

COMMON HERITAGE OR PRIVATE PROPERTY? POWER, STRATEGY, AND LAW-MAKING FOR THE DEEP SEABED AND OUTER SPACE

Michael BYERS*

SUMMARY: I. *Introduction*. II. *Deep Seabed Mining*. III. *International Law-Making and Deep Seabed Mining*. IV. *Strategies of International Law-making and Deep Seabed Mining*. V. *Space Mining*. VI. *Interpreting the Outer Space Treaty*. VII. *Travaux préparatoires*. VIII. *Moon Agreement*. IX. *Recent Efforts by the United States to Advance its Position*. X. *Strategies of International Law-Making and Space Mining*. XI. *Conclusion*. XII. *Bibliography*.

I. INTRODUCTION

Deep seabed mining involves the extraction of minerals from beyond the “continental shelf”, 200 nautical miles or more from shore.¹ For three decades, deep seabed mining was the subject of an international law-making contest that pitted the United States against the G-77 group of developing states. Due to the G-77’s collective bargaining, Part XI of the United Nations Convention on the Law of the Sea (UNCLOS) designated the deep seabed the “common heritage of [hu]mankind” and created a mining regime that provided for benefit-sharing and was only available to state enterprises. But in 1994, Part XI was amended at the insistence of the United States to permit the direct involvement of private companies in deep seabed mining.

The extraction of resources in space has never received the same degree of international law-making attention. Space mining is not addressed directly in the 1967 Outer Space Treaty (OST), and while the 1979 Moon Agreement identifies the Moon and other “celestial bodies” as part of the common heritage of [hu]mankind, it also explicitly defers the negotiation

* Professor & Canada Research Chair in Global Politics and International Law, University of British Columbia; Co-Director, Outer Space Institute; Co-author, *Who Owns Outer Space?* (Cambridge University Press, 2022).

¹ United Nations, *United Nations Convention on the Law of the Sea, Montego Bay*, United Nations Treaty Series, vol. 1833, num. 1, 1982, p. 3.

of rules on mining to an underdetermined future date. It is only since 2015 that a sustained US-led effort to develop international rules has occurred; an effort that, again, promotes the interests of private companies.

From 2015-2021, the G-77 did not engage diplomatically on the issue of space mining, despite that it will take place in an “area beyond national jurisdiction”, require technologies and levels of investment only available in powerful industrialized states, and potentially generate enormous profits. Indeed, the new US effort at international law-making seemed to catch developing states unprepared, perhaps because space mining seemed a distant prospect for decades.

Very recently the G-77 has become engaged. In May 2021, the “G77 and China” issued a joint statement supporting urgent discussions on space resources at the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS).² These discussions quickly led to the establishment of a Working Group on Space Resources. The Working Group is intended to provide a forum for “the general exchange of views on potential legal models for activities in exploration, exploitation and utilization of space resource”,³ but could—if there is consensus for so doing—produce a draft treaty. Such a draft treaty would be debated and could then be adopted by the UN General Assembly, either as a new treaty or as a non-binding General Assembly resolution. Even a non-binding instrument could contribute to customary international law, as Bin Cheng famously explained regarding the General Assembly’s 1961 and 1963 resolutions on space.⁴ This could smooth the path to an eventual treaty, just as the adoption of those resolutions in the early 1960s provided a firm basis for the negotiation and adoption of the OST a few years later.

The United States chose not to block the establishment of the Working Group in COPUOS, which operates on the basis of consensus. However, the State Department and NASA continue to aggressively pursue alternative strategies of international law-making, at a speed that threatens to outrun the Working Group and thus influence or even pre-empt its conclusions.

² G-77 & China, *G-77 and China Statement during the Sixtieth Session of the United Nations Committee on the Peaceful Uses of Outer Space, from 31 May-11 June 2021, delivered by H.E. Alejandro Solano Ortiz, Ambassador, Permanent Representative of Costa Rica*, 2021, available at: www.unoosa.org/documents/pdf/copuos/lsc/2021/statements/item_3_5_6a_6b_8_10_11_13_14_G77_China_ver.1_31_May_AM_LegalSC_280521.pdf.

³ Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space, *Draft Report-General exchange of views on potential legal models for activities in exploration, exploitation and utilization of space resources*, A/AC.105/C.2/L.314/Add.8, 2021, available at: www.unoosa.org/res/oosadoc/data/documents/2021/aac_105c_2l/aac_105c_2l_314add_8_0_html/AC105_C2_L314Add08E.pdf.

⁴ Cheng, B., “United Nations Resolutions on Outer Space: “Instant” International Customary Law?”, *The Indian Journal of International Law*, vol. 5, núm. 23, 1965, p. 23.

In this article, I compare the international law-making efforts on deep seabed mining and space mining. My focus is on the different international law-making strategies deployed by the United States, and how the G-77 is sometimes able to resist them, or at least modify the outcomes.

II. DEEP SEABED MINING

The first discovery of deep seabed resources was in 1870 when a British expedition found manganese nodules. Presently, deep seabed resources are grouped into three categories; seafloor massive sulfides around hydrothermal vents, cobalt-rich crusts, and polymetallic nodules.⁵ These resources can contain important minerals like manganese, cobalt, copper, and nickel. However, states and companies only became interested in deep seabed resources as a result of John Mero's *Mineral Resources of the Sea*, which was published in 1965 just as others were predicting a global shortage in minerals.⁶ Mero claimed the Pacific deep seabed contained over 1 trillion tonnes of manganese nodules. Although that claim and predictions of a global shortage later proved to be erroneous, states were now interested in deep seabed resources.⁷ They were also concerned about the possibility of armed conflict over those resources, which they believed would be extracted and exploited imminently, and therefore sought an international treaty to guard against this risk.⁸ Deep seabed mining was placed on the agenda of the UN General Assembly in 1967.⁹

III. INTERNATIONAL LAW-MAKING AND DEEP SEABED MINING

It was Malta's representative, Arvid Pardo, who introduced the term "common heritage of [hu]mankind" at the UN General Assembly.¹⁰ He did so

⁵ Miller, K. A. *et al.*, "An Overview of Seabed Mining Including the Current State of Development, Environmental Impacts, and Knowledge Gaps", *Frontiers in Marine Science*, vol. 4, 2018, available at: <https://doi.org/10.3389/fmars.2017.00418>.

⁶ Glasby, G. P., "Deep Seabed Mining: Past Failures and Future Prospects", *Marine Georesources & Geotechnology*, vol. 20, num. 2, 2002, pp. 161-176, available at: <https://doi.org/10.1080/03608860290051859>.

⁷ *Idem.*

⁸ Khatwani, N., "Common Heritage of Mankind for Outer Space", *Astropolitics*, vol. 17, num. 2, 2019, pp. 89-103, available at: <https://doi.org/10.1080/14777622.2019.1638679>.

⁹ *Idem.*

¹⁰ Vogler, J., "Global Commons Revisited", *Global Policy*, vol. 3, núm. 1, 2012, pp. 61-71, available at: <https://doi.org/10.1111/j.1758-5899.2011.00156.x>.

specifically to address concerns over the ownership of deep seabed resources, and to promote their exploitation in support of global prosperity.¹¹ The General Assembly responded by establishing an ad-hoc committee to investigate the issue, and in 1970 deep seabed resources were officially proclaimed the common heritage of [hu]mankind in the “Declaration on Principles Governing the Sea-bed and Ocean Floor, and the Subsoil Thereof, beyond the Limits of the National Jurisdiction”.¹²

Deep seabed mining was one of the most contentious issues at the Third United Nations Conference on the Law of the Sea, which ran from 1974-1982.¹³ In UNCLOS, as adopted by the UN General Assembly in 1982, Part XI reaffirmed the deep seabed as the common heritage of [hu]mankind, established the International Seabed Authority to regulate mining, limited mining activities to state enterprises only, and provided a benefit-sharing regime (United Nations, 1982, Part XI). But in 1994, UNCLOS was amended through the “Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982”.¹⁴ The most important change involved the application of the common heritage of [hu]mankind principle, with private companies now being allowed to conduct deep seabed mining operations.

IV. STRATEGIES OF INTERNATIONAL LAW-MAKING AND DEEP SEABED MINING

The negotiations for UNCLOS started with the ambition of regulating all aspects of maritime activity and a correspondingly broad agenda of 25 items, including deep seabed mining.¹⁵ Developed and developing countries came into the negotiations with differing views on the 1970 Declaration, with most of the former seeing its articulation of the common heritage of [hu]mankind

¹¹ Lavicoli, V., “The Legal Regime of Outer Space in Light of the Law of the Sea”, in Aricò, S. (ed.), *Ocean Sustainability in the 21st Century*, Cambridge University Press, 2015, pp. 249-274.

