 *Id.*
49 *Id.*
50 *Id.* at § 12.

safely, timely, and efficiently.[51] The signatories will, "to the extent practicable, [try to limit] the generation of new, long-lived harmful debris released through normal operations, break-up . . . and accidents and conjunctions by taking appropriate measures."[52]

A. Intent and General International Reaction

Notwithstanding the drafter's collaborative intentions, the Artemis Accords are not without controversy. China and Russia have not signed the Accords. Russia thinks they are too "U.S.-centric,"[53] and NASA is not allowed to work with China under the Wolf Amendment.[54] Some space and international law experts are concerned that because China and Russia are not a part of the agreement, the Accords will contribute to the escalation of competition and rivalry in space between the U.S. and its allies and China and Russia and their allies.[55]

Further, legal experts and countries are worried that the "safety zones" as defined in Section 11 of the Accords could turn into "de facto spheres of influence . . . or be subject to national appropriation," and begin a wave of space settlement.[56] Article II of the Outer Space Treaty also bans this.[57] Joanne Gabrynowicz, editor-in-chief emerita of the *Journal of Space Law*, commented on the legality of the "safety zones," noting that "an international agreement must come before staking out 'some kind of exclusive area for science or for whatever reason. It is not anything any nation can do unilaterally and still have it be legal.'"[58]

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51 *Id.*

52 *Id.*

53 Jonathan Amos, *Project Artemis: UK Signs up to Nasa's Moon Exploration Principles*, BRIT. BROAD. CORP. (Oct. 13, 2020), https://www.bbc.com/news/science-environment-54530361?xtor=AL-72-%5Bpartner%5D-%5Bmicrosoft%5D-%5Blink%5D-%5Bnews%5D-%5Bbizdev%5D-%5Bisapi%5D.

54 Department of Defense and Full-Year Continuing Appropriations Act, Pub. L. No. 112-10, § 1340(a), 125 Stat. 38, 123 (2011).

55 Ortega, *supra* note 35; Guoyu Wang, *NASA's Artemis Accords: The Path to a United Space Law or a Divided One?*, SPACE REV. (Aug. 24, 2020), https://www.thespacereview.com/article/4009/1.

56 Ortega, *supra* note 35.

57 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies art. 2, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 (entered into force Oct. 10, 1967) [hereinafter Outer Space Treaty].

58 Joey Roulette, *Exclusive: Trump Administration Drafting 'Artemis Accords' Pact for Moon Mining-Sources*, REUTERS (May 5, 2020), https://www.reuters.com/article/us-space-exploration-moon-mining-exclusi/exclusive-trump-administration-drafting-artemis-accords-pact-for-moon-mining-sources-idUSKBN22H2SB.

There is also concern that there was not enough international collaboration on the Accords. The Accords were written outside of the United Nations and over a dozen countries have signed them as of October 2021.[59] For a country to become a signatory, it must sign a bilateral agreement with the U.S., whereas historically most international law on space is created through large multilateral agreements.[60] The Accords do have a provision in Section 13 that provides that the signatories will periodically come together to discuss what is in the Accords, allowing the opportunity for more earnest international collaboration.[61] Though, in order for a country to have a say, they have to be a signatory, which means they have to go through the U.S.. With Russia hesitant to join, and China being barred from NASA collaboration, two big players on the space stage cannot be included in these discussions and partnerships which may cause wariness from other countries.

Despite the potential issues, the signatories are optimistic and proud of the Artemis Accords. Former NASA administrator, Jim Bridenstine, has stated that the Accords are a united, global coalition to explore space and establish "vital principles that will create a safe, peaceful, and prosperous future in space."[62] According to the NASA acting associate administrator charged with beginning the process, Mike Gold, the Accords will help avoid conflict, preserve peace, strengthen mutual understanding, and reduce misperceptions.[63] The Department of State (under the previous administration) has placed importance on U.S. leadership in space, especially regarding "purs[u]ing and maintaining a rules-based international framework" for civilian space activities.[64]

Along with the U.S., officials or government agencies of the other Signatories have expressed their eagerness to and their collective interest in exploring space.[65] In addition to the U.S., Ukraine, the United Arab Emirates (U.A.E.), and

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59 Brian Dunbar, *Principles for a Safe, Peaceful, and Prosperous Future*, NASA, https://www.nasa.gov/specials/artemis-accords/index.html (last visited Mar. 26, 2022).

60 Artemis Accords, *supra* note 25, at § 13; *Space Law Treaties and Principles*, U.N. OFF. FOR OUTER SPACE AFF., https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html (last visited Mar. 19, 2022) (giving an overview of the UN Committee's five large international treaties).

61 Artemis Accords, *supra* note 25, at § 13.

62 Sean Potter & Cheryl Warner, *NASA, International Partners Advance Cooperation with First Signings of Artemis Accords*, NASA (Oct. 13, 2020), https://www.nasa.gov/press-release/nasa-international-partners-advance-cooperation-with-first-signings-of-artemis-accords.

63 *Id.*

64 Carolyn Pace, *Space Exploration and the Artemis Accords*, U.S. DEP'T OF STATE (Oct. 20, 2020), https://2017-2021.state.gov/dipnote-u-s-department-of-state-official-blog/space-exploration-and-the-artemis-accords/index.html.

65 U.K., POLICY PAPER: NATIONAL SPACE STRATEGY, https://www.gov.uk/government/publications/national-space-strategy/national-space-strategy (last updated Feb.

the United Kingdom (U.K.) have brought attention to the fact that the Accords are an international agreement.[66] Like the U.S., Canada, Italy, Japan, the U.A.E., and the U.K. have said the Accords are to establish "principles to create a safe, peaceful, and prosperous future in space."[67]

III. SELECTED INDIVIDUAL INTERNATIONAL RESPONSES

As of June 2021, 12 countries have signed the Artemis Accords: Australia, Brazil, Canada, Italy, Japan, Luxembourg, New Zealand, the Republic of Korea, Ukraine, the United Arab Emirates, the United Kingdom and the U.S.[68] Aforementioned, the general international response to the Artemis Accords has been mixed.[69] Government officials of the signatories are mainly optimistic and excited for this new chapter of space relations.[70] The non-government reports on

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1, 2022); *NASA Administrator Signs Declaration of Intent with Italy on Artemis Cooperation*, NASA, https://www.nasa.gov/feature/nasa-administrator-signs-declaration-of-intent-with-italy-on-artemis-cooperation (last updated Oct. 14, 2020).

66 Doug Messier, *Ukraine Becomes the 9th Nation to Sign Artemis Accords*, PARABOLIC ARC (Nov. 14, 2020), http://www.parabolicarc.com/2020/11/14/ukraine-becomes-9th-nation-to-sign-artemis-accords/; *UAE Among Eight Countries in NASA 'Artemis Accords' Space Coalition*, ARAB NEWS (Oct. 13, 2020), https://www.arabnews.com/node/1748496/lifestyle [hereinafter ARAB NEWS]; Tom Whipple, *Britain's Space Agency Joins Nasa-Led International Group to Sign Moon Accords*, TIMES (Oct. 14, 2020), https://www.thetimes.co.uk/article/britain-s-space-agency-joins-nasa-led-international-group-to-sign-moon-accords-6hqm60wpx.

