

UNIVERSITY OF PITTSBURGH LAW REVIEW ONLINE

Vol. 84 • 2023

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DEEP-SEABED MINING BEYOND NATIONAL  
JURISDICTIONS: A SERVICEABLE ENTERPRISE  
OR A HOSTAGE TO FORTUNE?

John P. Jarecki

ISSN 1942-8405 (online) • DOI 10.5195/lawreview.2023.950  
<http://lawreview.law.pitt.edu>



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# DEEP-SEABED MINING BEYOND NATIONAL JURISDICTIONS: A SERVICEABLE ENTERPRISE OR A HOSTAGE TO FORTUNE?

John P. Jarecki\*

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*“It was the Law of the Sea, they said. Civilization ends at the waterline. Beyond that, we all enter the food chain, and not always right at the top.”*<sup>1</sup>

## I. INTRODUCTION

The development of satellite imaging has enabled cartography of once-remote celestial bodies, allowing for a detailed understanding of alien worlds.<sup>2</sup> Paradoxically, the Earth’s seabed is one of the least explored places in the Solar System; this fact is best summarized by the trite revelation that “we know more about the surface of Mars than . . . the ocean floor.”<sup>3</sup> This lack of exploration does not denote a lack of interest. Indeed, the deep ocean represents one of the largest habitats for life on Earth and is comprised of a subaquatic landscape of “mountain ranges, plateaus, volcanic peaks, canyons and vast abyssal plains”—terrain that rivals even the most stunning features above the surface.<sup>4</sup> But the payoff for deep sea exploration is not limited to opportunities for ecological or cartographical discovery.

Indeed, the deep-seabed contains riches yet unrealized in the form of precious minerals and energy resources.<sup>5</sup> In Jules Verne’s *20,000 Leagues Under the Sea*, Captain Nemo exclaimed, “at the bottom of the sea there exist veins of zinc, iron, silver, and gold whose mining would quite certainly be feasible.”<sup>6</sup> This prediction has proven accurate. Today, private organizations and nation-states alike are poised to harvest the ocean’s considerable mineral resource bounty of polymetallic nodules, polymetallic sulfides, and cobalt crusts.<sup>7</sup> In addition, key strategic resources like copper, cobalt, nickel and manganese also lie on the ocean’s deep-seabed beyond the

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<sup>1</sup> HUNTER S. THOMPSON, *GENERATION OF SWINE* 87 (Simon and Schuster 1988).

<sup>2</sup> See, e.g., *How Mapping is Used by NASA & Applications of GIS in Space*, USC DORNSIFE: BLOG (June 6, 2021), <https://gis.usc.edu/blog/how-mapping-is-used-by-nasa-applications-of-gis-in-space/>.

<sup>3</sup> Isabelle Gerretson, *Why NASA is Exploring the Deepest Oceans on Earth*, BBC (Jan. 12, 2022), <https://www.bbc.com/future/article/2022011-why-nasa-is-exploring-the-deepest-oceans-on-earth>; Gene Feldman, *Oceans: The Great Unknown*, NASA (Oct. 8, 2009), <https://www.nasa.gov/audience/forstudents/5-8/features/oceans-the-great-unknown-58.html>. Feldman related that “we have better maps of the surface of Mars and the moon than we do the bottom of the ocean.” *Id.*

<sup>4</sup> Michael Lodge, *The International Seabed Authority and Deep Seabed Mining*, U.N. CHRON. (May 16, 2017), <https://www.un.org/en/chronicle/article/international-seabed-authority-and-deep-seabed-mining>.

<sup>5</sup> Kathryn A. Miller et al., *An Overview of Seabed Mining Including the Current State of Development, Environmental Impacts, and Knowledge Gaps*, FRONTIERS. MARINE. SCI. 2 (Jan. 10, 2018), <https://www.frontiersin.org/articles/10.3389/fmars.2017.00418/full>.

<sup>6</sup> JULES VERNE, *TWENTY THOUSAND LEAGUES UNDER THE SEA* (Pierre-Jules Hetzel ed., F.P. Walter trans., Naval Inst. Press 1993) (1870).

<sup>7</sup> Lodge, *supra* note 4.

limits of national jurisdiction, as those boundaries have been delimited by international agreements.<sup>8</sup> With demand on the rise for these materials as a result of the emerging green economy and the dwindling of land deposits, it seems inevitable that deep-seabed mining is poised to be the next major global industry.<sup>9</sup> Due to the proliferation of clean technologies which require batteries, it is expected that the need for minerals like graphite, cobalt, and lithium could increase by 500% by 2050.<sup>10</sup> Consider the case of electric vehicles:

Electric vehicle sales across Germany, France, the U.K. and Norway increased 75% year over year in February, according to recent metals and mining research from S&P Global Market Intelligence. In China, the world's biggest EV market, plug-in EV sales are forecast to hit 1.9 million units this year and climb to over 5 million units in 2025.<sup>11</sup>

Beyond merely meeting a growing demand, deep-sea mining advocates also suggest that the practice could be more environmentally responsible than other means of mineral extraction; for example, the International Seabed Authority (described in greater detail *infra*) claims that “[m]ining nodules is more like harvesting potatoes than strip-mining or open-pit operations for ores in the earth.”<sup>12</sup> Despite the seemingly inevitable nature of the enterprise, no major commercial deep-sea mining operations have been undertaken successfully to date, although several entities, such as the British Columbia-based seabed mining company DeepGreen Metals Inc., have announced undertakings as early as 2024.<sup>13</sup> Perhaps for this reason, the practice of deep-seabed mining has not received the general media coverage it is owed; even a shallow canvassing of the literature in this area suggests that

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<sup>8</sup>Vladimir Golitsyn, *Freedom of Navigation: Development of the Law of the Sea and Emerging Challenges*, 93 INT'L L. STUD. 262, 268–69 (2017), <https://digital-commons.usnwc.edu/cgi/viewcontent.cgi?article=1706&context=ils>; see also Treaty between the Kingdom of Norway and the Russian Federation concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean, Nor.-Ru., Sept. 15, 2010, 2791 U.N.T.S. 49095.

