

## COMMENTS

### WARM IS THE NEW COLD: GLOBAL WARMING, OIL, UNCLOS ARTICLE 76, AND HOW AN ARCTIC TREATY MIGHT STOP A NEW COLD WAR

BY  
BRENT CARPENTER\*

*Russia, Norway, Canada, Denmark, and the United States have made or plan to make submissions to the United Nations Commission on the Limits of the Continental Shelf to establish the outer limits of their continental shelves under Article 76 of the United Nations Convention on the Law of the Sea (UNCLOS), an international agreement that addresses all aspects of resources and uses of the world's oceans. These countries claim that certain landmasses in the Arctic Ocean are "natural prolongations" of their continental shelves. Successful claimants will gain sovereignty over seabed extending to the middle of the Arctic Ocean, which would allow those countries to develop the region's considerable oil and gas reserves. This Comment evaluates these claims to determine their viability and finds that at least two of them could succeed. This Comment then argues that the resultant oil and gas development would have adverse affects on the Arctic. While the Arctic's southern counterpart, Antarctica, is protected by a binding international treaty, the Arctic is afforded no such protection against these adverse affects under the region's existing nonbinding agreements. Therefore, this Comment argues, despite the obvious differences between the two poles, their similarities are great enough—as are the threats to the fragile region posed by oil and gas development—to warrant a binding Arctic Treaty.*

---

\* Associate Editor, *Environmental Law*, 2008–2009; J.D. and Certificate in Environmental and Natural Resources Law expected 2009, Lewis & Clark Law School; B.A. 1995, *cum laude*, New York University. The author would like to thank Professor Melissa Powers for her guidance and encouragement. This Comment was the recipient of the 2008 Davis Wright Tremaine International Law Writing Award, and the author would like to express his gratitude to Davis Wright Tremaine and the reviewing committee for this honor.

I.	INTRODUCTION.....	216
II.	ARTICLE 76.....	220
	A. <i>Global Warming is Melting Arctic Ice, Making Development of the Region’s Oil and Gas Feasible</i> .....	221
	B. <i>Overview of Article 76, its Claim Process, and Relevant UNCLOS Provisions</i> .....	222
	C. <i>If a Coastal State Fails the Test of Appurtenance, its Claim will also Fail</i> .....	225
	D. <i>The Pseudoscience of Article 76</i> .....	227
	E. <i>Classification of Seafloor Highs</i> .....	228
	1. <i>Scientific Classification of Seafloor Highs</i> .....	228
	2. <i>Legal Classification of Seafloor Highs</i> .....	229
	a. <i>Definition of Oceanic Ridges</i> .....	229
	b. <i>Definition of Submarine Ridges</i> .....	230
	c. <i>Definition of Submarine Elevations</i> .....	230
III.	ANALYSIS OF ARTICLE 76 CLAIMS.....	230
	A. <i>Arctic Ocean Overview</i> .....	231
	B. <i>The Coastal States’ Article 76 Claims and Potential Claims</i> .....	232
	C. <i>Classification of Alpha-Mendeleev and Lomonosov Ridges</i> .....	233
	D. <i>Classification of Yermak Plateau and Chukchi Cap</i> .....	235
	E. <i>The Commission has a Limited Role in the Success or Failure of Claims</i> .....	236
IV.	INCREASED OIL AND GAS DEVELOPMENT WILL HAVE AN ADVERSE EFFECT ON THE ARCTIC .....	239
V.	THE ARCTIC’S EXISTING SOFT LAW AGREEMENTS ARE INSUFFICIENT PROTECTIONS AGAINST THE ADVERSE EFFECTS OF INCREASED OIL AND GAS DEVELOPMENT .....	243
	A. <i>The AEPS is Inadequate Because of Lack of Funding and Authority</i> .....	244
	B. <i>The Arctic Council is Inadequate Because of its Focus on “Sustainable Development”</i> .....	245
VI.	POSSIBLE PROTECTIONS AGAINST THE ADVERSE EFFECTS OF INCREASED ARCTIC OIL AND GAS DEVELOPMENT .....	246
	A. <i>Common Heritage of Mankind</i> .....	246
	B. <i>The Antarctic Treaty System—South Pole Hard Law Protection</i> .....	248
VII.	CONCLUSION.....	250

## I. INTRODUCTION

In August 2007, two miniature Russian Federation (Russia) submarines dove two miles beneath the ice to the Arctic Ocean seabed, where one of them extended its mechanical arm and planted a titanium Russian flag,<sup>1</sup> claiming the North Pole as

---

<sup>1</sup> Matthew Moore et al., *Russia Arctic Stunt Celebrated by Moscow Press*, TELEGRAPH.CO.UK, Aug. 4, 2007, <http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2007/08/03/wpole203.xml> (last visited Oct. 24, 2008) (photograph of a robotic arm planting a Russian flag on the seabed).

Russian territory.<sup>2</sup> The stunt brought international attention to a claim made less dramatically six years earlier.<sup>3</sup> At that time, Russia made the first submission to the United Nations Commission on the Limits of the Continental Shelf to establish the outer limits of its continental shelf under Article 76 of the United Nations Convention on the Law of the Sea (UNCLOS),<sup>4</sup> an international agreement that addresses all aspects of resources and uses of the world's oceans.<sup>5</sup> Russia claimed that two ridges in the Arctic Ocean, Lomonosov and Alpha-Mendeleev, are a "natural prolongation of its land territory."<sup>6</sup> In 2006, Norway made an Article 76 claim asserting that the Yermak Plateau is a natural prolongation of its land territory, thereby giving Norway sovereignty over the Western Nansen Basin of the Arctic Ocean.<sup>7</sup> Canada and Denmark are performing studies of Lomonosov Ridge—

---

<sup>2</sup> Jeremy Rifkin, *The Crisis Under the Ice*, L.A. TIMES, Aug. 9, 2007, <http://www.latimes.com/news/opinion/commentary/la-oe-rifkin9aug09,0,1108771.story?coll=la-news-comment-opinions> (last visited Jan. 25, 2009).

<sup>3</sup> See, e.g., Moore et al., *supra* note 1; Rifkin, *supra* note 2; *Russia Plants Flag Staking Claim to Arctic Region*, CBCNEWS.CA, Aug. 2, 2007, <http://www.cbc.ca/world/story/2007/08/02/russia-arctic.html> (last visited Jan. 25, 2008); *U.S. Sees No "Legal Standing" for Russia Flag-planting in Arctic*, CRIENGLISH.COM, Aug. 3, 2007, <http://english.cri.cn/2906/2007/08/03/272@257151.htm> (last visited Jan. 25, 2008); *infra* note 5 and accompanying text.

<sup>4</sup> United Nations Convention on the Law of the Sea art. 76, para. 1, Dec. 10, 1982, 1833 U.N.T.S. 397, available at [http://www.un.org/Depts/los/convention\\_agreements/texts/unclos/unclos\\_e.pdf](http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf) [hereinafter UNCLOS].

<sup>5</sup> Press Release, Comm'n on the Limits of the Continental Shelf, Comm'n on Limits of Continental Shelf Receives its First Submission: Russian Fed'n First to Move to Establish Outer Limits of its Extended Continental Shelf, U.N. Doc. SEA/1729 (Dec. 21, 2001), <http://www.un.org/News/Press/docs/2001/sea1729.doc.htm> (last visited Jan. 25, 2009); Comm'n on the Limits of the Continental Shelf, Area of the Continental Shelf of the Russian Federation in the Arctic Ocean Beyond 200-nautical-mile ZSone, available at [http://www.un.org/Depts/los/clcs\\_new/submissions\\_files/rus01/RUS\\_CLCS\\_01\\_2001\\_LOS\\_2.jpg](http://www.un.org/Depts/los/clcs_new/submissions_files/rus01/RUS_CLCS_01_2001_LOS_2.jpg) (map of Russia's Arctic claim); OFFICE OF LEGAL AFFAIRS, DIV. FOR OCEAN AFFAIRS AND THE LAW OF THE SEA, THE LAW OF THE SEA: TRAINING MANUAL FOR DELINEATION OF THE OUTER LIMITS OF THE CONTINENTAL SHELF BEYOND 200 NAUTICAL MILES AND FOR PREPARATION OF SUBMISSIONS TO THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF, at I-2 (2006) [hereinafter TRAINING MANUAL] (UNCLOS addresses the limits and legal regime of maritime zones, rights of navigation, conservation and management of living marine resources, peace and security, activities on the seabed beyond the limits of national jurisdiction, protection and preservation of the marine environment, scientific research, and settlement of disputes.).

<sup>6</sup> See United Nations Div. for Ocean Affairs and the Law of the Sea, Comm'n on the Limits of the Continental Shelf (CLCS), Outer Limits of the Continental Shelf Beyond 200 Nautical Miles from the Baselines: Submissions to the Comm'n: Submission by the Russian Fed'n, [http://www.un.org/Depts/los/clcs\\_new/submissions\\_files/submission\\_rus.htm](http://www.un.org/Depts/los/clcs_new/submissions_files/submission_rus.htm) (last visited Jan. 25, 2009) [hereinafter Russian Submission]; *supra* note 3; UNCLOS, *supra* note 4.

<sup>7</sup> United Nations Div. for Ocean Affairs & the Law of the Sea, Comm'n on the Limits of the Continental Shelf (CLCS), Outer Limits of the Continental Shelf Beyond 200 Nautical Miles from the Baselines: Submissions to the Comm'n: Submission by Norway, [http://www.un.org/Depts/los/clcs\\_new/submissions\\_files/submission\\_nor.htm](http://www.un.org/Depts/los/clcs_new/submissions_files/submission_nor.htm) (last visited Jan. 24, 2009) [hereinafter Norwegian Submission]; see KINGDOM OF NORWAY, CONTINENTAL SHELF SUBMISSION OF NORWAY IN RESPECT OF AREAS IN THE ARCTIC OCEAN, THE BARENTS SEA AND THE NORWEGIAN SEA: EXECUTIVE SUMMARY 8 (2006), available at [http://www.un.org/Depts/los/clcs\\_new/submissions\\_files/nor06/nor\\_exec\\_sum.pdf](http://www.un.org/Depts/los/clcs_new/submissions_files/nor06/nor_exec_sum.pdf) (Figure 2 map illustrating that Norway's Article 76 claim in the Western Nansen Basin is based on the assertion that Yermak Plateau is a natural prolongation of Norway's land territory).

the same ridge claimed by Russia—for potential Article 76 claims.<sup>8</sup> The United States has not yet ratified UNCLOS, but the Senate was scheduled to consider ratification in 2008, and the country is considering an Article 76 claim that Chukchi Cap, a plateau off the Arctic coast of Alaska, is a natural prolongation of its land territory.<sup>9</sup> These ridges, plateaus, and caps extend hundreds of miles into, and in some cases traverse, the Arctic Ocean.<sup>10</sup> If Russia, Norway, Canada, Denmark, and the United States (the coastal States) can prove that these ridges, plateaus, and caps are natural prolongations of their land territories, they will gain sovereignty over seabed extending to the middle of the Arctic Ocean.<sup>11</sup>

Why are the coastal States rushing to claim sovereignty over Arctic territory? Denmark has perhaps been the most frank about its intentions, with its Science and Technology Minister declaring that Arctic sovereignty would “give us access to oil and gas.”<sup>12</sup> The United States Geological Survey (USGS) estimates that the Arctic region holds 14%–25% of the world’s oil and gas reserves; however, these resources have been inaccessible until recently, when the Arctic ice melting and thinning caused by global warming made exploration feasible.<sup>13</sup>

Increased oil and gas development will adversely affect the Arctic through increased oil spills and development infrastructure.<sup>14</sup> Oil spills are more likely in the Arctic because oil tankers are not built to withstand collisions with sea ice,

---

<sup>8</sup> Julian Coman, *Denmark Causes International Chill by Claiming North Pole*, TELEGRAPH.CO.UK, Oct. 17, 2004, <http://www.telegraph.co.uk/news/worldnews/1474377/Denmark-causes-international-chill-by-claiming-North-Pole.html> (last visited Jan. 25, 2009).

<sup>9</sup> LARRY MAYER ET AL., THE COMPILATION AND ANALYSIS OF DATA RELEVANT TO A U.S. CLAIM UNDER UNITED NATIONS LAW OF THE SEA ARTICLE 76: A PRELIMINARY REPORT 6 (2002), available at [http://ccom.unh.edu/unclos/reports\\_pdf/CCOM\\_JHC\\_REP.pdf](http://ccom.unh.edu/unclos/reports_pdf/CCOM_JHC_REP.pdf); Executive Calendar: Monday, December 8, 2008, S., 110th Cong., Issue No. 353, at 2 (2008) (indicating that UNCLOS is still awaiting Senate floor action); Nat’l Oceanic & Atmospheric Admin., *NOAA Coast Survey Continues Sea Floor Mapping Expedition in the Arctic*, NOAA NEWS ONLINE, Aug. 13, 2007, <http://www.noaanews.noaa.gov/stories2007/s2907.htm> (last visited Jan. 25, 2009).

<sup>10</sup> Arthur Grantz, *Treatment of Ridges and Borderlands Under Article 76 of the United Nations Convention on Law of the Sea: The Example of the Arctic Ocean*, in LEGAL AND SCIENTIFIC ASPECTS OF CONTINENTAL SHELF LIMITS 201, 202 (Myron H. Nordquist et al. eds., 2004).