67 *International Partners Advance Cooperation with First Signings of the Artemis Accords*, AGENZIA SPAZIALE ITALIANA (Oct. 13, 2020), https://www.asi.it/en/2020/10/international-partners-advance-cooperation-with-first-signings-of-the-artemis-accords/; *Consulting Canadians on a Framework for Future Space Exploration Activities*, CANADA.CA, https://www.asc-csa.gc.ca/eng/astronomy/moon-exploration/consulting-canadians-framework-future-space-exploration-activities.asp (last updated July 30, 2021); *Eight Nations Sign Artemis Accords on Space Exploration*, MINISTRY OF EDUC., CULTURE, SPORTS, SCI. AND TECH. (Oct. 14, 2020), www.mext.go.jp/en/news/topics/detail/mext_00032.html; *UAE Space Agency Signs Artemis Accords for International Space Cooperation*, GULF NEWS (Oct. 13, 2020), https://gulfnews.com/uae/government/uae-space-agency-signs-artemis-accords-for-international-space-cooperation-1.1602610338825 [hereinafter GULF NEWS]; Press Release, UK and NASA Sign International Agreement Ahead of Mission to the Moon, GOV.UK (Oct. 13, 2020), https://www.gov.uk/government/news/uk-and-nasa-sign-international-agreement-ahead-of-mission-to-the-moon.

68 Chris Ciaccia, *Brazil Has Signed the Artemis Accords to Promise its Space Exploration Will be Peaceful and Green, Becoming the First South American Country to Do So*, DAILYMAIL.COM (June 16, 2021), https://www.dailymail.co.uk/sciencetech/article-9692699/Brazil-signed-Artemis-accords-South-American-country-so.html.

69 *See supra* Section III.a.

70 *A Framework for Future Space Exploration Activities - Background Information*,

the Accords of the Signatories have been mainly positive but cautious.[71] Non-signatories have expressed concern and seem to be wary of the Accords.[72] This section outlines, a selection of individual responses from allied nations and adversaries to the U.S..[73]

A. Australia

The response from the Australian Space Agency has been positive. Dr. Megan Clark, head of the Australian Space Agency, has highlighted that the Accords are for peaceful purposes.[74] Ms. Clark noted "[it is] through the principles of the Artemis Accords, that we share a collective interest in the exploration of outer space for peaceful purposes."[75] On the surface, the Australian public seems to be as content with the Accords similar to their space agency.[76] Some Australian companies are hoping to contribute to missions under the Accords and how different industries are interested in space.[77] However, some policy experts and scientists tried to stop the Australian government from signing the Accords.[78] They argued that humans should treat the Moon and space akin to the treatment of Antarctica is treated and protected from mining and exploitation.[79]

CAN. SPACE AGENCY, https://www.asc-csa.gc.ca/eng/astronomy/moon-exploration/framework-future-space-exploration-activities-background-info.asp (last updated Oct. 26, 2020).

71 *See generally* The Canadian Press, *Canada Joins U.S.-Led Artemis Accords to Send Human Explorers Back to Moon and Beyond*, CANADIAN BROAD. CORP. (Oct. 14, 2020), https://www.cbc.ca/news/science/artemis-accords-1.5761456; *see generally* Maya Yarova, *Ukraine Becomes the Ninth Country Joining the NASA Space Program*, AIN.UA (Nov. 16, 2020), https://ain.ua/en/2020/11/16/ukraine-signs-the-nasa-artemis-accords/; Beatriz Cavalcante, *Brazil Signs with NASA to Take the First Black Woman and Man to the Moon*, O POVO (June 15, 2021), https://www.opovo.com.br/noticias/economia/2021/06/15/brasil-assina-com-nasa-para-levar-homem-e-mulher-negros-a-lua.html.

72 Paul Stimers and Audrey Jammes, *The Artemis Accords After One Year of International Progress*, SPACE REV. (Oct. 18, 2021), https://www.thespacereview.com/article/4267/1.

73 *See infra* Sections IV.a–IV.i.

74 Press Release, Dep't of Indus., Sci., Energy and Res., Australia Signs NASA's Artemis Accords (Oct. 14, 2020) (Austl.).

75 *Id.*

76 *Public Views About Science in Australia*, PEW RSCH. CTR. (Sept. 29, 2020), https://www.pewresearch.org/science/fact-sheet/public-views-about-science-in-australia/.

77 Tory Shepherd, *Australia Signs International Space Agreement – Artemis Accords*, SPACE AUSTL. (Oct. 20, 2020), https://spaceaustralia.com/news/australia-signs-international-space-agreement-artemis-accords.

78 Anthony Galloway, *Pyne Joins Global Push to Save Outer Space from Exploitation*, SYDNEY MORNING HERALD (Sept. 8, 2020), https://www.smh.com.au/politics/federal/pyne-joins-global-push-to-save-outer-space-from-exploitation-20200907-p55t5k.html.

79 *Id.*

B. Canada

The Canadian Space Agency has also been optimistic about the Accords. The Canadian Space Agency President, Lisa Campbell, commented that sustainability is a crucial concept in the Accords.[80] The Canadian Space Agency noted,"[t]he Accords are an important achievement for safe and sustainable space exploration."[81] The public response in Canada was similar to that of Australia's response.[82] Primary news sources reported on the Accords neutrally but in a positive light.[83] Major national newspaper, *The Star*, reported that China and Russia are not signatories.[84] Also, like Australia, there was some concern from policy experts. David Kendall, former Director General of Space and Science and Technology at the Canadian Space Agency and former Chairman of COPUOS, expressed disappointment the Accords are not synched with COPUOS.[85] He also expressed his disappointment in Canada for choosing a bilateral agreement with the U.S. instead of working for a multilateral agreement through COPUOS.[86] The Canadian Space Agency President Lisa Campbell also expressed mixed feelings about the Accords: "[she] cheers the [A]ccords, but says more robust rules for the exploration of deep space are still a long ways off."[87]

C. Italy

Like its Canadian counterpart, the Italian space agency, Agenzia Spaziale Italiana, has also commented on the importance of sustainability in the Accords.[88] "[The Accords] will allow us and future generations a peaceful, safe

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80 *Canada Joins U.S.-led Artemis Accords to Send Human Explorers Back to Moon and Beyond*, *supra* note 71.

81 *A Framework for Future Space Exploration Activities - Background Information*, *supra* note 70.

82 *Public Views About Science in Canada*, PEW RSCH. CTR. (Sept. 29, 2020), https://www.pewresearch.org/science/fact-sheet/public-views-about-science-in-canada/.

83 *Canada Joins U.S.-led Artemis Accords to Send Human Explorers Back to Moon and Beyond*, *supra* note 71; Marcia Dunn, *NASA's New Moonshot Rules: No Fighting or Littering, Please*, AP NEWS (Oct. 13, 2020), https://www.thestar.com/news/world/us/2020/10/13/nasas-new-moonshot-rules-no-fighting-or-littering-please.html.

84 Dunn, *supra* note 83.

85 *Artemis Accords – Considerations for Canada*, SPACEQ (June 10, 2020), https://spaceq.ca/artemis-accords-considerations-for-canada/.

86 *Id.*

87 *Canada Joins U.S.-led Artemis Accords to Send Human Explorers Back to Moon and Beyond*, *supra* note 71.