<sup>9</sup>Taylor Kuykendall, *S&P Podcast: Surging Demand for Battery Metals Drives Push to Mine Ocean Floor*, S&P GLOB. MKT. INTEL. (Apr. 20, 2021), <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/s-p-podcast-surging-demand-for-battery-metals-drives-push-to-mine-ocean-floor-63723436>.

<sup>10</sup>*Id.*

<sup>11</sup>*Id.*; see also Alexandra Gillespie, *Your Next Car May Be Built with Ocean Rocks. Scientists Can't Agree if That's Good*, NPR (Sept. 3, 2021, 6:00 AM), <https://www.npr.org/2021/09/03/1031434711/your-next-car-may-be-built-with-ocean-rocks-scientists-cant-agree-if-thats-good>.

<sup>12</sup>Kuykendall, *supra* note 9 (internal quotations removed).

<sup>13</sup>*Id.*

discussions of seabed mining take place mostly among environmentalists, technology futurists, and commentators on the Law of the Sea.<sup>14</sup> This Article's preliminary recommendation is that relevant authorities take action to inform the general public of the opportunities and pitfalls of the practice. This is essential due to the novel environmental and legal challenges posed by deep-seabed mining, as explored in detail below.

### A. *Legal and Regulatory Challenges to Deep-Seabed Mining*

As with any tale of sunken treasure, the commercial exploration of deep-seabed deposits will be ripe with conflict and competition. This friction is sure to increase as the yet-underutilized resources on the seabed become exploited. Due to rise of vessel traffic and the associated construction of mining facilities, the high seas will likely become a more congested and litigious place.<sup>15</sup> Yet another potential conflict may arise when those parts of the ocean floor designated as environmental exploration sites become targets for mining operations, or when vessels exercising "freedom of the high seas" come into contact with such sites.<sup>16</sup> Further, environmental experts remain uncertain of the impact that such activities may have on wildlife populations.<sup>17</sup> Operating in the foreground of these sources of potential future conflict are agreements, such as the comprehensive 1982 United Nations Convention on the Law of the Sea (UNCLOS), which "recogni[ze] the seabed and ocean floor as the common heritage of humankind."<sup>18</sup> Certainly, conflicts are bound to arise, especially in areas which do not fall within the Exclusive Economic Zone (EEZ) of a given state and which, under prevailing legal theory, belong to all of humanity.<sup>19</sup> The international Law of the Sea framework will be called to resolve these conflicts.

At the time of publication, no commercial-scale, deep-seabed mining has occurred, although smaller-scale mining operations have been conducted in the

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<sup>14</sup> See generally Janusz Symonides, *Unresolved Issues and Emerging Challenges in the Law of the Sea*, XXXIV MAR. L. VOL. 17 (2018) (internal quotation marks omitted), <https://journals.pan.pl/Content/109795/PDF/symonides.pdf>.

<sup>15</sup> Golitsyn, *supra* note 8.

<sup>16</sup> *Id.*

<sup>17</sup> Elizabeth Claire Alberts, *Deep-Sea Mining: An Environmental Solution or Impending Catastrophe?*, MONGABAY (June 16, 2020), <https://news.mongabay.com/2020/06/deep-sea-mining-an-environmental-solution-or-impending-catastrophe/>.

<sup>18</sup> Symonides, *supra* note 14, at 18.

<sup>19</sup> *Id.*; Marie Bourrel et al., *The Common of Heritage of Mankind as a Means to Assess and Advance Equity in Deep Sea Mining*, MARINE POL'Y 25–27 (2016), <https://www.sciencedirect.com/science/article/abs/pii/S0308597X16304729?via%3Dihub>.

shallower areas of the seabed.<sup>20</sup> In 2019, one much-anticipated, deep-seabed commercial mining venture on the continental shelf of Papua New Guinea failed miserably, bankrupting the corporations involved and sparking calls for a “Pacific-wide moratorium on seabed mining for a decade.”<sup>21</sup> Despite these failures, the International Seabed Authority (ISA), an independent regulatory agency of UNCLOS vintage, approved twenty-seven contracts for mineral extraction, with more likely to be issued.<sup>22</sup> Recent delays notwithstanding, the issues of international law of the Sea inherent in deep-seabed mining beyond national jurisdictions (“DSMBJ”) could not be more timely. Mineral scarcity, economic necessity, as well as the further development of ocean mining technologies, are certain to make DSMBJ ubiquitous in the near future.

Alarming, the current legal regime is dangerously unprepared for this eventuality. This Article focuses primarily on the legal challenges of DSMBJ, the mining of resources which lie outside the limits of national jurisdictions, for two key reasons. First, these areas account for 60% of the entire seabed.<sup>23</sup> Second, disputes are likely to arise in these areas. While impressively wide-ranging, the 1982 UNCLOS and the agencies it created fall short of providing necessary guidance for the DSMBJ disputes of tomorrow. This Article will explore these issues of law in a nuanced fashion. Section II will review the pertinent sources of law and regulatory bodies relevant to potential issues arising from DSMBJ and consider criticism that has been lobbed at the practice by environmental groups. Section III will contend that the International Seabed Authority (ISA) is best suited to meet the challenges presented by DSMBJ and offer a proposal which could help preserve the full promise of the “CHM principle” for future generations. Finally, Section IV will briefly conclude.