¹² *Idem*.

¹³ Barnes, R.; Freestone, D. and Ong, D. M., *The Law of the Sea: Progress and Prospects*, Oxford University Press, 2006, pp. 1-27, available at: <https://doi.org/10.1093/acprof:oso/9780199299614.003.0001>.

¹⁴ United Nations, *Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982*, A/RES/48/263, 1994, available at: http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindxAgree.htm.

¹⁵ Koh, T., “Negotiating the UN Convention on the Law of the Sea”, *The Oxford Handbook of United Nations Treaties*, Oxford University Press, 2019, pp. 538-542, available at: <https://doi.org/10.1093/law/9780190947842.003.0032>.

principle as a political statement and the latter seeing it as reflecting customary international law.¹⁶ The Third United Nations Conference on the Law of the Sea provided a new opportunity to resolve the issue. During the negotiations, different law-making strategies were deployed by different states.

Developing states, which had recently achieved a numerical majority in the UN General Assembly due to decolonization, opened the negotiations with (1) a justice-based claim, namely, the common heritage of [hu] mankind, and (2) a strategy of collective bargaining, coordinated via a new group, the G-77. The United States responded with the strategy of “package deal”, and then, after the after the Cold War had ended, used its enhanced political power to secure a post-treaty amendment in 1994.

1. *Justice-Based Claims*

At the international level, where many states are not democratic, the principles of state sovereignty and state equality are at the very heart of the legal system. This creates a form of democracy among states, since each of them is both bound by international law and able to contribute to the processes by which the rules are made and changed. Many justice-based claims tap into these principles of state sovereignty and state equality, by demanding equal treatment in the face of efforts by powerful states to exercise unequal influence in international law-making.

For this reason, grounding a law-making effort in a justice-based claim can be a strategy for appealing to less-powerful states, which, if they speak or act together, can exercise considerable influence. As M. Sornarajah explained:

Justice-based claims articulated by the states of the developing world have made significant impact on the international law in several areas... The old power based concept of the freedom of the high seas, which enabled the powerful states to throw their naval power overseas and also dominate the gathering of the resources of the sea like fish, has been significantly curtailed by new developments in the law of the sea which emphasise justice based norms like the exclusive economic zones and the common heritage of [hu]mankind.¹⁷

Other justice-based claims have been strategically deployed in international law-making concerning humanitarian law, human rights, criminal

¹⁶ Jian-Cai, J., and Sommers, E., “The Dual Regime for Deep Seabed Mining”, *Studia Diplomatica*, vol. 41, num. 1, 1988, p. 69.

¹⁷ Sornarajah, M., “Power and Justice in International Law”, *Singapore Journal of International & Comparative Law*, vol. 1, num. 1, 1997, p. 36.

law, Indigenous rights, and even environmental law, with the deep principles being tapped into within these areas concerning the individual and group rights of human beings rather than states. In such instances, moral or ideological factors may come into play. But in the case of the deep seabed, the justice-based claim of common heritage of [hu]mankind was effective, first and foremost, because all states had a stake in the outcome —and equal rights in the UN General Assembly.

2. *Building Coalitions*

The G-77 was created in 1964 and is named after its 77 founding members. The G-77 was originally established to change global economic norms that disadvantaged the Global South to foster a more equitable international economy.¹⁸ The G-77 has operated in other issue-areas but always with a focus on its core economic goals. In deep seabed mining, the G-77 advocated for the common heritage of [hu]mankind principle as it aligned with their larger redistributive goals and the economic development of the global south. In 1970, the ability of developing states to act collectively through the G-77, and thus exert their new majority status within the UN General Assembly, resulted in the Declaration on Principles Governing the Sea-bed and Ocean Floor, and the Subsoil Thereof, beyond the Limits of the National Jurisdiction.

The G-77 also sought and received support from the Soviet Union and China for its position on deep seabed mining. This support became very important in the United Nations Conference on the Law of the Sea, since drawn-out treaty negotiations offer many opportunities for powerful states to exert influence, often outside of the main conference room and including in the capital cities of less powerful states. The support was available because of the Cold War context, as the United States and the Soviet Union (and China) were competing for influence in the developing world. As the United States were opposed to the common heritage of [hu]mankind principle due to their free-market economic beliefs and interests, the Soviet Union and China became easy allies for the G-77 to recruit. The compatibility between the common heritage of [hu]mankind principle and the Soviet Union's and China's centrally-planned national economies provided an additional, economic motivation for those two powerful states to provide support.¹⁹

¹⁸ Williams, M., "The Group of 77 and Global Environmental Politics", *Global Environmental Change*, vol. 7, num. 3, 1997, pp. 295-298, available at: [https://doi.org/10.1016/s0959-3780\(97\)00005-8](https://doi.org/10.1016/s0959-3780(97)00005-8).

¹⁹ Jian-Cai, J. & Sommers, E., *op. cit.*, p. 71.

3. *Package Deal*

The United States responded with the strategy of the “package deal”, which involves linking numerous issues during a treaty negotiation so that concessions on one issue can be secured through a willingness to compromise elsewhere.²⁰ As the president of the United Nations Conference on the Law of the Sea wrote in an explanatory memorandum to the Informal Composite Negotiating Text:

...the very nature of the concept of a package deal must mean that no delegation's position on a particular issue would be treated as irrevocable until at least all the elements of the “package” as contemplated had formed the subject of agreement. Every delegation, therefore, had the right to reserve its position on any particular issue until it had received satisfaction on other issues which it considered to be of vital importance to it.²¹

The package deal increased the chances of states being able to find positions they could concede (*e.g.* a 12 mile limit for the territorial sea, a US concession) in return for securing reciprocal concessions of greater importance to them (*e.g.* transit rights in straits, a US achievement). Moreover, opponents to any individual part of the package risked being cast as opponents to the whole package, thus making it more difficult for them to focus their efforts effectively and build coalitions around clearly defined goals.

A crucial element of any package deal is the inability to make reservations (*i.e.*, unilateral opt-outs from individual provisions) at the ratification or accession stage, as sometimes occurs with single-topic multilateral treaties. As Robert Jennings explained:

There is obviously an element of contradiction between the making of reservations, and the notion of the package deal; for what is the virtue of the package if parties could then reserve against one side of the bargain? It might be said that the package concept was only relevant to the stage of the conclusion of the text of a treaty. But that is merely to make the package concept into a fiction; a mere temporary device ultimately to be devoid of substance. The essential contradiction remains. A package deal subject to reservations is no longer either a package or a deal.²²

²⁰ Jennings, R., “Law-Making and Package Deal”, in Bardonnet, D. *et al.* (ed.), *Mélanges offerts à Paul Reuter*, Pedone, 1981, pp. 351 and 352.

²¹ United Nations, *Third Conference on the Law of the Sea*, 1980.

²² Jennings, R., *op. cit.*, pp. 351 and 352.

However, another strategy, not that different from making a reservation, is to seek amendments to a treaty after the final text has been adopted. This strategy, usually available only to the most powerful states, aims to reverse concessions made as part of a package deal.

4. *Post-Treaty Amendments*

After UNCLOS was concluded, the United States refused to ratify the treaty and persuaded many other developed states to also hold back. Then, when circumstances —such as the end of the Cold War and the temporal proximity of actual mining— changed to its advantage, the United States pushed for a renegotiation of Part XI. The package deal was broken, but developing states had little choice but to accept the change, since it was the price of securing ratifications from developed states. Those ratifications were the difference between a widely accepted and therefore potentially effective international system for regulating seabed mining, and one that was not. And again, the key change under the 1994 Agreement is that private companies are allowed to conduct deep seabed mining operations —something the G-77 had previously opposed.

The 1994 Agreement was carefully crafted to prevent any other renegotiations of the package deal that might negatively affect the United States. This was accomplished through Article 5(1), which reads:

A State or entity which has deposited before the date of the adoption of this Agreement an instrument of ratification or formal confirmation of or accession to the Convention and which has signed this Agreement in accordance with article 4, paragraph 3(c), shall be considered to have established its consent to be bound by this Agreement 12 months after the date of its adoption, unless that State or entity notifies the depositary in writing before that date that it is not availing itself of the simplified procedure set out in this article.