88 *Italy-USA Agreement on the Exploration of the Moon*, AGENZIA NAZIONALE STAMPA ASSOCIATA (Sept. 25, 2020),

and sustainable exploration of space to improve life on Earth," said the Undersecretary of State at the Presidency of the Italian Council of Ministers, Riccardo Fraccaro.[89] The Italian public seems to have the same response. News sources have commented on how the Accords and the Artemis Program will boost the Italian economy.[90] In addition, Italian officials celebrated their historical ties to, and continued partnership with, the U.S. on space issues.[91] News sources have voiced concern over the potential of a new space race between China and the U.S. that could turn dangerous, but the general attitude has been optimistic.[92]

D. Japan

The Japanese government is also positive about the Accords and commented on the Accords' role in space exploration. "The Artemis Accords are a vital commitment towards implementing safe and sustainable space exploration," said Hagiuda Koichi, Japan's former minister of Education, Culture, Sports, Science and Technology.[93] The Japanese public has been less enthusiastic than its government. News sources have reported on the Accords in a relatively neutral way.[94] They point out that the Accords are American-led, and it is NASA that is "seek[ing] to establish a set of principles for space exploration including lunar resource extraction."[95] Japanese media also bring up the fact that China and Russia are not involved in this agreement.[96]

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https://www.ansa.it/canale_scienza_tecnica/notizie/spazio_astronomia/2020/09/25/accordo-italia-usa-sullesplorazione-della-luna-_16c32da0-dadc-41dc-aeeb-20adc8b3bae4.html.

89 Doug Messier, *Italy Signs Artemis Accords*, PARABOLIC ARC (Oct. 16, 2020), http://www.parabolicarc.com/2020/10/16/italy-signs-artemis-accords/.

90 *Italy-USA Agreement on the Exploration of the Moon*, *supra* note 88.

91 *Id.*

92 Stefano Pioppi, *An Alliance for the Moon. The Geopolitical Weight of the Artemis Accords Explained by Spagnulo*, FORMICHE (Oct. 14, 2020), https://formiche.net/2020/10/luna-geopolitica-artemis-spagnulo.

93 *Eight Nations Sign Artemis Accords on Space Exploration*, *supra* note 67.

94 *See, e.g.*, James Hand-Cukierman and Mitsuru Obe, *Space Powers Take Aim at Moon in Quest for Resources and Glory*, NIKKEI ASIAN REV. (JAPAN) (Jan. 20, 2022), https://asia.nikkei.com/Spotlight/Asia-Insight/Space-powers-take-aim-at-moon-in-quest-for-resources-and-glory; *Govt to Agree on Intl Principles for Space*, JAPAN NEWS, Oct. 13, 2020, at 1, POLITICS, File No. 25121; Keisuke Katori & Shiori Ogawa, *New Legislation Gives Companies Legal Rights to Lunar Resources*, AJW (Sept. 1, 2021), https://www.asahi.com/ajw/articles/14420386.

95 *Japan Joins U.S.-Led Pact for Space Exploration and Moon Mining*, JAPAN TIMES (Oct. 14, 2020), https://web.archive.org/web/20210122073534/https://www.japantimes.co.jp/news/2020/10/14/national/science-health/japan-us-space-moon-mining/; *see also* Pioppi, *supra* note 92.

96 *E.g.*, *Japan Joins U.S.-Led Pact for Space Exploration and Moon Mining*, *supra* note 95.

E. Luxembourg

The Luxembourg government has emphasized that the Accords will promote peace in outer space. The Luxembourg Minister of the Economy, Franz Fayot, said, "The Artemis Accords . . . support the peaceful exploration sustainable utilization of space," and[97] news coverage in Luxembourg, like Italy, has emphasized the economic advantages of international cooperation for space exploration.[98] Luxembourgers have good reason to expect an economic perk, as Luxembourg passed the "Law of July 20th 2017 on the Exploration and Use of Space," which allows for space resources' commercial usage.[99] Luxembourgers are also looking forward to having a more significant presence in space.[100]

F. Ukraine

Like Italy and Luxembourg, Ukraine is eager to collaborate more with the U.S. The Ukrainian State Space Agency "hopes that the signing of the Accords will facilitate [the] conclusion of a framework agreement on cooperation in space exploration between the government of Ukraine and the U.S."[101] Press there has reported on Ukraine signing the Accords agreement positively.[102] The Ukrainian public seems to share its government's enthusiasm about working more closely with the U.S. and furthering Ukrainian presence in space.[103]

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97 *Minister of the Economy Franz Fayot Signs the Artemis Accords on Behalf of Luxembourg at the International Aeronautical Congress*, LUXEMBOURG SPACE AGENCY (Oct. 14, 2020), https://space-agency.public.lu/en/news-media/news/2020/20201.html.

98 *See, e.g.*, *Les Ressources Spatiales: Un Filon Prometteur pour le Luxembourg*, LUXEMBURGER WORT (Dec. 21, 2020), https://www.wort.lu/fr/economie/les-ressources-spatiales-un-filon-prometteur-pour-le-luxembourg-5c1ce5aa182b657ad3b9c37c.

99 *Law of July 20th 2017 on the Exploration and Use of Space Resources*, LUXEMBOURG SPACE AGENCY (Aug. 11, 2019), https://space-agency.public.lu/en/agency/legal-framework/law_space_resources_english_translation.html.

100 *Les Ressources Spatiales: un Filon Prometteur Pour le Luxembourg*, *supra* note 98; *Luxembourg, NASA Among First Signatories of Artemis Accords*, CHRONICLE.LU (Oct. 14, 2020), https://chronicle.lu/category/space/34267-luxembourg-nasa-among-first-signatories-of-artemis-agreements.

101 Messier, *supra* note 66.

102 *Ukraine Joins NASA's Mars and Moon Exploration Program*, CTR. FOR TRANSP. STRATEGIES (Nov. 18, 2020), https://en.cfts.org.ua/news/ukraine_joins_nasas_mars_and_moon_exploration_program; *US Embassy Congratulates Ukraine on Joining NASA Artemis Program*, KYIV POST (Nov. 17, 2020), https://www.kyivpost.com/ukraine-politics/us-embassy-congratulates-ukraine-on-joining-nasa-artemis-program.html?cn-reloaded=1; Yarova, *supra* note 71.

103 Yarova, *supra* note 71; *US Embassy Congratulates Ukraine on Joining NASA Artemis Program*, *supra* note 102.

G. The U.A.E.

The U.A.E.'s government has spoken favorably on the Accords and its commitment to peace. Sarah Al Amiri, the Minister of State for Advanced Technology, said, "[a]s a peaceful space fairing nation, the U.A.E. is pleased to become a signatory of the Artemis Accords, and our endorsement of this agreement is in keeping with our principle of the peaceful use and exploration of outer space."[104] The response from the U.A.E.'s public is also mainly positive.[105] Those sources that reported on the signing talked about how the Accords align with the U.A.E.'s vision of how space should be used.[106] There is also some concern about China and Russia not being Signatories.[107] *Arab News* says Russia's denouncing of the Accords "[marks] the probable end of the type of close cooperation seen for two decades on the International Space Station."[108]

H. The United Kingdom

Like all the other signatories' governments, the British government is optimistic about the Accords. A press release from the United Kingdom ("U.K.") space agency recently supported peaceful efforts, saying, "[a]t the core of the Artemis Accords is the requirement that all activities will be conducted for peaceful purposes."[109] The Head of International Policy at the U.K. Space Agency, Arfan Chaudhry, has commented on how "[the Accords] are key principles for devising a sustainable presence on the Moon while preparing for onward human missions to Mars."[110] Like Ukraine, the U.K. is looking forward to collaborating more with the U.S.[111] The U.K. is also keen on promoting its current and future leadership in space. "Signing the Accords is a strong signal of our intent to take a leading global role in civil space," said Graham Turnock, C.E.O. at the U.K. Space Agency.[112]

The British public has been critical of the lack of broader international

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104 GULF NEWS, *supra* note 67.