<sup>11</sup> See UNCLOS, *supra* note 4, art. 76. UNCLOS defines the continental shelf of a coastal State as the natural prolongation of its land territory to the outer edge of the continental margin or 200 nautical miles, whichever is greater. *Id.* art. 76, para. 1. In order to extend the shelf beyond 200 nautical miles, the coastal State must submit geographical information to the Commission on the Limits of the Continental Shelf. *Id.* art. 76, para. 8. Each of the coastal States has, to various extents, shown interest in the Article 76 process. See Rifkin, *supra* note 2; Norwegian Submission, *supra* note 7; Coman, *supra* note 8; MAYER ET AL., *supra* note 9, at 6.

<sup>12</sup> Coman, *supra* note 8.

<sup>13</sup> See, e.g., Steve Hargreaves, *The Arctic: Oil’s Last Frontier*, CNNMONEY.COM, Oct. 25, 2006, [http://money.cnn.com/2006/09/27/news/economy/arctic\\_drilling/index.htm](http://money.cnn.com/2006/09/27/news/economy/arctic_drilling/index.htm) (last visited Jan. 25, 2009) (citing one USGS estimate of 25%). *But see* Alan Bailey, *USGS: 25% Arctic Oil, Gas Estimate a Reporter’s Mistake*, PETROLEUMNEWS.COM, Oct. 21, 2007, <http://www.petroleumnews.com/pntruncate/347702651.shtml> (last visited Jan. 25, 2009) (noting that while the 25% figure is widely referenced, it includes areas outside of the Arctic Circle and when not including those areas, the estimate is 14%). However, a 14% estimate may undervalue the Arctic reserves as it does not include many of the Arctic basins. *Id.* See also SUSAN JOY HASSOL, ARCTIC COUNCIL, IMPACTS OF A WARMING ARCTIC: ARCTIC CLIMATE IMPACT ASSESSMENT 8, 11 (2004), available at <http://amap.no/acia/>; Tom Doggett, *Global Warming Exposes Arctic to Oil, Gas Drilling*, REUTERS, Nov. 9, 2004, <http://www.commondreams.org/headlines04/1109-06.htm> (last visited Jan. 25, 2009).

<sup>14</sup> HASSOL, *supra* note 13.

which is becoming more mobile and unpredictable as the Arctic warms.<sup>15</sup> Oil spills are especially dangerous in the Arctic because of the region's cold temperatures, which decrease rates of oil decomposition, resulting in the elimination of wildlife habitats and feeding grounds affected by any spills.<sup>16</sup> Elimination of habitat and feeding grounds will have a profound effect on Arctic species, which rely on a short food chain that can be fatally disrupted by the loss of even a single species.<sup>17</sup> These adverse effects will be compounded by increased oil and gas development infrastructure, which will include an array of new support facilities on land, oil rigs at sea, on- and off-shore pipelines, and increased air, land, and sea transportation.<sup>18</sup> This infrastructure will interfere with wildlife feeding, breeding, rest, and migration.<sup>19</sup> The Arctic is, by its nature, an unusually vulnerable environment and global warming compounds this vulnerability.<sup>20</sup> The adverse effects of increased oil and gas exploration would even further aggravate the region's vulnerability.<sup>21</sup>

Despite the region's fragility, the only protections afforded the Arctic are a collection of unrelated, nonbinding national and international agreements, and the Arctic Council, a voluntary organization of countries that border the Arctic Ocean.<sup>22</sup> The Arctic Council's goals are promotion of sustainable development and protection of the Arctic environment, but its regional agreements are "soft law"; that is, they are not legally binding.<sup>23</sup> Conversely, the Arctic's southern counterpart, Antarctica, is protected by the Antarctic Treaty System (ATS), a successful series of five "hard law" treaties that protect that region's similarly fragile environment with legally binding agreements.<sup>24</sup> In 1961, at the time of the ratification of the Antarctic Treaty, the world faced a predicament in Antarctica similar to the one that it faces in the Arctic today.<sup>25</sup> Seven countries had made territorial claims in Antarctica, a region rich in mineral resources.<sup>26</sup> The Antarctic Treaty resolved these territorial disputes with an "agreement to disagree," which froze the question of sovereignty for the duration of the treaty, and allowed States to focus on the

---

<sup>15</sup> *Id.* at 83–84.

<sup>16</sup> Barry Hart Dubner, *On The Basis for Creation of a New Method of Defining International Jurisdiction in the Arctic Ocean*, 13 MO. ENVTL. L. & POL'Y REV. 1, 20 (2005).

<sup>17</sup> David VanderZwaag et al., *The Arctic Environmental Protection Strategy, Arctic Council and Multilateral Environmental Initiatives: Tinkering While the Arctic Marine Environment Totters*, 30 DENV. J. INT'L L. & POL'Y 131, 134 (2002).

<sup>18</sup> Elise Wolf, *Oil and Water: The Arctic Seas Face Irreversible Damage*, EARTH ISLAND J., Summer 2007, at 32, 37.

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

<sup>20</sup> *See id.* at 36 (discussing the fragility of the area).

<sup>21</sup> *Id.*

<sup>22</sup> Melissa A. Verhaag, *It Is Not Too Late: The Need for a Comprehensive International Treaty to Protect the Arctic Environment*, 15 GEO. INT'L ENVTL. L. REV. 555, 570 (2003); *infra* Part V.

<sup>23</sup> *Id.* "Soft law" may be defined as beginning where "legal arrangements are weakened along one or more of the dimensions of obligation, precision, and delegation," which "can occur in varying degrees along each dimension and in different combinations across dimensions." Kenneth W. Abbott & Duncan Snidal, *Hard and Soft Law in International Governance*, 54 INT'L ORG. 421, 422 (2000).

<sup>24</sup> Verhaag, *supra* note 22, at 571. "Hard law" may be defined as "legally binding obligations that are precise (or can be made precise through adjudication or the issuance of detailed regulations) and that delegate authority for interpreting and implementing the law." Abbott & Snidal, *supra* note 23, at 421.

<sup>25</sup> Verhaag, *supra* note 22, at 576–77.

<sup>26</sup> Timo Koivurova, *Environmental Protection in the Arctic and Antarctic: Can the Polar Regimes Learn from Each Other?*, 33 INT'L J. LEGAL INFO. 204, 205 (2005); Verhaag, *supra* note 22, at 558.

region's preservation.<sup>27</sup> The world chose wisely then and this Comment will argue that it should do the same now in the Arctic.

The overarching goal of this Comment is to examine in detail one particular, concrete result of global warming. Global warming is melting Arctic ice, making development of the region's substantial oil and gas reserves feasible.<sup>28</sup> Therefore, the coastal States are scrambling to grab as much Arctic territory as they can.<sup>29</sup> This Comment endeavors to demonstrate that Article 76 provides the legal means for the coastal States to gain sovereignty over vast areas of the Arctic. The consequential increase in oil and gas development will have an adverse effect on the region, and existing soft law agreements are insufficient to protect the Arctic from these adverse effects. The discussion will begin narrowly, with Part II interpreting Article 76 to arrive at a set of legal definitions that will facilitate evaluation of the viability of the coastal States' claims. Based on this interpretation, Part III will evaluate the coastal States' claims and potential claims and find that at least two of them are viable, meaning that those coastal States could gain sovereignty over vast areas of the Arctic. The discussion will then broaden, with Part IV illustrating the adverse effects increased oil and gas development would have on the Arctic, Part V examining the existing Arctic soft law agreements, and Part VI proposing possible solutions to the lack of Arctic protection. The Comment will conclude that the Arctic needs a hard law treaty similar to the ATS.

## II. ARTICLE 76

Russia, Canada, Denmark, Norway, and the United States seek to prove that certain morphological highs of the Arctic seafloor (seafloor highs), such as ridges, plateaus, and caps, are natural prolongations of their land territory under Article 76 of UNCLOS.<sup>30</sup> If the coastal States succeed in proving that these seafloor highs are natural prolongations of their land territory, then the coastal States can include those seafloor highs in their continental shelves.<sup>31</sup> These seafloor highs extend hundreds of miles into, and some even traverse, the Arctic Ocean.<sup>32</sup> Coastal States have full sovereignty over their continental shelves.<sup>33</sup> Therefore, if the coastal States are allowed to include these seafloor highs in their continental shelves, they will gain sovereignty over the seabed extending to the middle of the Arctic Ocean.<sup>34</sup> This sovereignty will, in turn, give the coastal States sovereignty over the Arctic's substantial oil and gas reserves, development of which is now becoming feasible because global warming is melting Arctic ice.

---

<sup>27</sup> Koivurova, *supra* note 26, at 206.

<sup>28</sup> See *infra* Part II.A.

<sup>29</sup> See *supra* Part I.

<sup>30</sup> Russian Submission, *supra* note 6; Norwegian Submission, *supra* note 7; Coman, *supra* note 8; MAYER ET AL., *supra* note 9, at 8; UNCLOS, *supra* note 4, art. 76, para. 1; TRAINING MANUAL, *supra* note 5, at VII-1.

<sup>31</sup> See UNCLOS, *supra* note 4, art. 76.

<sup>32</sup> Grantz, *supra* note 10, at 203.

<sup>33</sup> UNCLOS, *supra* note 4, arts. 1, 76.

<sup>34</sup> See Russian Submission, *supra* note 6; Norwegian Submission, *supra* note 7; Coman, *supra* note 8; MAYER ET AL., *supra* note 9, at 8; UNCLOS, *supra* note 4, art. 76, para. 8.

This Part will begin with a brief overview of how global warming is facilitating increased oil and gas exploration in the Arctic. It will go on to provide an overview of Article 76, the legal means by which the coastal States seek to gain sovereignty over this oil-rich region. It will describe the four-step Article 76 continental shelf delineation process and will demonstrate that each coastal State's claim hinges upon step two of the process—the Test of Appurtenance. It will then interpret the Article 76 provisions that control the Test of Appurtenance. This interpretation will arrive at a set of legal definitions that will facilitate Part III's evaluation of the coastal States' claims.

*A. Global Warming is Melting Arctic Ice, Making Development of the Region's Oil and Gas Feasible*

The coastal States seek to establish sovereignty over the Arctic to gain control over and develop the region's significant oil and gas reserves.<sup>35</sup> The USGS estimates that the Arctic region holds 14%–25% of the world's oil and gas reserves, but these resources have been inaccessible because of extensive, thick sea ice.<sup>36</sup> Global warming, however, is melting and thinning Arctic ice, making development feasible.<sup>37</sup>

While there is regional temperature variability in the Arctic, the overarching trend is toward a warmer Arctic.<sup>38</sup> Average annual temperatures in the Arctic have risen at nearly twice the rate as those in the rest of the world during the last thirty years.<sup>39</sup> Snow and sea ice melt further aggravate the warming by exposing the darker surfaces of land and ocean, which more readily absorb the energy of the sun.<sup>40</sup> Additionally, the ocean stores solar heat in the summer, which it transfers to the atmosphere in winter, thereby further increasing temperature.<sup>41</sup> Finally, greenhouse gas levels are higher in the Arctic than elsewhere on Earth and those greenhouse gases trap heat in the atmosphere that would otherwise escape by evaporation.<sup>42</sup> Climate modeling projects average annual temperature increases from 1990–2090 of 37–41 degrees Fahrenheit over land and up to 44 degrees Fahrenheit over sea; and winter temperature increases of 39–44 degrees Fahrenheit over land and 44–50 degrees Fahrenheit over sea.<sup>43</sup>

Arctic warming is melting and thinning the Arctic Ocean's sea ice.<sup>44</sup> In the past thirty years, the annual average sea ice extent decreased by 8%, nearly

---

<sup>35</sup> Doggett, *supra* note 13.

<sup>36</sup> See, e.g., Hargreaves, *supra* note 13; Bailey, *supra* note 13; HASSOL, *supra* note 13, at 8; Doggett, *supra* note 13.

<sup>37</sup> See, e.g., Hargreaves, *supra* note 13; Bailey, *supra* note 13; HASSOL, *supra* note 13, at 8; Doggett, *supra* note 13.

<sup>38</sup> HASSOL, *supra* note 13, at 10.

<sup>39</sup> *Id.* at 8.

<sup>40</sup> *Id.* at 10.

<sup>41</sup> *Id.* at 20.

<sup>42</sup> *Id.*

<sup>43</sup> *Id.* at 28.

<sup>44</sup> *Id.* at 25.

400,000 square miles, with 15%–20% summer sea ice loss.<sup>45</sup> The remaining sea ice is becoming thinner, with a reduction in average thickness of 10%–15% and up to 40% in some areas.<sup>46</sup> Climate modeling predicts that this melting and thinning trend will accelerate, with melting occurring earlier in the spring and extending later into autumn, summer sea ice retreating from the Arctic landmass, and the summer Arctic ice cap possibly disappearing altogether in as little as fifty years.<sup>47</sup>

This thinning and melting trend will increase access to the Arctic's offshore oil and gas.<sup>48</sup> If the coastal States gain sovereignty over the Arctic through Article 76 claims, oil and gas development will increase.<sup>49</sup>

*B. Overview of Article 76, its Claim Process, and Relevant UNCLOS Provisions*<sup>50</sup>

UNCLOS is an international agreement that addresses all aspects of the world's oceans, including jurisdiction over areas of the oceans and seabed.<sup>51</sup> Oceanic jurisdictions are referred to as "maritime zones" and are measured by

---

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

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

<sup>47</sup> *Id.* at 13; Wolf, *supra* note 18, at 36.

<sup>48</sup> HASSOL, *supra* note 13, at 11.

<sup>49</sup> See *id.* at 8 ("[P]ossible increases in environmental damage that often accompanies shipping and resource extraction could harm the marine habitat and negatively affect the health and traditional lifestyles of indigenous people."); Coman, *supra* note 8.

<sup>50</sup> UNCLOS, *supra* note 4. This Comment focuses on Article 76, paragraphs 1, 3, 6, and 8:

1. The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea 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 where the outer edge of the continental margin does not extend up to that distance. . . .

