

Interpreting “Space Resources Obtained”: Historical and Postcolonial Interventions in the Law of Commercial Space Mining

This Note addresses a fundamental ambiguity in the U.S. Commercial Space Launch Competitiveness Act of 2015 (“CSLCA”). It is unclear whether the statute authorizes U.S. citizens to extract natural resources from asteroids and other celestial bodies, as is commonly assumed. Alternatively, the statute can be read to merely entitle citizens to resources that have already been obtained, where the regime for actually obtaining such resources remains undetermined. The Note resolves this issue in favor of the interpretation that best aligns with international law and policy. It first shows that the relevant elements of international law—the Outer Space Treaty of 1967 (“OST”) and customary international law (“CIL”)—do not resolve the issue. The Note then adopts a broader approach by considering the OST’s anti-imperial policy. By engaging scholarship on law, colonialism, and empire, this approach centers Global South States in space law discourse. This approach reveals two ways in which the more commonly accepted interpretation of the CSLCA cuts against the anti-imperial policy of the OST, related to the distinction between private and State extraction and to State conferral of property rights. To avoid contradicting these policy concerns, the CSLCA should be read narrowly, such that it leaves open future determination of the space resources regime. Finally, the Note offers guidance for such a regime. It argues that CIL development based on subsequent legislation or mining would let Global North States asymmetrically shape international law, which would contradict the OST’s anti-imperial policy. Instead, the Note recommends multilateral agreements that employ organizationally diverse models, which mix collective and private ownership. The Note ends by reflecting on lingering questions in the context of development and the Global South.

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INTRODUCTION: A “MINER” ISSUE

This Note analyzes the U.S. Commercial Space Launch Act

of 2015 (“CSLCA”) from the perspective of international law and policy.¹ Title IV of the statute entitles U.S. citizens to a set of enumerated property rights in the context of commercial space mining.² Commentators have debated whether this provision violates the Outer Space Treaty of 1967 (“OST”), a key treaty for governing activities in space. Specifically, commentators debate whether it violates Article I of the OST, which designates space as “the province of all mankind,”³ or Article II, which proscribes national appropriation of celestial bodies.⁴ This issue has become a political hotbed, generating conferences, hearings, and statements in the Legal Subcommittee (“LSC”) for the U.N. Committee on the Peaceful Uses of Outer Space (“UNCOPUOS”),⁵ the U.S. State Department,⁶ the U.S. Senate,⁷ law and policy organizations like the International Institute of Space Law (“IISL”),⁸ and the Space Foundation,⁹ and the media.¹⁰

1. U.S. Commercial Space Launch Competitiveness Act (CSLCA) of 2015, Pub. L. No. 114–90, 129 Stat. 704 (2015) (codified in scattered sections of 51 U.S.C.).

2. 51 U.S.C. §§ 10101, 51301–3 (2018). Title IV of the CSLCA is also referred to as the Spurring Private Aerospace Competitiveness and Entrepreneurship (“SPACE”) Act and the Space Resources Utilization Act.

3. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies art. I, Jan. 27, 1967, 18 Stat. 2410, 610 U.N.T.S. 205 [hereinafter OST].

4. *Id.* art. II.

5. International Institute of Space Law/European Centre for Space Law Symposium on Legal Models for Exploration, Exploitation, and Utilization of Space Resources 50 Years After the Adoption of the Outer Space Treaty, LEGAL SUBCOMM. FOR THE U.N. COMM. ON THE PEACEFUL USES OF OUTER SPACE (Mar. 27, 2017) [hereinafter IISL/ECSL Symposium] (at LSC UNCOPUOS’s fifty-sixth session, discussing the CSLCA), <http://www.unoosa.org/oosa/en/ourwork/copuos/lsc/2017/symposium.html> [https://perma.cc/9ZNN-9M36].

6. Brian Egan, U.S. State Department Legal Adviser, Speech to the IISL’s Galloway Symposium on Critical Issues in Space Law: The Next Fifty Years of the Outer Space Treaty (Dec. 7, 2016), <https://2009-2017.state.gov/s/l/releases/remarks/264963.htm> [https://perma.cc/YKA9-4Z8A].

7. *Reopening the American Frontier: Exploring How the Outer Space Treaty Will Impact American Commerce and Settlement in Space: Hearing Before the Subcomm. On Space, Sci., and Competitiveness of the S. Comm. on Commerce, Sci., and Transp.* 115th Cong. 1–5 (Apr. 2017) [hereinafter Reopening the American Frontier] (focusing in part on property concerns raised by the CSLCA).

8. INT’L INST. OF SPACE LAW, POSITION PAPER ON SPACE RESOURCE MINING (Dec. 20, 2015), <http://www.iislweb.org/docs/SpaceResourceMining.pdf> [https://perma.cc/6LH6-SGYA] (discussing ambiguities about the legality of the CSLCA); *cf.* INT’L INST. OF SPACE LAW, ON CLAIMS TO PROPERTY RIGHTS REGARDING THE MOON AND OTHER CELESTIAL BODIES (2004), http://iislweb.org/wp-content/uploads/2015/03/IISL_Outter_Space_Treaty_Statement.pdf [https://perma.cc/HFE2-3KEC] (an earlier report discussing the legality of space mining).

Commentators have failed to recognize a fundamental ambiguity in the statute. Most proponents of the CSLCA assume that the statute authorizes U.S. citizens to extract resources from asteroids and other celestial bodies.¹¹ Expressly or otherwise, these commentators assume that the statute establishes this right to mine space resources based on a labor theory of property; this Note refers to that reading as the “extraction interpretation.”¹² However, the statute can be read more narrowly. An alternative reading, which this Note refers to as the “already-obtained interpretation,” would hold that the statute merely entitles citizens to property rights over *already*-extracted space resources but not the right to actually extract them. This interpretation sets aside the question of the legality of extraction for future determination.

This Note argues that, as a matter of policy, the CSLCA should be read with the narrower already-obtained interpretation.

9. Debra Werner, *Space Law Workshop Exposes Rift in Legal Community over National Authority to Sanction Mining*, SPACE NEWS (Apr. 17, 2018), <https://spacenews.com/space-law-workshop-exposes-rift-in-legal-community-over-national-authority-to-sanction-space-mining/> [<https://perma.cc/2FWT-LE3W>] (reporting that at a prominent space conference, a space law workshop caused a “rift in the left community,” and commentators noted the legal uncertainty surrounding the legal questions about space resource extraction; notably, several of the participants are not from the United States).

10. For media coverage on the controversy, see Kenneth Chang, *If No One Owns the Moon, Can Anyone Make Money Up There?*, N.Y. TIMES (Nov. 26, 2017), <https://www.nytimes.com/2017/11/26/science/moon-express-outer-space-treaty.html> [<https://perma.cc/KPB7-AKBC>]; Maggie Koerth-Baker, *Mars Needs Lawyers*, FIFTYTHREE (Feb. 24, 2017), <https://fivethirtyeight.com/features/mars-needs-lawyers> [<https://perma.cc/A7V3-EM84>]; Nick Stockton, *Congress Says Yes to Space Mining, No to Rocket Regulations*, WIRED (Nov. 18, 2015), <https://www.wired.com/2015/11/congress-says-yes-to-space-mining-no-to-rocket-regulations> [<https://perma.cc/86SS-M2JD>]; *U.S. Space-Mining Law Seen Leading to Possible Treaty Violations*, CBC NEWS (Nov. 26, 2015), <http://www.cbc.ca/news/technology/space-mining-us-treaty-1.3339104> [<https://perma.cc/X7WL-DJBW>]. Also, Luxembourg has passed similar legislation; see David Schrieberg, *Asteroid Mining: The Next Grand Venture of Tiny Luxembourg*, FORBES (Feb. 24, 2017), <https://www.forbes.com/sites/davidschrieberg1/2017/01/24/asteroid-mining-the-next-grand-venture-of-tiny-luxembourg> [<https://perma.cc/64M6-7UGA>]; Aliya Ram, *U.S. and Luxembourg Frame Laws for New Space Race*, FIN. TIMES (Oct. 19, 2017), <https://www.ft.com/content/af15f0e4-707a-11e7-93ff-99f383b09ff9> [<https://perma.cc/5JFJ-LC2N>]; Atossa Abrahamian, *How a Tax Haven is Leading the Race to Privatise Space*, GUARDIAN (Sept. 15, 2017), <https://www.theguardian.com/news/2017/sep/15/luxembourg-tax-haven-privatise-space> [<https://perma.cc/7FKQ-MDA9>] (reporting on Luxembourg’s space industry tax haven and space mining law).

11. See *supra* note 10 for media quoting commentators supporting this view, and *infra* subsection I.A.2, discussing legislators, academics, and lawyers in the Congressional Record adopting this interpretation.

12. See *supra* note 10; *infra* subsection I.A.2.

Part I reviews the statute and its conflicting interpretations, showing how neither public reception of the CSLCA nor its Congressional Record clarify which reading is most accurate. Next, this part explains how international law and policy can clarify this ambiguity. It then deconstructs the argument that the extraction interpretation is legal under international law, finding that neither the OST nor customary international law (“CIL”) clearly indicate that the extraction interpretation aligns with international law.

Given the ambiguities that arise from looking only at the text of the law, Part II takes a broader policy approach that accounts for the OST’s historical and theoretical context. Commentators have not engaged this policy with scholarship on law, colonialism, and empire. This scholarship is essential to understanding the historical context of the law of space mining, the relevant frameworks in property theory, and fundamental problems for Global South States related to global inequity and barriers to accessing space. Hence, this part engages such scholarship to show two ways that the extraction interpretation contradicts the OST’s anti-imperial policy. First, private and State extraction are imperial projects that are not easily distinguished as separate technological practices. Consequently, private extraction approaches a claim of sovereignty. Second, State conferral of property rights over space resources amounts to a claim of sovereignty. Thus, to avoid contradicting the OST’s underlying concerns, the CSLCA should be read under the narrower already-obtained interpretation, which leaves room for future determination of the legal regime for space resources.

Part III offers guidance for such future determination. It first notes that treaty-formation would be impractical and that CIL development based on subsequent mining would allow Global North States to shape international law asymmetrically due to their technological and economic advantages, which would also contradict the OST’s anti-imperial policy. Instead, this part recommends multilateral agreements that account for the OST’s anti-imperial policy by utilizing organizationally diverse models. These are property arrangements that vary private and collective ownership, such as the semi-commons or liberal commons. The Note ends by acknowledging questions that linger in the context of economic and technological development in the Global South.

Ultimately, the Note provides guidance for legislative, judicial, executive, and regulatory entities in the United States or abroad, as well as international legal bodies, policymakers, and the commercial space industry. However, it is most directly addressed to the community of lawyers, policymakers, and industry stakeholders throughout those institutions, as well as in academia, that have

thought about and written on the CSLCA and the law of commercial space mining. At the very least, the Note aims to prod at and disrupt entrenched positions on this issue.

I. AMBIGUITIES IN THE CSLCA AND SPACE LAW

This part reviews legal frameworks pertinent to the CSLCA controversy. Section I.A reviews provisions of the CSLCA relevant to space resource extraction, explains the conflicting interpretations that form the impetus of this Note, and finds that such ambiguity should be resolved in favor of the interpretation that accords with international law and policy. Thus, Section I.B analyzes the CSLCA’s potential conflicts with international law, deconstructing commentary in support of the extraction interpretation’s legality. These analyses find that international law does not provide clear guidance about the legality of the extraction interpretation.¹³

A. Overview of the CSLCA and its Conflicting Interpretations

1. Overview of the CSLCA

The CSLCA, a modification of an earlier House bill, the American Space Technology for Exploring Resource Opportunities in Deep Space (“ASTEROIDS”) Act,¹⁴ confers to U.S. citizens a set of property rights regarding the utilization of particular natural resources in outer space for commercial purposes. Section 402 states:

A United States citizen engaged in commercial recovery of an asteroid resource or a space resource under this chapter shall be entitled to any asteroid resource or space resource obtained, including to possess, own, transport, use, and sell the asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of the United States.¹⁵

The statute defines “space resource” as “an abiotic resource in situ in outer space,” including “water and minerals,” and “asteroid resource”

13. See *infra* Sections I.B, I.C.

14. The American Space Technology for Exploring Resource Opportunities in Deep Space (“ASTEROIDS”) Act, H.R. 5063, 113th Cong. (2014).

15. 51 U.S.C. § 51303 (2018).

as “a space resource found on or within a single asteroid.”¹⁶ Generally, “in situ” refers to resources “in place,” fixed in or on a celestial body.”¹⁷ The statute declares Congress’s intention to “facilitate commercial exploration for and commercial recovery of space resources” by U.S. citizens,¹⁸ “discourage government barriers” to such developments, and “promote the right of United States citizens to engage” in these activities.¹⁹

The CSLCA also includes several references to international law. Three provisions require that the statute accords with U.S. international obligations.²⁰ Although the CSLCA does not explicitly reference the OST, Section 403 (“Disclaimer of Extraterrestrial Sovereignty”) declares the statute does not constitute an “assert[ion of] sovereignty or sovereign or exclusive rights or jurisdiction over, or ownership of, any celestial body.”²¹ This disclaimer is most likely an attempt to avoid the OST’s non-appropriation principle.²²

2. Conflicting Interpretations of “Space Resources Obtained”

The CSLCA can be read in two ways, due in part to poor drafting and in part to conflicting positions in the Congressional Record.²³ Neither the Record nor subsequent public statements clarify which interpretation accurately reflects the meaning of the statute.

16. *Id.* § 51301.

17. Fabio Tronchetti, *The Space Resource Exploration and Utilization Act: A Move Forward or a Step Back?*, 34 SPACE POL’Y 6, 8 (2015) (in-situ resources are “still in their original location”); *Hearings on Agreement Governing the Activities of States on the Moon and Other Celestial Bodies Before the S. Comm. on Commerce, Sci. and Transp.*, 96th Cong. 312–13 (1980) [hereinafter Moon Agreement Hearings] (letter from Secretary of State Vance to Senator Frank Church, from Nov. 28, 1979, distinguishing resources “in place” from resources that have been “removed”).

18. 51 U.S.C. § 51302(a)(1) (2018).

19. *Id.* §§ 51302(a)(1)–51302(a)(3). Also, U.S. citizens must be “subject to authorization and continuing supervision by the Federal Government.” *Id.* §§ 51302(a)(3), 51302(b)(2).

20. *Id.* §§ 51303 (see *supra* note 15 and accompanying text), 51302(a)(1) (regarding “discouragement of government barriers”), 51302(a)(3) (regarding “promotion of commercial exploitation”).

21. U.S. Commercial Space Launch Competitiveness Act (CSLCA) of 2015, Pub. L. No. 114–90, § 403, 129 Stat. 704, 722 (2015).

22. On the non-appropriation principle, see *infra* Section I.B. On other ambiguities regarding this disclaimer, see Samuel Roth, Note, *Developing a Law of Asteroids: Constants, Variables, and Alternatives*, 54 COLUM. J. TRANSNAT’L L. 827, 848–57 (2016).

23. Tronchetti, *supra* note 17, at 7 (on poor drafting of “in situ”).

The first reading, the already-obtained interpretation, holds that the statute merely entitles citizens to property rights over *already*-extracted space resources but not the right to actually extract them. This is based on the use of the past tense of “space resources obtained” in Section 402, which is the only Section in the statute that details the property rights of citizens in relation to space resources. In this interpretation, the past tense usage suggests that in order for citizens to assert rights over space resources, they must have already been obtained according to a legal regime for space mining that is distinct from the CSLCA. This reading would clearly avoid conflict with the OST’s non-appropriation principle, as discussed in section I.B, because it does not directly confer property rights over in-situ space resources.²⁴ The possession, ownership, transport, use, and sale of space resources granted under the statute happens *after* the extraction occurs, thus leaving the legal question of extraction rights or entitlements untouched. Under this reading, Congress intentionally omitted the legal principles by which space resources can be “obtained.”²⁵

This reading of the CSLCA accords with parts of the Record. Prominently, the ASTEROIDS Act’s reference to a first-in-time principle for obtaining space resources was not adopted in the final CSLCA, possibly to avoid the controversy of specifying legal principles for extraction.²⁶ Moreover, in congressional hearings on the CSLCA, a group of lawyers and academics advocated for the statute on the basis that it does not specify principles for or explicitly authorize extraction,²⁷ arguing that the statute allows the technical and

24. *Id.* (arguing the use of “in situ” could have used “more careful drafting”); *see also* 161 Cong. Rec. H3518–9 (daily ed. May 21, 2015) [hereinafter Hertzfeld Letter] (letter from Henry Hertzfeld, Matthew Schaefer, James Bennett, and Mark Sundahl on the use of “unextracted”).

25. Hertzfeld Letter, *supra* note 24, at H3518 (arguing that “the words of the bill are ‘resources obtained,’ leaving the unknown technical details to be specified in the future when they can be better defined and a process can be developed for regulatory actions as needed”).

26. *Exploring Our Solar System: The ASTEROIDS Act as a Key Step: Hearing Before the Subcomm. on Space of the H. Comm. on Sci., Space, and Tech.*, 113th Cong. 67–68 (2014) (testimony of Joanne Gabrynowicz). The first-in-time or “first come, first served” theory of property states that an individual owns property that he or she is the first to possess or arrive upon. *See* ASTEROIDS Act, H.R. 5063, 113th Cong. § 51302(b) (2014) (“Freedom From Harmful Interference.—As between any entities over which the United States can exercise jurisdiction, any assertion of superior right to execute specific commercial asteroid resource utilization activities in outer space shall prevail if it is found to be first in time, derived upon a reasonable basis, and in accordance with all existing international obligations of the United States.”).