105 *Id.*

106 *Id.*; *KT Edit: Collaborating in Space*, KHALEEJ TIMES (Oct. 15, 2020), https://www.khaleejtimes.com/editorials-columns/kt-edit-collaborating-in-space.

107 ARAB NEWS, *supra* note 66.

108 *Id.*

109 *UK and NASA Sign International Agreement Ahead of Mission to the Moon*, *supra* note 67.

110 Whipple, *supra* note 66.

111 *UK and NASA Sign International Agreement Ahead of Mission to the Moon*, *supra* note 67 (explaining that the extent of the United Kingdom's expected involvement in the Artemis Accords).

112 *Id.*

collaboration. It is important to note that China and Russia are not going to sign any time soon.[113] The British Broad Casting Network ("B.B.C.") states that "some experts working in the area of international relations and space law have also questioned whether the accords are too focused on U.S. interests, in a way that could lead to disagreements in the far future, especially if, or when, commercial interests overtake today's scientific exploration."[114] *The Times* stated "the Accords were signed without the endorsement of two of the nations most likely to engage in that exploration . . . some legal experts have claimed, risk overriding a fragile consensus governing activities in space, in an attempt to make money from it."[115] The International Director of the U.K. Space Agency, Dr. Alice Bunn, told the B.B.C. that the U.K. Space Agency was hesitant to sign the Accords on account of the "safety zones."[116] However, after clarification from the U.S. and compromise, they signed.[117]

I. South Korea, New Zealand, and Brazil

The governments of the newest signatories to the Accords also have positive feelings towards their cooperation with the U.S. via the Accords.[118] South Korean newspapers have been neutral about South Korea joining—commenting objectively on the partnership between South Korea and the U.S. and the provisions of the Accords.[119] They also bring up the fact that China and Russia are not participating in the Accords and one mentioned that the Artemis Accords conflict with the Moon Agreement. [120]

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113 Amos, *supra* note 53; *see also* Whipple, *supra* note 66.

114 Amos, *supra* note 53.

115 Whipple, *supra* note 66.

116 *See* Amos, *supra* note 53.

117 *Id.*

118 *See S. Korea Signs U.S.-Led Moon Exploration Accord*, YONHAP NEWS AGENCY (May 27, 2021), https://en.yna.co.kr/view/AEN20210527001200320; *see also Signing up for Artemis Agreement*, MINISTRY OF FOREIGN AFFAIRS (May 27, 2021), https://www.mofa.go.kr/www/brd/m_4080/view.do?seq=371210; *see also New Zealand Joins Artemis Accords*, MINISTRY OF BUS., INNOVATION & EMP. (June 1, 2021), https://www.mbie.govt.nz/about/news/new-zealand-joins-artemis-accords/; *Brazil Joins NASA Initiative that Will Take the First Woman to the Moon*, GOVERNO FEDERAL DO BRASIL (June 15, 2021), https://www.gov.br/planalto/pt-br/acompanhe-o-planalto/noticias/2021/06/brasil-adere-a-iniciativa-da-nasa-que-levara-a-primeira-mulher-a-lua.

119 *See* No-pil Kwak, *South Korea Will Also Participate in US Lunar Exploration in 2024*, HANKYOREH, https://www.hani.co.kr/arti/science/science_general/996887.html, (last visited Mar. 23, 2022); *see also* Hyun-kyung Lee, *The 'Artemis Agreement' that South Korea Participated in at the Korea-U.S. Summit*, DONGA SCI. (May 24, 2021), https://www.dongascience.com/news.php?idx=46767.

120 Kwak, *supra* note 119; *see generally* Lee, *supra* note 119.

New Zealand newspapers reported favorably on the Artemis Accords.[121] They place an emphasis on the Accords' commitment to the sustainable mining of outer space resources.[122] One newspaper reported on the economic advantages that are expected to come from the Accords, and also provided a summary of the objectives of the Accords.[123] Another quoted Peter Beck, the founder of Rocket Lab, that New Zealand's signing of the Accords was "a testament to the country's growing role in the space industry."[124]

Brazilian newspapers have been positive on the country signing the Artemis Accords.[125] They seem to be proud that Brazil is the first of the Latin American countries to sign the Accords.[126] They also emphasize the fact that the Artemis Program is going to bring the first woman to the moon.[127] One newspaper quoted Brazilian President Jair Bolsonaro saying that "Brazilians are really making history" and that the objective of the agreement between Brazil and the U.S. is to "encourage young Brazilians to take an interest in science and demonstrate their potential."[128]

The European Space Agency (E.S.A.) seems to be neutral about the Artemis Accords.[129] E.S.A. has posted an informational page about the Accords and the Memorandum of Understanding (which it has signed with NASA).[130] The summary looks like all the others floating about the Internet.[131] On whether or not it will sign the Accords, the head of E.S.A.'s Washington office, Sylvie Espinasse, said the "[ESA] 'will listen carefully' to all its member states."[132]

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121 *See* Perry, *supra* note 14.

122 *New Zealand and NASA Partner Up, Allowing Aotearoa to Grow Space Industry, Minister Says*, RADIO N.Z. (June 2, 2021), https://www.rnz.co.nz/news/national/443848/new-zealand-and-nasa-partner-up-allowing-aotearoa-to-grow-space-industry-minister-says [hereinafter RADIO N.Z.]; *see also* Perry, *supra* note 14.

123 RADIO N.Z., *supra* note 122.

124 Perry, *supra* note 14.

125 *See also Secretário de Estado dos EUA Cobra Ações Ambientais Concretas do Brasil*, O GLOBO MUNDO (June 17, 2021), https://oglobo.globo.com/mundo/secretario-de-estado-dos-eua-cobra-acoes-ambientais-concretas-do-brasil-25066149; *see generally* Cavalcante, *supra* note 71.

126 Cavalcante, *supra* note 71*; Secretário de Estado dos EUA Cobra Ações Ambientais Concretas do Brasil*, *supra* note 125.

127 Cavalcante, *supra* note 71*; Secretário de Estado dos EUA Cobra Ações Ambientais Concretas do Brasil*, *supra* note 125.

128 Cavalcante, *supra* note 71.

129 *See generally Gateway MOU and Artemis Accords –FAQs*, EUROPEAN SPACE AGENCY, https://www.esa.int/Science_Exploration/Human_and_Robotic_Exploration/Gateway_MoU_and_Artemis_Accords_FAQs.

130 *Id.*

131 *Id.*

132 Jeff Foust, *NASA-ESA Agreement a Milestone in Efforts to Develop Artemis International Partnerships*, SPACE NEWS (Oct. 30, 2020), https://spacenews.com/nasa-esa-agreement-a-milestone-in-efforts-to-develop-artemis-international-partnerships/.