3. The continental margin comprises the submerged prolongation of the land mass of the coastal State, and consists of the seabed and subsoil of the shelf, the slope and the rise. It does not include the deep ocean floor with its oceanic ridges or the subsoil thereof. . . .

6. Notwithstanding the provisions of paragraph 5, on submarine ridges, the outer limit of the continental shelf shall not exceed 350 nautical miles from the baselines from which the breadth of the territorial sea is measured. This paragraph does not apply to submarine elevations that are natural components of the continental margin, such as its plateaux, rises, caps, banks and spurs. . . .

8. Information on the limits of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured shall be submitted by the coastal State to the Commission on the Limits of the Continental Shelf set up under Annex II on the basis of equitable geographical representation. The Commission shall make recommendations to coastal States on matters related to the establishment of the outer limits of their continental shelf. The limits of the shelf established by a coastal State on the basis of these recommendations shall be final and binding.

UNCLOS, *supra* note 4, art. 76. For the curious reader, see *id.* for a link to Article 76 in its entirety.

<sup>51</sup> United Nations Div. for Ocean Affairs & the Law of the Sea, The United Nations Convention on the Law of the Sea (A Historical Perspective), [http://www.un.org/Depts/los/convention\\_agreements/convention\\_historical\\_perspective.htm](http://www.un.org/Depts/los/convention_agreements/convention_historical_perspective.htm) (last visited Jan. 25, 2009) (providing a concise history of UNCLOS negotiations and overview of goals); TRAINING MANUAL, *supra* note 5, at I-2. UNCLOS also addresses rights of navigation, conservation and management of living marine resources, peace and security, activities on the seabed beyond the limits of national jurisdiction, protection and preservation of the marine environment, scientific research, and settlement of disputes. UNCLOS, *supra* note 4, arts. 1, 3, 33, 56–57, 86.

boundaries called “baselines,” which consist of either the coastal low-water line if the coastal State’s coastline is linear, or lines connecting points along the coast if the coastal State’s coastline is indented.<sup>52</sup> The maritime zones over which the coastal State has full sovereignty are its internal waters and territorial sea.<sup>53</sup> Beyond the territorial sea lie the contiguous zone and the exclusive economic zone (EEZ), maritime zones over which the coastal State has qualified sovereignty.<sup>54</sup> Beyond those maritime zones lie the high seas, over which the coastal States have no sovereignty.<sup>55</sup> Seabed jurisdictional zones consist of the continental shelf, over which a coastal State has full sovereignty, and the Area, which is the “seabed and ocean floor and subsoil thereof” beyond the continental shelf.<sup>56</sup> The International Seabed Authority (Authority) has jurisdiction over the Area and its resources, which are the common heritage of mankind, a concept discussed further in Part VI.<sup>57</sup> The oceanic and seabed jurisdictions interact because Article 76 uses a coastal State’s maritime zones and baselines as the starting point for delineation of the outer limits of the coastal State’s continental shelf.<sup>58</sup>

Article 76, paragraph 1 defines the continental shelf of a coastal State as “the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin.”<sup>59</sup> Paragraph 3 states that “the continental margin comprises the submerged prolongation of the land mass of the coastal State, and consists of the seabed and subsoil of the shelf, the slope and the rise.”<sup>60</sup> Paragraphs 1 and 3 together form the legal definition of the continental shelf and declare that a coastal State’s territory stretches under water, with the continental shelf constituting the “submerged prolongation of its land territory” and the outer limit of that prolongation measured according to the “submerged prolongation of the land mass.”<sup>61</sup>

---

<sup>52</sup> UNCLOS, *supra* note 4, arts. 5, 7, 14; TRAINING MANUAL, *supra* note 5, at I-4 to I-5. Maritime zones consist of the internal waters, which are the waters landward of the baseline of the territorial sea; the territorial sea, which are waters seaward of the baseline of the territorial sea that extend up to 12 nautical miles (M); the contiguous zone, which are waters seaward of the territorial sea that extend up to 24 M; the exclusive economic zone (EEZ), which are waters seaward of the territorial sea, and overlapping the contiguous zone, that extend up to 200 M; and the high seas are the waters seaward of the EEZ. TRAINING MANUAL, *supra* note 5, at I-6 to I-9.

<sup>53</sup> UNCLOS, *supra* note 4, art. 2, para. 1.

<sup>54</sup> TRAINING MANUAL, *supra* note 5, at I-7 to I-8.

<sup>55</sup> *Id.* at I-9.

<sup>56</sup> UNCLOS, *supra* note 4, arts. 1, 77.

<sup>57</sup> *Id.* arts. 136–37, 156.

<sup>58</sup> *Id.* art. 76, para. 1.

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

<sup>60</sup> *Id.* art. 76, para. 3.

<sup>61</sup> TRAINING MANUAL, *supra* note 5, at I-18. This legal concept of the continental shelf differs from the scientific concept of the continental shelf. *Id.* at I-11. In scientific terms, the continental shelf is a flat and shallow submerged section of the continent, which extends from the shore to the apex of the continental slope. *Id.* Between the continent and the deep ocean floor, seabed characteristics change because of the lateral spread of oceanic and continental crust. *Id.* The continental slope is a steep section of the seabed that borders the continental shelf and forms at the boundary the continental mass where the continental crust becomes thinner and merges with oceanic crust. *Id.*; Victor Prescott, *Resources of the Continental Margin and International Law*, in CONTINENTAL SHELF LIMITS: THE SCIENTIFIC AND LEGAL INTERFACE 66 (Peter J. Cook et al. eds., 2000). The foot of the continental slope is the transition zone between continental and oceanic crust. TRAINING MANUAL, *supra* note 5, at I-11. The continental

Article 76 provides a four-step method for a coastal State to delineate its continental shelf.<sup>62</sup>

First, the coastal State must use the two line drawing methods described in Article 76, paragraph 4 to delineate the outer limits of its continental margin (Formulae Lines).<sup>63</sup> Second, the coastal State must prove that its continental shelf satisfies the Test of Appurtenance, which requires that the continental shelf extend “throughout the natural prolongation of its submerged land territory to the outer edge of the continental margin” beyond 200 nautical miles (M), measured from the coastal State’s baselines.<sup>64</sup> Third, if the Test of Appurtenance is satisfied, the coastal State must verify that the lines drawn in step one do not go beyond the constraint lines defined in paragraphs 5 and 6 of Article 76.<sup>65</sup> Fourth, the coastal State must use the Formulae Lines and the constraint lines of

---

rise is a layer of sediment from the base of the slope that forms a dip between the foot of the continental slope and the deep ocean floor. Prescott, *supra*, at 66. Together, the continental slope and rise compose the continental margin. TRAINING MANUAL, *supra* note 5, at I-12. However, under UNCLOS, the legal “continental shelf” equals the scientific “continental margin,” not the scientific “continental shelf,” which is simply one of the components of the scientific “continental margin.” *Id.*

<sup>62</sup> UNCLOS, *supra* note 4, art. 76; TRAINING MANUAL, *supra* note 5, at I-26. Article 76 requires utilization of several scientific methodologies including: geology, a “science that deals with the history of the earth and its life especially as recorded in rocks,” WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY 949 (Philip Babcock Gove ed., 16th ed. 1971); geodesy, a “branch of applied mathematics concerned with the determination of the size and shape of the earth and the exact positions of points on its surface and with the description of variations of its gravity field,” *id.* at 948; geophysics, a “branch of earth science dealing with the physical processes and phenomena occurring especially in the earth and in its vicinity,” MERRIAM-WEBSTER ONLINE DICTIONARY, <http://www.merriam-webster.com/> (last visited Jan. 25, 2009); geomorphology, a “science that deals with the relief features of the earth . . . and seeks a genetic interpretation of them,” WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY 950; hydrography, the “description and study of seas . . . the surveying, sounding, and charting of bodies of water,” *id.* at 1109; and bathymetry, “the measurement of depths of water depth in ocean seas,” *id.* at 186. See TRAINING MANUAL, *supra* note 5, at I-55 to I-56.

<sup>63</sup> TRAINING MANUAL, *supra* note 5, at I-26. Article 76, paragraph 4(a) contains two formulae for delineating the outer limits of the continental margin—the sediment thickness (or Gardiner) formula, and the distance (or Hedberg) formula. *Id.* at I-27, I-29, I-31; UNCLOS, *supra* note 4, art. 76, para. 4. Both of these methods require that the coastal State first establish the foot of its continental slope. TRAINING MANUAL, *supra* note 5, at I-27. A coastal State establishes the foot of its continental slope by finding the point of maximum change in gradient at the base of its continental slope. *Id.* Once the coastal State has established the foot of its continental slope, it can employ either the sediment thickness formula or the distance formula to draw the Formulae Lines. *Id.* at I-28. The sediment thickness requires the coastal State to identify fixed points where the thickness of the sedimentary rocks overlying its continental rise are at least 1% of the shortest distance between the fixed points and the foot of the continental slope. *Id.* at I-29. The distance formula is simpler, requiring the coastal State to create arcs at a distance of not more than 60 M from the foot of the continental slope. *Id.* at I-32. The choice of formula may depend on the thickness of the sediment. *Id.* at I-29, I-32.

<sup>64</sup> TRAINING MANUAL, *supra* note 5, at I-26; UNCLOS, *supra* note 4, art. 76, para. 1.

<sup>65</sup> TRAINING MANUAL, *supra* note 5, at I-26; UNCLOS, *supra* note 4, art. 76, paras. 5–6. The two constraint lines are 350 M from the baselines from which the breadth of the territorial sea is measured, or 100 M from the 2500 meter isobath (i.e., where the water is 2500 meters deep). TRAINING MANUAL, *supra* note 5, at I-38; UNCLOS, *supra* note 4, art. 76, paras. 5–6. In other words, the outer limits of a coastal States continental shelf can extend beyond a line delineated by fixed points at a distance of 350 M from the baselines from which the breadth of the territorial sea is measured. TRAINING MANUAL, *supra* note 5, at I-39. Alternatively, it can extend beyond a line delineated by fixed points at a distance of 100 M from the 2500 meter isobath. *Id.* at I-39. However, if the Constraint Lines intersect, the outer limits of the continental shelf cannot extend beyond both. *Id.*

step three to delineate the outer limits of its continental shelf.<sup>66</sup> The coastal State must complete all of these steps in order to delineate the outer limits of its continental shelf.<sup>67</sup>

Once a coastal State has completed the four-step process, it makes a submission of information about its delineation to the Commission on the Limits of the Continental Shelf (Commission).<sup>68</sup> The Commission evaluates and discusses the submission and then makes recommendations to the coastal State.<sup>69</sup> These “recommendations” consist of technical and scientific advice to aid the coastal State in the delineation process.<sup>70</sup> The coastal State then establishes the limits of its continental shelf “on the basis of these recommendations” and those limits “shall be final and binding.”<sup>71</sup> The Rules of Procedure of the Commission on the Limits of the Continental Shelf (Rules of Procedure) declare that the submitting coastal State may “classify as confidential any data and other material . . . that it submits” and that Commission meetings and deliberations regarding submissions are also confidential.<sup>72</sup>

*C. If a Coastal State Fails the Test of Appurtenance, its Claim will also Fail*

This Comment will focus exclusively on the Test of Appurtenance, step two of the four-step Article 76 continental shelf delineation process. Not all of the details of the claims and potential claims are available to the public because of the Commission’s confidentiality rules mentioned above. Therefore, it is not always possible to determine whether a state has satisfied all four steps. However, even without access to this confidential information, it is possible to assess the viability of the coastal States’s Article 76 claims and potential claims. Several coastal States have identified the seafloor highs they claim to be natural prolongations of their land territories.<sup>73</sup> The Commission has declared that determination of whether or not a seafloor high is a natural prolongation of a

---

<sup>66</sup> TRAINING MANUAL, *supra* note 5, at I-26; UNCLOS, *supra* note 4, art. 76, para. 7. The outer limit of a coastal State’s continental shelf is “the inner envelope of two lines: the outer envelope of the [F]ormulae [L]ines, and the outer envelope of the [C]onstraint [L]ines.” TRAINING MANUAL, *supra* note 5, at I-42.

<sup>67</sup> TRAINING MANUAL, *supra* note 5, at I-26.

<sup>68</sup> UNCLOS, *supra* note 4, art. 76, para. 8.

<sup>69</sup> *Id.*

<sup>70</sup> *Id.*; see also Alexei A. Zinchenko, *Emerging Issues in the Work of the Commission on the Limits of the Continental Shelf*, in LEGAL AND SCIENTIFIC ASPECTS OF CONTINENTAL SHELF LIMITS 225–26 (Myron H. Nordquist et al. eds., 2004) (describing the function of the Commission, a highly scientific body, to provide assistance in establishing “the true limit of the outer boundary of the continental shelf” according to the terms of UNCLOS).

<sup>71</sup> UNCLOS, *supra* note 4, art. 76, para. 8.

<sup>72</sup> Comm’n on the Limits of the Continental Shelf (CLCS), *Rules of Procedure of the Commission on the Limits of the Continental Shelf*, U.N. Doc. CLCS/40/Rev.1, annex II (Apr. 17, 2008) [hereinafter *Rules of Procedure*].

<sup>73</sup> See Russian Submission, *supra* note 6; Norwegian Submission, *supra* note 7; KINGDOM OF NORWAY, *supra* note 7, at 6–10; Coman, *supra* note 8; MAYER ET AL., *supra* note 9, at 8; UNCLOS, *supra* note 4, art. 76, para. 8.

coastal State's land territory is to be made on the basis of science.<sup>74</sup> Publicly available scientific information about those seafloor highs, such as their genesis and morphology, may be sufficient to determine whether they are natural prolongations of the coastal States' land territories.<sup>75</sup> Thus, if the seafloor high that a coastal State claims is a natural prolongation of its land territory is not scientifically a natural prolongation of its land territory, the coastal State will fail the Test of Appurtenance. If the coastal State fails the Test of Appurtenance, its Article 76 claim will necessarily fail because it must complete all four steps of the process.