27. *See* Hertzfeld Letter, *supra* note 24.

regulatory details of extraction to be specified in the future.²⁸

However, other parts of the Record assume the second reading, the extraction interpretation. This reading holds that the CSLCA entitles U.S. citizens to property rights over unextracted resources in-situ in an asteroid or other celestial body and thus authorizes extraction under a presumed labor theory of property, which states that an individual owns property that he or she mixes with labor.²⁹ Such a reading aligns with the Congress's explicit intention to "promote the right of . . . citizens to engage" in space mining.³⁰ This also accords with other parts of the Record. Notably, Representative Bill Posey, a co-sponsor of the CSLCA, emphasized that the term "obtained" was intended to be "politically neutral"; although it is unclear, a broad reading of the legislative history suggests that Posey is referencing disagreements about the ASTEROIDS Act's first-in-time principle, which was debated during congressional hearings due to international controversy about whether that principle or others abide by international law. Representative Posey seemed to believe that the statute directly authorizes extraction under a labor theory of property. Although he does not directly reference a labor theory, he describes "physical recover[y]" (i.e., labor) as necessary to acquiring property rights over space resources under the CSLCA: "It is our intention that only through actually physically recovering a resource does a company have the right of ownership of those resources [*sic*]."³¹ Furthermore, Posey claimed that Article VI of the OST allows private parties "the right to remove, take possession, and use in situ nat-

28. *Id.*

29. The legislative discussions do not directly show that Congresspersons were thinking about the labor theory, but, as shown in this subsection, they articulated the meaning of the CSLCA in terms very similar to the labor theory. The labor theory of property states that an individual owns that which he or she mixes with labor. In the context of land, such labor might include farming. *See* JOHN LOCKE, SECOND TREATISE OF GOVERNMENT 10–18 (Jonathan Bennett ed., 2017) (1689). Arguably, rights to in-situ resources entail rights to extract them. As Justice Oliver Wendell Holmes Jr. wrote: "For practical purposes, the right to coal consists in the right to mine it." *Pennsylvania Coal Co. v. Mahon et al.*, 260 U.S. 393, 414 (1922) (quoting *Commonwealth ex rel. Keator et al. v. Clearview Coal Co.*, 256 Pa. 328, 331 (1917)).

30. 51 U.S.C. § 51303 (2018); *see supra* Subsection I.A.1.

31. When the House considered the Senate's amendment to the CSLCA to include the specific language now found in Section 402, Representative Posey emphasized that the use of "obtain" in the bill was chosen for its political neutrality. 161 Cong. Rec. H8185, H8196 (daily ed. Nov. 16, 2015) (statement of Representative Bill Posey); *see also* Hertzfeld Letter, *supra* note 24, at H3518 ("[A]ny such resource within or on an asteroid would need to be 'obtained' in order to confer a property right.").

ural resources from celestial bodies.”³² Similarly, the House Committee on Science, Space, and Technology Report on the CSLCA assumes that the statute authorizes extraction.³³

The Record and subsequent public statements therefore do not definitely resolve the question of which interpretation Congress intended. The final language of the statute used “obtain” in order to be “politically neutral,” as Representative Posey stated on the Record.³⁴ As referenced above, Representative Posey cited political neutrality in the context of the ASTEROID Act’s use of a first-in-time principle. This principle was controversial when proposed due to the ongoing international disagreements, discussed with greater detail later in this Note, about the proper legal mechanisms for space mining.³⁵ However, Representative Posey’s comments elsewhere in the Record manifest a political intent. He voiced concern that if Congress does not begin incentivizing commercial investments with this legislation now, “the business just goes somewhere else, and I guarantee the Russians and Chinese will not give the rest of the world the thoughtful consideration that some people expect before we do anything.”³⁶ Similarly, subsequent Senate hearings led by Senator Ted Cruz discussed the possibility of modifying the OST to “open the frontier” to commercialization and, concurrently, of permitting military bases in space for the protection of private property “in the heavens.”³⁷ Moreover, most academics, members of the State Department, industry leaders, and other States assume the CSLCA authorizes extraction.³⁸ Some argue there are ambiguities arising from the disclaimer’s statement that the statute will comply with U.S. international obligations,³⁹ and others regard the disclaimer as mere “lip-

32. *Id.* at H8196; *see infra* notes 43, 49 (discussing Article VI).

33. H.R. Report No. 114–153, at 8 (2015) (finding that the CSLCA is consistent with CIL rules allowing “exploration and use of outer space includes the right to remove, take possession, and use in-situ natural resources from celestial bodies”).

34. *See* 161 Cong. Rec. H8185.

35. *See supra* note 26.

36. *Exploring Our Solar System: The ASTEROIDS Act as a Key Step: Hearing Before the Subcomm. on Space of the H. Comm. on Sci., Space, and Tech.*, 113th Cong. 91–92 (2014) (statement of Representative Posey).

37. Reopening the American Frontier, *supra* note 7 (focusing in part on property concerns raised by the CSLCA).

38. *See supra* notes 5–10, (sources generally reviewing commentaries by various actors that presume the CSLCA authorizes extraction).

39. Roth, *supra* note 22, at 848–57 (briefly raising the ambiguity addressed in this Note).

service,”⁴⁰ but none of these commentators directly question the ambiguous use of the past tense “obtained.”

3. Securing Legal Certainty: Resolving the CSLCA’s Ambiguity through International Law and Policy

Because neither the Record nor subsequent statements clarify with certainty which of the CSLCA’s interpretations should prevail, this Note turns to international law and policy for guidance. It does so in an attempt to clarify what ought to be the precise meaning of the statute in light of policy concerns about legal certainty, rather than to subject it to a strict reading of U.S. obligations under international law.

Turning to international law and policy makes sense for two reasons. First, when a federal statute can be interpreted to conflict with a treaty provision to which the United States is bound, courts generally construe the statute to avoid such conflict.⁴¹ Second, as previously mentioned, the CSLCA states that it does not assert sovereignty in outer space or violate U.S. obligations under international law in any other way.⁴² Therefore, the statute itself calls for examination of its compatibility with international norms.

Recent debates about the permissiveness of the OST have raised questions about U.S. obligations with respect to space resource utilization.⁴³ However, the question of U.S. obligations under the

40. Kevin MacWhorter, *Sustainable Mining: Incentivizing Asteroid Mining in the Name of Environmentalism*, 40 WM. & MARY ENVTL. L. & POL’Y REV. 645, 666 (2016).

41. RESTATEMENT (FOURTH) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES §§ 109(1), 109 cmt. b, 109 cmt. d (AM. LAW INST., Tentative Draft No. 1, 2016).

42. U.S. Commercial Space Launch Competitiveness Act (CSLCA) of 2015, Pub. L. No. 114–90, § 403, 129 Stat. 704, 722 (2015).

43. This debate follows a House bill, H.R. 2809, which states that it is U.S. policy for U.S. citizens and entities to “free[ly] explore and use space, including the utilization of space and resources contained therein.” American Space Commerce Free Enterprise Act, H.R. 2809, 115th Cong. (2017–18) [hereinafter H.R. 2809], Sec. 2(b)(1); see Michael Listner, *The Ball Is in the Senate’s Court Regarding Article VI*, SPACE NEWS (July 31, 2018) [hereinafter Listner July 2018] (arguing the bill could violate the OST via Article VI), <https://spacenews.com/op-ed-the-ball-is-in-the-senates-court-regarding-article-vi/> [https://perma.cc/KQ3A-QAQQ]; Michael Listner, *Seeing Shadows of Rights: What Is the Intent of Congress in HR 2809?*, SPACE REV. (May 7, 2018) [hereinafter Listner May 2018], <http://www.thespacereview.com/article/3489/1> [https://perma.cc/2Y8N-DVDZ]; Fact Sheet—Moon Express Payload Review Determination, Federal Aviation Administration (FAA) (Aug. 3, 2016), https://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=20595 [https://perma.cc/2NRU-5536] [hereinafter FAA/Moon Express Press Release] (the FAA, in consultation with the Department of State, authorized a commercial lunar mission

OST deserves a thorough analysis that goes beyond the scope of this Note. Instead this Note turns to international law and policy. Interpreting the CSLCA in light of international law and policy is crucial to meeting the statute’s aforementioned fundamental purpose of providing legal certainty to investors in the American space industry. If there is significant international disagreement about the legality of space mining or the CSLCA itself, then this uncertainty can deter investors from funding commercial space companies that are beginning to develop mining technologies today. As the above discussion of the legislative history indicated, this purpose of seeking legal certainty for the purposes of investment in U.S. industry was a crucial policy rationale for passing the CSLCA. Indeed, the statute has generated significant controversy, including from Global South States expressing dissatisfaction with the CSLCA under the extraction interpretation.⁴⁴ After a space law workshop at the Space Foundation’s annual Space Symposium “expos[ed a] rift” among lawyers over the legality of space mining, Tanja Masson-Zwaan, former IISL president, highlighted the problem of “legal certainty,” emphasizing that, under the OST, “the question of whether you can own extracted resources is not clearly answered.”⁴⁵ As the next section discusses, the legality of commercial space mining under the OST is ambiguous and subject to ongoing debate.

Due to these continuing disagreements about the legality of

for testing mining capabilities based on Article VI); Doug Messier, *Moon Express Unveils “MX-1” Commercial Lunar Lander*, PARABOLIC ARC (Dec. 5, 2013), <http://www.parabolicarc.com/2013/12/05/moon-express-unveils-mx1-commercial-lunar-lander/> [https://perma.cc/P6SN-55UY] (describing planned lunar mission). *But see* Laura Montgomery, *US Regulators May Not Prevent Space Activity on the Basis of Article VI of the Outer Space Treaty*, MERCATUS WORKING PAPER (2018), <https://www.mercatus.org/system/files/montgomery-outer-space-treaty-mercatus-working-paper-v1.pdf> [https://perma.cc/ZFU7-LAEW] (arguing Article VI is not self-executing); RESTATEMENT (FOURTH) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES, § 106(2) (AM. LAW INST., Tentative Draft No. 1, 2016) (defining “self-executing”). Montgomery cites *Treaty on Outer Space: Hearings Before the S. Comm. on Foreign Relations*, 90th Cong. 35 (1967) [hereinafter OST Hearings] (remarks by Ambassador Arthur Goldberg that “some provisions are self-executing . . . [b]ut only those . . . which I have indicated”; he did not state that Article VI is self-executing). *But see* David Sloss, *Non-Self-Executing Treaties: Exposing A Constitutional Fallacy*, 36 U.C. DAVIS L. REV. 1, 27 (2002) (arguing the use of “shall” should not lead courts to “conclude . . . that a treaty provision is not immediately effective, and therefore executory”).

44. On general controversy, see *supra* notes 5–10. On Global South disagreement, see José Monserrat Filho, *Developing Countries and the Exploitation of Natural Space Resources*, IISL/ECSL SYMPOSIUM (Mar. 27, 2017), <http://www.unoosa.org/documents/pdf/copuos/lsc/2017/symp-07.pdf> [https://perma.cc/3E88-D7LU].

45. Werner, *supra* note 9.

commercial space mining under the OST, it is uncertain whether the international community will actually accept property claims arising from private space resource extraction under the extraction interpretation.⁴⁶ It is true that if, for example, a State or non-governmental entity extracts minerals from a celestial body, that entity will possess those minerals regardless of the international community's acceptance of this fact. However, this Note is concerned with the policy dimensions of this question, in two respects. First, this Note aims to maintain the legitimacy of the law. In this sense, it is important to keep in mind the distinction between possession and ownership. The aforementioned scenario (extraction without international acceptance) posits circumstances in which the entity physically possesses resources but does not necessarily own them as property. Second, this Note addresses *ex ante* questions about legal certainty and investment. In the aforementioned scenario, if the legality of mining is uncertain before mining begins, then investors will be cautious about investing, such that no mining will occur in the first place. In a landscape of uncertain property rules, investors will be less inclined to fund space mining activities.⁴⁷ Since Congress's explicit purpose with the CSLCA is to encourage the commercialization of space resource extraction,⁴⁸ the statute should provide certainty on this issue. Any certainty that arises from the statute should emerge from a clear reading of international law and its broader context, not from the political and economic power of the American State backing a disputed interpretation of that law. Legal certainty in extraterritorial domains requires a global perspective. Thus, this Note seeks to resolve the CSLCA's ambiguity by construing the statute such that it avoids conflict with international law, as in section I.B, and policy, as in Part II. Section I.B finds that international law is ambiguous about the permissibility of commercial space mining and of the CSLCA itself.

46. See Lorenzo Gradoni, *What on Earth Is Happening to Space Law?*, EUR. J. INT'L L.: TALK! (July 31, 2018), <https://www.ejiltalk.org/what-on-earth-is-happening-to-space-law-a-new-space-law-for-a-new-space-race/> [<https://perma.cc/2DPJ-ENQC>] (discussing international disagreements over the legality of space mining under international law).

47. Already, one of the most prominent space mining companies, Planetary Resources, has lost significant funds from investors (although the reasons for this are unclear). Jeff Foust, *Planetary Resources Revising Plans After Funding Setback*, SPACE NEWS (Mar. 12, 2018), <https://spacenews.com/planetary-resources-revising-plans-after-funding-setback/> [<https://perma.cc/RM97-8WS7>].

48. 51 U.S.C. § 51302(a)(2) (2018) ("The President, acting through appropriate Federal agencies, shall . . . promote the right of United States citizens to engage in commercial exploration for and commercial recovery of space resources free from harmful interference, in accordance with the international obligations of the United States and subject to authorization and continuing supervision by the Federal Government.").

B. The Legality of the CSLCA under International Law

1. The Legality of the CSLCA under the OST

This subsection analyzes how the extraction interpretation of the CSLCA interacts with Articles I and II of the OST, alongside negotiations, or *travaux préparatoires*, relevant history, and related articles.⁴⁹ Ultimately, the OST does not clearly permit the extraction interpretation, which might violate Article II's non-appropriation principle.

a. Article II's Non-Appropriation Principle: In Situ Resources, Private Extraction, and State Conferral of Property Rights

Article II defines the OST's non-appropriation principle and is thus most relevant to the question of space resource extraction: "Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means."⁵⁰ Throughout the *travaux* in the LSC and General Assembly, parties emphasized the importance of the non-appropriation principle, contemplating resource utilization.⁵¹

49. Other articles tenuously relate to space resource extraction. The OST makes frequent reference to the use and exploration of space for scientific purposes, which could support an argument that highly commercial activity like private extraction falls outside the OST's goal of ensuring space is used primarily for exploration and the advancement of science. OST, *supra* note 3, art. I, cl. 3 (ensuring "freedom of scientific investigation in outer space"), art. IV, cl. 2 (requiring that "use of military personnel for scientific research or for any other peaceful uses shall not be prohibited"), art. XI (obligating States to "inform . . . the international community" about their conduct in space). Furthermore, the OST requires that States "authoriz[e] and continuous[ly] supervis[e]" the "activities of non-governmental entities" in space and on celestial bodies such that these activities conform with the OST. *Id.* art. VI. Generally, commentators argue that a State's authorization and continuous supervision of private space resource extraction would not constitute national appropriation because the State itself is not conducting the extraction. Andrew Lintner, *Extraterrestrial Extraction: The International Implications of the Space Resource Exploration and Utilization Act of 2015*, 40 FLETCHER F. WORLD AFF. 139, 146 (2016).

50. OST, *supra* note 3, art. II.

51. For example, France inquired about the scope of activity regulated by the OST, including space resource extraction on the Moon. Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., Summary Record of the Sixty-Third Meeting (Fifth Session), at 8, U.N. Doc. A/AC.105/C.2/SR.63 (Oct. 20, 1996). The U.S.S.R. replied by stating that the non-appropriation principle would proscribe "human activity on the moon or any other celestial body" from justifying national appropriation, although recommending that the LSC consider further legal frameworks for future technological developments as they become

Article II raises three ambiguities regarding the legality of the extraction interpretation. First, appropriation of celestial bodies under Article II includes in-situ resources. This is contrary to some defenses of the extraction interpretation that argue that the non-appropriation principle applies to territorial claims over the surfaces of celestial bodies but not to in-situ resources fixed below or on such surfaces.⁵² Such a narrow construction of Article II fails to account for the practical reality that, in order to extract in-situ resources, one must make some exclusionary claim of sovereignty, as a matter of law or force, over the surface above them.⁵³ Manfred Lachs, who presided as a judge over the LSC negotiations during which the OST

possible. *Id.* at 10; *see also id.* at 7–8 (remarks by India and France). Later, Brazil introduced the “irrespective of . . . scientific development” language as a replacement to “and shall be the province of all mankind,” in order to “reflect the balance between the space Powers and the non-space Powers.” Comm. on the Peaceful Use of Outer Space, Legal Subcomm., Summary Record of the Sixty-Fourth Meeting (Fifth Session), at 9, U.N. Doc. A/AC.105/C.2/SR.64 (Oct. 24, 1996); *see also id.* at 14 (remarks by Lebanon). Eventually, Brazil’s “irrespective” language was included in Article I, despite disagreements with others such as the U.S.S.R., but it is not entirely clear why. For contemplations of space mining during this time, see MANFRED LACHS, *THE LAW OF OUTER SPACE: AN EXPERIENCE IN CONTEMPORARY LAW-MAKING* 41–43 (Brill, 2014) (discussing similar discussions in the *travaux* among France, Poland, and Argentina); MYRES MCDUGAL, HAROLD LASSWELL, & IVAN VLASIC, *LAW AND PUBLIC ORDER IN SPACE* (1963) (a work of legal scholarship published shortly before the OST was signed which addresses the technical and legal problems of space mining and resources at length).