Though large players in E.S.A., the Germans have been silent on the Accords.[133]

The French, however, have not stayed silent. On the official website of the Centre national d'études spatiales (CNES, the French space agency), Julien Mariez, head of the legal department at CNES, wrote an analytical piece of the Accords.[134] He begins by asking the question, "Who owns the Moon and its natural resources?"[135] Mariez continues by saying that there is uncertain intentional legal framework regarding the Moon and its resources.[136] He then brings up the U.S. Space Act of 2015, in which Congress gives U.S. citizens the right to recover space resources.[137] Mariez says the U.N. is "in a rut" on making space agreements and coming to consensuses about how to act in space.[138] He argues that "[t]his relative paralysis and the inability to undertake a multilateral normative initiative, which can, unfortunately, be observed over time on all the new problems of the law of space activities, leaves the field open to national initiatives and to a certain form of unilateralism."[139] Mariez ends the piece by wondering if the Accords will be the end of international space law, as the Accords are a set of bilateral agreements between the U.S. and the other signatories.[140] Aforementioned, most other international space agreements, like the Outer Space Treaty, are multilateral agreements.[141]

China, as one could imagine, is not thrilled about the Artemis Accords.[142] Guoyu Wang, Professor and Dean of the Academy of Air, Space Policy and Law at the Beijing Institute of Technology and a Chinese delegate to COPUOS since 2012, wrote a critical article of the Accords.[143] He points out issues that the U.S. and other signatories failed to address in the many sections of the Accords.[144] Wang says that the U.S. might "imply or require" that signatories to the Accords do not collaborate with China.[145] He says that "[the Accords] will aggravate the game of interpreting and formulating international rules of space resources

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133 Susmita Mohanty, *Artemis Accords: A Step Toward Space Mining and Colonization*, FRIENDS OF EUR. (Dec. 4, 2020), https://www.friendsofeurope.org/insights/artemis-accords-a-step-toward-space-mining-and-colonisation/.

134 Julien Mariez, *À qui Appartiennent la Lune et ses Ressources Naturelles?*, CENTRE NATIONAL D'ÉTUDES SPATIALES (July 15, 2020), https://cnes.fr/fr/qui-appartiennent-la-lune-et-ses-ressources-naturelles.

135 *Id.*

136 *Id.*

137 *Id.*

138 *Id.*

139 *Id.*

140 *Id.*

141 *See* discussion *supra* Section III.a.

142 Wang, *supra* note 55.

143 *Id.*

144 *Id.*

145 *Id.*

activities, and will intensify the controversies in [the] international community."[146] Wang is also afraid that the "safety zones" could become "de facto spheres of influence of a state or be subject to national appropriation."[147] Song Zhongping, a military and aerospace expert, has compared the Accords to colonization and has accused the U.S. of seeking sovereignty over the Moon.[148] It does not help that Congress will not allow NASA to work with China.[149]

Russia has the same critical view as China.[150] In the past, Russia has said that "policies that certain states have adopted outside the U.N. framework on the exploration and use of resources in outer space . . . is fraught with serious risks for international cooperation and understanding."[151] Sergey Savelyev, Deputy Director General of Roscosmos (the Russian space agency), compared President Trump's executive order allowing recovery and use of space resources to colonialism: "[T]here have already been examples in history when one country decided to start seizing territories in its own interests and everyone remembers how that turned out."[152] However critical Roscosmos officials have been of the Artemis Program and the Accords, Director General Dmitry Rogozin has said that Roscosmos will still make sure the docking modules of their spacecraft will be compatible with that of NASA and the other signatories.[153]

IV. RELATIONSHIP TO THE OUTER SPACE TREATY

The Artemis Accords serve as a twenty-first century adaptation of the Outer Space Treaty to current and foreseeable technologies in a particular environment, with a focus on exploration and resource usage.[154] To that end, the authors of the Accords base them on the same principles as and affirm the

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146 *Id.*

147 *Id.*

148 Azcárate Ortega, *supra* note 35.

149 Department of Defense and Full-Year Continuing Appropriations Act, Pub. L. No. 112-10, § 1340(a), 125 Stat. 38, 123 (2011).

150 Azcárate Ortega, *supra* note 35.

151 *Comment By the Information and Press Department on the US President's Executive Order on Encouraging International Support for the Recovery and Use of Space Resources*, THE MINISTRY OF FOREIGN AFF. OF THE RUSS. FED'N (Apr. 7, 2020), https://www.mid.ru/en/foreign_policy/news/-/asset_publisher/cKNonkJE02Bw/content/id/4096701.

152 Bob Daemmrich, *Russia Compares Trump's Space Mining Order to Colonialism*, MOSCOW TIMES (Apr. 7, 2020), https://www.themoscowtimes.com/2020/04/07/russia-compares-trumps-space-mining-order-to-colonialism-a69901.

153 Amos, *supra* note 53.

154 Walker A. Smith, *Using the Artemis Accords to Build Customary International Law: A Vision for a U.S.-Centric Good Governance Regime in Outer Space*, 86 J. AIR. L. & COM. 661, 668 (2021).

importance of compliance with the Outer Space Treaty.[155] The Accords work to expound on principles found in the Outer Space Treaty and cite to the treaty as foundational to the success of the Accords.[156] However, some of the adaptations within the Accords go beyond the scope of the Outer Space Treaty.[157] This arguably results in a new interpretation of the multilateral agreement with the inherent risk of possibly confusing its intent and obligations. Conversely, the Accords may serve to strengthen the Outer Space Treaty and clarify state practice in light of new space activities.

A. How the Accords Clarify or Confuse the Outer Space Treaty

The Accords have the potential to expand on the Outer Space Treaty primarily in Section 4, which deals with transparency and echoes Article XI of the Outer Space Treaty.[158] Article XI establishes that state parties agree to inform the Secretary General of the UN, the public, and the international scientific community on the "nature, conduct, locations and results" of exploration and operations in outer space "to the greatest extent feasible and practicable."[159] In Section 4 of the Accords, this transparency is to be accomplished in accordance with the outer space treaty, but the "greatest extent feasible and practicable" standard is exchanged for the term "good-faith basis."[160]

This slight alteration in wording also appears to lower the standard for transparency. One interpretation under the "good faith standard" could be, that if a country does not share the nature, conduct, and locations of their activities, then they can be seen as acting in bad faith. The "good faith" standard is more open to legal interpretation. This interpretation can allow for future international agreements to address specific issues, without automatically conflicting with the Artemis Accords. By providing flexibility, the Accords can take the 1967 doctrines of the Outer Space Treaty and apply them to the twenty-first century geopolitical landscape.

Conversely, an area where the Accords may complicate and possibly contradict the Outer Space Treaty is regarding safety zones. As part of Section 11 of the Artemis Accords, safety zoning is intended to be a part of a larger model to deconflict space activities between the many different nations that will be operating in space.[161] Arguably, safety zones appear to be consistent with

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155 Artemis Accords, *supra* note 25, at § 1.
156 Smith, *supra* note 154.
157 *Id.*
158 *Id.*
159 Outer Space Treaty, *supra* note 57, at art. 2.
160 Artemis Accords, *supra* note 25, at § 1.
161 *Id.*

Articles XI and IX of the Outer Space Treaty, because they will provide the public with the location and information on general operations on the moon to prevent harmful interference.[162] On the other hand, some argue that the establishment of specific safety zones for an extended period of time, could lead to "de facto spheres of influence of a state or be subject to national appropriation."[163]

B. Safety Zones

Safety zones have been discussed before, specifically at the Hague Space Resources Governance Working Group.[164] Splitting from these discussions, The Accords appear to focus on the interests of the party which establishes the zone, rather than the balance of interests which the Hague Working Group addressed.[165] The concern hinges on the issue of permanence. If the safety zone is permanent, then it may become a form of de facto national appropriation.[166] But there is no clear definition of permanence.

When considering safety zones directly with space mining, it is clear from human experience in mining on Earth, that the land is never fully returned to what it once was before.[167] Translating this to space resource extraction and safety zones, what happens if there is an accident or extreme environmental damage to the moon or other celestial body and a safety zone needs to be established permanently for the safety of humankind? A nation may then have a permanency issue that could be interpreted as national appropriation.