Article 5(1) thus had two effects: First, it enabled states that had already gone through the sometimes complicated and politically fraught procedure of ratification to avoid repeating it, since the amendments to Part XI were treated as a memorandum of understanding rather than a treaty. Had the 1994 Agreement been approached as constituting a formal set of amendments subject to ratification, the package deal might have unraveled as various states used the opportunity to revisit other issues. Second, Article 5(1) enabled states to acquiesce to the changes rather than requiring any positive action from them. This made it easier to avoid re-ratification procedures,

including by reducing the likelihood of public scrutiny. The short 12-month timeline for objecting to the amendments was also something that at least a few under-resourced foreign ministries could be expected to miss. As of May 13, 2022, 151 states have become bound to the 1994 Agreement.²³

V. SPACE MINING

In 2018, fourteen Space agencies identified “*in situ* resource utilization” as a necessary capability for long-duration missions, including crewed missions to the Moon, Mars, and deep space.²⁴ The idea is that, if rocket fuel can be produced from ice and water-bearing minerals in space, it will not need to be lifted — at great expense — from Earth’s surface.

Robotic spacecrafts are already collecting samples from asteroids and bringing them back to Earth. The Japanese Space Agency’s Hayabusa-2 did so from the asteroid Ryugu in 2020 and NASA’s OSIRIS-Rex will return with a sample from the asteroid Bennu in 2023. Scientific interest in asteroids is clear as Ryugu and Bennu are composed of some of the oldest material in the solar system, unaltered for over 4.5 billion years. But space agencies see these missions as precursors to commercial operations, with NASA commenting that “asteroids like Bennu contain natural resources such as water, organics, and perhaps precious metals”.²⁵

Although space mining offers benefits, it will also create risks. Mining that is motivated purely by resource extraction could overlook or even destroy important scientific evidence. Asteroid mining will create streams of debris, posing a hazard to other spacecraft as well as lunar operations. Most worryingly, most physical interactions with asteroids will alter their trajectories, potentially creating a new, human-caused Earth impact risk. For all these reasons, widely agreed international rules on space mining are needed. And with most states lacking the technologies or large corporate interests necessary to support space mining, there is an important additional interest in play — namely, some kind of benefit-sharing among all states.

²³ United Nations (n.d.), Division of Ocean Affairs and the Law of the Sea, *Status of Convention Agreements*, available at: https://www.un.org/Depts/los/convention_agreements/convention_agreements.html.

²⁴ International Space Exploration Coordination Group, ISECG Global Exploration Roadmap, 3rd ed., in *International Space Exploration Coordination Group*, 2018, available at: https://www.globalspaceexploration.org/wordpress/wp-content/isecg/GER_2018_small_mobile.pdf.

²⁵ Arizona Board of Regents, *The Mission*, OSIRIS-REx Mission: Asteroid Sample Return Mission, 2022, available at: <https://www.asteroidmission.org/objectives/>.

As occurred with deep seabed mining, however, the United States sees its interests aligned with those of private companies, which wish to engage in space mining with minimal regulatory restrictions, no international governance mechanism, and no benefit-sharing regime. The United States is therefore (1) advancing an interpretation of the OST that allows for commercial space mining, while (2) engaging in, and encouraging others to engage in, state practice aimed at creating new, industry-friendly rules of customary international law. Its efforts in this regard could be aimed at influencing or even pre-empting the outcomes of the Working Group on Space Resources.

VI. INTERPRETING THE OUTER SPACE TREATY

Article II of the 1967 OST is the focus of the US interpretation effort. It reads: “[o]uter 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”.²⁶ The United States takes the position that the prohibition on national appropriation applies to natural resources only when they are “in place” and that resources, once extracted, may be bought and sold.²⁷ Other states disagree. In 2020, the director general of the Russian Space Agency said: “[w]e will not, in any case, accept any attempts to privatize the Moon. It is illegal, it runs counter to international law”.²⁸ But an application of the international rules on treaty interpretation, as found in the 1969 Vienna Convention on the Law of Treaties,²⁹ leads to the conclusion that Article II and the larger OST do not directly address spacing mining, leaving this matter to be resolved through further treaty negotiations or, failing that, the development of new customary international law.

Article 31 of the Vienna Convention reads: “[a] treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose”. The first step thus concerns the “ordinary meaning” of the terms.

²⁶ United Nations, *Treaty on Principles Governing the Activities of States in the Exploration and use of outer Space, Including the Moon and other Celestial Bodies*, United Nations Treaty Series, 1967, vol. 610, p. 205, available at: <https://treaties.un.org/pages/showdetails.aspx?objid=0800000280128cbd>.

²⁷ Egan, B. J., “The Next Fifty Years of the Outer Space Treaty”, *Galloway Symposium on Critical Issues in Space Law*, 2016, available at: <https://2009-2017.state.gov/s/l/releases/remarks/264963.htm>.

²⁸ TASS, *Russia will not Accept Attempts to Privatize the Moon, Says Roscosmos CEO*, TASS Russian News Agency, 2020, available at: <https://tass.com/science/1159969>.

²⁹ United Nations, *Vienna Convention on the Law of Treaties*, United Nations Treaty Series, vol. 1155, 1969, p. 1979.

In Article II, the term of greatest relevance is “national appropriation”, and there is no ordinary meaning for national appropriation, since the term is not used elsewhere in international law, or in day-to-day conversation. We do not know whether it means title to territory, or simply the use of an object or area by one state to the exclusion of others.

The second stage of interpretation concerns the “context” of the terms. According to the Vienna Convention, context includes the text of a treaty, its preamble, and annexes. There are several provisions of possible relevance here, including Article VI, which reads, in part: States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty.³⁰

“Non-governmental entities” will include international organisations, non-profit groups, and private companies. But mining is only one possible profit-oriented activity that companies might pursue in space. Others include the use of satellites for communications—an activity already taking place at the time of the OST’s negotiations and therefore in negotiators’ minds—. The combination of Article VI with the possibility that space mining could be conducted by non-governmental entities does not, on its own, allow the acquisition of property rights.

Then there is Article IX of the OST, which requires that states “conduct all their activities in outer space, including the moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty”.³¹ Article IX foresees that some space activities will have the potential to cause harmful contamination or interference, and it guards against this with a duty of consultation. However, there is no indication as to the level of care that “due regard” requires and if a state might be required to adjust its plans because of consultations. Furthermore, Article IX does not mention anything about property rights.

The third step in a treaty interpretation is to examine whether the “object and purpose” of the treaty casts any “light” on the ordinary meaning of its terms. Evidence of this is usually found in its preamble. It is clear from the OST’s preamble that its overall object and purpose is the promotion of peace and international cooperation in space. Property rights might, depending on the circumstances, either strengthen or weaken this. In other words, the object and purpose provide no guidance to an interpretation.

³⁰ United Nations, *Treaty on Principles Governing the Activities of States in the Exploration...*, *cit.*

³¹ *Idem.*

Then, there is “any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation”. Since space mining as such has not yet taken place, there is very little to look at here —apart from the fate of a few lunar samples—. In 1993, Sotheby’s auctioned three moon rocks for \$442,500.³² The rocks had been collected by the Soviet Union’s robotic Luna-16 mission in 1970 and given to the widow of the former director of the Soviet space program.³³ Two decades later, they somehow found their way to Sotheby’s. The same rocks were auctioned again in 2018. However, there is no indication that the soviet or russian governments approved these sales, making them of little value as “subsequent practice”.

VII. TRAVAUX PRÉPARATOIRES

The treaty interpretation above led to the conclusion that the issue of property rights is not addressed in the OST. Having reached this stage, according to Article 32 of the Vienna Convention, one can now review the negotiating record of the treaty to confirm the interpretation but not to overturn it.³⁴

As it happens, there was very little debate on Article II during the negotiation of the OST. Ultimately, negotiations on the issue of “extracting minerals” were deferred to some indefinite future date (*i.e.*, after the conclusion of the OST), as the following exchange between french and soviet delegates made clear:

Mr. Deleau (France) “observed that it was most important to clarify the scope of the treaty... Space, of course, was already being used for meteorological research and telecommunications, but in the case of celestial bodies it was hard at present to conceive of utilizing the moon, say, for the extraction of minerals. It was important for all States, and not only those engaged in space exploration, to know exactly what was meant by the term “use”. The word was, of course, to be found in the declaration of Principles, but the latter was by no means exhaustive and should not preclude further textual improvements” (Legal Sub-

³² Martin, D., “Space Artifacts of Soviets Soar at a \$7 Million Auction”, *The New York Times*, 1993, available at: <https://www.nytimes.com/1993/12/12/nyregion/space-artifacts-of-soviets-soar-at-a-7-million-auction.html>.