To pass the Test of Appurtenance, a coastal State must prove that "the natural prolongation of its land territory" extends "to the outer edge of the continental margin" beyond 200 M from the baselines.<sup>76</sup> A coastal State's Article 76 claim can succeed only if the seafloor high it claims is a natural prolongation of its land territory meets this test.<sup>77</sup> Article 76 identifies three types of seafloor highs: the "oceanic ridges" of paragraph 3 and the "submarine ridges" and "submarine elevations that are natural components of the continental margin" (submarine elevations) of paragraph 6.<sup>78</sup> Article 76 neither defines these terms nor gives coastal States guidance on how to distinguish between them, but simply deals with them differently.<sup>79</sup> Oceanic ridges are expressly excluded from the continental margin.<sup>80</sup> Unlike oceanic ridges, submarine ridges can be included in the continental shelf, but paragraph 6 states that "on submarine ridges, the outer limit of the continental shelf shall not exceed 350 [M] from the baselines."<sup>81</sup> Submarine elevations are treated as "natural components of the continental margin," and are thus included in the continental margin and can extend unlimited distances.<sup>82</sup> To summarize, the continental shelf includes the continental margin, which includes submarine elevations to an unlimited distance and submarine ridges up to 350 M from the baselines, but does not include oceanic ridges.<sup>83</sup>

Accordingly, if a seafloor high that a coastal State claims is a natural prolongation is an oceanic ridge, the seafloor high is excluded from the continental margin and the coastal State fails the Test of Appurtenance.<sup>84</sup> However, if the seafloor high is a submarine ridge or submarine elevation, it can be included in the continental margin, though the former is limited to 350 M from the baselines.<sup>85</sup> Therefore, the classification of seafloor highs as oceanic ridges,

---

<sup>74</sup> See *Rules of Procedure*, *supra* note 72, annex III, para. 9; CLCS, *Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf*, U.N. Doc. CLCS/11/7.1.8 (May 13, 1999) [hereinafter *Guidelines*].

<sup>75</sup> TRAINING MANUAL, *supra* note 5, at VII-18.

<sup>76</sup> UNCLOS, *supra* note 4, art. 76, para. 1; TRAINING MANUAL, *supra* note 5, at I-35.

<sup>77</sup> TRAINING MANUAL, *supra* note 5, at I-35.

<sup>78</sup> UNCLOS, *supra* note 4, art. 76, paras. 3, 6. Paragraph 6 of Article 76 does give examples of the "submarine elevations": plateaux, rises, caps, banks, and spurs. *Id.* art. 76, para. 6.

<sup>79</sup> TRAINING MANUAL, *supra* note 5, at I-35.

<sup>80</sup> UNCLOS, *supra* note 4, art. 76, para. 3.

<sup>81</sup> *Id.* art. 76, para. 6.

<sup>82</sup> *Id.*

<sup>83</sup> *Id.* art. 76, paras. 1, 3, 6.

<sup>84</sup> *Id.* art. 76, paras. 1, 3.

<sup>85</sup> *Id.* art. 76, paras. 1, 6; TRAINING MANUAL, *supra* note 5, at I-35.

submarine ridges, or submarine elevations will determine the success or failure of the coastal States' claims.

*D. The Pseudoscience of Article 76*

The terms “oceanic ridges,” “submarine ridges,” “submarine elevations,” and “continental shelf” contained in UNCLOS Article 76 do not correspond with those terms' scientific definitions.<sup>86</sup> This pseudoscientific language was the result of the negotiations of the Third United Nations Conference on the Law of the Sea (Third Conference).<sup>87</sup> The Third Conference negotiators sought to find consensus wording for paragraphs 3 and 6 that would balance the interests of states that wanted more of these features included in the legal definition of continental shelf, with the interests of those that wanted to prevent certain coastal States from extending their continental shelf sovereignty out past the EEZ.<sup>88</sup> The Soviet Union introduced the concern of excessive continental shelf claims and sought to limit the extent of such claims by proposing that the continental margin not include “the deep ocean floor, the subsoil thereof, nor underwater ocean ridges and the subsoil thereof.”<sup>89</sup> This language was added to paragraph 3, along with the compromise language of paragraph 6, defining “submarine ridges” and “submarine elevations,” to avoid excessive continental shelf claims, while also allowing for some flexibility in the definition because of the inherent complexities of the continental margin.<sup>90</sup> Ironically, this compromise has spawned more disagreements than its drafters hoped it would eliminate.<sup>91</sup> For example, the Russian Federation is attempting to claim continental shelf sovereignty to the middle of the ocean by using the pseudoscientific language that was negotiated by the Soviet Union and the other Third Conference negotiators to limit this very type of excessive claim.<sup>92</sup>

The lack of scientific definitions of the terms used in paragraphs 3 and 6 makes it difficult to classify real-world seafloor highs as oceanic ridges, submarine ridges, and submarine elevations.<sup>93</sup> However, the following discussion will interpret those provisions to arrive at workable definitions for the terms.

---

<sup>86</sup> TRAINING MANUAL, *supra* note 5, at I-10, VII-1.

<sup>87</sup> *Id.* at VII-1, VII-22 to VII-24.

<sup>88</sup> David A. Colson, *Delimitation of the Outer Continental Shelf Between States with Opposite or Adjacent Coasts*, in LEGAL AND SCIENTIFIC ASPECTS OF CONTINENTAL SHELF LIMITS 287, 296 (Myron H. Nordquist et al. eds., 2004) (describing the exclusive economic zone as extending 200 M from the coast); TRAINING MANUAL, *supra* note 5, at VII-22 to VII-24.

<sup>89</sup> Harald Brekke & Philip A. Symonds, *The Ridge Provisions of Article 76 of the UN Convention on the Law of the Sea*, in LEGAL AND SCIENTIFIC ASPECTS OF CONTINENTAL SHELF LIMITS 169, 175 (Myron H. Nordquist et al. eds., 2004).

<sup>90</sup> UNCLOS, *supra* note 4, art. 76, para. 3; TRAINING MANUAL, *supra* note 5, at VII-24.

<sup>91</sup> TRAINING MANUAL, *supra* note 5, at VII-1 (stating that the language is ambiguous and difficult to interpret, both legally and scientifically).

<sup>92</sup> See Russian Submission, *supra* note 6 (click on “page 4”) (stating claims to areas outside the 200 M exclusive economic zone).

<sup>93</sup> See *Guidelines*, *supra* note 74, paras. 7.2.1–7.2.3.

*E. Classification of Seafloor Highs*<sup>94</sup>

This discussion will define oceanic ridges, submarine ridges, and submarine elevations. A basic understanding of the scientific classification of seafloor highs is crucial to interpreting the pseudoscience of Article 76 and to arrive at legal definitions for oceanic ridges, submarine ridges, and submarine elevations. Therefore, this discussion will begin with a brief overview of scientific classification of seafloor highs and then move on to interpreting paragraphs 3 and 6 to arrive at definitions of oceanic ridges, submarine ridges, and submarine elevations.

*1. Scientific Classification of Seafloor Highs*

Seafloor highs such as ridges and plateaus can be classified by morphology, genesis, and crustal composition.<sup>95</sup> Morphologically, ridges are long and steep-sided, while plateaus are broad, flat-topped, and drop steeply on one or more of their sides.<sup>96</sup> Genetically, in the geological sense of the term,<sup>97</sup> ridges formed through seafloor spreading, which is the magmatic process that formed ocean basins: 1) through tectonic activity that caused the uplift of oceanic crust, 2) through hot spots, which are magma sources rooted in the Earth's mantle, or 3) when continental breakup isolated fragments of continental crust from the landmass.<sup>98</sup> Plateaus formed solely through continental breakup.<sup>99</sup> Ridges and plateaus are composed of either oceanic crust, continental crust, or a combination of both.<sup>100</sup>

Ridges are essentially underwater mountains that occur in ocean basins and at the margins of oceans, but most of which are separated from continental landmasses.<sup>101</sup> Some ridges have definite continental affinities, others oceanic, and

---

<sup>94</sup> Article 76 mentions six types of seafloor highs: ridges, plateaus, rises, caps, banks, and spurs. UNCLOS, *supra* note 4, art. 76, paras. 3, 6. A ridge is an "elongated narrow elevation of varying complexity having steep sides." INT'L HYDROGRAPHIC ORG.-INTERGOVERNMENTAL OCEANOGRAPHIC COMM'N, STANDARDIZATION OF UNDERSEA FEATURE NAMES 2-24 (2001), available at <http://www.iho.shom.fr/publicat/free/files/B6efEd3.pdf> [hereinafter IHO-IGO DEFINITIONS]. A plateau is a "flat or nearly flat elevation of considerable areal extent, dropping off abruptly on one or more sides." *Id.* at 2-23. A rise is a "broad elevation that rises gently and generally smoothly from the sea floor." *Id.* at 2-24. A bank is an "elevation of the sea floor, over which the depth of water is relatively shallow, but sufficient for safe surface navigation." *Id.* at 2-18. A spur is a "subordinate elevation or ridge protruding from a larger feature, such as a plateau or island foundation." *Id.* at 2-27. The IHO-IGO DEFINITIONS make no attempt to define "cap" because "a suitable description . . . is found among the present definitions." *Id.* at 2-17. However, it is possible to glean a definition of "cap" from scientific literature. "Chukchi Cap" is also referred to as "Chukchi Plateau," suggesting that a "cap" is similar to a "plateau," which is a "flat or nearly flat elevation of considerable areal extent, dropping off abruptly on one or more sides." See Philip A. Symonds et al., *Ridge Issues*, in CONTINENTAL SHELF LIMITS: THE SCIENTIFIC AND LEGAL INTERFACE 287 (Peter J. Cook et al. eds., 2000); Brekke & Symonds, *supra* note 89, at 179; Nat'l Oceanic & Atmospheric Admin., *supra* note 9; IHO-IGO DEFINITIONS *supra*, at 2-23.

<sup>95</sup> TRAINING MANUAL, *supra* note 5, at VII-18.

<sup>96</sup> Symonds et al., *supra* note 94, at 288.

<sup>97</sup> That is, "relating to or determined by the origin, development, prior history, or causal antecedents of some phenomenon." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 946 (Philip Babcock Gove ed., 16th ed. 1971).

<sup>98</sup> *Guidelines*, *supra* note 74, para. 7.2.1.

<sup>99</sup> *Id.*; TRAINING MANUAL, *supra* note 5, at VII-6.

<sup>100</sup> TRAINING MANUAL, *supra* note 5, at VII-18.

<sup>101</sup> Symonds et al., *supra* note 94, at 286, 288 (global ridge systems total over 37,000 miles in length).

others a combination of both.<sup>102</sup> Ridges can be composed of basaltic rocks created during seafloor spreading, basaltic rocks created by hot spots unrelated to seafloor spreading, continental fragments sheered off the continental mass during seafloor spreading, island arc fragments produced during the subduction process associated with convergent tectonic settings, or some combination of the four.<sup>103</sup> Only ridges that are composed of continental fragments are genetically connected to continental landmasses and margins.<sup>104</sup> Ridges that were created by the seafloor spreading process and by hot spots are genetically connected to the ocean basin.<sup>105</sup>

Plateaus can be located completely within the ocean basin or lie near the continental margin.<sup>106</sup> Those near the continental margin may display a clear break between the plateau and the margin, while others show no break.<sup>107</sup>

## 2. *Legal Classification of Seafloor Highs*

The Commission's Scientific and Technical Guidelines (Guidelines) acknowledge that seafloor highs have different names on different maps and that this lack of uniformity in classification is further complicated by the pseudoscientific terms oceanic ridges, submarine ridges, and submarine elevations.<sup>108</sup> The Guidelines state that classification of seafloor highs "shall not be based on their geographical denominations and names used so far in the preparation of the published maps and charts and other relevant literature[,] but "shall be made on the basis of scientific evidence."<sup>109</sup> The Guidelines declare that this classification should be based on the morphology and genesis of the seafloor high and whether the seafloor high is in geological continuity with the continental margin.<sup>110</sup> The Guidelines exclude consideration of crustal composition as the sole factor in the science-based classification.<sup>111</sup>

### a. *Definition of Oceanic Ridges*

In addition to paragraph 3's express exclusion of oceanic ridges, the UNCLOS negotiating history and *travaux* preparatoires show that the purpose of paragraph 3's wording was to ensure that no seafloor high of the deep sea floor could be successfully claimed as part of the continental margin.<sup>112</sup> Further, use of the term "oceanic" suggests that oceanic ridges share genetic and geological characteristics with the deep sea floor and are not in morphological continuity with the continental

---

<sup>102</sup> *Id.* at 286.

<sup>103</sup> *Id.* at 298.

<sup>104</sup> *Id.*

<sup>105</sup> *Id.*

<sup>106</sup> *Id.* at 292.

<sup>107</sup> *Id.*

<sup>108</sup> *Guidelines, supra* note 74, paras. 7.1.3, 7.1.8, 7.2.3.

<sup>109</sup> *Id.* para. 7.1.8.

<sup>110</sup> *Id.* paras. 7.2.4, 7.2.10.

<sup>111</sup> *Id.* para. 7.2.9.