C. Heritage Sites

Another area that the Accords causes a discrepancy with the Outer Space Treaty is possibly in preserving Outer Space Heritage.[168] The confusion arises under the same concept of national appropriation. For example, if the U.S. set

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162 Hunter Sutherland, Note, *The Stakes Are Out of This World: How to Fix the Space Act of 2015*, 22 VT. J. ENVTL. L. 100, 108 (2021).

163 Wang, *supra* note 55.

164 *Hague International Space Resources Governance Working Group Final Report*, UNIVERSITEIT LEIDEN 16 (Jan. 27, 2020), https://www.universiteitleiden.nl/binaries/content/assets/rechtsgeleerdheid/instituut-voor-publiekrecht/lucht—en-ruimterecht/space-resources/final-report-phase-2_the-hague-international-space-resources-governance-working-group.pdf.

165 Wang, *supra* note 55.

166 Christopher Johnson, *A First Look at the Artemis Accords*, LINKEDIN (Oct. 14, 2020), https://www.linkedin.com/pulse/first-look-artemis-accords-christopher-johnson/.

167 *Hague International Space Resources Governance Working Group Final Report*, *supra* note 164.

168 Artemis Accords, *supra* note 25, at § 9.

an Outer Space Heritage "zone" to preserve the Apollo 11 landing site under Section 9 of the Accords, is the U.S. therefore excluding other nations from space activities on that same site? If so, the U.S. would be exhibiting some form of property right on that site and could be accused of national appropriation. It appears that the Accords are trying to avoid this appropriation issue by placing Outer Space Heritage language in an international bilateral agreement, because it can be argued that it is not national appropriation if other nations agree to preserve a site, compared to just the U.S.[169] Perversely, it would be primarily U.S. technology that is being preserved as "Outer Space Heritage" and other nations could again argue this is de facto appropriation.[170] Because there is no clear definition or established norm to clarify the issue, confusion flourishes. The tension in seeking to save historical sites and equipment for future generations against the free use and access of space resources is an issue that arises again and again in space diplomacy.[171]

There are two unique methods that have the potential to establish these Outer Space Heritage Zones, while minimizing accusations of national appropriation. One alternative to countries establishing these historical preservation zones, is to have private entities advocate and establish these sites.[172] An example of this would be a private entity with no ties to any one government, such as the organization For All Moonkind.[173] In 2018, For All Moonkind was granted the status of Permanent Observer to the United Nations Committee on the Peaceful Uses of Outer Space and has made it its mission to protect each of the six human lunar landing sites.[174] The use of private entities, unaffiliated to any one country, could allow for a much more objective approach to the establishment of historical sites.[175] However, the use of private entities could result in a disparity in deciding what sites are preserved and which sites are not. This is because the actions of private organizations would be limited to the scope of their operating budgets and personal preferences of their members, rather than the national

169 *Id.*

170 *Id.* at § 1 ("The Signatories intend to preserve out space heritage, which they 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.").

171 Comm. on the Peaceful Uses of Outer Space, Rep. of the Legal Subcomm. on Its Sixty-Second Session, U.N. Doc. A/74/20 (2019).

172 *Id.*

173 *Mission Statement*, FOR ALL MOONKIND, https://www.forallmoonkind.org/moonkind-mission/mission-statement/ (last visited Mar. 28, 2022) (Mission Statement: "Ensure the six Apollo Lunar Landing and similar sites in outer space are recognized for their outstanding value to humanity and consequently preserved and protected for posterity as part of our common human heritage.").

174 *Id.*

175 Comm. on the Peaceful Uses of Outer Space, *supra* note 171.

objectives of individual countries.[176]

The second approach is to establish a process similar to that of the 1972 World Heritage Convention.[177] While this convention falls under UNESCO, something similar could be established for space heritage sites.[178] Another alternative would be that the 1972 Convention is amended to include space heritage sites. The Convention is a pledge by the signatories to conserve sites and communicate the conservation and preservation of these sites to the international community.[179] By following a similar pattern for Space Heritage Sites, as the 1972 Convention, it follows an established international process. This lends additional credibility to the system and could lessen the negative effects of limiting access to these sites through the required plans and processes.

The discussion of safety zones and preservation of outer space heritage both cut directly to property rights on the Moon, and by extension other celestial bodies. The Outer Space Treaty is generally seen as ambiguous on how property rights translate to space resources.[180] In fact, the global definition of "space resources" is in a constant state of evolution. Under conventional property law concepts, it is clear that the lunar rocks from the Apollo missions are owned by the U.S. of America.[181] Russian lunar samples have passed to private individuals for sale and resale, setting the precedent that once an object is removed from a celestial body, it is subject to some level of ownership rights, even if the celestial bodies themselves are not.[182] The Outer Space Treaty does not exactly address these issues. The treaty is sometimes viewed as an antiquated treaty from the Cold War Era, when fear of appropriation for military use was the primary fear and resource extraction was secondary.[183] This confusion is compounded in the Accords, concerning the "principle of free access to all areas of celestial bodies," while also working to establish certain zones.[184]

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176 *Id.*

177 *The World Heritage Convention*, UNESCO, https://whc.unesco.org/en/convention/ (last visited Mar. 29, 2022) ("The most significant feature of the 1972 World Heritage Convention is that it links together in a single document the concepts of nature conservation and the preservation of cultural properties. The Convention recognizes the way in which people interact with nature, and the fundamental need to preserve the balance between the two.").

178 *Id.*

179 *Id.*

180 Abigail D. Pershing, *Interpreting the Outer Space Treaty's Non-Appropriation Principle: Customary International Law from 1967 to Today*, 44 YALE J. INT'L. L. 149, 169 (2019).

181 Matthew P. Hytrek, Note, *Property Rights in Current Space Law: A Hinderance to Space Exploration*, 39 WHITTIER L. REV. 90, 103–04 (2018).

182 *Id.* at 109.

183 *Id.* at 92–93.

184 Artemis Accords, *supra* note 25, at § 11.

V. SPACE RESOURCE UTILIZATION: COVERAGE AND INTERNATIONAL CONCERNS

Article I of the Outer Space treaty states that the exploration of space and use of its resources are for the communal use of all nations, with Article II going further by prohibiting any national appropriation of space and its resources.[185] National appropriation cannot be done "by claim of sovereignty, by means or use or occupation, or by any other means."[186] The treaty is largely silent on the actions of private individuals and entities from owning regions of space, the moon, or other celestial bodies and the utilization of their resources. As a result, the U.S. was arguably acting within its rights to pass the 2015 Commercial Space Launch Competitiveness Act (2015 Act).[187] This act allowed for, and even encouraged, private ownership of space *resources* by U.S. citizens.[188] While this perspective remains controversial internationally, there are prominent scholars who support it suggesting, "[t]here should be no debate over this" because of the "numerous" examples of resource samples being "returned to Earth and owned by the extracting nation and even sold in some cases."[189] The U.S. reinforced this perspective when President Donald Trump signed an executive order on April 6, 2020 encouraging American citizens to explore, harvest, and utilize space resources.[190] This Executive Order also rejected the Moon Agreement as Customary international law, reminding the world that the U.S. was not a signatory to that Agreement.[191]

The Artemis Accords do not directly reference the 2015 Act or 2020 Executive Order. However, the legal interpretations of the Outer Space Treaty and perspective on space resources appear synonymous between the three documents.[192] Even though U.S. perspectives and interpretations appear to be in sync between the three documents, signatories to the Artemis Accords are not instantly signaling support of U.S. legislation and space policy by signing the accords. Each nation has their own perspective on the Accords and use of Space

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185 Outer Space Treaty, *supra* note 57, at art. 1–2.