52. Lintner, *supra* note 49, at 139–40. Similarly, some commentators also disagree about whether Article II’s “celestial bodies” includes asteroids. *See* Roth, *supra* note 22, at 841–42, 850. Others argue that, while Article II proscribes appropriation of in-situ resources, it does not proscribe ownership of resources that have been removed. Moon Agreement Hearings, *supra* note 17, at 313 (letter from Secretary of State Vance to Senator Frank Church, from Nov. 28, 1979). These commentators often argue that Article I’s free use and exploration language would allow removal of these in-situ resources. *Id.* However, as a practical matter, it is not clear how an entity can remove an in-situ resource without first appropriating it, thereby violating Article II.

53. Arguably, minerals might be compared to crustaceans and shrimp under the Law of the Sea Convention (“LOSC”). Under the LOSC, coastal states hold exclusive rights in their continental shelf to “mineral and other non-living resources of the seabed and subsoil together with living organisms belonging to sedentary species, that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil.” Convention on the Law of the Sea, pt. VI, art. 77, *opened for signature* December 10, 1982, 1833 U.N.T.S. 397 [hereinafter LOSC]. This includes oysters, clams, and abalone, but it is unclear whether 77(4) includes other species like crabs and lobsters. YOSHIFUMI TANAKA, *THE INTERNATIONAL LAW OF THE SEA* 147 (2d ed. 2012). However, this comparison is not useful because the LOSC does not address rights over such organisms in the deep seabed, which, like outer space, is outside of any nation’s territory.

was drafted,⁵⁴ writes that the non-appropriation principle extends to space mining.⁵⁵ Considering the practical concerns and Lachs's commentary, Article II's rule against territorial appropriation includes in-situ resources.

Second, the non-appropriation principle seems to proscribe claims of sovereignty only by State actors, not private entities. This accords with defenses of the extraction interpretation. Proponents of this interpretation distinguish sovereignty, which applies to States, from property rights, which apply to private entities.⁵⁶ On this basis, they argue that Article II's proscription of claims of sovereignty applies only to States and not to private entities.⁵⁷ This seems to reflect an accurately narrow reading of Article II.⁵⁸ Later, this Note complicates the distinction between State and private extraction.

Third, Article II seems to proscribe State conferral of property rights over space resources. Commentators disagree on the proposition that, for a State to confer property rights to its citizens over extraterritorial resources, the State must exercise sovereignty over the territory above those resources.⁵⁹ Commentators in favor of this

54. TANAKA, *supra* note 53, at 14 (including writings by legal thinkers who "had a formative influence on the development of international law" as sources of international law).

55. Lachs reads Article II as applying to "outer space as a whole and to any part of it," including "any of the volumes into which this great void, as a whole, might be divided," and distinguishes such "parts" from "phenomena" like "solar radiation, cosmic and electromagnetic rays as sources of energy, or interstellar gases." LACHS, *supra* note 51, at 42–43. Citing conferences on legal and scientific possibilities for space mining, Lachs also explicitly argues that theories based upon neither first discovery nor labor ("technical facilities") can "constitute a title to exclusive rights" in space resource exploitation. *Id.* at 45, 50–51 n.31. Rather, discovery and labor "should duly be taken into account" in such entitlement, balanced against the non-appropriation principle and Article I's requirement that such uses "shall be carried out for the benefit and in the interests of all countries." *Id.* at 45.

56. P.J. Blount & Christian J. Robison, *One Small Step: The Impact of the U.S. Commercial Space Launch Competitiveness Act of 2015 on the Exploitation of Resources in Outer Space*, 18 N.C. J.L. & TECH. 160, 173–74 (2016); Lintner, *supra* note 49, at 146–47. See generally J. I. Gabrynowicz, *The "Province" and "Heritage" of Mankind Reconsidered: A New Beginning in 2 NASA. JOHNSON SPACE CTR., SECOND CONFERENCE ON LUNAR BASES & SPACE ACTIVITIES 21ST CENTURY* 691, 691–92 (1992) (on balancing "use and exploration" with "province of all mankind" in Article I).

57. See proponents cited *supra* note 56.

58. Section II.A complicates this distinction between State and private activity in space mining.

59. Roth, *supra* note 22, at 850–52 (disagreeing with the proposition); Blount & Robison, *supra* note 56, at 180–81 (arguing that the "extension of jurisdiction is not *de facto* extension of sovereignty").

proposition provide scarce reasoning in its support.⁶⁰ Nevertheless, Lachs's commentary advocating this position provides robust support, because Lachs's role as a judge during the negotiations offers a potential insight into the intent of the State parties drafting this provision of the OST. He writes that the OST proscribes State conferral of property rights because such conferral violates Article II's bar on "any other means" of appropriation:

[Article II] includ[es] not only sovereign rights but also property rights. . . . "Appropriation" in the wider sense is involved. *States are thus also barred from establishing proprietary links in regard to the new dimension.* Property being the legal expression of a basic form of "appropriation," it confers the right to use or dispose of an object and exclude all others from doing so.⁶¹

But it remains unclear whether Lachs's position provides an accurate reading of the intent of Article II, given that the question of conferring property rights does not appear in the *travaux*.⁶²

b. Article I's "Province of All Mankind" and "Use and Exploration" Provisions: "Global Commons" and Natural Rights Theories of Property

Proponents of the extraction interpretation frequently support their view by reference to Article I of the OST. Article I requires that "exploration and use" of space, including celestial bodies, be "for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development," and declares space "the

60. Fabio Tronchetti, *Private Property Rights on Asteroid Resources: Assessing the Legality of the ASTEROIDS Act*, 30 SPACE POL'Y 193, 194 (2014) ("[P]roperty rights require a superior authority, a State, entitled to attribute and enforce them."). See generally RICKY LEE, LAW AND REGULATION OF COMMERCIAL MINING OF MINERALS IN OUTER SPACE 177–78 (2012) (on interpreting Article II's "any other means").

61. LACHS, *supra* note 51, at 41–52 (emphasis added); see also Ram Jakhu & Maria Buzdugan, *Development of the Natural Resources of the Moon and Other Celestial Bodies: Economic and Legal Aspects*, 6 ASTROPOLITICS 201, 219–20 (2008).

62. Section II.B clarifies this ambiguity. See JOHN SPRANKLING, THE INTERNATIONAL LAW OF PROPERTY 187–89 (2014) (on uncertainty about resource extraction under Article II in the *travaux* and regarding states granting "the right to exploit a particular celestial resource to one of its nationals"); cf. MCDUGAL ET AL., *supra* note 51, at 69–70, 129–30, 749–871 (contemplating conferral of property rights in space, the economic benefits and legal challenges for space mining, and competing socialist and capitalist conceptions of the space regime, referencing Global South interests, only a few years before the OST).

province of all mankind.”⁶³ It also requires that space and celestial bodies “be free for exploration and use by all States without discrimination of any kind” and that “there shall be free access to all areas of celestial bodies.”⁶⁴

This language raises two more ambiguities regarding the extraction interpretation. First, some commentators argue that Article I’s “province of all mankind” and “irrespective of . . . economic or scientific development” language subjects space resources to a collectivist property regime, based on “global commons” or “common heritage of mankind” (“CHM”) principles.⁶⁵ This hints at equitable distribution of such resources between all parties to the OST.⁶⁶ In the *travaux*, some Global South States forwarded this view.⁶⁷ They were concerned that Global North States, due to asymmetric technological and economic capabilities, would exhaust valuable resources in space before other States could begin exploitation.⁶⁸

But most commentators, including proponents of the extraction interpretation, disagree with this reading of Article I. Instead, they argue that Article I merely prevents States and private parties from excluding one another from conducting activities in outer space.⁶⁹ Historically, the United States has taken this position, arguing against socialist or collectivist regimes.⁷⁰ Scott Pace, Executive

63. OST, *supra* note 3, art. I (“The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.”).

64. *Id.* art. I.

65. Jakhu & Buzdugan, *supra* note 61, at 228–32 (discussing these differences).

66. *Id.*

67. See Ram Jakhu, *Legal Issues Relating to the Global Public Interest in Outer Space*, 32 J. SPACE L. 31, 37–39 (on Brazil’s accepted “common interest” proposal for Article I).

68. *Id.*; see Summary Record of the Sixty-Third Meeting (Fifth Session), *supra* note 51, at 9 (Brazil’s comments insisting the “common interest” language remain in Article I). See generally other proponents cited *supra* note 51.

69. Jakhu & Buzdugan, *supra* note 61, at 228–29; see also Henry Hertzfeld, Brian Weeden & Christopher Johnson, *How Simple Terms Mislead Us: The Pitfalls of Thinking about Outer Space as a Commons*, INT’L ASTRONAUTICAL FED’N (2015); <https://swfound.org/media/205390/how-simple-terms-mislead-us-hertzfeld-johnson-weeden-iac-2015.pdf> [<https://perma.cc/2TFY-WE89>] (critiquing uses of “global commons” and other concepts, with varying degrees of ambiguity, in space law); Henry Hertzfeld, Brian Weeden & Christopher Johnson, *Outer Space: Ungoverned or Lacking Effective Governance?: New Approaches to Managing Human Activities in Space*, 36 SAIS REV. INT’L AFF. 15 (2016).

70. Blount & Robison, *supra* note 56, at 163–64; Elliot Reaven, *The United States Commercial Space Launch Competitiveness Act: The Creation of Private Space Property Rights and the Omission of the Right to Freedom from Harmful Interference*, 94 WASH. U. L.

Director of President Trump's National Space Council, has stated that "outer space is not a 'global commons,' not the 'common heritage of mankind,' not 'res communis,' nor is it a public good."⁷¹ A recent House bill, H.R. 2809, goes so far as to state that "outer space shall not be considered a global commons."⁷² Pace's comments and H.R. 2809's language have generated rebukes that global commons in fact permit free use,⁷³ a position that policymakers have taken before.⁷⁴ Others argue that the definition of "global commons" is ambiguous.⁷⁵

In the OST Senate ratification hearings, U.S. Ambassador to the U.N. and former Supreme Court Justice Arthur Goldberg discussed Article I. He referenced language "added by our colleagues from Brazil" that requires States' use and exploration of space "irrespective of their degree of economic or scientific development."⁷⁶ Goldberg clarified that these provisions do not give all nations "complete fee simple title to all results" of spaceflight, and thus do not allow Global South States a "free ride."⁷⁷ In his view, they do not grant "noncontributing countries all the benefits of those who put up the money and expense" for spaceflight.⁷⁸ He viewed these as merely general propositions.⁷⁹ This position—that Article I simply pro-

REV. 238, 245 n.45 (2016) (discussing history of the U.S. government's position).

71. Dr. Scott Pace, Exec. Sec'y, Nat'l Space Council, Lunch Keynote at IISL Galloway Space Law Symposium: Space Development, Law, and Values (Dec. 13, 2017); https://spacepolicyonline.com/wp-content/uploads/2017/12/Scott-Pace-to-Galloway-FINAL.pdf?utm_content=buffer66778&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer [<https://perma.cc/KSD2-GBGL>].

72. H.R. 2809, 115th Cong. § 80308 (2018).

73. Ian Perry, *Claiming that Space Is Not a Commons Is a Bad Strategy*, LAWLESS.TECH (July 25, 2018), <https://lawless.tech/claiming-that-space-is-not-a-commons-is-a-bad-strategy> [<https://perma.cc/R9TL-R9C9>].

74. ELIOT COHEN, *THE BIG STICK: THE LIMITS OF SOFT POWER AND THE NECESSITY OF MILITARY FORCE* 173–93 (2016) (Cohen, a former counselor to Condoleezza Rice in the State Department, assumes that space is a global commons and therefore does not limit exercises of military force to protect private interests in space).

75. See Hertzfeld, Weeden & Johnson, *How Simple Terms Mislead Us*, *supra* note 69; Hertzfeld, Weeden, & Johnson, *Outer Space: Ungoverned or Lacking Effective Governance?*, *supra* note 69.

76. OST Hearings, *supra* note 43, at 9–10 (statement of Arthur Goldberg, Ambassador to the United Nations).

77. *Id.* at 10.

78. *Id.*

79. *Id.*; see also John Myers, *Extraterrestrial Property Rights: Utilizing the Resources of the Final Frontier*, 18 SAN DIEGO INT'L L.J. 77, 94–97 (2016) (discussing Goldberg's remarks in Senate hearings).

scribes exclusion—seems correct, as it mostly accords with the *travaux*. Still, it is unclear to what degree these statements constitute authoritative interpretations of the OST, given the significant disagreement in the international community on this issue.⁸⁰

The second ambiguity arises from Article I's "use and exploration" language. Proponents of the extraction interpretation argue that this language does not merely permit but authorizes private extraction under natural rights theories of property, such as the extraction interpretation's labor theory.⁸¹ The U.S. Department of State has generally held this position. This includes statements by Secretary of State Cyrus Vance, State Department Legal Adviser Roberts Owen, and, on whether the CSLCA complies with Article I, Legal Adviser Brian Egan.⁸² However, as with the above disagreements about Article I, the international community's disagreement with this position weakens it. Indeed, as discussed, the CSLCA dropped the ASTEROIDS Act's first-in-time natural rights theory to avoid such international controversy.

2. The Legality of the Extraction Interpretation of the CSLCA under CIL

Instead of the conventional law of the OST, some proponents of the extraction interpretation justify its legality by reference to CIL. International law requires the showing of two elements to establish a CIL rule: State practice, which must be widely accepted and "general and consistent," and *opinio juris*, which requires that such acts arise from "a sense of legal obligation."⁸³ Moreover, CIL requires

80. See *supra* notes 51, 69; see also Myers, *supra* note 79, at 97–100 (reviewing position in *travaux*, although focusing on U.S. and U.S.S.R. statements).

81. Myers, *supra* note 79, at 112–18 (advocating for CSLCA based on Locke's natural rights theory of labor, employing U.S. case law).

82. Moon Agreement Hearings, *supra* note 17, at 312–13 (Nov. 28, 1979 letter from Cyrus Vance, Secretary of State, to Frank Church, Senator, Chairman of the Senate Foreign Relations Committee, arguing OST permits resource extraction); *The Moon Treaty: Hearings Before the Subcomm. on Sci., Tech., & Space of the S. Comm. on Commerce, Sci., & Transp.*, 96th Cong. 2–19 (1980) [hereinafter Moon Agreement Subcomm. Hearings] (remarks and testimony of Roberts Owen, Legal Adviser to the Department of State, arguing OST permits resource extraction); Egan, *supra* note 6; see also Reaven, *supra* note 70, at 245 n.45. U.S. Government officials have consistently interpreted the OST as not prohibiting rights to extracted space resources. Furthermore, many government officials, such as Egan and Representative Posey, hold that Article VI freely permits extraction. Egan, *supra* note 6; see also *supra* note 32 and accompanying text.

83. RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 102(2), cmts. b–e (Am. Law Inst. 1987).

consensus, although it does not require universal acceptance.⁸⁴ Proponents of the extraction interpretation reference two instances⁸⁵ of State practice supporting the extraction interpretation: U.S. case law on property rights and space, and States' handling of lunar rocks and minerals. This subsection finds that these instances are distinct from the space mining context.

a. U.S. Case Law on Property Rights and Outer Space

Proponents of the extraction interpretation argue that U.S. case law constitutes State practice establishing CIL permitting space resource extraction or State conferral of property rights over space resources.⁸⁶ On the contrary, these cases do not establish CIL because they do not directly pertain to space resource extraction. Only two U.S. cases deal with property rights in space. In *Nemitz v. United States*, a U.S. citizen claimed ownership of an asteroid and attempted to charge NASA parking fees for landing a rover on its surface.⁸⁷ The District Court for the District of Nevada held that the citizen could not claim ownership of the asteroid, based on the

84. *Id.* § 102 cmts. b–e.

85. There is a potential third instance related to the Moon Agreement of 1979, a treaty that attempted to form a stricter property regime in space but failed because spacefaring nations refused to become party to it. Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, *opened for signature* Dec. 18, 1979, 1363 U.N.T.S. 3 [hereinafter Moon Agreement]. Some commentators argue that spacefaring states would not have agreed to the OST if it had set in place the kinds of limits proposed in the Moon Agreement—thus, the OST must permit extraction. Lintner, *supra* note 49, at 148–49; Myers, *supra* note 79, at 100–07, 124; Reaven, *supra* note 70, at 239–40. This argument seems to imply that spacefaring States' refusal constitutes State practice out of a sense of legal obligation to follow a particular interpretation of the OST. But, it is unclear that this argument meets the consensus requirement for CIL because it would be difficult to establish the absence of dissent by other States. Such dissent is apparent in the quantity of parties to the Moon Agreement—seventeen, some acceding as recently as 2016—even if they are not spacefaring States. Ratification by Nicaragua to the Moon Agreement (Aug. 10, 2017); *see also* Alison Morris, *Intergalactic Property Law: A New Regime for a New Age*, 19 VAND. J. ENT. & TECH. L. 1085, 1100 (2017) (arguing Moon Agreement shows “international belief” that space resources should be regulated as “common goods, rather than resources available for individual exploitation”).

86. For legislative and scholarly references to the cases discussed below, see H.R. Report No. 114–153, at 8 (2015); Hertzfeld Letter, *supra* note 24, at H3518; Stephen DiMaria, *Starships and Enterprise: Private Spaceflight Companies' Property Rights and the U.S. Commercial Space Launch Competitiveness Act*, 90 ST. JOHN'S L. REV. 415, 426–27, 440 (2016).