<sup>112</sup> TRAINING MANUAL, *supra* note 5, at VII-33; Symonds et al., *supra* note 94, at 286. "The continental margin comprises the submerged prolongation of the land mass of the coastal State, and consists of the seabed and subsoil of the shelf, the slope and the rise. It does not include the deep ocean floor with its oceanic ridges or the subsoil thereof." UNCLOS, *supra* note 4, art. 76, para. 3.

margin, which ends at the deep ocean floor.<sup>113</sup> Thus, a coastal State can define an oceanic ridge as a ridge that lacks morphological continuity with the continental margin and shares genetic and geological characteristics with the deep sea floor.<sup>114</sup>

*b. Definition of Submarine Ridges*

While Article 76 does not explain the difference between oceanic ridges and submarine ridges, it excludes oceanic ridges from the continental margin, but includes submarine ridges up to 350 M.<sup>115</sup> A submarine ridge is a ridge that is on the continental margin, but is not a natural component of the continental margin.<sup>116</sup> In other words, submarine ridges are morphologically integral to the continental margin, but differ genetically from the landmass of the coastal state.<sup>117</sup> However, because the submarine ridge extends from the continental slope of the continental margin, the same geological process that created the continental margin must have created at least part of the submarine ridge.<sup>118</sup> Thus, a coastal State can define a submarine ridge as a ridge that is in morphological continuity with the continental margin and thereby is not located in the deep ocean floor, even though part of the ridge may differ geologically and genetically from the landmass of the coastal State.<sup>119</sup>

*c. Definition of Submarine Elevations*

Paragraph 6 differentiates between submarine ridges and submarine elevations by declaring that submarine elevations—such as plateaus, rises, caps, banks, and spurs—are natural components of the continental margin.<sup>120</sup> This list of seafloor highs is meant to serve as a guide to what types of seafloor highs are natural components as opposed to submarine ridges.<sup>121</sup> A submarine elevation is like a submarine ridge because it is an integral part of the continental margin.<sup>122</sup> However, unlike a submarine ridge, the full extent of the submarine elevation must be in geological and genetic continuity with the landmass of the coastal State.<sup>123</sup> Thus, a coastal State can define a submarine elevation as an elevation that is in morphological continuity with the continental margin and throughout its entirety shares the geological and genetic characteristics of the landmass of the coastal State.<sup>124</sup>

### III. ANALYSIS OF ARTICLE 76 CLAIMS

To briefly review, the coastal States seek to prove that certain seafloor highs in the oil-rich Arctic Ocean are natural prolongations of their land territory under

---

<sup>113</sup> TRAINING MANUAL, *supra* note 5, at VII-33; Brekke & Symonds, *supra* note 89, at 183.

<sup>114</sup> TRAINING MANUAL, *supra* note 5, at VII-33.

<sup>115</sup> UNCLOS, *supra* note 4, art. 76, para. 6.

<sup>116</sup> TRAINING MANUAL, *supra* note 5, at VII-30.

<sup>117</sup> *Id.* at VII-31.

<sup>118</sup> *Id.*

<sup>119</sup> *Id.* at VII-31 to VII-32.

<sup>120</sup> UNCLOS, *supra* note 4, art. 76, para. 6.

<sup>121</sup> TRAINING MANUAL, *supra* note 5, at VII-32.

<sup>122</sup> *Id.*

<sup>123</sup> *Id.*

<sup>124</sup> *Id.*

Article 76 of UNCLOS.<sup>125</sup> Part II interpreted Article 76 as classifying seafloor highs as oceanic ridges, submarine ridges, or submarine elevations.<sup>126</sup> Oceanic ridges are excluded from the continental margin—and thus excluded from the continental shelf—while submarine ridges can be included in the continental margin up to 350 M from the baselines and submarine elevations are included without any distance limitation.<sup>127</sup> This Part will classify the seafloor highs over which the coastal States seek to assert jurisdiction. If those seafloor highs are oceanic ridges, they are not part of the continental margin, but if they are either submarine ridges or submarine elevations, they are part of the margin.<sup>128</sup> If the seafloor highs are part of the coastal States' continental margin they are part of its continental shelf and their delineation submissions could succeed.<sup>129</sup> If the coastal States' claims succeed, they will gain sovereignty over seabed extending to the middle of the Arctic Ocean.<sup>130</sup> If the coastal States gain sovereignty over these areas, oil and gas development in the Arctic will increase.<sup>131</sup> To help the reader understand the classification of the seafloor highs that the coastal States claim are natural prolongations, this discussion will begin with a description of the Arctic Ocean, where these seafloor highs are located.<sup>132</sup>

#### A. Arctic Ocean Overview<sup>133</sup>

The Arctic Ocean's small, deep central basin (Basin) is almost completely surrounded by the coastal States' continental shelves.<sup>134</sup> The Basin is underlain with oceanic crust that is disconnected from the adjacent continental shelves by a

---

<sup>125</sup> See UNCLOS, *supra* note 4, art. 76, para. 1 (stating that a coastal State can claim sovereignty over the area extending to either the "outer edge of the continental margin" or "200 nautical miles" from its coast); Russian Submission, *supra* note 6 (click on "page 4") (claiming that the continental shelf in the Sea of Okhotsk and the Bering Sea constitute a "prolongation of the land mass of the Russian Federation"); Norwegian Submission, *supra* note 7 (invoking Article 76 authority in establishing the outer limits of Norway's continental shelf); Coman, *supra* note 8 (describing Danish claims to the North Pole based upon new geological data); MAYER ET AL., *supra* note 9, at 8 (stating that coastal states can claim territory beyond their default EEZ).

<sup>126</sup> See UNCLOS, *supra* note 4, art. 76, paras. 3, 6 (describing what constitutes a seafloor high); *supra* discussion Part II.C.

<sup>127</sup> UNCLOS, *supra* note 4, art. 76, paras. 3, 6.

<sup>128</sup> *Id.*

<sup>129</sup> *Id.* art. 76, para. 1.

<sup>130</sup> See Russian Submission, *supra* note 6 (maps showing extent of the Russian Federation's claim); Coman, *supra* note 8; MAYER ET AL., *supra* note 9, at 55 (discussing possible extension of the United States's claim in the Arctic Ocean); UNCLOS, *supra* note 4, art. 76, para. 8; Norwegian Submission, *supra* note 7.

<sup>131</sup> See, e.g., Coman, *supra* note 8 (noting that Denmark will have a legitimate right to the North Pole's natural resources, including oil, if their delineation submission is accepted); Doggett, *supra* note 13 (stating that warmer temperatures will also likely lead to increased oil and gas development).

<sup>132</sup> Grantz, *supra* note 10, at 202–03.

<sup>133</sup> A basin is a "depression, in the sea floor, more or less equidimensional in plan and of variable extent." IHO-IGO DEFINITIONS, *supra* note 94, at 2-19. A borderland is a "region adjacent to a continent, normally occupied by or bordering a shelf and sometimes emerging as islands, that is irregular or blocky in plan or profile, with depths well in excess of those typical of a shelf." *Id.*

<sup>134</sup> Grantz, *supra* note 10, at 203.

belt of free-air anomalies,<sup>135</sup> which are located along the outer edge of the continental shelf.<sup>136</sup> The Basin contains three through-going ridges—Alpha-Mendeleev, Gakkel, and Lomonosov—which traverse the entire Basin from Greenland and Ellesmere Island to Russia.<sup>137</sup> The Basin contains two subbasins which contain three continental borderlands comprised of plateaus and spurs that protrude into the Basin from the adjacent continental shelves north of Svalbard, Greenland, and the Chukchi Sea north of Alaska.<sup>138</sup> Unlike the Alpha-Mendeleev and Lomonosov Ridges, the borderlands do not traverse the Basin.<sup>139</sup> The borderlands are Yermak Plateau, which extends into Nansen Basin from Norway's continental shelf north of Svalbard; Chukchi Borderland, which extends into the Canada Basin from the United States's shelf under the Chukchi Sea; and Morris Jesup Borderland, which extends into the Amundsen Basin from the Danish province Greenland's shelf.<sup>140</sup>

### *B. The Coastal States' Article 76 Claims and Potential Claims*

Russia submitted an Article 76 claim to the Commission (submission) in 2001.<sup>141</sup> Russia's submission and the recommendations it received from the Commission in 2002 are confidential and the portion made available to the public is very brief, consisting of a few maps, legends, and a short Executive Summary.<sup>142</sup> However, Russia has said—and the maps included in its Executive Summary indicate—that its submission is based on its claim that Alpha-Mendleev and Lomonosov Ridges are natural prolongations of its land territory.<sup>143</sup> Canada and Denmark have not made submissions to the Commission, but have begun a joint study of Lomonosov Ridge, LORITA-1 (Lomonosov Ridge Test of Appurtenance-1).<sup>144</sup> Denmark claims that Lomonosov Ridge is a natural prolongation of its land territory—that is, of the Danish province of Greenland—and has declared that it will make a submission once the LORITA-1 is complete.<sup>145</sup> Canada claims that Lomonosov Ridge is a natural prolongation of its land territory north of Ellesmere

---

<sup>135</sup> *Id.* at 204–05. A free-air anomaly is the “difference between observed gravity, corrected for elevation, and reference gravity.” GIORGIO RANALLI, *RHEOLOGY OF THE EARTH* 211 (1995).

<sup>136</sup> Grantz, *supra* note 10, at 205.

<sup>137</sup> *Id.* at 203.

<sup>138</sup> *Id.* at 203–04.

<sup>139</sup> *Id.*

<sup>140</sup> *Id.* Morris Jesup Borderland has not been mentioned in Denmark's potential claim. *See, e.g.,* Coman, *supra* note 8 (explaining Denmark's claim as based on the Lomonosov Ridge).

<sup>141</sup> The Secretary-General, *Oceans and the Law of the Sea, Report of the Secretary General*, add., para. 27, U.N. Doc. A/57/57/Add.1 (Oct. 8, 2002) [hereinafter *Russian Submission Addendum*].

<sup>142</sup> Russian Submission, *supra* note 6; *Rules of Procedure*, *supra* note 72, annex II, para. 2.

<sup>143</sup> CLCS, *Statement Made by the Deputy Minister for Natural Resources of the Russian Federation During Presentation of the Submission Made by the Russian Federation to the Commission, Made on 28 March 2002*, U.N. Doc. CLCS/31 (Apr. 5, 2002) [hereinafter *Russian Statement*]; Russian Submission, *supra* note 6.

<sup>144</sup> *Scientists Continue to Map Disputed Arctic Ridge*, CBCNEWS.CA, Apr. 16, 2007, <http://www.cbc.ca/canada/north/story/2007/04/16/north-ridge.html> (last visited Jan. 25, 2009) [hereinafter *CBCNEWS.CA*]; Coman, *supra* note 8.

<sup>145</sup> Coman, *supra* note 8.

Island, but has not expressly declared its intention to make a submission.<sup>146</sup> Norway made a submission in 2006,<sup>147</sup> and the maps contained in its Executive Summary indicate that it claims that Yermak Plateau is a natural prolongation of its land territory north of the Norwegian island of Svalbard.<sup>148</sup> The United States has not ratified UNCLOS, but in 2002 the Center for Coastal and Ocean Mapping (CCOM) at the University of New Hampshire performed a federally funded study of the Arctic to assess the potential for a claim that Chukchi Cap is a natural prolongation of its land territory.<sup>149</sup> CCOM's director, Larry Mayer, said the area of the potential claim "could be larger than California."<sup>150</sup>

In summary, Russia's submission claims Lomonosov and Alpha-Mendeleev Ridges, potential submissions by Canada and Denmark claim Lomonosov Ridge, Norway's submission claims Yermak Plateau, and the United States's potential submission claims Chukchi Cap as natural prolongations.<sup>151</sup> The morphology, genesis, and crustal type of these seafloor highs are known.<sup>152</sup> Therefore, the available scientific information about these seafloor highs is sufficient to classify them as oceanic ridges, submarine ridges, or submarine elevations.

Part II defined an oceanic ridge as a ridge that lacks morphological continuity with the continental margin and shares genetic and geological characteristics with the deep sea floor.<sup>153</sup> A submarine ridge is a ridge that is in morphological continuity with the continental margin and thereby is not located in the deep ocean floor, but part of it may differ geologically and genetically from the landmass of the coastal State.<sup>154</sup> A submarine elevation is an elevation that is in morphological continuity with the continental margin and throughout its entirety shares the geological and genetic characteristics of the landmass of the coastal State.<sup>155</sup> To be included in any coastal State's continental margin, a seafloor high must either be a submarine ridge or submarine elevation, but it cannot be an oceanic ridge.<sup>156</sup>

### C. Classification of Alpha-Mendeleev and Lomonosov Ridges

Alpha-Mendeleev is an oceanic ridge because it lacks morphological continuity with any continental margin and shares genetic and geological characteristics with the deep sea floor.<sup>157</sup> Alpha-Mendeleev is not a morphological

---

<sup>146</sup> *Id.*; CBCNEWS.CA, *supra* note 144.

<sup>147</sup> CLCS, *Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the Progress of Work in the Commission*, para. 4(k), U.N. Doc. CLCS/54 (Apr. 27, 2007).

<sup>148</sup> Norwegian Submission, *supra* note 7; KINGDOM OF NORWAY, *supra* note 7, at 14–15.

<sup>149</sup> MAYER ET AL., *supra* note 9, at 6; Candace L. Bates, *U.S. Ratification of the U.N. Convention on the Law of the Sea: Passive Acceptance is Not Enough to Protect U.S. Property Interests*, 31 N.C. J. INT'L L. & COM. REG. 745, 780 (2006) (stating that the United States may have a claim to Chukchi Cap).

<sup>150</sup> William Underhill, *The North Pole Heats Up*, NEWSWEEK, Dec. 5, 2005, <http://www.newsweek.com/id/51449/output/print> (last visited Jan. 25, 2008).

<sup>151</sup> See *supra* notes 141–50 and accompanying text; UNCLOS, *supra* note 4, art. 76, para. 1.