186 *Id.* at art. 2.

187 Camisha L. Simmons, *On the Edge: Space Exploration and Production: Bankruptcy Perspectives*, AM. BANKR. INST. J. 24, 24 (2020).

188 *Id.*

189 Matthew Schaefer, *Property Rights in Space (Part II): Post New Space Conference Thoughts - Posey ASTEROIDS Act, Bigelow Payload Safety Review, On-Orbit Jurisdiction, Etc.*, LAWOFSCHAEFER (July 26, 2014), https://lawofschaefer.com/2014/07/26/property-rightsin-space-part-ii-post-newspace-conference-thoughts-posey-asteroids-actbigelow-payload-safety-review-on-orbit-jurisdiction-etc/.

190 Exec. Order No. 13,914, 85 Fed. Reg. 20, 381 (Apr. 10, 2020).

191 *Id*.

192 *Id.;* Artemis Accords, *supra* note 25, at § 10; Commercial Space Launch Competitiveness Act of 2015, 51 U.S.C. § 51302 (2020).

Resources, which all vary slightly from the U.S. perspective.[193]

It is an established view that signing a treaty with one country does not indicate the country's support of all legislation from that other country. Thus, the signing of the Artemis Accords does not directly indicate that a country supports the U.S. 2015 Commercial Space Launch or President Trump's April 2020 Executive Order establishing entitlements to U.S. companies of space resources. However, in this instance it could be argued that by signing the Artemis Accords, which were primarily drafted by a U.S. government entity, that the signatories would be indicating support for a U.S. centric perspective on outer space and the utilization of space resources.

Support for U.S. remise would include the legal interpretation of national appropriation. Under Section 10 of the Artemis Accords, extraction and utilization of space resources is not only permissible but encouraged.[194] Interestingly, the Accords state that these actions should comply with the Outer Space Treaty.[195] The key sentence of Section 10 is: "[t]he Signatories affirm that the extraction of space resources does not inherently constitute national appropriation under Article II of the Outer Space Treaty, and that contracts and other legal instruments relating to space resources should be consistent with that Treaty."[196] This sentence is important because it establishes the basis for space resource utilization. One legal interpretation of Articles I and II of the Outer Space Treaty is that any use of space resources could be considered national appropriation. This sentence from Section 10 of the Accords establishes a specific legal perspective, to which the Signatories are prescribing.[197] Signatory nations to the Accords are stating that they support the legal interpretation that the extraction of space resources does not inherently constitute national appropriation.[198] This means that simply taking a resource from space or a celestial body is not in itself national appropriation. The accords thus imply that national appropriation of space resources is a multi-step process, to which extraction is simply one part.

In addition, international opinions of the Artemis Accords are mixed, signaling that the Accords themselves may be viewed as too U.S. centric in promoting the privatization of space resources.[199] These opinions could result in a weakening of the Accords or even the Outer Space Treaty itself. As more

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193 *See supra* Sections IV.a–IV.i.

194 Artemis Accords, *supra* note 25, at § 10.

195 *Id.*

196 *Id.*

197 *See id*.

198 *Id.* at § 10, ¶ 2.

199 Andrew Jones, *Russian Space Chief Disses NASA's Artemis Moon Landing Plans*, SPACE.COM (Nov. 4, 2020), https://www.space.com/russia-space-agency-chief-criticizes-nasa-moon-plans.

countries sign the Accords, it could be perceived as a shift to a U.S. legal interpretation of the outer space treaty, which could deter future cooperation or result in competing agreements that support a more liberal interpretation of the Outer Space Treaty.

So, while signatories to the Artemis Accords are not necessarily indicating their country's support of the U.S. 2015 Commercial Space Launch Competitiveness Act and Trump's April 2020 Executive Order, they may be indicating their support for a specific legal interpretation of the Outer Space Treaty, that allows for the extraction and utilization of space resources.

VI. THE MOON AGREEMENT: COVERAGE AND CONCERNS

The Artemis Accords contradict the 1979 Moon Agreement, to which the U.S. is not a party, in several places.[200] As the Moon Agreement is recognized by some countries as Customary International Law, it is important to consider how countries will address apparent conflicts between competing space treaties and doctrines.

A. Background and the U.S.

Currently, only 18 countries have ratified the Moon Agreement.[201] Notably, Russia, China, and the U.S. have all decided not to ratify the Agreement.[202] The U.S. has noted that the differences between the Moon Agreement and the Outer Space Treaty contribute to uncertainty regarding the rights to extract and utilize space resources.[203] The U.S. also believes that Americans have the right to engage in commercial exploration, extraction, and utilization of space resources, in accordance with applicable law.[204] The U.S. argues that "[o]uter space is a legally and physically unique domain of human activity, and the U.S. does not view it as a global commons."[205] As a result of this view, the U.S., through the Secretary of State, will object to any attempt to treat the Moon Agreement as "reflecting or otherwise expressing customary international law."[206]

Even though the U.S. does not recognize the Moon Agreement as customary

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200 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Agreement), Dec. 5, 1979, 1363 U.N.T.S. 3 [hereinafter Moon Agreement].

201 *Id.*

202 *See generally id.*

203 51 U.S.C.S. § 51302 (2021).

204 *Id.*

205 *Id.*

206 *Id.*

international law, there are countries that do.[207] If these countries want to join the Artemis Accords, or any agreement the supports the recovery and use of space resources from the moon, then they will have to reconcile the two conflicting agreements. As Australia is currently the only country in this predicament, many eyes will be on how Australia handles this apparent conflict in international agreements.[208]

B. Specific Conflicts Between the Moon Treaty and the Artemis Accords

There are several instances where sections of the Artemis Accords directly conflict with the Moon Agreement. Section 10 is one of several places where the Artemis Accords breakaway from the text of the 1979 Moon Treaty. In Section 10 of the Accords signatories affirm the ability to extract space resources from the Moon.[209] As part of Article 11 of the Moon Agreement, the Moon is the common heritage of humankind and if there is to be space resource extraction, it will be accomplished through the establishment of an international regime that will govern the extraction.[210] Both of these concepts are missing from the Artemis Accords. [211]

Another conflict between the Moon Agreement and the Artemis Accords occurs in the establishment of Common Heritage Sites and Safety Zones. Both of these concepts allude to a prolonged or indefinite occupation of the lunar surface and around equipment on the Moon.[212] The Moon treaty specifically states that "[t]he placement of personnel, space vehicles, equipment, facilities, stations and installations on or below the surface of the Moon . . . shall not create a right of ownership over the surface or subsurface of the Moon or any areas thereof."[213] The Artemis Accords intend to "preserve artifacts, spacecraft, and other evidence of activity on celestial bodies."[214] These conflicts present a challenge to Australia, and any other countries who have ratified the Moon Agreement, when they become signatories to the Artemis Accords.

It is widely accepted that simply signing an agreement, does not usually mean

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207 Moon Agreement, *supra* note 200 (including France, Mexico, and Saudi Arabia among others as signatories).

208 *See generally id.* (noting Australia as a signatory); Artemis Accords, *supra* note 25, at § 10 (noting Australia as a signatory).

209 Artemis Accords, *supra* note 25, at § 10.

210 Moon Agreement, *supra* note 200, at art. 11.

211 *See generally* Jack Wright Nelson, *The Artemis Accords and the Future of International Space Law*, AM. SOC'Y OF INT'L LAW (Dec. 10, 2020), https://www.asil.org/insights/volume/24/issue/31/artemis-accords-and-future-international-space-law#_edn18.