## II. BACKGROUND

The Law of the Sea is a forest of international agreements and treaties, with some “trees” standing taller than others. Taken together, they offer a robust framework for resolving disputes arising from DSMBJ. However, before delving

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<sup>20</sup> Miller et al., *supra* note 5.

<sup>21</sup> Ben Doherty, *Collapse of PNG Deep-sea Mining Venture Sparks Calls for Moratorium*, THE GUARDIAN (Sept. 15, 2019, 14:00 EDT), <https://www.theguardian.com/world/2019/sep/16/collapse-of-png-deep-sea-mining-venture-sparks-calls-for-moratorium>. Crucially, regulatory authorities in the region noted that “appropriate legal frameworks for mining of this kind are not in place, either in the Pacific or elsewhere. This type of commercial experiment in the ocean should not progress without effective regulatory measures for risk mitigation, monitoring and enforcement of conditions.” *Id.*

<sup>22</sup> Miller et al., *supra* note 5, at 1.

<sup>23</sup> Bourrel et al., *supra* note 19.

into the sources of the Law of the Sea, it may be useful to understand the terrain—both legal and geographical—that lie at the heart of these concerns. From the deck of an oceangoing vessel, it is difficult to imagine the complex landscape which exists below the waves. Like the visible topology of landmasses, the ocean floor is a physically dynamic place. The seabed is comprised of four distinct areas: the continental shelf, the continental slope, the continental rise, and the abyssal plain—each of which has legal significance.<sup>24</sup> The continental shelf is the area of seabed which hugs continents and gradually drops off into the depths.<sup>25</sup> This area represents one of the most complex aspects of Law of the Sea and has been the subject of many separate controversies and conventions.<sup>26</sup> From a legal perspective, the continental shelf may extend the sovereign rights of a state “for the purpose of exploring it and exploiting its natural resources.”<sup>27</sup> Article 76, Paragraph 1 of UNCLOS provides that coastal states may argue claims of their continental shelf beyond the 200 nautical miles normally granted under its “Exclusive Economic Zone” to a maximum of 350 nautical miles under some circumstances.<sup>28</sup> In modern jurisprudence, this term “continental shelf” encompasses the continental slope and the continental rise, which themselves are seabed formations that link the coastal baseline, or shore, with the

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<sup>24</sup> Paul Sutherland, *The Legging Law of the Continental Shelf: Some Problems and Proposals*, 22 CATH. U. L. REV. 131, 133 (1972).

<sup>25</sup> *Id.*

<sup>26</sup> *See generally id.*

<sup>27</sup> U.N. Convention on the Law of the Sea art. 77 Dec. 10, 1982, 1833 U.N.T.S. 397.

<sup>28</sup> Helmut Tuerk, *Questions Relating to the Continental Shelf Beyond 200 Nautical Miles: Delimitation, Delineation, and Revenue Sharing*, 97 INT’L L. STUD. 232, 235–36 (2021), <https://digital-commons.usnwc.edu/ils/vol97/iss1/1>. Article 76 describes the continental shelf as the area “throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured—even where no geological shelf exists.” *Id.* at 236–37. Article 76 enables states to extend national jurisdiction up to 350 nautical miles from the coastal baseline. Anna Cavnar, *Accountability and the Commission on the Limits of the Continental Shelf: Deciding Who Owns the Ocean Floor*, 42 CORNELL INT’L L.J. 387, 389 (2009). In order to claim this right, the state must describe the boundaries of their claim by using a complex formula laid out in Article 76. *Id.* This formula requires “extensive scientific testing and measurements to delineate a set of precise boundaries that mark the edges of the claiming state’s exclusive seabed rights.” *Id.* In addition, the claims must be verified by an authority set up under Article 76, the Commission on the Limits of the Continental Shelf (the “CLCS” or the “Commission”), which is comprised of independent technical and scientific experts who are tasked with reviewing every extended shelf claim and ensuring that it comports with the requirements set forth in the formula. *Id.* at 389–90. The state’s extended boundary claim is only realized when the CLCS has given its final stamp of approval. *Id.* at 390.

seafloor.<sup>29</sup> The ocean floor is referred to as the abyssal plain.<sup>30</sup> The abyssal plain is also likely to constitute “The Area”—to borrow Ambassador Arvid Pardo’s terminology—a sort of “commonwealth” described in more detail *infra*.<sup>31</sup> “The Area” is of paramount importance to the legal issues of DSMBJ.

Other legal boundaries grant varying degrees of sovereign authority to the coastal state. As alluded to earlier, a coastal state’s exclusive economic zone (“EEZ”) extends 200 nautical miles from the coastal baseline.<sup>32</sup> Within this range, nations enjoy full economic rights and fishery authority.<sup>33</sup> An exception exists when EEZs of states overlap, and the delimitation of EEZs in these cases are resolved by separate international agreements.<sup>34</sup> A coastal state’s territorial sea extends twelve nautical miles from the coastal baseline, in which the state enjoys full sovereignty, although foreign vessels “enjoy the right of innocent passage through the territorial sea.”<sup>35</sup> Additionally, a coastal state may enjoy limited control over the contiguous zone, which is up to twenty-four nautical miles surrounding the coastal baseline, to guard against the “infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea . . . .”<sup>36</sup>

#### A. *The 1982 Convention*

As one of the most complex and comprehensive international agreements ever conceived, the 1982 United Nations Convention on the Law of the Sea (“UNCLOS”) has rightly been described as a “constitution for the oceans.”<sup>37</sup> Apart from merely confirming customary law codified by the 1958 Geneva Conventions, UNCLOS is most significant in the progressive development of Law of the Sea that it represented.<sup>38</sup> This development came by way of new concepts, like the EEZ and

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<sup>29</sup> U.N. Convention on the Law of the Sea, *supra* note 27, art. 73; Sutherland, *supra* note 24; *see also* David W. Robertson, *The Outer Continental Shelf Lands Act’s Provisions on Jurisdiction, Remedies, and Choice of Law. Correcting the Fifth Circuit’s Mistakes*, 38 J. MAR. L. & COM. 487, 493 (2007).