<sup>152</sup> See Grantz, *supra* note 10, at 202; TRAINING MANUAL, *supra* note 5, at VII-33.

<sup>153</sup> See *supra* Part II; TRAINING MANUAL, *supra* note 5, at VII-33.

<sup>154</sup> TRAINING MANUAL, *supra* note 5, at VII-31 to VII-32.

<sup>155</sup> *Id.* at VII-32.

<sup>156</sup> See UNCLOS, *supra* note 4, art. 76, paras. 3, 6.

<sup>157</sup> See CLCS, *United States of America: Notification Regarding the Submission Made by the Russian Federation to the Commission on the Limits of the Continental Shelf*, 2–3, U.N. Doc.

continuation of the landmass of Russia, Canada, or Denmark.<sup>158</sup> Alpha-Mendeleev's free-air anomalies terminate at the continental margin at both of its ends and those anomalies are missing from the neighboring continental shelves.<sup>159</sup> Additionally, Alpha-Mendeleev's free-air anomalies are comparable in magnetic character to the oceanic Iceland-Faroe Ridge.<sup>160</sup> Russia's Deputy Minister for Natural Resources acknowledges that the characteristics of Alpha-Mendeleev's free-air anomalies are the same as those of Iceland-Faroe Ridge, "which is an oceanic morphostructure with prolonged hot spot volcanic activity."<sup>161</sup> Finally, both ends of Alpha-Mendeleev are separated from the adjacent continental shelves by irregular seafloor, including bathymetric lows.<sup>162</sup> Therefore, Alpha-Mendeleev is not a morphological continuation of any coastal State's landmass.<sup>163</sup>

Alpha-Mendeleev shares genetic and geological characteristics with the deep ocean floor.<sup>164</sup> Genetically, Alpha-Mendeleev was formed on ocean crust 120–130 million years ago by magma from a Basin hot spot.<sup>165</sup> Also, collections of Alpha-Mendeleev bedrock have consisted of volcanic rock associated with hot spot volcanism.<sup>166</sup> Geologically, the fine-grained sedimentary deposits overlaying Alpha-Mendeleev's oceanic crust is typical of oceanic ridges and is dissimilar to the coarse-grained deposits typical of continental shelves.<sup>167</sup> Therefore, Alpha-Mendeleev shares genetic and geological characteristics with the deep ocean floor.<sup>168</sup> Because it is not a morphological continuation of any coastal State's landmass and shares genetic and geological characteristics with the deep ocean floor, Alpha-Mendeleev is an oceanic ridge and cannot be included in any coastal State's continental margin.<sup>169</sup>

Lomonosov Ridge is also an oceanic ridge because it lacks morphological continuity with any of the coastal States' continental margins.<sup>170</sup> Lomonosov is a fragment of continental crust that was sheared off of the Russian continental shelf about 58 million years ago.<sup>171</sup> Thus, Lomonosov differs from Alpha-Mendeleev

---

CLCS.01.2001.LOS/USA (Mar. 18, 2002) [hereinafter *U.S. Reaction*]; Grantz, *supra* note 10, at 207; UNCLOS, *supra* note 4, art. 76, para. 3.

<sup>158</sup> *U.S. Reaction*, *supra* note 157; Grantz, *supra* note 10, at 201, 207.

<sup>159</sup> *U.S. Reaction*, *supra* note 157, at 2 ("This anomaly field, which is characterized by geometrically irregular short wavelength, high amplitude anomalies, does not cross the Russian continental margin and is absent from the adjacent broad continental shelf of the East Siberian Sea.").

<sup>160</sup> *Id.*

<sup>161</sup> *Russian Statement*, *supra* note 143.

<sup>162</sup> Grantz, *supra* note 10, at 207.

<sup>163</sup> See *U.S. Reaction*, *supra* note 157, at 2 (describing Alpha-Mendeleev's similarities with the deep Arctic Basin).

<sup>164</sup> *Id.*

<sup>165</sup> *Id.*

<sup>166</sup> *Id.* at 3.

<sup>167</sup> *Id.* (stating that Alpha-Mendeleev's crust is overlaid with "thin-bedded sedimentary rocks with low seismic velocities that are only 100 to 500 meters thick. Piston cores show that these sediments are pelagic deposits formed by slow settling of fine-grained material through the water column. They are typical of oceanic ridges and the deep ocean far from land, rather than the more rapidly deposited, typically coarser-grained current-bedded deposits found on continental shelves.").

<sup>168</sup> *Id.*

<sup>169</sup> *Id.* at 2; see UNCLOS, *supra* note 4, art. 76, para. 3.

<sup>170</sup> UNCLOS, *supra* note 4, art. 76, para. 3; see *U.S. Reaction*, *supra* note 157, at 3.

<sup>171</sup> Grantz, *supra* note 10, at 206–07.

because it shares geological and genetic characteristics with the Russian landmass.<sup>172</sup> Russia argued to the Commission that because Lomonosov is comprised of continental crust, it is part of the country's continental margin—meaning that Russia considers Lomonosov to be either a submarine ridge or submarine elevation.<sup>173</sup> While it is true that Lomonosov is a fragment of continental crust that was once part of the Russian continental margin, and thus shares geological and genetic characteristics with that margin, Russia's argument fails because Lomonosov lacks the other necessary element of submarine ridge or submarine elevation classification—morphological continuity with the continental margin.<sup>174</sup>

First, Lomonosov is completely surrounded by oceanic crust.<sup>175</sup> That oceanic crust is separated from the coastal States' continental shelves by a boundary of free-air anomalies that encircles the Basin.<sup>176</sup> Second, like Alpha-Mendelev, bathymetric lows separate it from the neighboring continental shelves on both of its ends.<sup>177</sup> Additionally, the typical summit elevations of Lomonosov lie at subsea level depths of 1300–8500 feet, while the outer edge of the continental shelves are 490–1300 feet deep adjacent to the Russian end of Lomonosov and 1300–1900 feet deep on the Canadian end.<sup>178</sup> Thus, Lomonosov is not a morphological continuation of any coastal State's landmass and therefore is an oceanic ridge that cannot be included in any coastal State's continental margin.<sup>179</sup>

To summarize, Alpha-Mendelev and Lomonosov Ridges are oceanic ridges and therefore cannot be included in the continental margin under Article 76.<sup>180</sup> Consequently, Russia's Article 76 claim fails the Test of Appurtenance and Canada and Denmark's potential claims will also fail.<sup>181</sup>

#### *D. Classification of Yermak Plateau and Chukchi Cap*

Yermak Plateau and Chukchi Cap are submarine elevations because they are in morphological continuity with the continental margin and throughout their entirety share the geological and genetic characteristics of the landmasses of Norway and the United States.<sup>182</sup> First, Yermak and Chukchi are morphological continuations of the

<sup>172</sup> As opposed to Alpha-Mendelev, which does not share those characteristics with the Russian landmass. See *U.S. Reaction*, *supra* note 157, at 2.

<sup>173</sup> *Russian Statement*, *supra* note 143, at 5.

<sup>174</sup> See Grantz, *supra* note 10, at 205–06.

<sup>175</sup> *Id.* at 205.

<sup>176</sup> *Id.* (“[A]nomalies show that the entire Eurasia Basin, from the base of the Barents-Kara continental slope to the base of Lomonosov Ridge, is underlain by oceanic crust” and “[s]hort segments of linear magnetic anomalies beneath Makarov Basin . . . which lies between the Alpha-Mendelev and Lomonosov Ridges, are essentially parallel in trend to the radiate magnetic anomalies of the Canada Basin. This suggests that the radiate system of magnetic anomalies of the central Canada Basin extends from the lower Mackenzie River valley to the foot of Lomonosov Ridge”); UNCLOS, *supra* note 4, art. 76, para. 6.

<sup>177</sup> Grantz, *supra* note 10, at 207.

<sup>178</sup> *Id.*

<sup>179</sup> See UNCLOS, *supra* note 4, art. 76, para. 3; *U.S. Reaction*, *supra* note 157, at 3.

<sup>180</sup> Grantz, *supra* note 10, at 201; UNCLOS, *supra* note 4, art. 76, para. 3; *supra* Part III.C.

<sup>181</sup> See Grantz, *supra* note 10, at 201; UNCLOS, *supra* note 4, art. 76, para. 3; *supra* notes 141–50 and accompanying text (describing those coastal States' claims and potential claims).

<sup>182</sup> Grantz, *supra* note 10, at 204; TRAINING MANUAL, *supra* note 5, at VII-32.

landmasses of Norway and the United States because, unlike Alpha-Mendelev and Lomonosov Ridges, there is no change in elevation where Yermak and Chukchi connect with the continental shelves.<sup>183</sup> Instead, they both merge fluidly with their adjacent shelves.<sup>184</sup> Additionally, both Yermak and Chukchi have broad, convex crests similar to the adjacent continental shelves.<sup>185</sup> Further, the slopes that separate both Yermak and Chukchi from the Basin are comparable to and merge with the continental slopes of their respective landmasses.<sup>186</sup>

Second, Yermak and Chukchi share geological and genetic characteristics with the landmasses of Norway and the United States because continental rock comprises them and the same genetic process that created those countries' continental margins also formed Yermak and Chukchi.<sup>187</sup> Thus, Yermak Plateau and Chukchi Cap are submarine elevations and can be included in Norway and the United States's continental margins.<sup>188</sup> Therefore, the claims and potential claims of Norway and the United States meet the Test of Appurtenance.<sup>189</sup>

#### *E. The Commission has a Limited Role in the Success or Failure of Claims*

The Commission made confidential recommendations to Russia in 2002,<sup>190</sup> which it summarized as recommending "that the Russian Federation make a revised submission in respect of its extended continental shelf" in the Arctic "based on the findings contained in the recommendations."<sup>191</sup> Russia responded in 2003 with a letter requesting clarifications of the Commission's recommendations, but the Commission has not responded.<sup>192</sup> The Commission considered Norway's submission during several of its recent sessions, including in September 2008, and has informed Norway on its preliminary views on certain areas of the submission, but has not indicated whether it has adopted any recommendations.<sup>193</sup> As mentioned above, the United States has not yet ratified UNCLOS, and thus has not made a submission; and neither Canada nor Denmark has made a submission.<sup>194</sup>

Although the coastal State submits evidence of delineation of its continental shelf and the Commission's decision is ostensibly "final and binding," the

---

<sup>183</sup> Grantz, *supra* note 10, at 204; *see supra* Part III.C (discussing Alpha-Mendelev and Lomonosov).

<sup>184</sup> Grantz, *supra* note 10, at 204.

<sup>185</sup> *Id.*

<sup>186</sup> *Id.*

<sup>187</sup> *See id.* (discussing crustal morphology and other similarities).

<sup>188</sup> *Id.*

<sup>189</sup> *See* TRAINING MANUAL, *supra* note 5, at I-26.

<sup>190</sup> *Russian Submission Addendum*, *supra* note 141, para. 41; Peter F. Croker, *The Commission on the Limits of the Continental Shelf: Progress to Date and Future Challenges*, in LEGAL AND SCIENTIFIC ASPECTS OF CONTINENTAL SHELF LIMITS 215, 220 (Myron H. Nordquist et al. eds., 2004).

<sup>191</sup> *Russian Submission Addendum*, *supra* note 141, para. 41.

<sup>192</sup> Croker, *supra* note 190.

<sup>193</sup> CLCS, *Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the Progress of Work in the Commission*, paras. 24–28, Doc. CLCS/58 (Apr. 25, 2008); CLCS, *Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the Progress of Work in the Commission*, paras. 15–18, Doc. CLCS/60 (Sept. 26, 2008).

<sup>194</sup> Coman, *supra* note 8; MAYER ET AL., *supra* note 9, at 6.

Commission is not a court.<sup>195</sup> First, the Commission's budget is provided by the home States of the respective Commission members.<sup>196</sup> Second, members of the Commission can provide recommendations to their respective home States and ultimately decide whether the home State's Article 76 claim is approved.<sup>197</sup> Together, these factors distinguish the Commission from international courts and have created questions about the Commission's impartiality.<sup>198</sup>

The Commission also is not an international body, like the United Nations, that represents its member States.<sup>199</sup> Because the Commission does not represent them, States preserve their right to action and reaction regarding other State's continental shelf claims and the Commission's decisions concerning those claims.<sup>200</sup> Additionally, the Commission does not represent mankind as a whole, because the International Seabed Authority—the body that is charged with acting on behalf of mankind under UNCLOS—is not among its members.<sup>201</sup> Thus, the Commission is essentially a source of nonbinding scientific and technical advice.<sup>202</sup>

Article 76 compels the Commission to provide the coastal States with scientific and technical recommendations regarding delineation of their continental shelf and declares that “[t]he limits of the shelf established by a coastal State on the basis of these recommendations shall be final and binding.”<sup>203</sup> Article 76 does not state upon whom the limits will be final and binding.<sup>204</sup> One interpretation held by the United Nations Office of Legal Affairs, is that the delineation is final and binding on all States.<sup>205</sup> However, as mentioned above, because the Commission does not represent all States, it cannot speak for them.<sup>206</sup> Therefore, States retain their legal right to protest another State's delineation, even though the delineation was on the basis of the Commission's recommendations.<sup>207</sup> Thus, the more likely interpretation is that the delineation is “final and binding” only upon the submitting State; that is, the State cannot change its delineation after it makes the delineation on the basis of the Commission's recommendations.<sup>208</sup>

If a coastal State disagrees with another coastal State's delineation, it is unclear what fora are available to it for protest.<sup>209</sup> Part XV of UNCLOS commands parties to use peaceful means of their choosing, which include compulsory conciliation or compulsory third-party adjudication in the International Court of

---

<sup>195</sup> Ted L. McDorman, *The Role of the Commission on the Limits of the Continental Shelf: A Technical Body in a Political World*, 17 INT'L. J. MARINE & COASTAL L. 301, 310–12 (2002).