212 *Id.*

213 *Id.*

214 Artemis Accords, *supra* note 25, at § 1.

that you have immediately acted contrary to another international obligation.[215] However, this means that countries in situations like Australia's will need to routinely review their commitments to these two agreements to ensure that there is no conflict otherwise, Australia may need to withdraw from one of them.[216] After signing the Accords, Anthony Murfett, Deputy Head of the Australian Space Agency, stated:

> The Australian Government is investing $150 million for Australian businesses and researchers to join NASA's endeavour, and investment here in Australia, and deliver key capabilities for missions through participation in international space supply chains. Given Australia's capabilities in space communications, robotics and automation, Earth observation, space medicine as well as capabilities in the resources sector, Australia is ready to contribute its best ideas and know-how to support the future of space exploration.[217]

What is most notable about this statement is its silence to the apparent conflict between the Moon Agreement and the Artemis Accords.[218] In fact, the statement highlights actions that Australia can take which are technically in accordance with both documents. Further, NASA administrator, Jim Bridenstine, has been quoted as stating that Australia has experience in autonomous capability of extracting resources from its mining industry and this capability will be very important to lunar mining.[219]

In its current form, Australia does not appear to be denouncing the 1979 Moon Agreement by signing the Artemis Accords however, they are also not openly committing to anything which would directly violate the Moon Agreement.[220] Although they have signed the Accords, they have not explicitly stated their support of the utilization of space resources by private entities either. It is also important to note, that in this instance, the Accords are silent on actively stating that the extraction of space resources will definitely occur.[221] Rather, it presents a negative, that extracting space resources does *not* inherently constitute national

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215 Nelson, *supra* note 211.

216 *Id.*

217 *Australia Signs NASA's Artemis Accords*, DEP'T OF INDUSTRY, SCI., ENERGY AND RES. (Oct. 14, 2020), https://www.industry.gov.au/news/australia-signs-nasas-artemis-accords.

218 *Compare* Moon Agreement, *supra* note 200, *with* Artemis Accords, *supra* note 25, at § 1.

219 Jeffery McGee & Bin Li, *Australia Has Long Valued an Outer Space Shared By All. Mining Profits Could Change All This*, THECONVERSATION.COM (Apr. 29, 2020), https://theconversation.com/australia-has-long-valued-an-outer-space-shared-by-all-mining-profits-could-change-this-137405.

220 *Compare* Moon Agreement, *supra* note 200, *with* Artemis Accords, *supra* note 25, at § 1.

221 *See generally* Artemis Accords, supra note 25, at § 9.

appropriations.[222] The interpretation that this means extraction of resources will occur is implied rather than explicit. This allows countries like Australia to toe the line by saying that they can support both the Moon Agreement and the Artemis Accords, because while the Moon Agreement directly forbids resources extraction, the Accords do not actively state extraction will occur.

VII. GLOBAL IMPACT: IN CONCLUSION

Based on the global responses, the desired effect of the Artemis Accords could be achieved. Focusing on the Accords' altruistic intentions of creating international standards of conducting activities in space to ensure the safety and sustainability of space, they will only be achieved if enough countries sign into the Accords. If more countries sign bilateral agreements with the U.S., then the Accords will become the global standard, whether other countries or international bodies want it to or not. In terms of the "problematic" intents of the extraction and utilization of space resources and "safety zones," they also might also be achieved. Like the altruistic intents, if enough countries become signatories, then the Accords' standard will rule the cosmos. The only thing stopping this from happening is the fact that Sections 10 and 11 of the Accords have the potential to go against Article 2 of the Outer Space Treaty.[223] Presumably, there will be consequences against countries that violate the Treaty. If those consequences can deter countries from extracting and utilizing space resources, then that desired effect of the Accords will not be achieved.

It has yet to be seen whether the Artemis Accords have worked in the U.S.'s best interests. The Accords are certainly one potential way for the U.S. to secure its leadership in space. If the U.S. can get enough countries to become signatories, especially countries like France, Germany, and Russia, then they will have a power majority, confirming U.S. leadership. The issue is that many countries are still skeptical of the Accords. To help quiet fears from the broader international community, the U.S. and other signatories could invoke Section 13 of the Accords to hold a meeting to reevaluate the Accords' text and possible consequences.[224]

In 2008, the European Union attempted to create a set of rules, the Draft International Code of Conduct, with the same aim peaceful, constructive aims of the Accords.[225] Not enough countries signed, however, so it failed.[226] To

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222 *See generally id.* at § 10.

223 *Compare id.* at §§ 10-11, *with* Outer Space Treaty, *supra* note 57, at art. 2.

224 Artemis Accords, *supra* note 25, at § 13.

225 Xavier Pasco, *European Security Efforts Under Construction American Academy of Arts and Sciences*, AM. ACAD. OF ARTS AND SCI. (Jan. 2009), https://www.amacad.org/publication/european-approach-space-security/section/6.

226 *Id.*

survive, an international agreement needs to be more than a couple of like-minded allies coming together. If the U.S. is not careful, the Accords could go the way of the Draft International Code of Conduct.

The Artemis Accords might make space activities more secure and safe. The safety zones of Section 11 of the Artemis Accords are a relatively good idea in theory.[227] There will inevitably be an operation that needs to be isolated for fear it will harm or be harmed by another. As long as the "safety zones" are not abused, they will most likely make space activities safer.

Another difficulty is the extraction and utilization of space resources. As mentioned before, policy experts and scientists have already expressed their anxieties over this.[228] Earth is a prime example of what happens when regulations regarding resources are ignored. Section 10 of the Accords could be abused, and space resources may be depleted quickly.[229] It is up to the U.S., as the leader of the Accords, to make sure signatories comply with Article II of the Outer Space Treaty.

The Artemis Accords have begun to create a significant shift in how space diplomacy may be conducted in the future. All of the successful international agreements on space have been multilateral and drawn up in an international forum. The Accords, however, are a set of bilateral agreements with the U.S. as the leader. If they are successful, the Accords will be a good example of creating a set of bilateral agreements for other countries who wish to get around the tediousness of creating multilateral agreements. The most recent space treaty out of the COPUOS was the Moon Agreement of 1979, which was not signed by the U.S. or any other space power of the time. The Accords might be a sign that the international community needs to come together to make multilateral agreements in a way in which all countries can be heard.

There is the potential that the Accords will set a precedent of like-minded countries signing agreements to work together and cutting the rest of the world out. This will most likely be counterproductive. If space-faring countries do not acknowledge one another, then there is predictably going to be conflict, which will take focus away from scientific and humanitarian advancement.

It has been less than a year since the founding member states signed the Artemis Accords, and the Artemis Program will not land astronauts on the moon

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227 Artemis Accords, *supra* note 25, at § 11.

228 *See supra* Part VI.

229 *See The Latest Study by the Luxembourg Space Agency Shows that the Space Resource Utilization Industry Is Expected to Generate Billions of Euros Until 2045*, LUXEMBURGER WORT. (Dec. 21, 2018), https://www.wort.lu/fr/economie/les-ressources-spatiales-un-filon-prometteur-pour-le-luxembourg-5c1ce5aa182b657ad3b9c37c; Artemis Accords, *supra* note 25, at § 11.

until later this decade.[230] The journey of the Accords has just begun. For now, there can only be speculation on their success, failure, and consequences.

[230] Chelsea Gohd, *NASA's Artemis Astronauts Won't Land On the Moon By 2024 Deadline*, SPACE.COM (Nov. 9, 2021), https://www.space.com/nasa-changes-artemis-moon-landing-goal-2024.