<sup>30</sup> Sutherland, *supra* note 24.

<sup>31</sup> U.N. Convention on the Law of the Sea, *supra* note 27, art. 55.

<sup>32</sup> *Id.* art. 57.

<sup>33</sup> *Id.* arts. 58, 62, para. 4.

<sup>34</sup> *Id.* art. 74.

<sup>35</sup> *Id.* arts. 3, 17.

<sup>36</sup> *Id.* art. 33.

<sup>37</sup> Symonides, *supra* note 14.

<sup>38</sup> Golitsyn, *supra* note 8; *see generally* DONALD ROTHWELL & TIM STEPHENS, *THE INT’L L. OF THE SEA* (3d ed. 2023).



archipelagic waters, as well as the new definition of the continental shelf and its recognition of the seabed and ocean floor as the common heritage of humanity.<sup>39</sup> It is responsible for tempering states' claims by way of a strict legal regulatory framework, and instills limits on these claims: "12 miles for the territorial sea, 200 miles for the exclusive economic zone and 350 miles for the extended continental shelf."<sup>40</sup> The convention is also comprehensive in its nature; embedded in the text of UNCLOS is the doctrine that all legal issues relating to the Law of the Sea are interconnected.<sup>41</sup> Among the key features of UNCLOS are the following:

1. Coastal States exercise sovereignty over their territorial sea which they have the right to establish its breadth up to a limit not to exceed twelve nautical miles; foreign vessels are allowed "innocent passage" through those waters;
2. Ships and aircraft of all countries are allowed "transit passage" through straits used for international navigation; States bordering the straits can regulate navigational and other aspects of passage;
3. Archipelagic States, made up of a group or groups of closely related islands and interconnecting waters, have sovereignty over a sea area enclosed by straight lines drawn between the outermost points of the islands; the waters between the islands are declared archipelagic waters where States may establish sea lanes and air routes in which all other States enjoy the right of archipelagic passage through such designated sea lanes;
4. Coastal States have sovereign rights in a 200-nautical mile exclusive economic zone (EEZ) with respect to natural resources and certain economic activities, and exercise jurisdiction over marine science research and environmental protection;
5. All other States have freedom of navigation and overflight in the EEZ, as well as freedom to lay submarine cables and pipelines;
6. Land-locked and geographically disadvantaged States have the right to participate on an equitable basis in exploitation of an appropriate part of the surplus of the living resources of the EEZ's of coastal States of the same region or sub-region; highly migratory species of fish and marine mammals are accorded special protection;

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<sup>39</sup> Symonides, *supra* note 14, at 19, 34.

<sup>40</sup> *Id.* at 19.

<sup>41</sup> *Id.*

7. All States enjoy the traditional freedoms of navigation, overflight, scientific research and fishing on the high seas; they are obliged to adopt, or cooperate with other States in adopting, measures to manage and conserve living resources . . . .<sup>42</sup>

### 1. The Slow Path to Enactment

The path UNCLOS took from the time it opened for signature to its eventual entry into force was a long and storied journey. The Convention opened for signature on December 10, 1982 in Montego Bay, Jamaica.<sup>43</sup> In the fourteen years prior, representatives from more than 150 countries worked to iron out the details.<sup>44</sup> Importantly, drafters came from all regions of the globe, and “all legal and political systems and the spectrum of socio/economic development” were represented.<sup>45</sup> The Convention was entered into force on November 16, 1994, approximately one year after the date of the deposit of the sixtieth instrument of ratification or accession which was needed for the Convention to be accepted worldwide.<sup>46</sup> There are a few aspects of UNCLOS which may explain the long delay, but the most obvious is UNCLOS’s hostile position toward reservations. UNCLOS states in unambiguous language that “[n]o reservations or exceptions may be made to this Convention unless expressly permitted by other articles of this Convention.”<sup>47</sup> In the context of international treaties, state signatories, where permitted, may choose to accede to a treaty with reservations; these statements are often used to harmonize the language of the treaty with the signing country’s own Constitution or existing domestic laws.<sup>48</sup> Thus, UNCLOS’s hostility toward reservations may have likely contributed to its delayed enactment.<sup>49</sup>

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<sup>42</sup> U.N. Convention on the Law of the Sea, *supra* note 27, art. 77.

<sup>43</sup> *Id.*

<sup>44</sup> *Id.*

<sup>45</sup> *Id.*

<sup>46</sup> *Id.*

<sup>47</sup> U.N. Convention on the Law of the Sea, *supra* note 27, art. 309.

<sup>48</sup> John King Gamble Jr., *Reservations to Multilateral Treaties*, 74 AM. J. INT’L L. 372, 373–74, 386 (1980).

<sup>49</sup> See generally John King Gamble Jr., *The 1982 U.N. Convention on the Law of the Sea: A Midstream Assessment of the Effectiveness of Article 309*, 24 SAN DIEGO L. REV. 627 (1987).