<sup>196</sup> Gudmundur Eiriksson, *The Case of Disagreement Between a Coastal State and the Commission on the Limits of the Continental Shelf*, in LEGAL AND SCIENTIFIC ASPECTS OF CONTINENTAL SHELF LIMITS 251, 254 (Myron H. Nordquist et al. eds., 2004); McDorman, *supra* note 195, at 312.

<sup>197</sup> Eiriksson, *supra* note 196.

<sup>198</sup> McDorman, *supra* note 195, at 311–12.

<sup>199</sup> *Id.* at 311.

<sup>200</sup> *Id.*

<sup>201</sup> *Id.*; UNCLOS, *supra* note 4, arts. 137, para. 2, 156, annex II.

<sup>202</sup> See McDorman, *supra* note 195, at 311.

<sup>203</sup> UNCLOS, *supra* note 4, art. 76, para. 8.

<sup>204</sup> McDorman, *supra* note 195, at 314–15; UNCLOS, *supra* note 4, art. 76, para. 8.

<sup>205</sup> McDorman, *supra* note 195, at 314–15; TRAINING MANUAL, *supra* note 5, at I-61.

<sup>206</sup> McDorman, *supra* note 195, at 315.

<sup>207</sup> *Id.*

<sup>208</sup> *Id.*

<sup>209</sup> *Id.* at 316–19.

Justice or International Tribunal for the Law of the Sea, to resolve disputes.<sup>210</sup> However, because of lack of consensus during Article 76 negotiations, there is no explicit language in either Article 76 or Part XV about how to resolve disputes stemming from continental shelf claims and Commission determinations.<sup>211</sup> Some commentators have suggested that UNCLOS negotiators opted out of the Article 279 and 280 compulsory processes of dispute resolution through use of the term “final and binding[;]” that is, the Commission has the last word on the matter.<sup>212</sup> Others have pointed to the absence of express “opt out” language, which they argue the drafters could have easily included.<sup>213</sup> For example, Article 298 of UNCLOS allows States to opt out of the dispute settlement processes in disputes over overlapping offshore claims.<sup>214</sup> UNCLOS drafters could have declared that if the coastal State and the Commission agree on the coastal State’s continental shelf delineation, third parties are precluded from contesting that delineation through use of UNCLOS dispute settlement procedures.<sup>215</sup> Failure to include such opt out language lends support to the interpretation that “final and binding” does not mean final and binding on all States.<sup>216</sup> However interpreted, the ambiguity surrounding “final and binding” suggests that the Commission has a limited role in delineation.<sup>217</sup> Therefore, the submitting and reacting States both have complete political and legal autonomy regarding delineation of the continental shelf and reaction to that delineation.<sup>218</sup>

To put it plainly, the Commission is powerless to stop a coastal State from developing oil and gas on the seafloor highs it claims are natural prolongations of its land territory, but which the Commission determines are not.<sup>219</sup> For example, the Commission may determine that Alpha-Mendeleev and Lomonosov are oceanic ridges and that, therefore, Russia’s Article 76 claim must fail. However, Russia could simply ignore the Commission’s recommendations and begin developing oil and gas on Alpha-Mendeleev and Lomonosov Ridges. The Commission would have no power to enjoin Russia because it is not a court.<sup>220</sup> Therefore, even if a coastal State’s Article 76 claim fails with the Commission, the coastal State remains free to behave as if its claim was actually approved.<sup>221</sup> It would be contingent upon the other coastal States to prevent such an exercise of

---

<sup>210</sup> UNCLOS, *supra* note 4, arts. 279–80; McDorman, *supra* note 195, at 317 n.64.

<sup>211</sup> McDorman, *supra* note 195, at 317.

<sup>212</sup> *Id.*

<sup>213</sup> *Id.* at 317–18.

<sup>214</sup> *Id.* at 318. The relevant portion of Article 298 reads:

When signing, ratifying or acceding to this Convention or at any time thereafter, a State may, without prejudice to the obligations arising under section 1, declare in writing that it does not accept any one or more of the procedures provided for in section 2 with respect to one or more of the following categories of disputes [list of various types of disputes].

UNCLOS, *supra* note 4, art. 298, para. 1.

<sup>215</sup> McDorman, *supra* note 195, at 318.

<sup>216</sup> *Id.*

<sup>217</sup> *Id.* at 319.

<sup>218</sup> *Id.*

<sup>219</sup> *See id.* at 311–13, 319 (explaining the limited role of the Commission).

<sup>220</sup> *Id.* at 311–12.

<sup>221</sup> *See id.* at 319 (stating that claiming and nonclaiming states may have full legal and political autonomy).

sovereignty.<sup>222</sup> However, it is unclear what methods of peaceful dispute resolution are available to coastal States.<sup>223</sup>

Given the tenor of events following Russia's flag planting stunt, the threat of nonpeaceful disputes over Arctic sovereignty is not implausible.<sup>224</sup> A week after Russia's submarine dive, Canadian Prime Minister Stephen Harper announced that Canada would construct two new military facilities in the Arctic, build six to eight navy patrol ships to guard the area, and increase its military forces by 900 troops in order to protect Canada's asserted sovereignty over the Arctic and its natural resources.<sup>225</sup> Russian bombers appeared over the Arctic a few days later, for the first time since the Cold War.<sup>226</sup> Harper, flanked by his Defense Minister and Canadian troops, said in a speech at the site of one of the future facilities that "Canada's new government understands that the first principle of Arctic sovereignty is: Use it or lose it."<sup>227</sup> As troops, ships, and bombers circle the Arctic, this fragile region faces yet another threat: war.

The Commission has a limited role in the success or failure of the coastal States' Article 76 claims. It is powerless to stop a coastal State whose claim it has denied from nevertheless behaving as if the claim had been approved. For example, if the Commission rejects Russia's Article 76 claim, Russia could nevertheless continue to claim Alpha-Mendeleev and Lomonosov Ridges as part of its continental shelf, and could develop oil and gas in those areas of the Arctic. If Canada disagrees with Russia's behavior—as it certainly would—it is not clear what peaceful means it has to make its dispute. Thus, the specter of armed conflict—for which Russia and Canada appear to be preparing—looms over an already dire situation.

#### IV. INCREASED OIL AND GAS DEVELOPMENT WILL HAVE AN ADVERSE EFFECT ON THE ARCTIC<sup>228</sup>

If the coastal States gain sovereignty over these areas, oil and gas development in the Arctic will increase.<sup>229</sup> This Part will illustrate that increased oil and gas development in the Arctic will have an adverse effect on the region because of increased oil spills and the negative impacts of increased development infrastructure.

Increased oil and gas development will result in increased oil spills.<sup>230</sup> Part II described how global warming is melting Arctic sea ice.<sup>231</sup> As Arctic sea ice melts

---

<sup>222</sup> *Id.*

<sup>223</sup> *Id.* at 315–16.

<sup>224</sup> See *Canada Rejects Russian Claim*, ASSOCIATED PRESS, Aug. 12, 2007, <http://www.smh.com.au/news/world/canada-rejects-russian-claim/2007/08/11/1186530679819.html> (last visited Jan. 25, 2009); Scott G. Borgerson, *Arctic Meltdown*, FOREIGN AFFAIRS, Mar.–Apr. 2008, at 63, 63–64.

<sup>225</sup> ASSOCIATED PRESS, *supra* note 224; Moore et al., *supra* note 1 (dating Russia's submarine dive).

<sup>226</sup> Borgerson, *supra* note 224, at 63.

<sup>227</sup> ASSOCIATED PRESS, *supra* note 224.

<sup>228</sup> Increased oil and gas development will also adversely affect Arctic indigenous people. HASSOL, *supra* note 13, at 8. However, discussion of these effects is beyond the scope of this Comment.

<sup>229</sup> Coman, *supra* note 8.

<sup>230</sup> HASSOL, *supra* note 13, at 19.

<sup>231</sup> See *supra* Part II.

and thins, it also becomes more mobile.<sup>232</sup> Increasingly mobile sea ice threatens oil tankers because most of these vessels are not built to withstand collisions with ice.<sup>233</sup> Planning ice-free routes for these ships is not an option because of sea ice mobility.<sup>234</sup> The well-known danger posed by oil spills from tankers is even greater in ice-filled waters because there is no reliable cleanup method, a fact conceded by the oil and gas industry.<sup>235</sup> Skimming and containing, typical cleanup procedures in ice-free waters, are impossible in ice-laden waters, and burning, the preferred method of clean up in ice-filled waters, is only successful under a narrow set of conditions.<sup>236</sup> Therefore, increased oil and gas development in the Arctic will lead to more oil spills, which pose a greater threat in the region than elsewhere because there is no reliable cleanup method.<sup>237</sup>

The eleven million gallon 1989 Exxon Valdez oil spill in Alaska's Prince William Sound was the worst in U.S. history.<sup>238</sup> The spill illustrates how difficult oil spill response and clean up is even in clear weather and relatively ice-free seas.<sup>239</sup> In addition to its well-known immediate effects—the spill killed over a quarter of a million seabirds and marine mammals—Exxon Valdez illustrates that the effects of an oil spill in a cold ocean at high latitude may last well beyond the spill itself.<sup>240</sup> Scientists predicted that the Prince William Sound would recover when the oil degraded and dissipated, but unanticipated persistence of subsurface oil has continued to adversely affect wildlife.<sup>241</sup> While the early stages of oil transformation and transport followed scientists' expectations,<sup>242</sup> rates of degradation and dispersion diminished over time.<sup>243</sup> A survey performed twelve years after the spill found over sixty-one tons of undecayed Exxon Valdez oil in the subsurface sediments of Prince William Sound intertidal shorelines and an almost equal amount of only minimally decayed subsurface oil, representing only a 20%–26% per year decay rate.<sup>244</sup> Sea otters and other species dig for food on these

---

<sup>232</sup> HASSOL, *supra* note 13, at 84.

<sup>233</sup> *See id.* (stating that ships will need to be built to higher construction standards to account for the probability of operating in ice).

<sup>234</sup> *Id.*

<sup>235</sup> *Id.* at 85; Wolf, *supra* note 18, at 37.

<sup>236</sup> Wolf, *supra* note 18, at 37.

<sup>237</sup> HASSOL, *supra* note 13, at 85; Wolf, *supra* note 18, at 37.

<sup>238</sup> HASSOL, *supra* note 13, at 85.

<sup>239</sup> Wolf, *supra* note 18, at 37.

<sup>240</sup> HASSOL, *supra* note 13, at 85.

<sup>241</sup> *Id.*; Charles H. Peterson et al., *Long-Term Ecosystem Response to the Exxon Valdez Oil Spill*, 302 SCI. 2082, 2082 (2003).

<sup>242</sup> Peterson et al., *supra* note 241, at 2082. For example,

[a]bout 40 to 45% of the oil mass grounded in 1989 on 787 km of PWS beaches; another 7 to 11% was transported to contaminate 1203 km of Gulf of Alaska shoreline. About 2% remained on intertidal PWS beaches after 3.5 years; this reflected an exponential decay rate of  $-0.87 \text{ year}^{-1}$ , which in turn produced a loss of 58% over a year.

*Id.* (citations omitted in original).

<sup>243</sup> *Id.* (explaining “most oil remaining after October 1992 was sequestered in environments where degradation was suppressed by physical barriers to disturbance, oxygenation, and photolysis” (citation omitted in original)).

<sup>244</sup> *Id.*

beaches and are exposed to the oil.<sup>245</sup> This persistence of oil, even in small amounts, harms wildlife by reducing species survival rates, slowing reproduction, and stunting growth.<sup>246</sup> Effective spill response strategies have yet to be developed for the ice-filled waters of the Arctic, which will make cleanup efforts more demanding and complex.<sup>247</sup>

In addition to spills from oil tankers, undersea oil pipelines pose a spill risk.<sup>248</sup> Large pieces of ice called ice keels pummel the Arctic sea floor and could rupture a pipeline, causing a spill that could go undetected for months.<sup>249</sup> Oil under ice could travel toward land, fouling bays, estuaries, and inlets, and thereby harm birds, seals, and beluga whales. Oil could also travel further out to sea, placing offshore species at risk, or it could contaminate the seafloor.<sup>250</sup> Research following the Exxon Valdez spill shows that seafloor contamination can potentially harm all wildlife, from plankton to whales.<sup>251</sup>

Two related factors could conceivably prevent increased oil spills. First, oil and gas development itself might be hindered by the high costs and risk of those activities in the Arctic.<sup>252</sup> In order to operate without oil spills, the industry would need to build a new fleet of tankers that could withstand collisions with ice.<sup>253</sup> Building stronger ships would require a substantial capital investment by the industry, not to mention the associated increased operational and maintenance costs.<sup>254</sup> Additionally, long transportation routes between ports and offshore facilities will further shrink profit margins.<sup>255</sup> Further, the Arctic lacks oil and gas development infrastructure and its construction will be costly.<sup>256</sup> Finally, and more generally, the remoteness, cold temperatures, and darkness of the Arctic will make oil and gas development more difficult, demanding, and costly.<sup>257</sup> Thus, it is possible that because of increased costs and risk the oil and gas industry would delay oil and gas development until the Arctic is relatively ice-free.<sup>258</sup> Second, if the industry chooses to wait until the Arctic is ice-free, and therefore warmer, the risks of increased oil spills due to oil tanker collisions with mobile sea ice and decreased rates of oil decay due to cold water would be lessened or eliminated.<sup>259</sup> However, even if oil spills were completely avoided—a highly unlikely scenario given that a spill recently occurred in the ice-free, relatively warm waters of San

---

<sup>245</sup> HASSOL, *supra* note 13, at 85.