87. *Nemitz v. United States*, No. CV–N030599–HDM (RAM), 2004 WL 3167042 (D. Nev. Apr. 26, 2004).

court's reading of the OST's non-appropriation principle.⁸⁸ Another prominent case, *United States v. One Lucite Ball*, involved a lunar rock that a U.S. citizen had bought from a colonel, who had allegedly stolen the rock from the former Honduran government after a coup.⁸⁹ The Honduran government had received it as a gift from President Richard Nixon in 1973.⁹⁰ In dicta, *One Lucite Ball* refers to the sale of a slide of lunar dust at a Sotheby's auction.⁹¹ The court held that the rock sold by the Honduran colonel was stolen and must be forfeited to the U.S. government.⁹²

These cases do not shed light on private space resource extraction under international law. Commentators, including academics who wrote letters to Congress during hearings on the CSLCA, generally argue that *One Lucite Ball* "upheld the right of Honduras to assert ownership over a moon rock."⁹³ However, the holding of *One Lucite Ball* did not turn on whether a State or private party can claim ownership over an in-situ space resource. Rather, it was a forfeiture case about whether the seller of the rock, the colonel, legally obtained the rock during the coup in Honduras. Furthermore, *One Lucite Ball* does not reference the OST. By contrast, *Nemitz* relies on a reading of the OST, but does not directly shed light on resource extraction. Moreover, the fact that there are only two notable cases that relate at all to the issue indicates a lack of general and consistent practice arising from such cases.

b. States' Handling of Lunar Rocks and Minerals

Proponents of the extraction interpretation also argue that States' handling of lunar rocks and minerals has created a CIL rule permitting space resource extraction or State conferral of property rights over such resources.⁹⁴ American, Russian, and Japanese governments have declared rocks and soil that these countries took from the Moon and asteroids as their property.⁹⁵ These governments have

88. *Id.*

89. *United States v. One Lucite Ball Containing Lunar Material*, 252 F. Supp. 2d 1367, 1369, 1381 (S.D. Fla. 2003).

90. *Id.* at 1369.

91. *Id.*

92. *Id.*

93. Hertzfeld Letter, *supra* note 24, at H3518.

94. *See* sources cited *supra* note 86 (also discussing states' handling of lunar and asteroid materials).

95. *Id.*

enforced such declarations in several ways. Theft of lunar rocks is a criminal offense in the United States, the Russian government has publicly auctioned lunar rocks, and Japan has displayed its asteroid materials in a museum.⁹⁶ However, these practices do not clearly settle the question of private resource extraction in space through CIL. They are distinguishable from the commercial space mining context and fail to meet the requirement of consensus for establishing CIL.

These State practices are distinguishable on two grounds. First, the United States, Russia, and Japan obtained and exchanged the lunar and asteroid rocks and minerals for purposes of science and diplomacy, not commerce.⁹⁷ Second, the scale of obtaining these small quantities of rocks and minerals is not comparable to that of commercial extraction where there is a possibility that excessive extraction can lead to depletion of a celestial body's resources, and thus, arguably, appropriation.⁹⁸ Thus, in these circumstances, other States' lack of dissent about these practices should not necessarily establish a CIL rule permitting private space resource extraction.⁹⁹ It would be incoherent to require States to dissent to practices that are distinguishable, as shown above, from commercial space mining. Indeed, such practices are unremarkable in nature, pertaining to only a few rocks and mineral samples and are unlikely to have invited any international objection. In fact, the current international disagreement¹⁰⁰ about unilateral laws in the United States and Luxembourg

96. Hertzfeld Letter, *supra* note 24, at H3518.

97. *Id.*

98. Numerous commentators have elucidated the legal and factual differences between small-scale scientific extraction and larger commercial expansion. Sprankling, *supra* note 62, at 185 (arguing there is no CIL in space “due to absence of consistent state practice” and because it “cannot be seriously argued that such limited activities [as U.S. and Russian transport of lunar rocks and other mineral samples] have matured into a customary norm that would permit large-scale exploitation of space resources”); Tronchetti, *supra* note 17, at 7–8 (distinguishing extraction “on a large scale”); Steven Freeland, *Common Heritage, Not Common Law: How International Law Will Regulate Proposals to Exploit Space Resources*, 35 QUESTIONS OF INT’L L. 19, 23 (2017) (arguing Article II bars mining celestial body “out of existence”); DiMaria, *supra* note 86, at 439–40 (proposing “sunset provision” in CSLCA to prevent appropriation from excessive mining); *see also* LEE, *supra* note 60, at 13, 317 (similarly distinguishing gathering of mineral samples for commercial purposes from prior samples for scientific purposes). Indeed, even the Moon Agreement allowed for this kind of small-scale resource extraction for scientific purposes under Article 6, implicitly distinguishing it from the larger-scale exploitation contemplated under Article 11. Moon Agreement, *supra* note 85, arts. 6, 11. Specifically, Article 6 permits States to collect and remove samples of minerals and other substances from the Moon for “scientific purposes” or “in quantities appropriate for the support of their missions.” *Id.* art. 6.

99. Sprankling, *supra* note 62 and accompanying discussion.

100. *See supra* notes 5–10, 46.

that purportedly authorize space resource extraction suggests an absence of consensus on the issue.

C. International Law Does Not Resolve the CSLCA’s Ambiguity

This part found that the CSLCA contains a fundamental ambiguity as to whether the statute authorizes private space resource extraction (the extraction interpretation) or merely confers property rights over space resources obtained under a presently undetermined regime (the already-obtained interpretation). Neither the Congressional Record nor subsequent public statements clarify this ambiguity. Subsequently, this part sought to construe the statute based on which of the two possible interpretations accords with international law. However, neither conventional international law under the OST nor CIL clarifies whether the extraction interpretation violates international law, although the former suggests one way in which it might violate the OST’s non-appropriation principle. Thus, Part II turns to policy; it asks whether the extraction interpretation accords with a broader policy concern of the OST.

II. ASSESSING THE OST’S ANTI-IMPERIAL POLICY IN THE GOVERNANCE OF SPACE RESOURCE EXTRACTION: IMPERIAL LOGICS, PROPERTY THEORY, AND HISTORY

Due to the ambiguities regarding the extraction interpretation under international law, the CSLCA should be further construed in light of the OST’s policy concerns. This is because the text of the OST provided incomplete answers in Part I. By looking beyond the text, policy considerations incorporate other factors, such as legal theory and historical context, that can clarify these ambiguities. In particular, this part asks whether the extraction interpretation infringes upon the OST’s anti-imperial policy.

Commentators generally regard the OST’s anti-imperial policy as arising from Article II’s non-appropriation principle.¹⁰¹ This policy seeks to “exclude imperial logics from extending into space” by limiting the “spatial expansion of the State.”¹⁰² Such a rationale might accord with the U.S. government’s position. During Senate ratification hearings for the OST, the only substantive discussion of Article II took the form of a statement by Senator Frank Church,

101. Blount & Robison, *supra* note 56, at 163–64.

102. *Id.* at 164.

Chairman of the Committee on Foreign Relations, in which he affirmed the OST's anti-imperial policy: "[Space] cannot be appropriated for Isabella and Ferdinand."¹⁰³ Ambassador Goldberg, who represented the United States in the drafting of the OST at the U.N., affirmed that Senator Church's statement represented the official U.S. position on Article II.

To be clear, this Note does not presume that legal scholars or actors like Senator Church or Ambassador Goldberg fully realized the implications of their references to an underlying "anti-imperial" policy rationale in Article II. Rather, this Note aims to take these commentators to task for invoking an anti-imperial policy without fully realizing what this means. These commentators generally seem to assume that this policy rationale simply means that, according to Article II, States cannot make territorial claims of sovereignty in space. But, as this part discusses, the theoretical implications of this proscription complicate purely legal notions of sovereignty. Moreover, as this part and Part III discuss, the historical context of the OST is crucial: Although Americans and Soviets might have interpreted Article II as such, the use of language proscribing "claim[s] of sovereignty" likely holds an entirely different meaning for the majority of parties to the OST that are Global South States. These States had only recently decolonized from former empires that had claimed sovereignty on their lands, and they were concerned about problems of access to space that fell along fault-lines between empires and their former subjects.¹⁰⁴ Indeed, examining the so-called "anti-imperial" policy's relationship with such scholarship is essential for taking into account a global perspective on the OST because the treaty was signed during a key historical moment for the postcolonial world.¹⁰⁵ Given this context, commentators on the CSLCA that do not engage with the OST's postcolonial context at all run the risk of eliding an important aspect of the treaty's broader meaning. In fact, the anti-imperial context of the OST is an aspect of space law that is frequent-

103. OST Hearings, *supra* note 43, at 21.

104. On this postcolonial moment, see generally Luis Eslava, Michael Fakhri & Vasuki Nesiah (eds.), *BANDUNG, GLOBAL HISTORY, & INTERNATIONAL LAW* (2017) (particularly *Introduction* at 1–33). On the New International Economic Order and the Non-Aligned Movement, see Umut Özsu, "Let Us First of All Have Unity Among Us": *Bandung, International Law, and the Empty Politics of Solidarity*, in *BANDUNG, GLOBAL HISTORY, AND INTERNATIONAL LAW* 293–307 (Luis Eslava et al., eds. 2017). *But see* ANTHONY ANGHIE, *IMPERIALISM, SOVEREIGNTY & THE MAKING OF INTERNATIONAL LAW* 196–244 (2006). Sam Moyn situates this postcolonial moment from the 1940s through 1960s. *See generally* SAMUEL MOYN, *THE LAST UTOPIA: HUMAN RIGHTS IN HISTORY* 8 (2010).

105. *Supra* note 104; *see also infra* note 108.

ly neglected, especially in discourse on the CSLCA.¹⁰⁶ Consequently, it is crucial to engage the OST with scholarship and historical context on law, colonialism, and empire.¹⁰⁷

In pursuing such an analysis, this part develops a more nuanced understanding of what it means to grapple with the OST as a legal document that has been interpreted with legal theories, or “imperial logics,” parallel to those used in prior imperial encounters. Because commercial space mining will not likely involve the exploitation or abuse of indigenous populations, this analysis does not approach colonialism and imperialism as such. Instead, this part unveils “imperial logics”—legal theories that, historically, have been used to justify prior imperial activities—that are then used to justify particular readings of the OST that support the extraction interpretation. It also acknowledges imperialism in the space context as a technological, legal, and economic practice in which Global North States—“former” empires—exploit their disproportionate economic and technological capabilities, often attained by virtue of their former imperial successes, to further global inequality by obtaining resources in extraterritorial domains.¹⁰⁸ In other words, this Note treats

106. See *supra* note 104; see also *infra* note 108. Most proponents of the extraction interpretation rely on Article I but do not balance its “use and exploration” language with Article II’s non-appropriation principle and its anti-imperial policy. Even the Senate ratification hearings for the OST dedicated merely eight lines of text to the non-appropriation principle (the aforementioned “Isabella and Ferdinand” exchange).

107. The few commentators who discuss colonialism and empire merely engage in hermeneutic analyses that primarily reference legal sources and scholarship. Blount & Robison, *supra* note 56 (defining the anti-imperial policy without engaging in scholarship on imperialism and colonialism); Myers, *supra* note 79, at 112–14, 118–19 (arguing that Lockean labor theory of property has superseded *Johnson v. M’Intosh*’s “imperialistic” discovery theory but failing to engage with the imperial and colonial contingencies of Locke’s labor theory, as discussed in Part II of this Note; also briefly citing African land grabs to show that absence of a legal regime facilitates asymmetric power); Lintner, *supra* note 49, at 142–43 (briefly discussing aboriginal title’s first occupation and labor theories, which Lintner argues cannot apply in space law); see also MCDUGAL ET AL., *supra* note 51, at 830–77 (pre-OST scholarship reviewing imperial and colonial histories related to appropriation of resources based upon discovery, symbolic acts, and effective occupation).

108. For a historical illustration of this brand of imperialism centered on the metropole’s economy, see generally ERIC HOBBSBAWM, *AGE OF EMPIRES: 1875–1914*, at 56–83 (1987) (showing how imperialism and colonialism are tied to the economic “partition of the world” between Global North and South States); see also TIMOTHY MITCHELL, *RULE OF EXPERTS: EGYPT, TECHNO-POLITICS, MODERNITY* 295–97 (2002) (tying modern global capitalism to imperial and colonial histories). For more scholarship on space activities, imperialism, and colonialism in contexts of violence, law, and economic development, see generally PETER REDFIELD, *SPACE IN THE TROPICS: FROM CONVICTS TO ROCKETS IN FRENCH GUIANA* (2000); Peter D’Auria, *Protestors Took Europe’s Space Program Hostage*, QUARTZ (Apr. 17, 2017), <https://qz.com/960817/how-a-handful-of-south-american-protestors-in-french-guiana-took->

imperialism as a practice that does not merely exploit peoples in a foreign territory; rather, it uses its imperial spoils to make economic gains abroad that further widen the gap between Global North and South. Later, Part III considers the OST as a legal document historically produced in postcolonial contexts.

Thus, this part examines scholarship on colonialism and empire, ultimately demonstrating that the extraction interpretation infringes on the OST's anti-imperial policy. Specifically, this part illustrates two ways in which the extraction interpretation extends spatial sovereignty and imperial logics into the outer space regime. Section II.A shows that private space resource extraction approaches a claim of sovereignty. Section II.B shows that State conferral of property rights over space resources constitutes appropriation. Due to these infringements of the OST's anti-imperial policy, the CSLCA should be construed with the alternative reading, the already-obtained interpretation.

A. Private Extraction Approaches a Claim of Sovereignty: "State as Effect" in the Techno-politics of Resource Extraction

Private extraction under the extraction interpretation of the CSLCA infringes upon the OST's anti-imperial policy because private extraction in this context extends State power and thereby approaches a claim of sovereignty. This counters the claim that the non-appropriation principle does not apply to private space resource extraction because Article II refers to States, not private entities. On

arianespace-and-europes-space-program-hostage [https://perma.cc/PB8L-T88A] (on continuing influence of French Guiana's imperial history on economic and political unrest surrounding the Guiana Space Centre); SEAN T. MITCHELL, CONSTELLATIONS OF INEQUALITY: SPACE, RACE, AND UTOPIA IN BRAZIL (2017); Asif Siddiqi, *Competing Technologies, National(ist) Narratives, and Universal Claims: Toward a Global History of Space Exploration*, 51 *TECH. & CULTURE* 425 (2010); Asif Siddiqi, *Science, Geography, and Nation: The Global Creation of Thumba*, 31 *HIST. & TECH.* 420 (2015); Asif Siddiqi, *Technology in the South Asian Imaginary*, 31 *HIST. & TECH.* 341 (2015); JODI DEAN, *ALIENS IN AMERICA: CONSPIRACY CULTURES FROM OUTERSPACE TO CYBERSPACE* 19–20, 169–71, 180–81, 205 n.52 (1998); Haris Durrani, *Space Law, Shari'a, and the Legal Place of a Scientific Enterprise: A Parallel Challenge of Sovereignty*, 10 *COMP. ISLAMIC STUD.* 27 (2014) (on differentials of power in the space regime; discussing space activities by the Global North as strengthening the military, economic, and political order of the metropole and continuing the exploitation and subjugation of former colonial and imperial subjects on the ground) [hereinafter Durrani 2014]; Haris Durrani, "Our Window on the World": *Life in the Orbital Heterotopia of the International Space Station*, *QUEST: THE HIST. OF SPACE FLIGHT Q.*, Vol. 25 #2, at 23 (2018) (including a discussion situating the roughness of analogizing space activities to colonization) [hereinafter Durrani 2018]; *infra* note 177 (on imperialism and colonialism in the Bogotá Declaration of 1976).

the contrary, the non-appropriation principle applies because private extraction and State appropriation of resources operate contiguously within a larger political order. To demonstrate this, Section II.A applies Timothy Mitchell's concept of the "State as effect," a prominent theory in historical and sociological studies of the relationship between State and private actors in the context of resource extraction, to the relationship between private and State actors in the OST and CSLCA. The prevalence of "State as effect" phenomena in the U.S. space industry, particularly with respect to the CSLCA, shows that parsing private extraction from State appropriation of space resources is splitting hairs.

1. Natural Resources in Law and History: "State as Effect" as an Imperial Logic

Mitchell's concept of the "State as effect" is an imperial logic that is especially pertinent to law, natural resources, and sovereignty. Indeed, Mitchell's scholarship on the imperial techno-politics of resource extraction in the modern Middle East provides a useful framework for addressing legal questions about the relationship between private and State activity that arise in the context of the CSLCA. In a seminal essay, Mitchell describes the "State as effect" as a phenomenon in which the State does not merely function as a structured, centralized body, wherein internal mechanisms causally produce State activities.¹⁰⁹ Rather, it operates through a more Foucauldian series of interactions, in which seemingly non-State actors, inadvertently or otherwise, constitute part of a broader State apparatus.¹¹⁰ These actors create the "effect" of State boundaries, even as they pursue State interests beyond those very boundaries.¹¹¹ In other words, the State forms the perception that there are boundaries by which one might distinguish between State conduct and non-State, or private, conduct.¹¹²

Mitchell highlights this phenomenon to critique bright-line distinctions between State and private activity, particularly in the context of resource extraction.¹¹³ He offers the example of Saudi Ar-

109. Timothy Mitchell, *The Limits of the State: Beyond Statist Approaches and Their Critics*, 85 AM. POL. REV. 77, 89–95 (Mar. 1991); see also Durrani 2014, *supra* note 108, at 37–40 (discussing Mitchell's "State as effect" and legal pluralism).

110. Mitchell, *supra* note 109, at 92–93.

111. *Id.* at 89–95.

112. *Id.* at 90.