³³ France-Presse, A., “Moon Rocks Sell for \$855,000 in New York: Sotheby’s”, *Phys*, November 29, 2018, available at: <https://phys.org/news/2018-11-moon-york-sotheby.html>.

³⁴ United Nations (1969, May 23), *Vienna Convention on the Law of Treaties*, United Nations Treaty Series, vol. 1155, p. 1979.

committee of the Committee on the Peaceful Uses of Outer Space, 1966, pp. 8 and 9)... Mr. Morozov (USSR) “felt that the Soviet text covered the very interesting point raised by the representative of France. It was not possible to say everything in one article and he believed that adequate clarification was to be found in article II of the USSR draft, which specified that outer space and celestial bodies should not be subject to national appropriation by means of use or occupation, or by any other means. In other words, no human activity on the moon or any other celestial body could be taken as justification for national appropriation. Needless to say, a treaty could deal only with the problems arising at the current stage of human evolution, and future developments would give rise to new problems requiring subsequent solution. But it would be unwise to look too far ahead and to attempt to prescribe rules for situations on which it was impossible to form adequate judgement at the present stage...”³⁵

In short, a review of the *travaux préparatoires* leads to the conclusion that the OST does not address the issue of property rights over extracted space resources. The issue was left until later, with the first attempt coming in 1979.

VIII. MOON AGREEMENT

The 1979 Moon Agreement expands on the regulation of celestial bodies in the OST, with Article 11 designating the Moon, other celestial bodies, and their resources the common heritage of [hu]mankind. However, that same article defers the negotiation of rules on resource extraction to an underdetermined future date, when “such exploitation is about to become feasible”.³⁶ Moreover, like UNCLOS before the 1994 Agreement, the Moon Agreement suffers from a lack of ratifications, with only 18 states having ratified so far. These ratifications are mostly from the Global South, and none are from states independently engaged in spaceflight.

IX. RECENT EFFORTS BY THE UNITED STATES TO ADVANCE ITS POSITION

Article 31(3)(b) of the Vienna Convention reads that “any subsequent practice in the application of the treaty which establishes the agreement of the parties

³⁵ Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space, *Summary Record of the 63rd Meeting*, A/AC.105/C.2/SR.63, 1966, p. 11, available at: https://www.unoosa.org/pdf/transcripts/legal/AC105_C2_SR063E.pdf.

³⁶ United Nations (1979, December 5), *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, United Nations Treaty Series, vol. 1363, p. 13.

regarding its interpretation”³⁷ can be taken into account. Subsequent practice for the purposes of treaty interpretation includes not just physical acts, but also official statements and the adoption of national law and regulations.

The United States has long maintained that the OST “does not preclude private ownership of resources extracted from a celestial body”.³⁸ In 1979, Secretary of State Cyrus Vance told the US Senate that the “non-appropriation” principle applies to the natural resources of celestial bodies only when such resources are “in place” and does not limit “ownership to be exercised by States or private entities over those natural resources which have been removed from their place on or below the surface of the moon or other celestial bodies”.³⁹ However, it still came as a surprise to many when, in 2015, the US government adopted legislation in support of commercial space mining despite the absence of widely agreed international rules. In retrospect, it was the first step in a strategically informed effort to secure widespread support for the US legal position.

1. *Commercial Space Launch Competitiveness Act*

The 2015 Commercial Space Launch Competitiveness Act implements the US interpretation of Article II of the OST in national law, by giving US citizens the right to “possess, own, transport, use, and sell (any) asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of the United States” (US Commercial Space Launch Competitiveness Act, 2015). By claiming to be consistent with international law, the legislation is intended to bolster the US interpretation. As one of the government lawyers involved in the legislation later argued: “[a]bsent international consensus on what the rule is, national legislatures are in the position of weighing in on one side or another of an unresolved interpretive debate”.⁴⁰

But while it is true that national legislation can assist in the interpretation of a treaty, no single state can develop international law on its own. For this reason, it helped the United States that three countries soon demonstrated support for its position by adopting similar national laws. In 2017, Lu-

³⁷ United Nations, *Vienna Convention on the Law of Treaties*, United Nations Treaty Series, vol. 1155, 1969, p. 1979.

³⁸ Egan, B. J., *op. cit.*

³⁹ *Idem.*

⁴⁰ Israel, B. R., “Space Resources in the Evolutionary Course of Space Lawmaking”, *AJIL Unbound*, 2019, vol. 113, num. 116, p. 116, available at: <https://doi.org/10.1017/aju.2019.12>.

xembourg adopted legislation on commercial space mining.⁴¹ In 2019, the United Arab Emirates (UAE) adopted a law that foresees commercial space mining, while postponing the creation of a licensing regime.⁴² In 2021, Japan adopted a “Law Concerning the Promotion of Business Activities Related to the Exploration and Development of Space Resources”.⁴³

However, Article 31(3)n(b) of the Vienna Convention includes the words “which establishes the agreement of the parties”. Four states cannot, on their own, establish the agreement of the parties on the interpretation of a major multilateral treaty, in this case, one that has been ratified by 112 states. The United States therefore had to take its law-making effort further.

2. *Executive Order*

In April 2020, US President Donald Trump signed an “Executive Order on Encouraging International Support for the Recovery and Use of Space Resources”.⁴⁴ The Executive Order (EO) reiterated that it is “the policy of the United States to encourage international support for the public and private recovery and use of resources in outer space, consistent with applicable law”.⁴⁵ It thus constituted another instance of subsequent practice for the purposes of interpreting the OST. However, the EO went further than the 2015 Commercial Space Launch Competitiveness Act by explicitly rejecting that space is a “global commons” and dismissing the 1979 Moon Agreement as irrelevant because it has not been ratified by major spacefaring states.⁴⁶ The EO instructed the State Department to take “all appropriate actions to encourage international support for the public and private recovery and use of resources in outer space”.⁴⁷

⁴¹ Loi du 20 juillet 2017 sur l’exploration et l’utilisation des ressources de l’espace, 2017, available at: legilux.public.lu/eli/etat/leg/loi/2017/07/20/a674/jo/fr.

⁴² Federal Law, No. (12) of 2019 on the Regulation of the Space Sector, 2019, available at: <https://www.moj.gov.ae/assets/2020/Federal%20Law%20No%2012%20of%202019%20on%20THE%20REGULATION%20OF%20THE%20SPACE%20SECTOR.pdf.aspx>.

⁴³ Foust, J., “Japan Passes Space Resources Law”, *SpaceNews*, June 17, 2021, available at: <https://spacenews.com/japan-passes-space-resources-law/>.

⁴⁴ Wall, M., “Trump Signs Executive Order to Support Moon Mining, Tap Asteroid Resources”, *Space*, 2020, available at: <https://www.space.com/trump-moon-mining-space-resources-executive-order.html>.

⁴⁵ The White House, Executive Order on Encouraging International Support for the Recovery and Use of Space Resources, 2020, available at: <https://trumpwhitehouse.archives.gov/presidential-actions/executive-order-encouraging-international-support-recovery-use-space-resources/>.

⁴⁶ *Idem*.

⁴⁷ Wall, M., “Trump Signs Executive Order...”, *cit*.

3. *Artemis Accords*

In May 2020, NASA announced the core principles of the “Artemis Accords”, which it said would “establish a common set of principles to govern the civil exploration and use of outer space”.⁴⁸ Then, in October 2020, the full text of the Artemis Accords was released.⁴⁹

The United States clearly wanted the Artemis Accords to provide strong support for its position that the OST does not preclude property rights over extracted resources, and that in the absence of international rules on the conduct of space mining, these activities may be regulated solely through national laws. Initially NASA negotiated bilaterally with NASA partner states, with these being the states most likely to support the US position. Yet the Artemis Accords as ultimately adopted carry less weight, as subsequent practice, than the United States might have hoped. Although Australia, Canada, Italy, Japan, Luxembourg, the UAE, and the UK all signed the document in an online ceremony at the International Astronautical Congress in October 2020, there are at least two compromises evident in the text.