## 2. The Reagan Administration and Deep-Seabed Mining

To date, the United States of America has not signed, acceded to, or ratified any part of UNCLOS.<sup>50</sup> Commentators have suggested that the United States failed to ratify the Convention because members of the Republican party feared that it would undermine the sovereignty of the United States “by transferring ‘ownership’ of the high seas to the United Nations.”<sup>51</sup> In addition, American opponents to UNCLOS contended that the treaty would allow “global bureaucrats to overrule U.S. naval operations and require U.S. companies to pay royalties to the International Seabed Authority.”<sup>52</sup> The Reagan Administration also apparently “feared [lawsuits arising from the United States’ failure] to meet the environmental standards for the high seas” which were set by the treaty, should the United States accede.<sup>53</sup>

Although the forgoing reasons for the United States’ refusal to accede to UNCLOS were likely the most publicized, a closer reading of the Reagan Administration’s position on the Convention reveals that deep-seabed mining was a major factor in the determination—if not the only one. On July 9, 1982, President Ronald Reagan made the following remarks:

The United States has long recognized how critical the world’s oceans are to mankind and how important international agreements are to the use of those oceans. For over a decade, the United States has been working with more than 150 countries at the Third United Nations Conference on Law of the Sea to develop a comprehensive treaty.

On January 29 of this year, I reaffirmed the United States commitment to the multilateral process for reaching such a treaty and announced that we would return to the negotiations to seek to correct unacceptable elements in the [deep-seabed] mining part of the draft convention. I also announced that my administration would support ratification of a convention meeting six basic objectives.

On April 30[,] the conference adopted a convention that does not satisfy the objectives sought by the United States. It was adopted by a vote of 130 in favor, with four against (including the United States) and seventeen abstentions. Those voting “no” or abstaining appear small in number but represent countries which

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<sup>50</sup> Anya Wahal, *On International Treaties, the United States Refuses to Play Ball*, COUNCIL ON FOREIGN RELS. (Jan. 7, 2022, 5:08 PM), <https://www.cfr.org/blog/international-treaties-united-states-refuses-play-ball>.

<sup>51</sup> *Id.*

<sup>52</sup> *Id.*

<sup>53</sup> *Id.*

produce more than 60% of the world's gross national product and provide more than 60% of the contributions to the United Nations.

We have now completed a review of that convention and recognize that it contains many positive and very significant accomplishments. Those extensive parts dealing with navigation and overflight and most other provisions of the convention are consistent with United States interests and, in our view, serve well the interests of all nations. That is an important achievement and signifies the benefits of working together and effectively balancing numerous interests. The United States also appreciates the efforts of the many countries that have worked with us toward an acceptable agreement, including efforts by friends and allies at the session that concluded on April 30.

Our review recognizes, however, that the [deep-seabed] mining part of the convention does not meet United States objectives. For this reason, I am announcing today that the United States will not sign the convention as adopted by the conference, and our participation in the remaining conference process will be at the technical level and will involve only those provisions that serve United States interests.

These decisions reflect the deep conviction that the United States cannot support a deep seabed mining regime with such major problems. In our view, those problems include:

- Provisions that would actually deter future development of deep seabed mineral resources, when such development should serve the interest of all countries.
- A decision-making process that would not give the United States or others a role that fairly reflects and protects their interests.
- Provisions that would allow amendments to enter into force for the United States without its approval. This is clearly incompatible with the United States approach to such treaties.
- Stipulations relating to mandatory transfer of private technology and the possibility of national liberation movements sharing in benefits.
- The absence of assured access for future qualified deep seabed miners to promote the development of these resources.

We recognize that world demand and markets currently do not justify commercial development of deep seabed mineral resources, and it is not clear when such development will be justified. When such factors become favorable, however, the deep seabed represents a potentially important source of strategic and other minerals. The aim of the United States in this regard has been to

establish with other nations an order that would allow exploration and development under reasonable terms and conditions.<sup>54</sup>

### B. *The International Seabed Authority*

Based on the language above, the framework most objected to by the Reagan Administration was the power UNCLOS vested in the authorities that it created—such as the International Seabed Authority, which is tasked with regulating the protection and preservation of the marine environment and sets out the rules governing marine research in these areas.<sup>55</sup> Also important to a consideration of DSMBJ, UNCLOS created legal parameters of marine areas and defined the legal status of the seabed and ocean floor extending beyond national boundaries.<sup>56</sup> So far, the ISA has signed off on twenty-eight exploration contracts in the Pacific, Indian, and Atlantic Oceans, covering a vast amount of the ocean floor.<sup>57</sup> The ISA will grant contracts to states who are a party to UNCLOS and to companies who are sponsored by state signatories to the convention.<sup>58</sup> A diverse group of states have taken advantage of these opportunities. So far, “China, France, Germany, India, Japan, the Republic of Korea, the Russian Federation and the Interoceanmetal Joint Organization (a consortium of Bulgaria, Cuba, the Czech Republic, Poland, the Russian Federation and Slovakia)” have contracted with the ISA.<sup>59</sup> Additionally, a recent trend is emerging in which private companies sponsored by developing nations, such as “the Cook Islands, Kiribati, Nauru, Singapore and Tonga[,]” are becoming involved.<sup>60</sup>

According to ISA leadership, the body is now committed to developing a regulatory framework that enables the extraction of these resources while also contemplating a wide range of environmental and technical concerns.<sup>61</sup> Although each mining expedition will employ different types of technologies, in every case,

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<sup>54</sup> RONALD REAGAN, RONALD REAGAN PRESIDENTIAL LIBRARY AND MUSEUM, STATEMENT ON UNITED STATES ACTIONS CONCERNING THE CONFERENCE ON THE LAW OF THE SEA (July 9, 1982), <https://www.reaganlibrary.gov/archives/speech/statement-united-states-actions-concerning-conference-law-sea>.

<sup>55</sup> *Id.*

<sup>56</sup> *Id.*; Lodge, *supra* note 4.