113. *Id.* at 89–95.

amco, an actor that was not formally within the perceived boundaries of the U.S. State but nevertheless pursued that State's interests by "collu[ding]" with the U.S. Department of State to manipulate a loophole in U.S. tax law to satisfy royalties on payments for Saudi oil.¹¹⁴ Mitchell explains:

The point that the state's boundary never marks a real exterior can suggest why it seems so often elusive and unstable. But this does not mean the line is illusory. On the contrary, as the Aramco case shows, producing and maintaining the distinction between state and society is itself a mechanism that generates resources of power. The fact that Aramco can be said to lie outside the formal political system, thereby disguising its role in international politics, is essential to its strength as part of a larger political order.¹¹⁵

Elsewhere, Mitchell challenges hermeneutic theories of the State in the context of property claims over land, agriculture, and other resources in colonial Egypt.¹¹⁶ Employing legal realist scholarship, he describes the law as being defined by its externalities or exceptions, such as extralegal violence and private interests, including private claims to property.¹¹⁷ He further argues that, by pursuing State power beyond its perceived boundaries (i.e., beyond its "structural effect"), global commercial enterprises undermine the free market, producing the kind of constrained economic system that Adam Smith sought to redress.¹¹⁸ In Mitchell's accounts, the natural resource interests of Global North States in the modern Middle East function contiguously with private interests. This amounts to the conclusion that State and private extraction are often not easily distinguishable practices; for Mitchell, they are mutually-constitutive.

The complex, mutually-constitutive character of State and

114. *Id.* at 89–90.

115. *Id.* at 90.

116. TIMOTHY MITCHELL, *supra* note 108, at 54–79, 296.

117. *Id.* at 79, 320 n.68. Mark Neocleous forwards similar arguments regarding extralegal violence in the context of the "state of exception" as a perpetual and integral aspect of the State, particularly the United States. See generally Mark Neocleous, *The Problem with Normality: Taking Exception to "Permanent Emergency"* 31 ALTERNATIVES 191 (2006).

118. TIMOTHY MITCHELL, *supra* note 108, at 294–95 (arguing that "Smith wrote *The Wealth of Nations* as an attack on the power of these colonizing corporations [such as the Dutch and English East India companies and the joint-stock companies in North American colonization] and formulated the idea of individual exchange in 'the market' as the program for an alternative").

private entities in their legal relationships with natural resources in the Middle East is not new to even a casual observer of law, colonialism, and empire. It goes without saying that private enterprises have frequently extended property rights abroad by operating hand-in-hand with colonial and imperial expansions of sovereignty. Classic examples of such State projects were simultaneously commercial ones. Consider the economic exploitations of Christopher Columbus in Latin America or the East India Company in South and East Asia.¹¹⁹

2. "State as Effect" in the History of Space Law, the CSLCA's Legislative History, and Space Mining

As a general matter, the American space industry functions contiguously with State actors.¹²⁰ The U.S. space mining industry

119. Kate Miles, *Expectations: A History of Constructs in International Law* (Draft Paper), SYMPOSIUM ON EXPECTATIONS AS PROPERTY, COLUMBIA LAW SCHOOL 2–6 (May 2017) (arguing that Vitoria constructed a universal right to free trade, upon which one could wage war, to justify the Spanish empire's expansion and that Grotius similarly justified the East India Company's colonial projects, with an additional universal right to access the high seas "that created 'offences' justifying military intervention and forcible acquisition of territory and resources"); MCDUGAL ET AL., *supra* note 51, at 833–37, 847–48 (arguing the Spanish empire used effective occupation and labor theories to expand sovereignty and accrue resources, issuing to Columbus patents and licenses urging him to "conquer," "master and hold" lands, and convert natives); see TIMOTHY MITCHELL, *supra* note 108 (on the East India Company).

120. See generally Peter Dickens, *Capitalism, Class and the Cosmos*, in THE PALGRAVE HANDBOOK OF SOCIETY, CULTURE & OUTER SPACE 71 (Peter Dickens & James Ormrod eds., 2016); James Ormrod & Peter Dickens, *Conclusion: The Future of Outer Space*, in THE PALGRAVE HANDBOOK OF SOCIETY, CULTURE & OUTER SPACE 445 (James Ormrod & Peter Dickens eds., 2016); Durrani 2018, *supra* note 108 (illustrating the "state as effect" in the legal structure of the ISS assembly and space industry); see also Haris Durrani, *Space Crystals and "Our Window on the World": Economic Development, Imagination, and Humanity in the Orbital Heterotopia of the International Space Station* (2016) (unpublished M.Phil dissertation, Cambridge University) (on file with the *Columbia Journal of Transnational Law*) (discussing patents in space, the ISS legal structure, and space pharmaceuticals). Today, such companies remain strapped to public funding, SpaceX included, so much so that libertarian publications like *Breitbart*, concerned about "crony capitalism," have complained that companies like SpaceX receive public funding to the detriment of the purity of the commercial space sector. See Eric Berger, *Breitbart, Other Conservative Outlets Escalate Anti-SpaceX Campaign*, ARS TECHNICA (Nov. 1, 2017), <https://arstechnica.com/science/2017/11/breitbart-other-conservative-outlets-escalate-anti-spacex-campaign> [<https://perma.cc/EAF6-RF7S>]. In part, this is because the space launch industry is an inelastic market subject to the limited demand of government agencies and the military, which only require a set number of launches per year. Ryan Faith, *SpaceX Landed Its Rocket, But You Should Know a Few Things Before Buying Your Spacesuit*, VICE (Dec.

and the CSLCA are prime examples of such “State as effect” phenomena. This is apparent in three instances: statements in the Senate denying collectivist regimes under the OST and Moon Agreement of 1979 (“Moon Agreement”), the CSLCA’s legislative history, and recent statements by politicians and members of the space industry.

Contiguous commercial and governmental interests were inherent in discussions of the “free rider” problem in Senate hearings about ratification of the OST and Moon Agreement, a treaty that failed because spacefaring States, including the United States, refused to become party to it.¹²¹ These determinations in the Senate focused on the government’s economic interests in space. For example, in Senate hearings on the OST, Ambassador Goldberg asserted that “[t]his is not a free ride” in response to Senator Bourke Hickenlooper’s question about whether Article I allows “noncontributing” States to receive “the benefits of those who put up the money and expense for this.”¹²² Similarly, in Senate hearings on the Moon Agreement, the L-5 Society, a private organization advocating for the colonization of space, lobbied for an interpretation of the Moon Agreement, which attempted to establish a CHM principle for space resource extraction, to allow for a “first-come, first serve” basis by which States can “bring [space resources] to the world market” if they are “capable of using” those resources.¹²³

Moreover, the legislative history of the CSLCA strongly suggests intertwined relationships between governmental and commercial actors that contiguously pursue the interests of the U.S. State while operating beyond its perceived boundaries. Notably, the Congresspersons who introduced the ASTEROIDS Act, which led to the CSLCA, have unique ties to the space industry. The first, Representative Derek Kilmer, is from Washington, home state of the prominent space mining company Planetary Resources, which lobbied for

22, 2015), <https://news.vice.com/article/spacex-landed-its-rocket-but-you-should-know-a-few-things-before-buying-your-spacesuit> [<https://perma.cc/M2XG-RBXY>].

121. Recall that proponents of the extraction interpretation cite these discussions to support the U.S. position that Article I of the OST does not render space resources a commons and thus permits private resource extraction. *See supra* note 85 (on Lintner, Reaven, and Myers).

122. OST Hearings, *supra* note 43, at 10 (exchange between Senator Hickenlooper and Ambassador Goldberg).

123. *See* Myers, *supra* note 79, at 104–05 (discussing L-5’s role in the hearings); Moon Agreement Hearings, *supra* note 17, at 319–21 (L-5 referenced favorably); Memorandum of the L-5 Society in Annex D of Moon Agreement Hearings, at 366–79.

the CSLCA.¹²⁴ The second, Representative Posey of Florida, was a McDonnell Douglas employee,¹²⁵ and Florida is host to numerous space activities due to the rocket launch sites in Cape Canaveral.¹²⁶ For example, the year that the CSLCA was enacted, the space mining company Moon Express moved important operations to Florida.¹²⁷

Statements in Congress indicate the kind of overlapping State and private interests that have defined space activities for decades.¹²⁸ For example, Representative Posey, advocating for the extraction interpretation, believed the bill would enable the American space economy to outcompete any other national space economy.¹²⁹ These statements generally align with the extraction interpretation. In the wake of the CSLCA, Senator Cruz's 2017 hearings on reforming the OST formalized mutually-constitutive commercial and governmental activities. The first hearing began with a discussion of the Homestead Act, a colonial project used to extend the boundaries of the American State.¹³⁰ In that hearing, Senator Cruz expressed sentiments akin to Representative Posey's. Senator Cruz advocated for the United States to pursue regimes in space that would incentivize American private entities in space mining and other endeavors in or-

124. *Asteroid Property Rights Bill on Its Way to the President's Desk for Signature into Law*, PLANETARY RESOURCES (Nov. 16, 2015), <https://www.planetaryresources.com/2015/11/asteroid-property-rights-bill-on-its-way-to-the-presidents-desk-for-signature-into-law> [<https://perma.cc/APL7-YVDU>].

125. Shannon Stirone, *Meet the Republican Congressman Obsessed with Sending America Back to the Moon*, MOTHERBOARD (Feb. 27, 2017), https://motherboard.vice.com/en_us/article/8qewe4/meet-the-republican-congressman-obsessed-with-sending-america-back-to-the-moon [<https://perma.cc/Q9US-FHA4>].

126. This is widely known due to the popularity of the NASA Kennedy Space Center as well as the Cape Canaveral Air Force Station.

127. *Historic Cape Canaveral SLC-36 Will Now Be Central to Moon Express' Commercial Efforts to Reach the Moon*, MOON EXPRESS (Jan. 22, 2015), <http://www.moonexpress.com/news/moon-express-signs-agreement-historic-cape-canaveral-space-launch-complex-36> [<https://perma.cc/2TVA-4PNK>].

128. See *supra* note 120 (referring to history of intertwined State and private space activities).

129. See *supra* note 36. This echoes the U.S. motivation for outcompeting other economic blocks in the pharmaceutical industry by incentivizing commercial activity through the ISS legal regime and Patents in Space Act. See John F. Kohler, *Space Pharmaceuticals: Will the United States Fumble Another High Technology Industry?*, 58 J. AIR L. & COM. 511, 550–53 (1992); Durrani, *Space Crystals and "Our Window on the World,"* *supra* note 120.

130. See PAUL FRYMER, *BUILDING AN AMERICAN EMPIRE: THE ERA OF TERRITORIAL AND POLITICAL EXPANSION* 131–33 (2017).

der to strengthen U.S. State power in space.¹³¹ During this hearing, Robert Bigelow, of Bigelow Aerospace, proposed U.S. military protection of private property claims in space.¹³² Although it is unclear whether the United States will go this far, Bigelow's statement solidifies the possibility that private industry and the U.S. government aim to work hand-in-hand to secure property rights in space. (In similar form, Goldman Sachs has expressed a "bullish" advocacy of space mining, releasing a ninety-eight-page report advocating investment.)¹³³ Moreover, one of the Trump Administration's first inquiries to NASA was about space mining,¹³⁴ and President Trump's NASA transition team contains numerous members who presently or formerly worked in the American space industry.¹³⁵ President Trump's newly-appointed NASA Administrator, former Representative Jim Bridenstine, stated during his confirmation hearings that he would consider partnering with the space industry to pursue space re-

131. Reopening the American Frontier, *supra* note 7, at 1–2 (statement of Sen. Ted Cruz, Chairman, Subcomm. on Space, Sci., & Competitiveness). Sen. Cruz expressed a similar sentiment in the second hearing on the same subject. *Reopening the American Frontier: Reducing Regulatory Barriers and Expanding American Free Enterprise in Space: Hearing Before the Subcomm. on Space, Sci., & Competitiveness of the S. Comm. on Commerce, Sci., & Transp.*, 115th Cong. 1–2 (May. 2017)

132. *Reopening the American Frontier: Reducing Regulatory Barriers and Expanding American Free Enterprise in Space: Hearing Before the Subcomm. on Space, Sci., & Competitiveness of the S. Comm. on Commerce, Sci., & Transp.*, 115th Cong. 6–8 (Apr. 2017) (statement of Robert T. Bigelow, Founder and President, Bigelow Aerospace, LLC) [hereinafter Statement of Robert T. Bigelow]; *cf.* COHEN, *supra* note 74, at 173–93 (advocating for use of U.S. military to secure American private interests in space).

133. The report was sent to clients but unpublished. It reads in part: "While the psychological barrier to mining asteroids is high, the actual financial and technological barriers are far lower." Jim Edwards, *Goldman Sachs: Space-Mining for Platinum Is 'More Realistic than Perceived,'* BUS. INSIDER (Apr. 6, 2017), <http://www.businessinsider.com/goldman-sachs-space-mining-asteroid-platinum-2017-4> [https://perma.cc/K9TB-G472] (discussing how report estimated costs of mining at \$2.6 billion compared to football field-sized asteroid containing \$25–50 billion of platinum).

134. David Axe, *Trump's Transition Team Asked NASA About Surveying the Moon for Valuable Resources*, MOTHERBOARD (Apr. 12, 2017, 2:16 PM), https://motherboard.vice.com/en_us/article/kbvema/trump-transition-nasa-foia-moon [https://perma.cc/2538-VM2G].

135. Marcia Smith, *Trump Transition Team Adds Six More Members to NASA Landing Party—Update*, SPACEPOLICYONLINE.COM (Dec. 9, 2016, 12:00 AM), <https://spacepolicyonline.com/news/trump-transition-team-adds-six-more-members-to-nasa-landing-party> [https://perma.cc/6WGY-RBD6]; Marcia Smith, *NASA Landing Team Gets 8th Member—Charles Miller*, SPACEPOLICYONLINE.COM (Jan. 2, 2017, 12:00 AM), <https://spacepolicyonline.com/news/nasa-landing-team-gets-8th-member-charles-miller> [https://perma.cc/F2JV-KSHP].

source extraction.¹³⁶

In sum, the prevalence of “State as effect” characteristics surrounding the CSLCA, particularly the extraction interpretation, casts doubt on the proposition that a private entity’s property claims and a State’s territorial claims are clearly distinguished in practice, as proponents of the CSLCA argue. Of course, private entities lobby Congress often, and private persons who worked for private entities frequently become Congresspersons or administrative officials. But this fits with Mitchell’s broader intervention, in *Rule of Experts*, that experts, by virtue of their importance to the administration of law (i.e., techno-politics), complicate attempts to bifurcate State from private actors. This does not necessarily indicate that, as a matter of law, private extraction of space resources is synonymous with State extraction, which would directly violate Article II’s non-appropriation principle. As such, it is not clearly a de jure infringement of the OST. Rather, this shows that the extraction interpretation would extend the imperial logic of “State as effect.” If one considers the OST as anti-imperial, such an extension infringes upon that policy consideration. To parse such legal distinctions turns a blind eye to facts on—or, perhaps more properly, *off*—the ground and contributes to a larger political order in space. This is not a critique of the interplay between State and private actors in space but an attempt to accurately characterize the nature of spaceflight in the context of the private extraction/State appropriation distinction made by proponents of the extraction interpretation.

*B. State Conferral of Property Rights over Space Resources
Constitutes a Claim of Sovereignty: Property Theory and the
History of Imperialism and Colonialism*

Under the extraction interpretation, the CSLCA would

136. *Nomination Hearing for Jim Bridenstine to be Administrator of NASA Before the S. Comm. on Commerce, Sci., & Transp.*, 115th Cong. (2017), https://www.commerce.senate.gov/public/_cache/files/e22aa3c2-2a92-4eaf-aa6e-2ecefcb1df2/1ED74BA97E3188FA491F64FE73D0B025.majority-qfrs—honorable-james-bridenstine.pdf [https://perma.cc/J47R-BSM4] (response to written questions submitted by Honorable Roger Wicker to Honorable James Bridenstine); see Marcia Smith, *Bridenstine Reiterates Support for NASA’s Earth Science Program*, SPACEPOLICYONLINE.COM (Nov. 7, 2017, 11:29 PM), <https://spacepolicyonline.com/news/bridenstine-reiterates-support-for-nasas-earth-science-program> [https://perma.cc/9BEK-43QU]; see also Vice President Mike Pence, Remarks by Vice President Pence at the 34th Space Symposium (Apr. 16, 2018), *transcript of speech available at* <https://www.whitehouse.gov/briefings-statements/remarks-vice-president-pence-34th-space-symposium-colorado-springs-co/> [https://perma.cc/KR24-YQN2] (citing asteroid mining as new industry in “meteoric rise of America’s commercial space sector”).

amount to State conferral of property rights over space resources. Regardless of the indistinct boundaries between State and private actors in space resource extraction, this conferral constitutes a claim of sovereignty. As noted in Part I, a few commentators make this argument, but they inadequately justify their claims.¹³⁷ They fail to address countervailing arguments by proponents of the extraction interpretation that such rights arise from a labor theory of property, not from State conferral.¹³⁸ Neither do they address the countervailing Demsetzian policy rationale that such property rights are necessary to technological and economic progress.¹³⁹

This section critiques these positions through a broader analysis of the OST's anti-imperial policy. This bolsters the argument that State conferral of property rights over space resources constitutes a claim of sovereignty. First, this section revisits the theoretical meaning of property to show that conferral of property rights entails a claim of sovereignty. Second, it shows that this theoretical understanding aligns with histories in which colonial and imperial powers used two related imperial logics to extend sovereignty into extraterritorial domains. These two logics are: (1) the distinction between property rights and sovereignty and (2) the construction of universal natural rights, like a labor theory, in those domains. Thus, under the extraction interpretation, the CSLCA would constitute a claim of sovereignty that infringes upon the OST's anti-imperial policy.