First, Section 10(2) reads: The Signatories affirm that the extraction of space resources does not inherently constitute national appropriation under Article II of the Outer Space Treaty, and that contracts and other legal instruments relating to space resources should be consistent with that Treaty.⁵⁰

The language used in this sentence differs from that used in the core principles as released by NASA in May 2020, before the negotiations with NASA partner states began. There, NASA simply asserted: “[t]he Artemis Accords reinforce that space resource extraction and utilization can and will be conducted under the auspices of the Outer Space Treaty”.⁵¹ Although NASA was likely pushing for a similar statement, or simply that space mining does not constitute “national appropriation”, the insertion of the word “inherently” into Section 10(2) introduces an element of ambiguity that the US negotiators would not have sought. Is space mining sometimes “national appropriation” and sometimes not? Was space mining originally not “natio-

⁴⁸ Foust, J., “NASA Announces Artemis Accords for International Cooperation in Lunar Exploration”, *SpaceNews*, May 15, 2020, available at: <https://spacenews.com/nasa-announces-artermis-accords-for-international-cooperation-in-lunar-exploration/>.

⁴⁹ NASA, *The Artemis Accords: Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids for Peaceful Purposes*, 2020, available at: <https://www.nasa.gov/specials/artermis-accords/img/Artemis-Accords-signed-13Oct2020.pdf>.

⁵⁰ *Idem*.

⁵¹ NASA, (n.d.), *NASA: Artemis Accords*, available at: <https://www.nasa.gov/specials/artermis-accords/index.html>.

nal appropriation”, but capable of becoming understood as “national appropriation” as understandings and interests change? Can a term such as “national appropriation”, which has no “ordinary meaning” because it is not used outside of the OST, “inherently” mean anything? The appearance of this word in the final text of the Artemis Accords most likely represents a negotiated compromise, and specifically, a “constructive ambiguity” designed to accommodate different views by fudging the terminology.⁵² The result, however, further reduces the weight of the Artemis Accords as subsequent practice, state practice, and evidence of *opinio juris*.

Second, the text explicitly states that the Artemis Accords “represent a political commitment”.⁵³ Hence, they do not constitute a multilateral treaty or even a series of bilateral treaties. For this reason, the Artemis Accords cannot be particularly significant as “subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation”, or for the purposes of customary international law.

Despite their textual ambiguity and status as a “political commitment”, the Artemis Accords were condemned by the director general of the Russian Space Agency. To repeat a quote from above, he said: “[w]e will not... accept any attempts to privatize the Moon. It is illegal, it runs counter to international law”.⁵⁴ China did not offer an official response, but commentary in its state-run media described the Artemis Accords as a product of a Cold War mentality, focused on exerting dominance, and continuing the legacy of colonisation.⁵⁵ Undeterred by these reactions, the United States continued to advance its preferred interpretation of the OST.

4. *NASA Contracting to Purchase Lunar Regolith*

In September 2020, NASA announced that it was seeking proposals from industry to extract small amounts of regolith from the surface of the Moon and sell them to NASA. Any selected company would be required to collect between 50 and 500 grams and provide imagery of the material and

⁵² Berridge, G. and Lloyd, Lorna, *Dictionary of Diplomacy*, 3rd ed., Palgrave Macmillan, 2012.

⁵³ NASA, *The Artemis Accords: Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids for Peaceful Purposes*, 2020, available at: <https://www.nasa.gov/specials/artemis-accords/img/Artemis-Accords-signed-13Oct2020.pdf>.

⁵⁴ TASS, *Russia will not Accept Attempts to Privatize the Moon, Says Roscosmos CEO*. TASS Russian News Agency, 2020, available at: <https://tass.com/science/1159969>.

⁵⁵ Ji, E. *et al.*, “What Does China Think About NASA’s Artemis Accords?”, *The Diplomat*, September 17, 2020, available at: <https://thediplomat.com/2020/09/what-does-china-think-about-nasas-artemis-accords/>.

data concerning its location. NASA would then buy the material, through an “in-place ownership transfer”, without the company having to return the sample to Earth. NASA might then retrieve the material at some unspecified future time.⁵⁶ Or it might not.

None of this was about the regolith itself. The NASA Administrator admitted that the planned purchases were aimed at creating more subsequent practice in favour of the US interpretation of the OST: “[w]hat we’re trying to do is make sure that there is a norm of behavior that says that resources can be extracted and that we’re doing it in a way that is in compliance with the Outer Space Treaty”.⁵⁷ The admission was remarkable for its candour: Government officials are rarely transparent about efforts to change international law through actions rather than negotiations, perhaps because it draws attention to their efforts and can generate negative responses from other states.

X. STRATEGIES OF INTERNATIONAL LAW-MAKING AND SPACE MINING

1. *National Legislation as Subsequent and State Practice*

The 2015 Commercial Space Launch Competitiveness Act was part of a strategic effort to advance a particular interpretation of the OST without entering into multilateral negotiations where all states are formally equal and collective bargaining is possible. As Philip De Man explains:

Prominent spacefaring States are increasingly resorting to the adoption of domestic legislation that implements their international obligations according to an interpretation that best serves their own interests. This approach is obviously preferred over protracted multilateral negotiation processes that, apart from being cumbersome, risk upsetting the basic balance of the existing space law regime that favours spacefaring States in the first place.⁵⁸

⁵⁶ NASA, Shared Services Center, *Purchase of Lunar Regolith and/or Rock Materials from Contractor*, System for Award Management, 2020, available at: <https://sam.gov/opp/77726177617a45d0a196e23a587d7c14/view>.

⁵⁷ Foust, J., “NASA Offers to Buy Lunar Samples to Set Space Resources Precedent”, *SpaceNews*, September 10, 2020b, available at: <https://spacenews.com/nasa-offers-to-buy-lunar-samples-to-set-space-resources-precedent/#:~:text=NASA%20offers%20to%20buy%20lunar%20samples%20to%20set%20space%20resources%20precedent>.

⁵⁸ De Man, P., “State Practice, Domestic Legislation and the Interpretation of Fundamental Principles of International Space Law”, *Space Policy*, vol. 42, 2017, pp. 92-102, available at: <https://doi.org/10.1016/j.spacepol.2017.06.001>.

In the context of space mining, the legislation adopted by the United States counts as both subsequent practice and state practice. It attracted considerable attention, thus setting the law-making agenda, and was soon followed by three other states.

2. *Highlighting the Favorable, Discrediting the Unfavorable*

In a 2016 speech, the State Department Legal Advisor made the case for the US interpretation of the OST by highlighting developments favoring the US position, while ignoring those that did not. This, of course, is a strategy found across humanity, and therefore hardly noteworthy. More interesting, however, is the United States' effort to publicly discredit developments that weaken its position, including a core principle of international governance. The 2020 US Executive Order dismissed both the 1979 Moon Agreement and the idea that space is a "global commons". The Moon Agreement, of course, recognizes the Moon and other celestial bodies as "common heritage of [hu]mankind", while the non-legal term "global commons" is generally understood to mean much the same thing. Significantly, the dismissal of the Moon Agreement was based on the fact that it has only received 18 ratifications—a situation analogous to that of UNCLOS before the United States began its push for a renegotiation of Part XI.

3. *Bilateralism over Multilateralism*

Powerful states often find that their negotiating strength is accentuated in bilateral situations, especially when negotiating with states that are significantly less powerful. One of the best examples of this is the US-led use of bilateral investment treaties (BITs) to break down the collective position of developing states on compensation for the expropriation of foreign owned property.

In 1938, US Secretary of State Cordell Hull claimed that "prompt, adequate and effective compensation" was required.⁵⁹ This somewhat ambiguous phrase, which was generally understood to mean full compensation, was firmly established in customary international law until well after the Second World War. The first serious challenge to it followed a wave of decolonization that saw many newly independent states embrace policies of nationalization. In 1962, the UN General Assembly adopted a "Resolution

⁵⁹ Schachter, O., "Compensation for Expropriation", *American Journal of International Law*, vol. 78, num. 1, 1984, pp. 121-130.

on Permanent Sovereignty over Natural Resources” that called for “appropriate compensation, in accordance with the rules in force in the State taking such measures in the exercise of its sovereignty”.⁶⁰

Then, in 1974, the UN General Assembly adopted the Charter of Economic Rights and Duties of States, which unequivocally rejected the “Hull formula” and caused a rupture between developed and developing states. The developing and socialist states unanimously supported the resolution while developed states constituted all six negative votes and all ten abstentions.⁶¹ Developed and developing states, and scholars from both sides thus began a long and often acrimonious debate as to whether General Assembly resolutions could contribute to customary international law.⁶²

Faced with this new uncertainty as to the state of the law, the developed world—led by the United States—embarked on a new approach that sought to bring back the Hull formula by way of BITs containing the “prompt, adequate and effective” standard. As of June 1st, 2022, there are 5799 BITs in force.⁶³ Most such treaties set out the Hull formula explicitly; others do so implicitly through the use of more general formulae such as “just”, “full”, “reasonable” or “fair and equitable” compensation.⁶⁴

Developing states are willing to accept the Hull formula, despite standing together to reject it earlier, partly due to game theory and, more precisely, the “prisoners’ dilemma”.⁶⁵ A developing state negotiating a BIT one-on-one with a developed state is in a very different position than voting for a resolution in the company of all other developing states. Any developing state which refused to conclude a BIT including the Hull formula with a developed state risked being placed at a serious disadvantage if its main competitor or competitors were to conclude similar treaties with that same developed state. And given the lack of transparency that usually accompanies bilateral negotiations, the developing state would have had little ability to assess the degree of risk involved. BITs thus enabled the developed states to bypass the consensus against the Hull formula that existed among the developing states within the General Assembly.