<sup>57</sup> Lodge, *supra* note 4.

<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

<sup>60</sup> *Id.*

<sup>61</sup> *Id.*

an extractor mechanism will make contact with the seafloor.<sup>62</sup> With respect to minerals like cobalt crusts, the substrate of the seafloor will need to be drilled into while nodules may be collected from the surface of the seabed directly.<sup>63</sup> Minerals and seawater will then be brought to the surface before they are separated at the collecting vessel.<sup>64</sup> Of course, the manner in which these operations are conducted is of supreme importance to the ISA. Each ISA contract decision balances several important interests related to the “societal benefits of deep seabed mining, [such as] access to essential minerals, the non-displacement of communities[,] extensive deep sea research and technological development, [as well as] the need to protect the marine environment.”<sup>65</sup> Fortunately, the ISA’s ultimate authority helps ensure that these interests will be considered in an enforceable way.<sup>66</sup> At the present moment, mining of the deep seabed has not occurred. It is therefore unsurprising that the ISA has spent most of its efforts ensuring that would-be exploration contractors conduct research which provides “baseline data, especially on the composition and distribution of deep-sea species” and provide studies which explore any long-term impacts of deep-sea mining which are presently unknown.<sup>67</sup> The risk of environmental damage is always present in these activities, and the ISA has prioritized the preservation of the environment in the realm of DSMBJ so far.<sup>68</sup>

*C. Early Considerations of Deep Seabed Mining and the  
Common Heritage of Mankind (CHM) Principle*

The law governing DSMBJ, in many ways, developed consubstantially with the Law of the Sea itself. The existence of deep seabed minerals first caught the attention of the world in the 1960s, thanks to *The Mineral Resources of the Sea*, a seminal book authored by American geologist John L. Mero.<sup>69</sup> The book, which argued that the seabed held the key to the world’s future supply of mineral resources, famously inspired Ambassador Arvid Pardo of Malta to deliver remarks at the First Committee of the United Nations General Assembly calling on the body to designate recovered resources from the international deep seabed as the “common heritage of

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<sup>62</sup> *Id.*

<sup>63</sup> *Id.*

<sup>64</sup> *Id.*

<sup>65</sup> *Id.*

<sup>66</sup> *Id.*

<sup>67</sup> *Id.*

<sup>68</sup> *Id.*

<sup>69</sup> See generally JOHN L. MERO, *THE MINERAL RESOURCES OF THE SEA* (1970).

mankind.”<sup>70</sup> Accordingly, Pardo advocated for an international regulatory framework to keep technologically advanced states from conquering the seabed and consuming its resources to the disadvantage of still-developing States, also announcing the need for an appropriate institutional machinery.<sup>71</sup>

Pardo’s peaceful and egalitarian vision for seabed resources lying beyond the EEZ of a state, affectionately referred to as “the Area,” was largely embraced by the United Nations, which from 1967 to 1982 drafted a series of agreements which are now axiomatic to the Law of the Sea, including UNCLOS.<sup>72</sup> Specifically, in 1970, the General Assembly adopted the “Declaration of Principles Governing the Seabed and the Ocean Floor, and the Subsoil Thereof: Beyond the Limits of National Jurisdiction,” which had the primary effect of ensuring the seabed would be used for peaceful purposes and “developed for the benefit of mankind as a whole through international machinery to be established for that purpose.”<sup>73</sup> Currently, it seems the “appropriate institutional machinery”<sup>74</sup> for enforcing Pardo’s vision is the ISA itself, *vis-à-vis* “The Enterprise,” the commercial arm of the ISA.<sup>75</sup> The current framework of the ISA provides no schedule for how these resources would be “equitably” devised.

Regardless, the so-called CHM principle—named for Pardo’s famous declaration—has been considered an essential element of UNCLOS, providing guidance for the “management of the resources which lie outside the limits of national jurisdiction[s].”<sup>76</sup> In addition to the aforementioned notions of distributive justice, which is achieved through preferential treatment of developing states with respect to the extraction of natural resources, the CHM principle goes further. For

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<sup>70</sup> Karin Mickelson, *Common Heritage of Mankind as a Limit to Exploitation of the Global Commons*, 30 EUR. J. INT’L L. 635, 635 (2019).

<sup>71</sup> *Id.*

<sup>72</sup> Bourrel et al., *supra* note 19, at 2; *see also* Aline Jaeckel, *Benefitting from the Common Heritage of Humankind: From Expectation to Reality*, 35 INT’L J. MARINE & COASTAL L. 660, 661 (2020), [https://brill.com/view/journals/estu/35/4/article-p660\\_3.xml](https://brill.com/view/journals/estu/35/4/article-p660_3.xml).

<sup>73</sup> Lodge, *supra* note 4.

<sup>74</sup> John E. Noyes, *The Common Heritage of Mankind: Past, Present, and Future*, 40 DENV. J. INT’L L. & POL’Y 447, 451 (2011).