1. Theory: State Conferral of Property Rights Entails a Claim of Sovereignty

As a matter of theory, the fundamental meaning of property

137. See *supra* notes 60–62.

138. For views advocating a labor theory under the CSLCA, see *supra* notes 31–37; Myers, *supra* note 79; cf. Jinyuan Su, *Legality of Unilateral Exploitation of Space Resources Under International Law*, 66 INT'L COMP. L.Q. 991, 1001, 1007–08 (2017) (discussing Locke's approach to common resources, arguing unilateral legislation like CSLCA will necessarily follow first-in-time principle, which would be detrimental to coordination of space resources regime); 2-34 AM. LAW OF MINING § 34.01 (2d Ed. 2017) (briefly mentioning CSLCA as “implicitly recogniz[ing] the predisccovery rights of prospectors”). The presumption of a labor theory allows proponents to argue that the CSLCA's mere enumeration of property rights for in-situ resources entails authorization to extract, despite no explicit language to this effect.

139. See Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347 (1967). For Demsetzian views on space mining, see Chang, *supra* note 10; see also Myers, *supra* note 79, at 125 (“If property rights are not granted in space, it is . . . foreseeable that corporations will not invest in space and the resources of space will go underexploited.”). Part III directly addresses this issue.

shows that a property right requires the preceding existence of a sovereign.¹⁴⁰ Like any right, a property right has no metaphysical meaning or practical effect without the preceding existence of a sovereign to grant it that meaning and ensure its enforcement. This renders State conferral of property rights over property a claim of sovereignty over that property. Morris Cohen writes:

[A] property right is not to be identified with the fact of physical possession. Whatever technical definition of property we may prefer, we must recognize that a property right is a relation not between an owner and a thing, but between the owner and other individuals in reference to things. A right is always against one or more individuals.¹⁴¹

The State establishes, enforces, and regulates such relations. Through its courts, legislatures, executive bodies, and administrative agencies, the State decides how and when to define property according to any of several principles, including first occupation or labor.¹⁴² It adjudicates disputes about property rights. And it enforces those rights, if need be. Thus, the conferral of a property right entails a claim of sovereignty.

This understanding applies to the extraction interpretation because that interpretation conceives of the CSLCA as State enforcement of private property rights, thereby extending State sovereignty into the space regime. It is telling that Robert Bigelow testified in Congress that the U.S. military should be prepared to protect the property interests of private entities on the Moon.¹⁴³ This position may appear aggressive or hyperbolic, but it points to an understanding that, by granting to private entities property rights over space resources, the U.S. government is extending sovereign power. Indeed, as Representative Posey explicitly stated in the Record, a primary

140. See, e.g., Morris Cohen, *Property and Sovereignty*, 13 CORNELL L. REV. 8, 11–12 (1927).

141. Cohen, *supra* note 140, at 12. See also Elizabeth Mensch, *The History of Mainstream Legal Thought*, in *THE POLITICS OF LAW: A PROGRESSIVE CRITIQUE* 13, 23–24 (David Kairys ed., rev. ed. 1990) (arguing Cohen's seminal essay complicates distinctions between private property and state sovereignty: "property is really an (always conditional) delegation of sovereignty").

142. See generally Cohen, *supra* note 141, at 14 (noting that scholars have long disputed whether property arises from title or any of variety of principles such as first occupation, first discovery, labor, personhood, or economic productivity). Notably, Cohen emphasizes that this understanding of property rights is not necessarily a critique of them. The first occupation theory of property states that an individual owns property that he or she occupies.

143. See *supra* note 132.

purpose of the CSLCA was to incentivize the American space industry to pursue space mining and outcompete Russia and China.¹⁴⁴ In this way, the statute is a direct signal to American companies that the government will enforce their property rights over space resources. Thus, the CSLCA's conferral of property rights under the extraction interpretation does not forward a purely libertarian notion of private property. Rather, it constitutes a "power play" that extends geopolitics and competing national economies into the space resources regime. By thus seeking to expand State sovereignty, such conferral infringes upon the OST's anti-imperial policy.

2. Colonial and Imperial Histories: The Property/Sovereignty Distinction and the Construction of Natural Rights in Extraterritorial Domains

Historically, colonial and imperial regimes conferred property rights in extraterritorial domains as a means of extending sovereignty. This subsection highlights two imperial logics in the extraction interpretation that borrow from these histories. This historical critique further bolsters this subsection's claims that the extraction interpretation would lead the CSLCA to infringe upon the OST's anti-imperial policy by conferring property rights over space resources.

First, colonial and imperial regimes often distinguished property from sovereignty to extend their sovereignty in extraterritorial domains. This parallels the abovementioned justifications of the extraction interpretation. The prior discussion of Mitchell's "State as effect" showed that colonial and imperial projects drew bright lines between sovereignty and property in order to conceal larger political orders.¹⁴⁵ Similarly, discussing Cohen's work on this subject, Elizabeth Mensch writes that empires made such a distinction in order to "mask[] the reality of economic and political power."¹⁴⁶ Describing

144. See *supra* note 36.

145. Mitchell argues that this line-drawing is intrinsic to the law of property as rooted in "the principle of abstraction," which is conditioned on asymmetric power relations in which the "private right [of property as control over things] (*dominium* in Roman law) was contrasted with sovereignty (*imperium*), or the rule over people. . . . But in practice, in both Europe and Egypt, property was a power relation among people as well as things." TIMOTHY MITCHELL, *supra* note 108, at 70; see also Craig Foster, *Excuse Me, You're Mining My Asteroid: Space Property Rights and the U.S. Space Resource Exploration and Utilization Act of 2015*, 2016 U. ILL. J.L. TECH. & POL'Y 407, 417–18 (2016) (positing Roman law doctrine of *pedis possessio*, or first occupation, might permit space resource extraction because it is distinct from appropriation); cf. DiMaria, *supra* note 86, at 431–32 (assuming *imperium/dominium* distinction).

146. Mensch, *supra* note 141 (writing Cohen suggested "the whole liberal worldview of

American exploitation of indigenous lands, Michael Burger and Paul Frymer also write that this distinction allowed the likes of Francisco de Vitoria, Hugo Grotius, and Alberico Gentili to use property rights, based on discovery and labor theories, to extend sovereignty during imperial encounters in the Americas, Africa, and South Asia.¹⁴⁷ Hence, the extraction interpretation would extend the imperial logic of the property/sovereignty distinction into the space regime.

Second, the extraction interpretation parallels imperial and colonial regimes' construction of universal natural rights in and free access to extraterritorial domains. Historically, colonial and imperial projects constructed universal natural rights in such domains, often rights to freely access spaces deemed commons or *terra nullius* (not subject to ownership but available for private or State possession or occupation). For example, Kate Miles situates the "plac[ing of] property and commerce at the centre of international law" within "a deeply problematic" tradition of such legal "constructs" or "fictions" as justifications for colonial and imperial projects.¹⁴⁸ Imperial categorizations of extraterritorial domains as commons or *terra nullius* and subject to constructed universal private property rights mirror the extraction interpretation's construction of property rights over space resources. This is clear in the fact that proponents of the extraction interpretation argue that space resources are available for "use and exploration" under Article I of the OST, without reconciling such

(private) rights and (public) sovereignty mediated by the rule of law was only a mirage, a pretty fantasy that masked the reality of economic and political power").

147. Michael Burger & Paul Frymer, *Property Law and American Empire*, 34 U. HAW. L. REV. 471, 480–83 (2012). Furthermore, the appeal to the property/sovereignty distinction subscribes to a subset of Western philosophy. Cohen, *supra* note 141 (other kinds of law "ma[de] no such distinction"). Likewise, Talal Asad has shown that imperial regimes used Locke's labor theory to render property "European." TALAL ASAD, FORMATIONS OF THE SECULAR 130–34, 167–68 (2003). The discovery theory of property states that an individual owns property that he or she is the first to discover.

148. Miles, *supra* note 119 (on Vitoria and Grotius's legal constructions justifying imperialism); see GIL ANIDJAR, BLOOD: A CRITIQUE OF CHRISTIANITY 13–18 (2014) (drawing on Carl Schmitt's *The Nomos of the Earth in the International Law of Jus Publicum Europaeum* and Zygmunt Bauman's concept of "liquid modernity" to explain legal designation of sea and New World as "free spaces" justified colonial expansion); Vandana Shiva, *The Seed and the Earth: The Colonization of Regeneration*, 13 CAN. WOMAN STUD. 23, 24–26 (1993) (arguing designation of New World as *terra nullius* facilitated exploitation of indigenous peoples and their lands and resources); see also Burger & Frymer, *supra* note 147, at 522 (showing creation of "global protectionist scheme" under natural rights theories in international law "promotes the expansion of Western culture and ideas into these foreign sovereignties, amounting to 'old-fashioned, Western-style imperialism"). See generally JEREMY WALDRON, THE RIGHT TO PRIVATE PROPERTY (1988) (critiquing Locke's labor theory, among other natural rights theories of property).

provisions with Article II's non-appropriation principle.¹⁴⁹ This is also clear in proponents' argument that private entities can extract space resources under a universal labor theory.¹⁵⁰ As such, the extraction interpretation could continue the historical trend of constructing natural rights in extraterritorial domains to justify expansions of sovereignty.

Despite the use of these imperial logics by proponents of the extraction interpretation, it is important to note that such uses do not necessarily mean that the extraction interpretation is per se colonialist or imperialist. However, when read amidst the other postcolonial dimensions of the extraction interpretation discussed throughout this Note—such as the postcolonial techno-politics of the CSLCA or the history of the OST negotiations during a key moment for the postcolonial world—the existence of these theoretical frameworks bolsters the claim that the extraction interpretation infringes upon anti-imperial concerns embodied in the OST. As the political philosopher Jodi Dean writes, “[S]uch colonial rhetoric disrupts the [American] space program’s smooth presentation of democratic freedom.”¹⁵¹

C. Conclusion: Toward the Already-Obtained Interpretation

This part demonstrated that the extraction interpretation, which holds that the CSLCA authorizes U.S. citizens to extract space resources based on a labor theory, infringes upon the OST's anti-imperial policy in two ways. First, it presumes that private extraction is neatly distinguishable from a claim of sovereignty. This disregards the contiguous relationship between State and private resource extraction. In this relationship, private activity in space mining expands State power, continuing the imperial logic of the “State as effect.” Second, the extraction interpretation would render the CSLCA a State conferral of property rights over space resources. According to property theory and the history of imperialism and colonialism, such conferral amounts to a claim of sovereignty.

Thus, a policy reading of the OST dispels the ambiguities regarding the permissibility of the extraction interpretation and ultimately renders this interpretation unfavorable. Instead, the CSLCA should be read in line with the already-obtained interpretation, which holds that the CSLCA entitles U.S. citizens to property rights over space resources that have already been obtained according to some

149. *See supra* note 82.

150. *See supra* notes 31, 79.

151. DEAN, *supra* note 108, at 20.

presently undecided regime. This is a narrower reading that avoids infringing on the OST’s anti-imperial policy by setting aside the legal question of extraction for future determination, as contemplated in parts of the CSLCA’s Record. Part III contemplates how such future determination can abide by the OST’s anti-imperial policy.

III. PROPOSALS FOR THE FUTURE OF SPACE RESOURCE GOVERNANCE: CIL, ALTERNATIVE COMMONS AGREEMENTS, AND DEVELOPMENT

Although space mining is at least a decade away,¹⁵² it is important that the U.S. government, private actors, and the international community begin to contemplate how to regulate these activities. This will provide certainty for investors to support space mining today and will address Global South concerns about global inequality and access to space. In this context, Part III provides guidance for a future space resources regime that takes into account the OST’s anti-imperial policy. Section III.A argues that CIL development based on subsequent conduct under the extraction interpretation would infringe upon the OST’s anti-imperial policy. Section III.B proposes that the international community pursue multilateral agreements as a first step toward developing a space resources regime. In order to align with the OST’s anti-imperial policy, these agreements should balance the interests of Global North and South States by employing organizationally diverse models, which are property arrangements that mix private and collective ownership, such as the semi-commons or liberal commons. Section III.C raises lingering problems for space law in the context of development and the Global South.

A. CIL Based on Subsequent Mining Would Infringe upon the OST’s

152. Thomas Heath, *Space-Mining May Be Only a Decade Away. Really.*, WASH. POST (Apr. 28, 2017), https://www.washingtonpost.com/business/space-mining-may-be-only-a-decade-away-really/2017/04/28/df33b31a-29ee-11e7-a616-d7c8a68c1a66_story.html [https://perma.cc/KF3E-VLXF]; see Paul Rincon, *Hayabusa 2 Rovers Send New Images from Ryugu Surface*, BBC (Sept. 27, 2018), <https://www.bbc.com/news/science-environment-45667350> [https://perma.cc/BVL7-U7AG] (on Japanese space agency’s asteroid rovers, which were released onto the asteroid Ryugu on Sept. 21, 2018); RAM JAKHU, JOSEPH PELTON, & YAW NYAMPONG, *SPACE MINING AND ITS REGULATION* 13–19, 23–40 (2017) (on scientific, technological, and economic possibilities of space mining); *supra* note 133 (on Goldman Sachs’s space mining report); Roth, *supra* note 22, at 830–33 (on economic and scientific potential of space mining); *Opening New Mines*, MISSION 2016: FUTURE STRATEGIC NAT. RESOURCES, <http://web.mit.edu/12.000/www/m2016/finalwebsite/solutions/newmines.html> [https://perma.cc/QF8M-5KJV].

Anti-Imperial Policy

CIL development based on subsequent mining under the extraction interpretation would infringe upon the OST's anti-imperial policy. Some proponents of the extraction interpretation suggest that the CSLCA constitutes a "first step" toward CIL development.¹⁵³ They propose that the international community should await subsequent mining as State practice under the extraction interpretation.¹⁵⁴ Presumably, in this future scenario, such unregulated mining would produce a CIL regime governed by natural rights theories based on first discovery, first possession, or labor. This section argues that this CIL proposal would allow technological, economic, and political asymmetries to shape international law. This section makes this argument by re-assessing historical examples. These examples show how such asymmetries have thus far shaped regimes in space and other extraterritorial domains.

1. Revisiting Asymmetries in the OST Negotiations

U.S. and other Global North States' political, technological, and economic advantages over Global South States allowed these States to disregard the concerns of Global South States during OST negotiations. This is most noticeable in disagreements over Article I's requirement that space be used freely as the "province of all mankind" and "irrespective of . . . economic or scientific development."¹⁵⁵ As discussed, some Global South States proposed that this provision limit resource exploitation or require the sharing of technologies or resources in space.¹⁵⁶ The United States and U.S.S.R. held that these provisions should not entail such a collectivist meaning but should merely prevent States and their citizens from absolute exclusion of each other's use of space.¹⁵⁷ Ultimately, as discussed, the issue did not give rise to significant debate in the *travaux*, and the United States's and U.S.S.R.'s interpretation has predominated.

153. Blount & Robison, *supra* note 56, at 181–82 (suggesting other States can reject the extraction interpretation or that subsequent mining can affirm it, writing that the CSLCA is an "incremental advance in our understanding of the international rights and obligations contained within the ambiguous text"); Myers, *supra* note 79, at 108–09 (suggesting subsequent conduct under the CSLCA can establish a CIL space resources regime "set by space-faring states").

154. See *supra* note 153.

155. OST, *supra* note 3, art. I.

156. See *supra* notes 65–68 and accompanying text.

157. See *supra* notes 69–79 and accompanying text.

It is possible that this interpretation predominated because most other countries agreed with it, but subsequent failed treaties proposed by Global South States—the Moon Agreement and the Bogotá Declaration of 1976, addressed in the next two subsections—suggest that this might not have been the case. These failed treaties seem to follow up on the U.S.S.R.'s proposal to table the question of equitable distribution of scientific information, technology, and property rights for "future developments" as new space technologies and knowledge about resources in space arise.¹⁵⁸ Indeed, it is not clear whether the predominant interpretation is significantly more authoritative than the collectivist interpretation proposed by some Global South States, given the latter interpretation's continuing use by some of those States.¹⁵⁹ Furthermore, a few Global South States claim that the United States and U.S.S.R. were not upfront in sharing information about their space capabilities and their knowledge about the potential economic benefits of space at the time of negotiation.¹⁶⁰ This is despite the U.S.S.R.'s above proposal and Global South States' insistence during the OST negotiations that "steps should be taken to ensure that they [countries which did not yet participate in space exploration] were kept fully abreast of space activities."¹⁶¹ At any rate, American and Soviet technological and economic dominance of the space regime seems to have rendered contrary legal positions impotent, as the next example makes clear.

2. Asymmetries in the Failure of the Moon Agreement

The Moon Agreement presents another example relevant to space resources in which American and Soviet refusal to partake in a space treaty regime proposed by Global South States resulted in that regime's failure. This failure was due to political, technological, and economic asymmetries. Article 11 of the Agreement declared space resources the CHM and proposed a tentative governance structure for

158. U.N. Doc. A/AC.105/C.2/SR.63, *supra* note 51, 10–11 (remarks by the U.S.S.R.).

159. Filho, *supra* note 44.

160. LEE, *supra* note 60, at 171–72 (discussing this as a reason for the Bogotá Declaration); Declaration of the First Meeting of Equatorial Countries, Dec. 3, 1976, http://www.jaxa.jp/library/space_law/chapter_2/2-2-1-2_e.html [https://perma.cc/38XU-N58N] [hereinafter Bogotá Declaration] (during the drafting of the OST, "developing countries could not count on adequate scientific advice and were thus not able to observe and evaluate the omissions, contradictions and consequences of the proposals which were prepared with great ability by the industrialized powers for their own benefit"); *see infra* subsection III.A.3.