⁶⁰ United Nations General Assembly, *Permanent sovereignty over natural resources*, 1962, available at: https://legal.un.org/avl/ha/ga_1803/ga_1803.html.

⁶¹ United Nations, *Yearbook of the United Nations*, 1974, p. 402.

⁶² Byers, M., *Custom, Power and the Power of Rules*, Cambridge University Press, 1999, pp. 40-43.

⁶³ ICSID (n.d.), *Bilateral Investment Treaty Database*, available at: <https://icsid.worldbank.org/resources/databases/bilateral-investment-treaties>.

⁶⁴ Dolzer, R. and Stevens, M., *Bilateral Investment Treaties*, Martinus Nijhoff, 1995, p. 109.

⁶⁵ Guzman, A., “Why LDCs Sign Treaties that Hurt Them: Explaining the Popularity of Bilateral Investment Treaties”, *Virginia Journal of International Law*, vol. 38, 1998.

That said, not every developing state was willing to conclude BITs. Those states that refused to conclude such treaties could, however, still become bound to the Hull formula if the generally applicable rule of customary international law were to return to “prompt, adequate and effective” compensation. As a result, another debate ensued over whether BITs constitute only exceptions to the applicable rule of customary international law, or whether enough exceptions—1600 exceptions—can change a customary rule.⁶⁶

The United States is following the same approach with the Artemis Accords. Since October 2020, 12 additional states—Brazil, New Zealand, South Korea, Ukraine, Poland, Israel, Mexico, Romania, Bahrain, Singapore, Colombia and France—have been persuaded to sign onto the document, and to do so in elaborate ceremonies. While signing ceremonies do not a treaty make, they certainly indicate an intent to consider the Accords as legally significant—both as subsequent practice for the purposes of interpreting the OST, and as state practice and expressions of *opinio juris* in the development of new rules of customary international law that will facilitate commercial space mining.

Moreover, it will often be easier for a powerful state to extract concessions in a bilateral negotiation. For instance, signing the Artemis Accords might be one of a dozen requests made by a senior US official during a high-level visit to a foreign capital. In such circumstances, where the less powerful state must choose which requests to deny, signing the Artemis Accords may enable it to say “no” on another, more sensitive issue. Not all pressure is coercive, with NASA being able to offer astronaut “slot” to partner states. These slots are desirable because having an astronaut in space generates national pride and generally reflects well on the government. At least two states, Japan and the UAE, obtained astronaut slots shortly after signing the Artemis Accords.

4. *Deliberate Creation of Legal Precedents*

As noted earlier, NASA’s September 2020 announcement on the purchase of lunar regolith from private companies was remarkable for its transparency about the intended creation of legal precedents. Yet, neither this announcement nor the subsequent signature of four contracts drew any public response from other states, with this lack of response arguably constituting acquiescence in the US law-making effort. And indeed, the practice was desig-

⁶⁶ Kishoiyian, B., “The Utility of Bilateral Investment Treaties in the Formulation of Customary International Law”, *Northwestern Journal of International Law and Business*, vol. 14, num. 2, 1994, pp. 327-375.

ned to encourage acquiescence, being of no consequence —except as subsequent practice and state practice on an issue that developing states have had little reason to pay attention to since the negotiations on the Moon Agreement in 1979—. But despite this success, the US law-making effort is not unfolding quite as smoothly as NASA and the State Department might like, with a new Working Group on Space Resources providing a competing multilateral forum for negotiations.

5. *Working Group on Space Resources*

Not all developed states are supporting the US law-making effort. Quite a few NASA-partner states in Europe have yet to sign the Artemis Accords. In May 2021, Germany and seven others —Austria, Belgium, Czech Republic, Finland, Greece, Slovakia, Spain— submitted a proposal for a “Working Group on Space Resources” to the Legal Subcommittee of COPUOS.⁶⁷ They did so based on a recognition of “the increased interest in activities on celestial bodies in general, and activities involving space resources in particular, and taking into account various initiatives to develop normative instruments applicable to space resources activities, as well as the desire for legal certainty and international cooperation in this regard”.⁶⁸ The stated objective of the proposal was to “ensure that space resources activities are conducted in a safe, sustainable and peaceful manner, for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and in accordance with international law”.⁶⁹

At this point, the G-77 became diplomatically engaged on the issue of space mining, submitting a joint between “G-77 and China” statement in support of “urgent” discussions on space resources at COPUOS. The G-77 presently includes 134 developing states. China has long been a *de facto* member of the group, with the words “G-77 and China” being used to signal whenever they are speaking with one voice. Together, they represent 70 percent of UN member states, 80 percent of the world’s population, and 25 percent of global GDP.

⁶⁷ United Nations Office for Outer Space Affairs, *Working Paper on the Establishment of a Working Group on Space Resources Submitted by Austria, Belgium, Czech Republic, Finland, Germany, Greece, Slovakia and Spain*, 2021, available at: www.unoosa.org/documents/pdf/copuos/lsc/space-resources/Non-paper-on-the-Establishment-of-a-Working-Group-on-Space_Resources-at-COPUOS_LSC-27-05-2021.pdf.

⁶⁸ *Idem.*

⁶⁹ *Idem.*

In their statement, the G-77 and China identified the need for a multi-lateral response to the national laws adopted by the United States, Luxembourg, and the UAE, “to avoid gaps or contradictions in the legal framework in this area and to provide a clear understanding of the legal obligations of the States in the space exploration”.⁷⁰ They also stressed the need for international cooperation in the development of space activities “for the benefit and in the interest of all States taking in particular account the needs on [*sic*] developing countries”.⁷¹

The statement was emphatic on the necessary role of developing states in any normative or legal developments:

The Group is of the view that the discussions of this Subcommittee should not lead to any measures, including norms, guidelines and standards that would limit access to outer space by nations with emerging space capabilities, especially the developing countries. Accordingly, the Group believes that the international legal framework should be developed in a manner that addresses the concerns of all States.⁷²

Russia also supported the creation of the Working Group. One week after the end of the Legal Subcommittee meeting, the director general of the Russian Space Agency called for a “system of regulations” to address the issue of space mining at an international level. “Russia believes that states mustn’t adopt any laws and regulations on a unilateral basis because space is our common heritage and belongs to everyone”, he said. “[w]e consider the United Nations as a suitable [forum] to discuss these issues”.⁷³

With all this support, the Legal Subcommittee of COPUOS decided “to establish, under a five-year workplan, a working group under the agenda item on the general exchange of views on potential legal models for activities in exploration, exploitation and utilization of space resources...”.⁷⁴ Since COPUOS operates based on consensus, all 95 of its members consented to this decision. Less than one year later, in April 2022, the new working group adopted its five-year workplan, again, on the basis of a consensus that inclu-

⁷⁰ G-77 & China, *G-77 and China Statement during the Sixtieth Session of the United Nations Committee on the Peaceful Uses of Outer Space, from 31 May-11 June 2021, delivered by H.E. Alejandro Solano Ortiz, Ambassador, Permanent Representative of Costa Rica*, 2021, available at: www.unoosa.org/documents/pdf/copuos/lsc/2021/statements/item_3_5_6a_6b_8_10_11_13_14_G77_China_ver.1_31_May_AM_LegalSC_280521.pdf.

⁷¹ *Idem*.

⁷² *Idem*.

⁷³ Foust, J., “Japan passes space...”, *cit*.

⁷⁴ United Nations Office for Outer Space Affairs, *op. cit*.

ded the United States, Russia and China. This was all the more remarkable and encouraging because it was done just six weeks after Russia invaded Ukraine.⁷⁵

There is, therefore, some reason to hope that the working group can developed detailed rules on space mining within that multilateral context; rules that can achieve consensus support and be sent to the UN General Assembly in the form of a draft multilateral treaty. But this will have to happen quickly —before the effort is pre-empted, or the content of the rules significantly influenced, as a result of more and more states signing the Artemis Accords.