<sup>75</sup> *Nautilus Minerals Propose Joint Venture with the Enterprise*, INT’L SEABED AUTH. (Apr. 12, 2022), <https://www.isa.org.jm/news/nautilus-minerals-propose-joint-venture-enterprise>. According to the ISA website, The Enterprise is “empowered to conduct its own mining, initially through joint ventures with other entities. Until seabed mining becomes a commercial reality, the functions of the Enterprise are to be carried out by the Secretariat.” *Id.*

<sup>76</sup> Bourrel et al., *supra* note 19.

instance, because the Area is “subject to the freedom of the seas,” regard should be “given to other legitimate uses . . . [a]ssociated with this is the idea that such interests should serve not only the current generations but also the interest of future generations.”<sup>77</sup>

While the CHM principle is laudable in theory, its exact legal status—or the specific obligations it imposes on States—remains poorly defined. It has been noted by commentators that while UNCLOS does not explicitly invoke *jus cogens*, for instance, it does provide that signatories shall not offer amendments with respect to the CHM principle as it appears in Article 136, “and that they shall not be party to any agreement in derogation thereof.”<sup>78</sup> Thus, scholars have disagreed over whether or not the CHM principle should be understood as customary law.<sup>79</sup> Yet another problem is a definitional one; scholars have diverged in their interpretation of the term “common heritage.”<sup>80</sup> One scholar argued that each individual state has the burden of ensuring that “activities subject to the principle are carried out for the benefit of all mankind” and thus, reserves choice over “whether to attempt to achieve this objective by refraining from unilateral, in favour of joint[] activities, by seeking cooperation on a bilateral or multilateral basis, *or* by redistributing revenues or information.”<sup>81</sup>

On the other hand, The Seabed Disputes Chamber of the International Tribunal for the Law of the Sea (ITLOS) announced through its Advisory Opinion on the *Responsibilities and Obligations of States Sponsoring Persons and Entities with respect to Activities in the Area* “that the role of the sponsoring State is to contribute to the common interest of all States in the proper implementation of the principle of the common heritage of mankind by assisting the Authority and by acting on its own with a view to ensuring that entities under its jurisdiction conform to the rules on deep seabed mining.”<sup>82</sup> Clearly, there are divergent views with respect to even the most bedrock concepts underlying the CHM Principle that must be resolved in order to ensure its effectiveness as DSMBJ becomes a commercial reality. It appears, however, that the ISA is clarifying how the CHM Principle will be considered during its dealings with extractors.<sup>83</sup> For example, the ISA’s 2019 exploitation regulations

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<sup>77</sup> *Id.*

<sup>78</sup> *Id.*

<sup>79</sup> *Id.*

<sup>80</sup> *Id.*

<sup>81</sup> Noyes, *supra* note 74, at 453 (internal quotation marks omitted).

<sup>82</sup> Bourrel et al., *supra* note 19.

<sup>83</sup> Jaeckel, *supra* note 72, at 681.



reference the CHM principle as one factor to determine whether an application for an exploitation contract should be accepted.<sup>84</sup> The regulations commit the ISA to considering “the manner in which the proposed Plan of Work contributes to realizing benefits for mankind as a whole.”<sup>85</sup> Of course, these “benefits” must be clearly defined before DSMBJ operations proliferate.

#### D. Environmental Concerns

Even though ecological dangers posed by DSMBJ are entirely speculative, environmental concerns constitute a major reason why commercial DSMBJ projects have not yet begun. Opponents to DSMBJ insist that such activities are likely to cause serious damage to ecosystems and the unique life forms that exist at the crushing depths of the Area, with mining contractors vehemently disagreeing.<sup>86</sup> The debate has especially centered around the collection of polymetallic nodules, potato-sized formations on the seafloor that contain minerals such as manganese, copper, and cobalt. While these mineral accretions have monetary value above the surface, recent studies suggest that they may have considerable ecological value remaining on the bottom of the ocean, as well. One such investigation into the potential consequences of polymetallic nodule mining suggest that “sediment plumes and waste discharge from mining could upset phytoplankton blooms at the sea’s surface, and introduce toxic metals into marine food chains.”<sup>87</sup> In addition, this same mining discharge could also drift through the ocean and impact adjacent seamounts and coral reef formations, which are relied upon by many rare fish and marine mammal species for shelter and food.<sup>88</sup> These issues are compounded by the fact that some of these marine species are rare and have evolved to thrive in unique environments; “[t]he report also calls attention to the potential impacts of light pollution, which could disrupt a multitude of species attuned to living in the dark, and noise pollution that could change the swimming and schooling behavior of tuna, and cause dolphins and whales to strand.”<sup>89</sup> Because no DSMBJ has occurred, mining proponents often

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<sup>84</sup>*Id.*

<sup>85</sup> *Id.*

<sup>86</sup> Alberts, *supra* note 17.

<sup>87</sup> Twin Harbors Waterkeeper, *Why You Should Care About Seabed Mining*, WATERKEEPER ALL. (Nov. 2, 2020), <https://waterkeeper.org/news/why-you-should-care-about-seabed-mining/#:~:text=Sediment%20plumes%20and%20waste%20discharge,dolphins%20and%20whales%20to%20strand>.

<sup>88</sup> *Id.*

<sup>89</sup> *Id.*

argue that there is no evidence such activities cause these environmental challenges.<sup>90</sup> Environmentalists, on the other hand, push back:

Some people who are proponents of mining say, “Oh, let’s mine first and then we’ll be able to see what the problems are” . . . [a]nd we’re saying, “Well, we don’t really need to do that.” We know you’re going to destroy the biodiversity down there and that species are going to be lost. We know that the impacts are going to be long lasting because those nodules take millions of years to form.<sup>91</sup>

While the regulatory restrictions on DSMBJ are unclear, other environmentalists are concerned about the actual enforcement of future safeguards.<sup>92</sup> These commentators highlight the practical difficulties of supervising these sites, due to the remote nature of underwater operations.<sup>93</sup> One such commentator made the observation that “[o]n land, you can fly a drone over [a mine], and there’s all kinds of ways to see what’s actually going on . . . [b]ut in the deep sea, who’s going to be the watchdogs down there? And if things go wrong, how do you fix it?”<sup>94</sup> The responses to this critique are wide ranging, but most ultimately contend that DSMBJ is similar to offshore oil drilling, and so it could be supervised in a similar manner.<sup>95</sup> Overall, while these environmental challenges should be taken seriously, it seems as though they are already being taken into consideration by the ISA and other relevant authorities.