161. U.N. Doc. A/AC.105/C.2/SR.64, *supra* note 51, at 14 (remarks by Lebanon).

space resource extraction.¹⁶² Importantly, the Agreement did not wholly proscribe resource exploitation but merely began the first steps toward a regulatory regime that would manage extraction according to multilateral agreement.¹⁶³ The United States did not agree to this based on the aforementioned “free rider” argument, and Senate hearings on the Moon Agreement clearly indicate an intent to resist Global South attempts to extend the use of CHM from the parallel context of the deep seabed regime in the Law of the Sea Convention (“LOSC”) at the time¹⁶⁴ into the space resources regime.¹⁶⁵ Although seventeen States ratified or acceded and four signed, mostly from Global South States,¹⁶⁶ the Agreement is generally not regarded as having binding force because no major spacefaring State has agreed to it.¹⁶⁷ Again, this shows how Global North States, because of their technological and economic capabilities, can

162. Moon Agreement, *supra* note 85, art. 11 (declaring the Moon and its natural resources to be the CHM; barring any “state, international intergovernmental or non-governmental organization, national organization or non-governmental entity or . . . natural person” from property claims over the Moon’s surface, subsurface, or “natural resources in place”; requiring States to establish an international regime “to govern the exploitation of the natural resources of the moon as such exploitation is about to become feasible”).

163. *See supra* note 98 (discussion of Moon Agreement); *cf.* Roth, *supra* note 22, at 843 (reading the Moon Agreement to “unequivocally prohibit” space resource extraction).

164. LOSC, *supra* note 53. This seabed regime preceded later changes favoring the Global North. The deep seabed regime in the LOSC governs conduct, technologies, and economic distribution related to resources extracted from the ocean floor located beneath the high seas. *See infra* notes 178–179.

165. *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies: Hearings Before the Subcomm. on Sci., Tech., and Space of the S. Comm. on Commerce, Sci., and Transp.*, 96th Cong. 84 (1980) (letter from the American Bar Association, arguing against an equitable CHM regime for space resource extraction because “the expectation is that U.S. signature and ratification of the ‘common heritage’ moon treaty would precommit the Senate to acceptance of the same principle of control by the less developed countries and the Soviet bloc of the resources of the seabed and of Antarctica”); *id.* at 11 (Statement of Robert B. Owen) (expressing concern that the use of CHM in the Moon Agreement seems to continue the LOSC’s deep seabed regime, in which “negotiations to date have been tilted in favor of the Third World as against the developed nations, including the United States”); Myers, *supra* note 79. This reading also reflects Ambassador Goldberg’s clarification of Article I in the Senate hearings on the OST. OST Hearings, *supra* note 43. *See generally* Scott Shackelford, *The Tragedy of the Common Heritage of Mankind*, 27 STAN. ENVTL. L.J. 109 (2008) (on differences between Global North and South conceptions of the CHM that have led to the concept’s irresolution in the governance of the seas, Antarctica, and space).

166. Status of Moon Agreement, U.N. TREATY COLLECTION, *as of* Jan. 16, 2018, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXIV-2&chapter=24&clang=_en [<https://perma.cc/E9NB-AD24>].

167. *See supra* note 85.

choose to act—or, in this case, not act—in such a way as to render ineffective regimes that would seek to mitigate these capabilities’ asymmetries. Without the capabilities necessary to access space, Global South States only have recourse to lawfare. By contrast, Global North States, by virtue of their disproportionate ability to access space, can shape the law by simply choosing not to participate.

3. Asymmetries in the Failure of the Bogotá Declaration

The Bogotá Declaration highlights how American and Russian technological and economic asymmetries have shaped property rights in other aspects of space law. In the Declaration, eight equatorial States claimed sovereignty over the geostationary orbital slots above their territories.¹⁶⁸ Because those slots possessed a physical connection with equatorial territory, the States argued that the slots were natural extensions of their territories.¹⁶⁹ Geostationary orbit was and remains one of the most valuable orbits due to its use for telecommunications satellites. Hence, the Declaration’s signatories were concerned that Global North States would fill these orbital slots before Global South States could do so.¹⁷⁰ The Declaration also states that Global North States were not forthright about their space capabilities, an issue Global South States had emphasized during the OST negotiations.¹⁷¹

The Declaration concerns orbital space as a resource, not minerals or other resources found in situ in a celestial body or asteroid. However, the signatories’ policy concerns are analogous to those of Global South States who oppose the extraction interpretation because Global North States will extract the most easily accessible and valuable space resources before other States develop the capabilities to do so.¹⁷² On this point, it is telling that Brazil, an observer

168. Bogotá Declaration, *supra* note 160.

169. *Id.* (“[A] physical fact linked to the reality of our planet because its existence depends exclusively on its relation to gravitational phenomena generated by the earth”). This allowed the parties to rely on the *jus cogens* principle that states have absolute control and sovereignty over their natural resources. Dan St. John, *The Bogotá Declaration and the Curious Case of Geostationary Orbit*, VIEW FROM ABOVE (Jan. 31, 2013), <http://djilp.org/3494/the-bogota-declaration-and-the-curious-case-of-geostationary-orbit> [<https://perma.cc/M8CB-764E>]; Ferdinand Agama, *Effects of the Bogotá Declaration on the Legal Status of Geostationary Orbit in International Space Law*, 8 NNAMDI AZIKIWE U.J. INT’L L. & JURIS. 24, 24 (2017).

170. Bogotá Declaration, *supra* note 160.

171. *Supra* note 160.

172. *Id.*; LEE, *supra* note 60, at 172 (reviewing “power inequality of industrialised

on the Declaration, criticized the CSLCA during a 2017 symposium on space resource extraction at the UNCOPUOS LSC.¹⁷³ But most commentators hold that the Declaration has not authoritatively undermined the OST's non-appropriation principle and does not pose a conflicting norm in CIL because most States, including some of the Declaration's signatories, have signed the OST.¹⁷⁴

Nevertheless, the Declaration demonstrates how laws pertaining to resources in space are partly shaped by asymmetries in power. Surabhi Ranganathan recontextualizes the Declaration in terms of asymmetries of power in treaty conflicts. She shows that Global South States are less able to counteract multilateral treaty regimes and that conflicting treaties almost always require U.S. support in order to succeed.¹⁷⁵ She offers the Declaration as a typical example of this, having failed due to the absence of agreement from the most powerful spacefaring States at the time, the United States and U.S.S.R.¹⁷⁶ "Strategically created treaty conflicts may thus be particularly the weapon of the most powerful States," Ranganathan writes.¹⁷⁷ In this way, allowing technological and economic asym-

states" in the formation of space law). See generally Jakhu & Buzdugan, *supra* note 67 (on "global public interest" in space).

173. Filho, *supra* note 44; see Mark Neocleous, *Police Power, All the Way to Heaven*, RADICAL PHILOSOPHY, Nov–Dec. 2013, at 5, 8 (situating the Declaration in the context of military and sovereign power); cf. SEAN T. MITCHELL, *supra* note 108, at 27–28, 94–96 (discussing Filho's advocacy of the Brazilian space program, whose neoliberal, nationalist, and commercial visions have operated to the detriment of local welfare); see also Frans G. von der Dunk, *Asteroid Mining: International and National Legal Aspects*, 26 MICH. ST. INT'L L. REV. 83, 98–99 (2017) (summarizing a Brazilian representative's critique of the U.S. legislation "at an early stage," during deliberations in the Technical and Scientific Subcommittee of UNCOPUOS).

174. LEE, *supra* note 60, at 171–79; see Agama, *supra* note 169, at 33–34 (noting that, while the International Telecommunication Union now assigns orbital slots through a non-binding regulatory regime, Global South States' satellites still comprise a minority of satellites in geostationary orbit).

175. SURABHI RANGANATHAN, STRATEGICALLY CREATED TREATY CONFLICTS & THE POLITICS OF INTERNATIONAL LAW 15–16 (2014). This is despite her argument that "less powerful States" have been able to "counter more powerful ones" by "assert[ing] their numerical superiority" when negotiating new treaties, reinterpreting prior regimes, and establishing various international agreements. *Id.* at 16. Her overall argument that Global South States can shift the contours of international law by forming treaties and agreements that conflict with other elements of international law is an interesting potential solution that addresses the central problem of legal uncertainty in this Note. On agreements, see Section III.B.

176. RANGANATHAN, *supra* note 175, at 16.

177. *Id.*; see also *id.* at 6–16, 27 ("[T]reaties are no more than the formal expression of the underlying configuration of State power and interests."); Haris Durrani, *The Bogotá*

metries to shape international law infringes upon the OST’s anti-imperial policy.

4. Analogous Histories: Resources in the Deep Seabed and Expropriated from Indigenous Peoples

This uneven history of the formation of space law continues a broader imperial and colonial history in which Global North States’ asymmetric political, technological, and economic capabilities shaped regimes governing extraterritorial domains. One finds an analogous example in the complex history of the law governing the deep seabed under the LOSC.¹⁷⁸ There, Global South States’ attempts to establish a treaty regime for the management of resource extraction presents an instance in which the United States used its political and economic weight to co-opt a multilateral regime for resources in an extraterritorial domain.¹⁷⁹ Furthermore, there are a va-

Declaration: A Case Study on Sovereignty, Empire, and the Commons in Outer Space, THE BULLETIN—COLUM. J. TRANSNAT’L L. (Dec. 5, 2017), <http://jtl.columbia.edu/the-bogota-declaration-a-case-study-on-sovereignty-empire-and-the-commons-in-outer-space> [<https://perma.cc/J2B4-B9L4>]; Haris Durrani, *The Bogotá Declaration: A Global Uprising?*, COLUM. CTR. FOR CONTEMPORARY CRITICAL THOUGHT—UPRISING 13/13 (Jan. 2018), <http://blogs.law.columbia.edu/uprising1313/haris-a-durrani-the-bogota-declaration-a-global-uprising> [<https://perma.cc/B3X3-5HNL>]; Haris Durrani, *Property, Power, and Law in “the New Dimension,”* POET’S COUNTRY, Summer 2017.

178. LOSC pt. XI, *supra* note 53; Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea, Nov. 16, 1994, 1836 U.N.T.S. 3 (entered into force July 28, 1996) [hereinafter Implementation Agreement]. This Note does not address the high seas at length, given the roughness of that analogy to space resource governance. *See generally* Virginie Blanchette-Séguin, Commentary, *Reaching for the Moon: Mining in Outer Space*, 49 N.Y.U. J. INT’L L. & POL. 959, 967–69 (criticizing analogies between space mining and fishing on the high seas).

179. RANGANATHAN, *supra* note 175, at 198, 371–79 (conceding that “there is a basis for critics to conclude that their [Global South States’] needs have not been adequately met”; reviewing the deep seabed regime); R.P. Anand, *Common Heritage of Mankind: Mutilation of an Ideal*, in STUDIES IN INTERNATIONAL LAW AND HISTORY: AN ASIAN PERSPECTIVE 180 (2004) (arguing that this regime allows Global North States to exploit the deep seabed “on commercial terms, irrespective of the needs and interests of the weaker members of the international community”); Edwin Egende, *Chapter 4: Africa and Part XI of Law of the Sea Convention (LOSC) 1982 Provisions as Amended by the 1994 Implementation Agreement*, in AFRICA AND THE DEEP SEABED REGIME: POLITICS AND INTERNATIONAL LAW OF THE COMMON HERITAGE OF MANKIND 75 (2011) (arguing that the regime constitutes “a triumph of free market liberalism over the regulated rather protectionist regime” prior to the Implementation Agreement and “confirms that real power in the international system still remains firmly with the western liberal democratic powers who . . . wrest[ed] further concessions for themselves”); Carol B. Thompson, *International Law of the Sea/Seed: Public Domain Versus Private Commodity*, 44 NAT. RESOURCES J. 841, 846–49 (quoting Indonesian

riety of other instances in which U.S. technological, economic, and political asymmetries shaped international agreements over extraterritorial domains at the expense of indigenous peoples, such as in lands occupied by indigenous peoples in the Americas and plant genetic resources (“PGRs”) in the Global South.¹⁸⁰

5. Conclusion: Asymmetries in Subsequent Mining

In sum, this section pushes against the proposal that the extraction interpretation should constitute a “first step” toward CIL on space resource extraction. The international community should not wait for extraction to begin in order to develop CIL on the issue. Regarding the CSLCA as a CIL development would preference U.S. and Global North positions over that of Global South States, as occurred in negotiations over the OST, the Moon Agreement, deep seabed governance, and PGRs. Moreover, waiting for mining to occur would allow States that are the most technologically and economically advanced to shape the law through their conduct, as occurred with the Bogotá Declaration, the Moon Agreement, and indigenous lands. Indeed, this would be similar to colonial and imperial projects that used first occupation or labor theories to justify subsequent conduct that expanded their sovereignty, as discussed in subsection II.B.2. The CIL proposal would continue these histories, thereby infringing upon the OST’s anti-imperial policy.

B. Toward an Alternative Commons Agreement: Embracing Organizational Diversity

Multilateral agreements may provide a way forward. These could be binding agreements or “soft law” agreements, which are not legally binding.¹⁸¹ Although the former provides the security of a binding agreement,¹⁸² it is more difficult to gather political support for them; by contrast, soft law agreements, if well-constructed, can ensure adherence through dependencies on economic, technological,

representative Hasjim Djalal’s resistance to the Reagan Administration’s pre-Implementation Agreement proposal to extend the freedom of the high seas to this regime).

180. See generally Burger & Frymer, *supra* note 147.

181. “Soft law” agreements are those between States that do not bind such parties by law but, rather, set out guidelines, norms, and policies for cooperation and conduct.

182. Henry Hertzfeld, Presentation at Dentons Symposium: Managing Space, Power Point, slides 16, 18 (Oct. 20, 2016) (advocating for bilateral and multilateral binding agreements in space law).

and diplomatic relationships.¹⁸³ Section III.A showed that CIL is an inadequate means of determining the space resources regime. Meanwhile, the practicality of a new space treaty is slim.¹⁸⁴ Hence, international agreements can provide first steps toward establishing a practical space resources regime. The OST’s anti-imperial policy would clearly prefer that these agreements are multilateral, balancing the interests of Global North and South States.

Most commentators on the CSLCA take a binary “socialist versus libertarian” approach to the law of space mining.¹⁸⁵ This is patent in spacefaring States’ refusal to become party to the Moon Agreement. Prominently, Article 11 outlines a framework for natural resource management on the Moon that directly pertains to Global South concerns.¹⁸⁶ Reading these provisions, some commentators adopt the binary approach, claiming that the Agreement prohibits extraction.¹⁸⁷ This is inconsistent with a plain reading of Article 11, which shows that the article offers a tentative proposal for managing extraction rights, not a total ban.¹⁸⁸ Likewise, in commentary on the

183. See Matthew Waxman, *Cybersecurity Law: Domestic and International Issues* (Draft Chapter, Fall 2017) (forthcoming).

184. *Id.* (demonstrating the difficulty of ratifying a cybersecurity treaty due to technological change and political barriers, advocating for soft law agreements); Hertzfeld, *supra* note 182, slide 11 (asserting that “international ‘governance’” is not possible today).

185. For an exception to this, see DiMaria, *supra* note 86, at 434–35, 439–40 (discussing analogies to water law and proposing a sunset provision on the CSLCA); see also Shackelford, *supra* note 165, at 162–67 (advocating for a limited leasehold or auction approach to property rights in the “international commons,” although not discussing the CSLCA, which would arrive years later).

186. Moon Agreement, *supra* note 85, art. 11 (declaring the Moon and its resources as the CHM).

187. See *supra* note 174.

188. Moon Agreement, *supra* note 85, art. 11 (contemplating governance of lunar resources “as such exploitation is about to become feasible”); see Frans von der Dunk, Interview: *Space Lawyer Frans von der Dunk: A Less Strict Form of the Law of the Sea Might be the Way to Go for Asteroid Mining*, LAWLESS.TECH (Sep. 20, 2018), <https://lawless.tech/space-lawyer-frans-von-der-dunk-a-less-strict-form-of-the-law-of-the-sea-might-be-the-way-to-go-for-asteroid-mining/> [https://perma.cc/PRN5-TKXX] (“And if you then try to look at what happened in space law, first of all, we should recognize that the Moon Agreement, which is the only treaty in space law where the common heritage of mankind was mentioned, was only ratified by 18 countries, and the only real space-faring country among those is Australia. If you look at big space-faring nation states—the US, Russia, China, India, Brazil, Nigeria, the UK, France, Germany, Canada, Japan, and so on,—they are all not parties to the Moon agreement. So, number two, if you look at the Moon Agreement, it only refers to the common heritage of mankind. It doesn’t indicate any of the details. It just talks about the international regime. And that still leaves the question open. Are we going for a very tight heavyweight international regime, such [*sic*] the one originally

CSLCA, many presume that CIL based on natural rights theories of private property is the only reasonable means of adapting international law to the unpredictable technological development of space mining, which necessitates a Demsetzian approach.¹⁸⁹ In this view, an alternative regime not based on private property would impractically take the form of a rigid collectivist structure that distributes technology, resources, and wealth related to private resource extraction between all States participating in that regime.

Section III.B proposes that future agreements pursue a regime that diversifies collective and private property arrangements. In so doing, it favors a more nuanced and practical approach than that found elsewhere in commentaries on the CSLCA. It recommends that negotiations for future agreements pursue an organizationally diverse model, such as the semi-commons or liberal commons,¹⁹⁰ for the space resources regime.