Indeed, it seems that US diplomats are targeting developing states as they seek new signatures. Brazil signed on June 15, 2021;⁷⁶ followed by Mexico on December 10, 2021;⁷⁷ Bahrain on March 7, 2022,⁷⁸ Colombia on May 10, 2022,⁷⁹ and Singapore on March 28, 2022.⁸⁰ The strategy, it seems, is to have as many developing states as possible express support for the United States' preferred interpretation of the OST, and for the provisions of the Artemis Accords concerning the conduct of space mining, so as to make it difficult for them to join in any collective bargaining for different rules during the multilateral negotiations.

XI. CONCLUSION

The United States, as it seeks to create new international rules on space mining, is deploying strategies designed to maximize its influence and minimize the influence of developing states. Those states should respond by playing an

⁷⁵ Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space, *Draft Report Annex II – Report of the Chair and Vice-Chair of the working group established under the Legal Subcommittee agenda item entitled ‘General exchange of views on potential legal models for activities in the exploration, exploitation and utilization of space resources*, A/AC.105/C.2/2022/SRA/L.1., 2022, available at: www.unoosa.org/res/oosadoc/data/documents/2022/aac_105c_2sra/aac_105c_22022sral_1_0.html/AC105_C2_2022_SRA_L01E.pdf.

⁷⁶ Potter, S., “Brazil Signs Artemis Accords”, NASA, June 15, 2021, available at: <https://www.nasa.gov/feature/brazil-signs-artemis-accords>.

⁷⁷ Foust, J., “Mexico Joins Artemis Accords”, *SpaceNews*, December 10, 2021, available at: <https://spacenews.com/mexico-joins-artemis-accords/>.

⁷⁸ Potter, S., “Bahrain Signs Artemis Accords”, NASA, March 7, 2022, available at: <https://www.nasa.gov/press-release/bahrain-signs-artemis-accords>.

⁷⁹ Potter, S., “NASA Welcomes Vice President of Colombia for Artemis Accords Signing”, NASA, May 10, 2022, available at: <https://www.nasa.gov/feature/nasa-welcomes-vice-president-of-colombia-for-artemis-accords-signing>.

⁸⁰ United States Department of State, *Republic of Singapore Signs the Artemis Accords*. United States Department of State, 2022, available at: <https://www.state.gov/republic-of-singapore-signs-the-artemis-accords/>.

active role in the new Working Group on Space Resources, both individually and collectively through the G-77. For many, this will necessitate becoming members of COPUOS; as of 1 June 2022, only 58 of the G-77's 134 members have done so.

Developing states should also refuse to sign the Artemis Accords, to give the multilateral negotiations the time necessary for meaningful and generally agreed outcomes. Otherwise, the US campaign for signatures could pre-empt those negotiations or at least influence those outcomes. Some developing states could even “un-sign” the Artemis Accords, much like the United States has un-signed actual treaties in past years, to make it easier for the G-77 to speak with one voice. They should also, individually and collectively, publicly protest actions that are clearly intended to constitute subsequent practice and state practice in support of the US legal positions on space mining.

International law-making on space mining is underway, and the United States is seeking to maximize its influence through a number of strategies. This is hardly a surprise, since the United States has done this many times before, including on the issue of deep seabed mining.

Developing states now have a choice. They can support the US effort, either by signing the Artemis Accords or by doing nothing, which in international law is considered acquiesce and therefore consent. Or they can insist that international rules on space mining be developed multilaterally, starting in the new Working Group on Space Resources.

XII. BIBLIOGRAPHY

- ARIZONA BOARD OF REGENTS, *The Mission*, OSIRIS-REx Mission: Asteroid Sample Return Mission, 2022, available at: <https://www.asteroidmission.org/objectives/>.
- BARNES, R., FREESTONE, D. and ONG, D. M., *The Law of the Sea: Progress and Prospects*, Oxford University Press, 2006, available at: <https://doi.org/10.1093/acprof:oso/9780199299614.003.0001>.
- BERRIDGE, G. R., and LLOYD, Lorna, *Dictionary of Diplomacy*, 3rd ed., Palgrave Macmillan, 2012.
- BYERS, M., *Custom, Power and the Power of Rules*, Cambridge University Press, 1999.
- CHENG, B., “United Nations Resolutions on Outer Space: «Instant» International Customary Law?”, *The Indian Journal of International Law*, vol. 5, núm. 23, 1965.

- DE MAN, P., “State Practice, Domestic Legislation and the Interpretation of Fundamental Principles of International Space Law”, *Space Policy*, vol. 42, 2017, available at: <https://doi.org/10.1016/j.spacepol.2017.06.001>.
- DOLZER, R. and STEVENS, M., *Bilateral Investment Treaties*, Martinus Nijhoff, 1995.
- EGAN, B. J., “The Next Fifty Years of the Outer Space Treaty”, *Galloway Symposium on Critical Issues in Space Law*, 2016, available at: <https://2009-2017.state.gov/s/l/releases/remarks/264963.htm>.
- FEDERAL Law, No. (12) of 2019 on the Regulation of the Space Sector, 2019, available at: <https://www.moj.gov.ae/assets/2020/Federal%20Law%20No%2012%20of%202019%20on%20THE%20REGULATION%20OF%20THE%20SPACE%20SECTOR.pdf.aspx>.
- FOUST, J., “Japan Passes Space Resources Law”, *SpaceNews*, June 17, 2021, available at: <https://spacenews.com/japan-passes-space-resources-law/>.
- FOUST, J., “Mexico Joins Artemis Accords”, *SpaceNews*, December 10, 2021, available at: <https://spacenews.com/mexico-joins-artemis-accords/>.
- FOUST, J., “NASA Announces Artemis Accords for International Cooperation in Lunar Exploration”, *SpaceNews*, May 15, 2020, available at: <https://spacenews.com/nasa-announces-artemis-accords-for-international-cooperation-in-lunar-exploration/>.
- FOUST, J., “NASA Offers to Buy Lunar Samples to Set Space Resources Precedent”, *SpaceNews*, September 10, 2020, available at: <https://spacenews.com/nasa-offers-to-buy-lunar-samples-to-set-space-resources-precedent/#:~:text=NASA%20offers%20to%20buy%20lunar%20samples%20to%20set%20space%20resources%20precedent>.
- FRANCE-PRESSE, A., “Moon Rocks Sell for \$855,000 in New York: Sotheby’s”, *Phys*, 2018, available at: <https://phys.org/news/2018-11-moon-york-sotheby.html>.
- G-77 and CHINA, *G-77 and China Statement during the Sixtieth Session of the United Nations Committee on the Peaceful Uses of Outer Space, from 31 May-11 June 2021, delivered by H.E. Alejandro Solano Ortiz, Ambassador, Permanent Representative of Costa Rica*, 2021, available at: www.unoosa.org/documents/pdf/copuos/lsc/2021/statements/item_3_5_6a_6b_8_10_11_13_14_G77_China_ver:1_31_May_AM_LegalSC_280521.pdf.
- GLASBY, G. P., “Deep Seabed Mining: Past Failures and Future Prospects”, *Marine Georesources & Geotechnology*, vol. 20, num. 2, 2002, available at: <https://doi.org/10.1080/03608860290051859>.
- GUZMAN, A., “Why LDCs Sign Treaties that Hurt Them: Explaining the Popularity of Bilateral Investment Treaties”, *Virginia Journal of International Law*, vol. 38, 1998.

LAVICOLI, V., “The Legal Regime of Outer Space in Light of the Law of the Sea”, in ARICÒ, S. (ed.), *Ocean Sustainability in the 21st Century*, Cambridge University Press, 2015.

INTERNATIONAL SPACE EXPLORATION COORDINATION GROUP, *The Global Exploration Roadmap*, 3rd ed., 2018, available at: https://www.globalspaceexploration.org/wordpress/wp-content/isecg/GER_2018_small_mobile.pdf.

ISRAEL, B. R., “Space Resources in the Evolutionary Course of Space Lawmaking”, *AJIL Unbound*, 2019, available at: <https://doi.org/10.1017/aju.2019.12>.

JENNINGS, R., “Law-Making and Package Deal”, in BARDONNET, D. et al. (ed.), *Mélanges offerts à Paul Reuter*, Pedone, 1981.