### III. IMPROVING THE REGULATORY FRAMEWORK BEFORE IT IS TOO LATE

As outlined above, the chief difficulties now in the realm of DSMBJ are related to the enactment of existing priorities which, if effectuated, could ensure that the deep seabed’s resources are extracted in an environmentally and socially responsible manner. Although the ISA has made statements displaying a general embrace of ideals such as the CHM principle, it is yet unclear how these lofty notions of international justice will be enforced. The institutional framework exists, of course, but policy choices will need to be developed before mining operations begin. Of course, one option is to simply do nothing prior to the commencement of these

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<sup>90</sup> *Id.*

<sup>91</sup> *Id.* (internal quotation marks omitted).

<sup>92</sup> *Id.*

<sup>93</sup> *Id.*

<sup>94</sup> *Id.* (internal quotation marks omitted).

<sup>95</sup> *Id.*

operations and let the occurrence of the first disputes serve as a catalyst for policy development. This is probably unwise. Put simply, the deep monetary interests involved will, in the absence of previously agreed upon “rules of the game,” run roughshod over the kumbaya-esque aspirations of Ambassador Pardo. To be sure, the notion that rules must be formulated is by no means novel or unique to this Article. This same sentiment has been shared by many commentators, and by the leadership team of the ISA itself.<sup>96</sup> This Article does, however, delineate the specific policies that should be enacted as well as the manner in which they should be codified.

#### A. *The ISA is Best Suited to Enforce the CHM Principle*

There are many avenues for adding language which would ensconce Ambassador Pardo’s principles. For one thing, policies might be adopted by the Seabed Disputes Chamber, an administrative arm of UNCLOS which was formed by the agreement.<sup>97</sup> There are also provisions in place to amend UNCLOS itself or to pass “special implementation agreements” to provide for more stringent regulations—although commentators have noted that any changes to UNCLOS are more likely to occur at the level of the International Maritime Organization (IMO) due to the fact that even one state can pose an almost fatal challenge to an amendment; “Article 313(2) provides that ‘if . . . a State Party objects to the proposed amendment or to the proposal for its adoption by the simplified procedure, the amendment shall be considered rejected.’”<sup>98</sup> Arguably, however, the best way to enact more specific policies that accomplish the goals encapsulated by the CHM principle is to enact regulations at the level of the ISA, the organization directly tasked with these issues in the first place.

Due to the divergent interpretations of the CHM principle and related topics, it seems reasonable for the ISA to anticipatorily create a framework for ensuring that deep-sea miners, be they states or their affiliate corporations, contribute to the project of the CHM principle. The ISA could require future contractors, for instance, to commit 30% of their monetary earnings from a given expedition to go towards a fund which benefits charities in keeping with the spirit of Ambassador Pardo’s mission. Perhaps a smaller percentage of the 30% should be earmarked for further research into the potential harms posed by deep-sea mining in general and should contribute towards the research and development of technologies which could make DSMBJ a

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<sup>96</sup> Bourrel et al., *supra* note 19.

<sup>97</sup> U.N. Convention on the Law of the Sea, *supra* note 27, art. 186.

<sup>98</sup> Raul Pedrozo, *Is it Time for the United States to Join the Law of the Sea Convention?*, 41 J. MAR. L. & COM. 151, 164 (2010).

more ecologically safe endeavor. In addition, the ISA should create a sliding scale whereby developing or under-advantaged nations pay some figure less than the 30% in keeping with the mission of CHM. This sliding scale could consider any number of factors, such as a state's GDP, average household income, specific in-country social indicators, and other variables. Overall, while the precise figure should be decided upon by the ISA, it seems necessary to have a specific figure in the first place—to ensure that the principles are actually upheld. As for the conflicts that are certain to arise on the high seas as a secondary effect of DSMBJ, existing frameworks of UNCLOS, such as the Seabed Disputes Chamber or related agencies, should rise to the challenge of keeping the peace outside the EEZs of member states. These factors are easily enumerated and suggested, but they are by no means easy to enact and enforce. However, in the fullness of time, the framework outlined above may be of some use in constructing a framework which balances the relevant interests at play in DSMBJ issues.

#### IV. CONCLUSION

Many factors conspire to make DSMBJ an issue of pressing international concern. Many have described the seas that surround us as the “Earth’s final frontier,” particularly since, as of 2017, only about 6% of the ocean was mapped in adequate detail.<sup>99</sup> When making his statement publicizing the decision of his administration not to accede to UNCLOS, President Ronald Reagan said, “[w]e recognize that world demand and markets currently do not justify commercial development of deep seabed mineral resources, and it is not clear when such development will be justified.”<sup>100</sup> Due to the rising demand for minerals, and the continued depletion of these critical resources on land, it seems prudent to consider that the time for “such development to be justified” is imminent. In this relative calm before the storm—prior to the commencement of these DSMBJ operations—the ISA has the authority, as well as the responsibility, to take steps to ensure that existing legal principles are protected prior to the commencement of these operations. The important task of safeguarding the world’s most vulnerable cultures and economies *vis-à-vis* the CHM principle will likely only become more Sisyphean after the gold rush.

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<sup>99</sup> Laura Trethewey, *Earth’s Final Frontier: The Global Race to Map the Entire Ocean Floor*, THE GUARDIAN (June 30, 2020, 8:30 BST), <https://www.theguardian.com/environment/2020/jun/30/earths-final-frontier-the-global-race-to-map-the-entire-ocean-floor>.

<sup>100</sup> REAGAN, *supra* note 54.