1. Organizational Diversity: Semi-Commons and Liberal Commons

Before addressing the relevance of organizationally diverse models, it is important to briefly define them. Organizationally diverse models vary collective and private ownership.¹⁹¹ Semi-commons entail the “opportunistic[] mix[ing of] public and private ownership.”¹⁹² Henry Smith famously described medieval European open-fields as semi-commons, wherein participants privately owned parcels of land for farming purposes and collectively owned the entire land for grazing purposes.¹⁹³ Meanwhile, liberal commons entail

intended for the law of the sea? Are we going for a very lightweight international regime?”).

189. See *supra* note 152.

190. See generally Henry Smith, *Semicommon Property Rights and Scattering in the Open Fields*, 29 J. LEGAL STUD. 131 (2000); Hanoch Dagan & Michael A. Heller, *The Liberal Commons*, 110 YALE L.J. 549 (2001).

191. Dagan & Heller, *supra* note 190, at 559 n.35; see Robert Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1387–88 (1993).

192. Ellickson, *supra* note 191, at 1387.

193. See generally Smith, *supra* note 190. Arguably, commons are in fact semi-commons. For example, Garrett Hardin’s classic illustration of a “tragedy of the commons,” the overgrazing of farmland, involves mixed ownership over “the same physical resource,” wherein actors own the land collectively but the cattle privately. However, Lee Fennell distinguishes the two regimes: A commons distributes burdens equally among participants, while a semi-commons allows participants to selectively burden one another. Nevertheless, Fennell argues that, in practice, participants rarely share burdens equally. Thus, most “commons” are ultimately semi-commons. Lee Fennell, *Commons, Anticommons, Semicommons* 16–17 (John M. Olin Program in Law & Econ. Working Paper No. 457, Feb.

the "var[iation] of initial bundles of rights and transfer rules,"¹⁹⁴ as Michael Heller and Hanoach Dagan articulate. In a liberal commons, participants collectively own a resource while retaining the autonomy of a "right to exit" the regime.¹⁹⁵ It includes various other elements, such as a "liberal approach to contracting" that allows participants to tailor their individual rights and obligations in the regime.¹⁹⁶

Generally, these models provide a framework for balancing Global South States' equitable concerns vis-à-vis the OST's anti-imperial policy with the private property interests of Global North States. For space resource governance, organizational diversity offers a practical middle ground between the absolute freedom of a private property regime and the strict equitable distribution of a rigid commons regime. By promoting nuanced models, such regimes embrace Dagan and Heller's maxim that "[w]ell-structured law can, and often does, mediate liberty and cooperation."¹⁹⁷ Global South States might prefer the semi-commons' mixing of ownership, since the liberal commons' right of exit might allow Global North States to opt out of certain obligations in the regime or out of the regime entirely. However, it might be possible to build into a liberal commons regime benefits that would incentivize Global North States not to exit. After all, such benefits would be crucial to the enforcement of a soft law agreement, which is not legally binding. These benefits might include access to natural resources in the territory of participating Global South States¹⁹⁸ or reduction of prices on raw materials ex-

1, 2009).

194. Ellickson, *supra* note 191, at 1387; Dagan & Heller, *supra* note 190, at 559 n.35.

195. Dagan & Heller, *supra* note 191, at 602, tbl. 1.

196. *Id.* at 596, 602 tbl. 1.

197. *Id.* at 553.

198. For example, consider Chinese relations with Nigeria, Venezuela, and Bolivia, in which China has aided Global South States in exchange for access to valuable resources, including agricultural resources, raw materials and metals, and oil. A prominent aspect of these development policies has been to provide these countries with satellites. *Analysts Say China Poised to Become Leader in Space*, VOA NEWS (Apr. 20, 2010), <https://www.voanews.com/a/analysts-say-china-poised-to-become-leader-in-space-91720434/165601.html> [<https://perma.cc/8ZL6-RM54>] (quoting Heritage Foundation Analyst Dean Cheng: "[I]t's no accident that Venezuela and Nigeria, of course, both have oil. And Bolivia, interestingly, is one of the world's largest sources of lithium, which if you think we're all going to drive electric cars, is going to be a vital source."); see AJEY LELE, ASIAN SPACE RACE: RHETORIC OR REALITY? 219, 230 (2012) ("The Chinese assistance to the space programmes of various states helps them to extend their technological footprint globally. This also enables them to establish intergovernmental cooperation in different regions of the world."); Chung-chian Teng, *Democracy, Development and China's Acquisition of Oil in the Third World*, in DANCING WITH THE DRAGON: CHINA'S EMERGENCE

tracted from Global South States for rocket and spacecraft manufacturing.¹⁹⁹

This section simply recommends the international community look toward these as practical models when considering future agreements. Given that commentators on the CSLCA have not even suggested these models, such a broad recommendation is a simple but fundamental first step toward a sensible space resources regime. Discussions at the U.N. and other international bodies ought to consider these alternative arrangements of property rights as a means toward framing formal legal developments or informal policy. Likewise, national legislatures, like the U.S. Congress, should acknowledge the ways in which a unilateral regime based on private property rights can frustrate attempts to form mixed property regimes through multilateral consensus.

2. Prior Models: The Moon Agreement and Deep Seabed Governance

The diversification of private and collective property rights is not unprecedented. Prior models for the distribution of property rights in extraterritorial domains, regardless of their status as binding law, offer useful factors that the international community should consider in forming agreements for an alternative, organizationally diverse regime. Briefly, this subsection considers several elements of the property rights regime under the LOSC and the tentative property arrangements proposed by the Moon Agreement.

One such model is the governance of deep seabed resource extraction under the LOSC, despite its aforementioned setbacks. This regime's requirement that a central international body²⁰⁰ governs the deep seabed, and licenses State and private mining, is useful. In the context of private space resource extraction, this kind of central body would help States dodge the appropriation problem of State conferral of property rights discussed in section II.B. This might also

IN THE DEVELOPING WORLD 111, 111–12 (Dennis Hickey & Baobang Guo eds., 2010).

199. Consider the relationships between the U.S. space industry and government and the Alcoa Company in Latin America during the mid to late twentieth century, in which American commercial enterprises mined for bauxite (aluminum) to build satellites, rockets, and other space-related technologies. See generally Mimi Sheller, *Space Age Tropics, in SURVEYING THE AMERICAN TROPICS: A LITERARY GEOGRAPHY FROM NEW YORK TO RIO* 131 (Maria Cristina Fumagalli, Peter Hulme, Owen Robinson, & Lesley Wylie eds., 2013); MIMI SHELLER, *ALUMINUM DREAMS: THE MAKING OF LIGHT MODERNITY* (2014).

200. This body is the "Enterprise," an organ of the International Seabed Authority (ISA). LOSC *supra* note 53, pt. XI § 4.

help regulate the intertwined relations between private and State actors addressed in section II.A.

Additionally, the seabed regime diversifies private and collective ownership in two ways. First, “site-banking” requires a licensee to identify two areas of equal value, one of which would be set aside for mining by the Enterprise (an organ of the deep seabed regime’s International Seabed Authority) or Global South States.²⁰¹ Second, the deep seabed regime requires a limited amount of “technology transfer,” in which licensees must share mining technology with Global South States.²⁰² In the space regime, preserving some mining sites and technologies for later use by Global South States and their private entities could approach organizational diversity as a middle ground between collectivist and privatized models. For example, perhaps, for each asteroid a company selects for extraction, that company could be required to identify a second asteroid that is of reasonably equal value and accessibility from Earth or to set aside part of the first asteroid. That second asteroid or the portion of the first asteroid would be reserved for future use by private entities from Global South States that are party to the agreement. Moreover, such an approach could actually align with Global North interests, since it might address the problem that, as Goldman Sachs found, “[s]uccessful asteroid mining would likely crater the global price of platinum.”²⁰³ An agreement limiting extraction or otherwise distributing revenues might address this problem by dampening the “disruptive” economic effect²⁰⁴ of full-scale asteroid mining.

201. See RANGANATHAN, *supra* note 175, at 198, 371–79. However, the creation of an international institution that governs property rights in any extraterritorial domain is likely to be a hard sell. Hertzfeld, *supra* note 182, slides 11, 16 (“No comprehensive or international global governance system for outer space will exist anytime soon.”).

202. *Id.*

203. Edwards, *supra* note 133 (quoting the unpublished Goldman Sachs report on space mining).

204. *Id.* Consider Deganit Pakowsky & Roey Tzezana, *The Politics of Space Mining—An Account of a Simulation Game*, 142 ACTA ASTRONAUTICA 10, 10 (2018):

Once space mining, and especially the ability to transport mined materials to Earth, becomes technologically and economically feasible, it will have a dramatic and disruptive effect on the global economy and on world politics. Furthermore, these imports would have dramatic impact on individual state economies and global supply chain economies, and will affect a large number of countries regardless of their space capabilities, bearing significant consequences for security and global stability.

See Abigail Beall, *Space Mining Is Going to Seriously Disrupt Earth’s Economy. And We’re Nowhere Near Ready for the Shock*, WIRED (Jan. 20, 2018), <http://www.wired.co.uk/article/international-laws-are-not-ready-for-space-mining> [https://perma.cc/7BH8-8KBZ] (reporting on Paikowsky and Tzezana’s study).

The Moon Agreement also sought to balance the interests of Global South States and required an international regime for the management of extraterritorial resources.²⁰⁵ Moreover, the Agreement includes a provision worth considering for space resource governance: a built-in requirement that the regime allow for later revision and negotiation as technology develops.²⁰⁶ This would allay libertarian, Demsetzian concerns that a rigid commons regime would not accommodate technological change.

C. Reflections on Development and Space Activities in the Global South

The findings of this Note set aside a lingering issue that deserves attention. This issue arises from the law-and-development context of space activities in the Global South. The so-called Global South perspective in space law, which shares some similarities with those in the law of the sea,²⁰⁷ promotes an international system of property, often based on CHM, that requires some degree of equitable distribution.²⁰⁸ This perspective holds that such distribution should account for the interests of Global South States, given their colonial and imperial histories. However, this view makes an important assumption, which is that granting States these economic and technological benefits will substantially benefit their peoples.

Discourses in law-and-development often dispute this assumption. For example, Chinese programs offer Global South States telecommunications satellites in exchange for Chinese access to natural resources. Ajey Lele suggests that this practice expands Chinese power globally.²⁰⁹ Moreover, these practices might not actually ben-

205. Moon Agreement, *supra* note 85, art. 11 (detailing the main purposes of this regime, including rational management, expansion of opportunities in the use of those resources, equitable sharing, and “special consideration” of balancing interests of developing countries with those that directly or indirectly contributed to lunar exploration).

206. *Id.* art. 18 (facilitating later revision and negotiation to determine the parameters of this regime after the Agreement enters into effect, accounting “in particular [for] any relevant technological developments”).

207. TANAKA, *supra* note 53, at 25 (on “structural changes in the international community due to the independence of former colonized regions in the 1960s”).

208. This is particularly true of the disputes over CHM in the Moon Agreement and the LOSC’s deep seabed regime, which actors in both the Global North and South associated with the New International Economic Order and Non-Aligned Movement during the 1970s. See *supra* notes 104, 163; LEE, *supra* note 60.

209. LELE, *supra* note 198 (“The Chinese assistance to the space programmes of various states helps them to extend their technological footprint globally.”).

efit peoples in these Global South States. Consider States like Nigeria, which grants China access to its raw materials and oil, in exchange for telecommunications satellites.²¹⁰ It is unclear to what degree this space infrastructure directly benefits the everyday Nigerian. Similarly, consider French Guiana, a French territory and former penal colony. French Guiana's imperial history continues to affect the relationship between the Guiana Space Centre, upon which the European space industry relies, and the economic grievances of the French Guianese people.²¹¹

Brazil's space activities form an especially potent case that poses thorny questions for a Global South perspective on the space resources regime. On the one hand, Brazil has historically advocated for an equitable regime in space law based on CHM or similar principles, shaping much of the Global South perspective in space law. This ranges from its introduction of Article I's "irrespective of . . . economic or scientific development" language during the OST negotiations in the 1960s,²¹² to its role in the Moon Agreement and Bogotá Declaration in the 1970s,²¹³ to its contemporary rejections of the CSLCA in the UNCOPUOS LSC as recently as 2017.²¹⁴ On the other hand, as anthropologist Sean T. Mitchell has shown, the Brazilian space program has mixed neoliberal, nationalist, and commercial priorities in the establishment of its Alcântara Launch Center, often to the detriment of Brazilians from marginalized racial, ethnic, and economic communities.²¹⁵ For these communities, the creation and operation of the spaceport has disrupted their means of subsistence and livelihood, while the economic benefits from the spaceport and Brazil's space activities hardly accrue to them.²¹⁶

Nevertheless, in the context of the space resources regime, the uncertainty as to whether benefits to a Global South State will accrue to its people is not grounds to abandon a Global South perspective. Indeed, in some instances, a State's space activities will benefit its people. At the very least, this is a possibility toward which a Global

210. See *supra* note 198.

211. See generally REDFIELD, *supra* note 108 (an anthropological study of imperialism, territoriality, and the Guiana Space Centre). This imperial history continues—as recently as April 14, 2017, protestors shut down the Guiana Space Centre, halting the European space industry for a month over economic grievances in French Guiana. D'Auria, *supra* note 108.

212. See *supra* note 76.

213. See *supra* Part III.A.3.

214. Filho, *supra* note 44.

215. See generally SEAN T. MITCHELL, *supra* note 108.

216. *Id.*

South perspective should direct its efforts. This will likely vary on a case-by-case basis.

Moreover, the development angle on this issue is a double-edged sword that poses contradictions for the Global North as much as the Global South. Consider the Brazilian government's positions during international disputes in space law and mining, which contrast sharply with how Brazilians and their government conceive of their space activities domestically. Whereas Brazil has consistently advocated positions in space law rooted in an equitable concept of "mankind," at home, Brazilians debate their space program in terms of local and national interests.²¹⁷ Mitchell argues that these domestic conflicts within Brazil diverge from how Global North States often conceive of their space programs in terms of a utopian "human future," concluding that "[p]ublicly fantasizing about the 'future of mankind' seems to be the privilege of imperial powers and their privatized descendants."²¹⁸ But, as this Note has shown, Global North States' positions on space law have focused on nationalist interests vis-à-vis the "free rider" problem. This seems to show that, in international disputes over space law and mining, the United States does not conceive of its space activities in terms of a common "human future." These paradoxical U.S. and Brazilian juxtapositions present an interesting phenomenon: Internally, Global North States—or at least the United States—seem to conceive of their activities in terms of common humanity, notwithstanding legislation like the CSLCA, but fail to extend this communal utopianism beyond their borders. By contrast, Global South States—or at least Brazil historically²¹⁹—seem to flip this dynamic.

217. SEAN T. MITCHELL, *supra* note 108, at 94–95. There are other, related discontinuities between Brazilian discourses on space in and outside of their country. For example, the Brazilian government seems to purport an anti-capitalist position in space law discussions on mining at the UNCOPUOS LSC. Filho, *supra* note 44 (critiquing the CSLCA by quoting Harvard Business School Professor Kevin Sharer: "Global capital has no social conscience; it goes where the returns are."). Meanwhile, within Brazil, the country's space industry has often worked in conjunction with military and civilian space activities, and even Filho has situated Brazil's space program in terms of its "commercial potential" in global markets. MITCHELL, *supra* note 108, at 27–28.

218. SEAN T. MITCHELL, *supra* note 108, at 94–95. See generally Durrani 2018, *supra* note 108 (discussing the colonial and imperial history of the "World Picture" and "thinking globally" in outer space).

219. In other development contexts in the Global South, space programs are similarly regarded as nationalist projects. See generally Siddiqi, *supra* note 108; JÖRG MATTHIAS DETERMANN, SPACE SCIENCE AND THE ARAB WORLD: OBSERVATORIES AND NATIONALISM IN THE MIDDLE EAST (2018); Durrani, *The Bogotá Declaration: A Global Uprising?*, *supra* note 177.

It would escape the orbit of this Note to push such issues further, but it is important that they are not neglected in subsequent discourses on legal issues related to space mining, space activities generally, and similar disputes in other extraterritorial domains. It suffices to contend that these lingering, complex law-and-development questions should factor into how future discourses engage with space law, space resource extraction, and postcolonial studies.

CONCLUSION

The CSLCA should be construed under the already-obtained interpretation, not the extraction interpretation. Part I demonstrated the fundamental ambiguity between these two interpretations. Invoking the problem of uncertainty, this part argued that the statute should be construed based on whether the extraction interpretation aligns with international law and policy. Neither conventional nor customary international law resolved this question. Hence, Part II applied a broader policy approach, employing scholarship on colonialism and empire to show how the extraction interpretation infringes on the OST's anti-imperial policy. Because private space resource extraction approaches a claim of sovereignty and because conferral of property rights over space resources constitutes such a claim, the extraction interpretation does not align with the OST's anti-imperial policy. In its place, the already-obtained interpretation allows room for future determination of a space resources regime. Part III provided two proposals for such determination. First, CIL development should not result from subsequent legislation or mining, because this infringes upon the OST's anti-imperial policy. Second, the international community should pursue multilateral agreements that honor the OST's anti-imperial policy, adopting organizationally diverse models, like the semi-commons or liberal commons. Additionally, Part III addressed lingering questions for a Global South perspective on space law. Throughout, scholarship on law, colonialism, and empire provided novel insights that should factor into future discourses on space resource extraction, space law generally, and other regimes governing extraterritorial domains.

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