JI, E.; CERNY, M. B. and PILIERO, R. J., “What Does China Think About NASA’s Artemis Accords?”, *The Diplomat*, 2020, available at: <https://thediplomat.com/2020/09/what-does-china-think-about-nasas-artemis-accords/>.

JIAN-CAI, J. and SOMMERS, E., “The Dual Regime for Deep Seabed Mining”, *Studia Diplomatica*, vol. 41, num. 1, 1988.

KHATWANI, N., “Common Heritage of Mankind for Outer Space”, *Astropolitics*, vol. 17, num. 2, 2019, available at: <https://doi.org/10.1080/14777622.2019.1638679>.

KISHOYIAN, B., “The Utility of Bilateral Investment Treaties in the Formulation of Customary International Law”, *Northwestern Journal of International Law and Business*, vol. 14, num. 2, 1994.

KOH, T., “Negotiating the UN Convention on the Law of the Sea”, *The Oxford Handbook of United Nations Treaties*, Oxford University Press, 2019, available at: <https://doi.org/10.1093/law/9780190947842.003.0032>.

LEGAL SUBCOMMITTEE OF THE COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE, A/AC.105/C.2/2022/SRA/L.1, *Draft Report Annex II – Report of the Chair and Vice-Chair of the working group established under the Legal Subcommittee agenda item entitled ‘General exchange of views on potential legal models for activities in the exploration, exploitation and utilization of space resources*, April 5, 2022, available at: www.unoosa.org/res/oosadoc/data/documents/2022/aac_105c_2sra/aac_105c_22022sral_1_0_html/AC105_C2_2022_SRA_L01E.pdf.

LEGAL SUBCOMMITTEE OF THE COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE, A/AC.105/C.2/L.314/Add.8, *Draft Report - General exchange of views on potential legal models for activities in exploration, exploitation and utilization of space resources*, June 10, 2021, available at: www.unoosa.org/res/oosadoc/data/documents/2021/aac_105c_2l/aac_105c_2l_314add_8_0_html/AC105_C2_L314Add08E.pdf.

LEGAL SUBCOMMITTEE OF THE COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE, A/AC.105/C.2/SR.63, *Summary Record of the 63rd Meeting*,

- October 20, 1966, available at: https://www.unoosa.org/pdf/transcripts/legal/AC105_C2_SR063E.pdf.
- MARTIN, D., “Space Artifacts of Soviets Soar at a \$7 Million Auction”, *The New York Times*, December 12, 1993, available at: <https://www.nytimes.com/1993/12/12/nyregion/space-artifacts-of-soviets-soar-at-a-7-million-auction.html>.
- MILLER, K. A. *et al.*, “An Overview of Seabed Mining Including the Current State of Development, Environmental Impacts, and Knowledge Gaps”, *Frontiers in Marine Science*, vol. 4, 2018, available at: <https://doi.org/10.3389/fmars.2017.00418>.
- NASA (n.d.), “Principles for a Safe Peaceful and Prosperous Future”, available at: <https://www.nasa.gov/specials/artemis-accords/index.html>.
- NASA, “The Artemis Accords: Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids for Peaceful Purposes”, 2020, available at: <https://www.nasa.gov/specials/artemis-accords/img/Artemis-Accords-signed-13Oct2020.pdf>.
- NASA, Shared Services Center, *Purchase of Lunar Regolith and/or Rock Materials from Contractor*, System for Award Management, 2020, available at: <https://sam.gov/opp/77726177617a45d0a196e23a587d7c14/view>.
- POTTER, S., “Bahrain Signs Artemis Accords”, *NASA*, March 7, 2022a, available at: <https://www.nasa.gov/press-release/bahrain-signs-artemis-accords>.
- POTTER, S., “Brazil Signs Artemis Accords”, *NASA*, June 15, 2021, available at: <https://www.nasa.gov/feature/brazil-signs-artemis-accords>.
- POTTER, S., “NASA Selects Companies to Collect Lunar Resources for Artemis”, *NASA*, December 3, 2020, available at: <https://www.nasa.gov/press-release/nasa-selects-companies-to-collect-lunar-resources-for-artemis-demonstrations>.
- POTTER, S., “NASA Welcomes Vice President of Colombia for Artemis Accords Signing”, *NASA*, May 10, 2022, available at: <https://www.nasa.gov/feature/nasa-welcomes-vice-president-of-colombia-for-artemis-accords-signing>.
- SCHACHTER, O., “Compensation for expropriation”, *American Journal of International Law*, vol. 78, num. 1, 1984.
- SORNARAJAH, M., “Power and Justice in International Law”, *Singapore Journal of International & Comparative Law*, vol. 1, num. 1, 1997.
- TASS, *Russia will not Accept Attempts to Privatize the Moon, Says Roscosmos CEO*, TASS Russian News Agency, 2020, available at: <https://tass.com/science/1159969>.
- THE INTERNATIONAL CENTER FOR THE SETTLEMENT OF INVESTMENT DISPUTES, ICSID (n.d.), *Bilateral Investment Treaty Database*, available at: <https://icsid.worldbank.org/resources/databases/bilateral-investment-treaties>.

- TRUMP, Donald J., Executive Order on Encouraging International Support for the Recovery and Use of Space Resources. The White House, 2020, available at: <https://trumpwhitehouse.archives.gov/presidential-actions/executive-order-encouraging-international-support-recovery-use-space-resources/>.
- UNITED NATIONS, *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, United Nations Treaty Series, vol. 1363, 1979.
- UNITED NATIONS, A/CONF.62/WP.10/Rev.1, *Informal Composite Negotiating Text*, Third Conference on the Law of the Sea, 1980, available at: https://legal.un.org/diplomaticconferences/1973_los/docs/english/vol_8/a_conf62_wp10_rev1.pdf.
- UNITED NATIONS, A/RES/48/263, *Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982*, July 28, 1994, available at: http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindxAgree.htm.
- UNITED NATIONS (n.d.), *Status of Convention Agreements*, Division of Ocean Affairs and the Law of the Sea, available at: https://www.un.org/Depts/los/convention_agreements/convention_agreements.html.
- UNITED NATIONS, *Treaty on principles governing the activities of States in the exploration and use of outer space, including the moon and other celestial bodies*, United Nations Treaty Series, vol. 610, 1967, available at: https://treaties.un.org/pages/show_details.aspx?objid=0800000280128cbd.
- UNITED NATIONS, *United Nations Convention on the Law of the Sea, Montego Bay*, United Nations Treaty Series, vol. 1833, 1982.
- UNITED NATIONS, *Vienna Convention on the Law of Treaties*, United Nations Treaty Series, vol. 1155, 1969.
- UNITED NATIONS, *Yearbook of the United Nations*, 1974.
- UNITED NATIONS GENERAL ASSEMBLY, *Permanent Sovereignty over Natural Resources*, 1962, available at: https://legal.un.org/avl/ha/ga_1803/ga_1803.html.
- UNITED NATIONS OFFICE FOR OUTER SPACE AFFAIRS, *Working Paper on the Establishment of a Working Group on Space Resources submitted by Austria, Belgium, Czech Republic, Finland, Germany, Greece, Slovakia and Spain*, 2021, available at: www.unoosa.org/documents/pdf/copuos/lsc/space-resources/Non-paper-on-the-Establishment-of-a-Working-Group-on-Space_Resources-at-COPUOS_LSC-27-05-2021.pdf.
- UNITED STATES DEPARTMENT OF STATE, *Republic of Singapore Signs the Artemis Accords*, United States Department of State, 2022, available at: <https://www.state.gov/republic-of-singapore-signs-the-artemis-accords/>.
- VOGLER, J., “Global Commons Revisited”, *Global Policy*, vol. 3, núm.1, 2012, available at: <https://doi.org/10.1111/j.1758-5899.2011.00156.x>.

- WALL, M., “New Space Mining Legislation Is «History in the Making»”, *Space*, November 20, 2015, available at: <https://www.space.com/31177-space-mining-commercial-spaceflight-congress.html>.
- WALL, M., “Trump Signs Executive Order to Support Moon Mining, Tap Asteroid Resources”, *Space*, 2020, available at: <https://www.space.com/trump-moon-mining-space-resources-executive-order.html>.
- WILLIAMS, M., “The Group of 77 and Global Environmental Politics”, *Global Environmental Change*, vol. 7, num. 3, 1997, available at: [https://doi.org/10.1016/s0959-3780\(97\)00005-8](https://doi.org/10.1016/s0959-3780(97)00005-8).