<sup>246</sup> *Id.*

<sup>247</sup> *Id.*

<sup>248</sup> Wolf, *supra* note 18, at 37.

<sup>249</sup> *Id.*

<sup>250</sup> *Id.*

<sup>251</sup> *Id.*

<sup>252</sup> See HASSOL, *supra* note 13, at 84–85 (discussing the risks that will face ships in the Arctic).

<sup>253</sup> *Id.*

<sup>254</sup> *Id.*

<sup>255</sup> Dubner, *supra* note 16, at 6.

<sup>256</sup> *Id.*

<sup>257</sup> *Id.*

<sup>258</sup> See Wolf, *supra* note 18, at 36.

<sup>259</sup> See HASSOL, *supra* note 13, at 84–85 (describing how conditions could become less predictable in the Arctic).

Francisco Bay—the adverse effects caused by oil and gas development infrastructure remain.<sup>260</sup>

Increased oil and gas development will result in increased development infrastructure, which will have negative impacts on the Arctic.<sup>261</sup> While the oil and gas industry likes to boast that its developments will have minimal impacts on the surrounding environment, increased Arctic oil and gas development will result in an array of new support facilities on land, oil rigs at sea, on- and off-shore pipelines, and increased air, land, and sea transportation.<sup>262</sup> On land, waste and processing facilities, docks, ports, causeways, and pipeline landfall bases could replace wild coastal areas used by walrus and seal for resting and escaping predators and used by birds for nesting and breeding grounds.<sup>263</sup> Hundreds of miles of pipelines could hinder caribou migration.<sup>264</sup> Noise from scores of helicopter flights and other aircraft may scare and dislocate animals.<sup>265</sup> At sea, oil rigs and offshore pipelines may compromise animal migration, while expanded ship traffic would increase bird and marine animal strikes and impair their resting habits.<sup>266</sup> Seismic testing, icebreakers, and other loud exploration methods may cause noise-sensitive animals, such as seals, walrus, and whales, which rely on hearing to hunt, to abandon vital feeding sites.<sup>267</sup>

Again, and somewhat perversely, global warming might mitigate these adverse effects because an Arctic barren of ice will also be barren of much of its iconic wildlife.<sup>268</sup> Polar bears as a species are not likely to survive a complete loss of summer sea-ice.<sup>269</sup> Similarly, the ringed seal's chances of survival without ice are slim.<sup>270</sup> Walrus rely on the ice edge for resting and feeding on shellfish on the continental shelves.<sup>271</sup> As the ice edge retreats to deeper areas that lack shellfish, walrus will be unable to feed.<sup>272</sup> Thus, it seems likely that many of the region's well-known species will disappear with the ice.<sup>273</sup>

However, it is uncertain if or when these “mitigating factors”—warm seas, ice-free waters, and the resulting elimination of many Arctic species—might occur. Given the wealth to be gained by developing up to 25% of the world's remaining undeveloped oil and gas reserves,<sup>274</sup> the industry may very well take its chances with

---

<sup>260</sup> Wolf, *supra* note 18, at 37; Terence Chea, *San Francisco Oil Spill Threatens Wildlife*, NAT'L GEOGRAPHIC, Nov. 9, 2008, <http://news.nationalgeographic.com/news/2007/11/071109-AP-bay-spill.html> (last visited Jan. 25, 2009).

<sup>261</sup> Wolf, *supra* note 18, at 37.

<sup>262</sup> ANWR.org, *Today's Drilling Leaves a Small Footprint*, <http://www.anwr.org/Technology/Today-s-drilling-leaves-a-small-footprint.php> (last visited Jan. 25, 2009); see Wolf, *supra* note 18, at 37 (describing land and sea impacts of Arctic drilling on Alaska's outer continental shelf).

<sup>263</sup> Wolf, *supra* note 18, at 37.

<sup>264</sup> *Id.*

<sup>265</sup> *Id.*

<sup>266</sup> *Id.*

<sup>267</sup> *Id.*

<sup>268</sup> See HASSOL, *supra* note 13, at 58–59.

<sup>269</sup> *Id.* at 58.

<sup>270</sup> *Id.* at 59.

<sup>271</sup> *Id.*

<sup>272</sup> *Id.*

<sup>273</sup> See *id.* 58–59.

<sup>274</sup> Hargreaves, *supra* note 13.

its weak-hulled oil tankers and vulnerable pipelines and not wait for the mitigating factors to arrive. Perhaps the global warming-induced Arctic melt will lessen or halt. These are uncertainties. One certainty is that increased oil and gas development in the present-day Arctic, using present-day oil and gas development and shipping methods, will have an adverse effect on the region because of increased oil spills and the negative impacts of increased development infrastructure.

V. THE ARCTIC'S EXISTING SOFT LAW AGREEMENTS ARE INSUFFICIENT PROTECTIONS AGAINST THE ADVERSE EFFECTS OF INCREASED OIL AND GAS DEVELOPMENT

Another certainty is that the region's existing agreements are inadequate to protect the Arctic from the adverse effects of increased oil and gas development. This Part will discuss the existing Arctic environmental protections and find them insufficient because they are not legally binding on the Arctic States—Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States. In other words, they are “soft law.”<sup>275</sup>

The Arctic legal regime is a piecemeal collection of a single hard law treaty—the 1973 Agreement on the Conservation of Polar Bears<sup>276</sup>—and soft law agreements that only address specific Arctic issues.<sup>277</sup> There is no unifying legal instrument in the Arctic that focuses on protection of the region as a whole.<sup>278</sup> There are five problems with the existing Arctic soft law regime.<sup>279</sup> First, the majority of soft law agreements do not have the support of all of the Arctic States, a shortcoming that severely weakens their effectiveness.<sup>280</sup> Second, the agreements were adopted to try to deal with then-existing issues, and thus constitute a disparate collection of separate legal regimes instead of one unified, comprehensive Arctic regime.<sup>281</sup> Third, the agreements essentially ignore Arctic environmental interdependence; that is, they do not consider the Arctic as an ecosystem with

---

<sup>275</sup> See, e.g., Tadeusz Gruchalla-Wesierski, *A Framework for Understanding “Soft Law,”* 30 MCGILL L.J. 37, 40 (1984) (“[S]oft law is often unenforceable because the parties retain discretion over the content of the obligation or over its exigibility.”); see also *supra* note 23 for a discussion of soft law.

<sup>276</sup> Agreement on the Conservation of Polar Bears, Nov. 15, 1973, 27 U.S.T. 3918, 13 I.L.M. 13; see also *supra* note 24 for a discussion of hard law.

<sup>277</sup> David VanderZwaag, *International Law and Arctic Marine Conservation and Protection: A Slushy, Shifting Seascape*, 9 GEO. INT'L ENVTL. L. REV. 303, 303–04 (1997). Some examples of these soft law agreements are: the 1973 International Convention for the Prevention of Pollution from Ships and its 1978 Protocol (MARPOL); the 1990 International Convention on Oil Pollution Preparedness, Response and Co-Operation; the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage; the United Nations Educational, Scientific and Cultural Organization (UNESCO) Biosphere Reserve System; the 1992 Convention on Biodiversity; the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora; the 1979 Convention on Long-Range Transboundary Air Pollution; and the 1985 Vienna Convention for the Protection of the Ozone Layer. Richard J. Ansson, Jr., *The North American Agreement on Environmental Protection and the Arctic Council Agreement: Will These Multinational Agreements Adequately Protect the Environment?*, 29 CAL. W. INT'L L.J. 101, 117–20 (1998).

<sup>278</sup> Donald R. Rothwell, *International Law and the Protection of the Arctic Environment*, 44 INT'L & COMP. L.Q. 280, 280 (1995).

<sup>279</sup> *Id.* at 298.

<sup>280</sup> *Id.*; see also Ansson, *supra* note 277, at 120.

<sup>281</sup> Rothwell, *supra* note 278, at 298.

interrelated flora and fauna and marine and land environments.<sup>282</sup> Fourth, large areas of the Arctic beyond national jurisdiction have been ignored because the agreements largely focus on encouraging action by Arctic States within their territories.<sup>283</sup> Fifth, the agreements have focused more on studying and talking about Arctic environmental issues than on taking action to resolve them.<sup>284</sup>

*A. The AEPS is Inadequate Because of Lack of Funding and Authority*

The majority of cooperation between Arctic States since 1991 has taken place through the Arctic Environmental Protection Strategy (AEPS), a talk-and-study, soft-law agreement.<sup>285</sup> The AEPS's goals are restoration, protection, and enhancement of Arctic environmental quality and sustainable natural resource exploitation.<sup>286</sup> AEPS attempts to achieve these goals through five working groups (with a sixth added by the AEPS successor, the Arctic Council).<sup>287</sup> The Arctic Monitoring and Assessment Programme's (AMAP) objective is to provide information and nonbinding advice to Arctic States regarding Arctic environmental conditions and threats so that States may take preventative actions, but AMAP's lack of funding prevents it from taking action on its own.<sup>288</sup> The objective of another working group, Protection of the Arctic Marine Environment (PAME), is to address nonemergency pollution prevention, but an insufficient budget has hindered those efforts.<sup>289</sup> The Emergency Prevention, Preparedness and Response's (EPPR) objective is to prepare for and respond to environmental emergencies in the Arctic.<sup>290</sup> However, EPPR has been unable to respond to oil spills in the region because Arctic States are unwilling to provide it the necessary budget and access to their respective sovereign territories.<sup>291</sup> Conservation of Arctic Flora and Fauna's (CAFF) objective is to study Arctic biodiversity and provide conservation advice to the Arctic States.<sup>292</sup> Arctic States, however, are not required to protect habitat and are often disinclined to do so because the habitat areas also contain valuable oil and gas reserves.<sup>293</sup> The Arctic Contaminants Action Program's (ACAP) objective is pollution reduction, but its role is limited to providing advice to the Arctic States.<sup>294</sup> In summary, AEPS is insufficient to protect the Arctic from the adverse effects of increased oil and gas development because its working groups lack the funding and

---

<sup>282</sup> *Id.* at 299.

<sup>283</sup> *Id.*

<sup>284</sup> VanderZwaag et al., *supra* note 17, at 132; *see* Rothwell, *supra* note 278, at 299.

<sup>285</sup> VanderZwaag et al., *supra* note 17, at 132.

<sup>286</sup> Arctic Environmental Protection Strategy (AEPS), para. 2.1, June 14, 1991, 30 I.L.M. 1624.

<sup>287</sup> Arctic Council, Working Groups, [http://arctic-council.org/section/working\\_groups](http://arctic-council.org/section/working_groups) (last visited Jan. 25, 2009).

<sup>288</sup> Arctic Council, AMAP, [http://arctic-council.org/working\\_group/amap](http://arctic-council.org/working_group/amap) (last visited Jan. 25, 2009).

<sup>289</sup> Arctic Council, PAME, [http://arctic-council.org/working\\_group/pame](http://arctic-council.org/working_group/pame) (last visited Jan. 25, 2009); VanderZwaag et al., *supra* note 17, at 149–50.

<sup>290</sup> Arctic Council, EPPR, [http://arctic-council.org/working\\_group/eppr](http://arctic-council.org/working_group/eppr) (last visited Jan. 25, 2009).

<sup>291</sup> VanderZwaag et al., *supra* note 17, at 148–49.

<sup>292</sup> Arctic Council, CAFF, [http://arctic-council.org/working\\_group/caff](http://arctic-council.org/working_group/caff) (last visited Jan. 25, 2009).

<sup>293</sup> VanderZwaag et al., *supra* note 17, at 151–52.

<sup>294</sup> Arctic Council, ACAP, [http://arctic-council.org/working\\_group/acap](http://arctic-council.org/working_group/acap) (last visited Jan. 25, 2009).

authority necessary to independently provide protection, and lack the authority to force the Arctic States to provide protection.<sup>295</sup>

*B. The Arctic Council is Inadequate Because of its Focus on “Sustainable Development”*

The AEPS was incorporated into the Arctic Council on its formation in 1996 and took on its shortcomings—lack of funding and authority.<sup>296</sup> The Arctic Council is a voluntary organization of the Arctic States that seeks to promote “sustainable development” and environmental protection through the nonbinding recommendations of the AEPS working groups.<sup>297</sup> The Preamble to the Declaration on Establishment of the Arctic Council affirms its “commitment to sustainable development,” and its commitment to Arctic environmental protection, although this commitment includes “sustainable use of natural resources.”<sup>298</sup> One of the Arctic Council’s first acts was to create the Working Group on Sustainable Development (SDWG).<sup>299</sup> SDWG suffers from the same lack of funding and authority that afflicts the AEPS-created working groups; that is, despite its mandate to promote sustainable development, States are free to develop their resources as sustainably or unsustainably as they wish because the Arctic Council is a soft law agreement.<sup>300</sup> Even if SDWG could force Arctic States to develop sustainably, it is not clear what that development would look like because neither SDWG nor the Arctic Council defines “sustainable development.”<sup>301</sup>

The Arctic is already threatened by global warming, melting ice, and declining species.<sup>302</sup> Therefore, promoting development of any sort—whether cloaked in the ambiguous veil of “sustainable development” or not—is inconsistent with protection of the Arctic environment.<sup>303</sup> Thus, instead of increasing the already meager protections afforded the region by the AEPS, the Arctic Council has further compromised those protections.<sup>304</sup>

To summarize, the Arctic’s piecemeal collection of soft law agreements are insufficient to protect the region from the adverse effects of increased oil and gas development because they do not have the support of all of the Arctic States and they only address specific Arctic environmental issues instead of addressing

---

<sup>295</sup> See generally VanderZwaag et al., *supra* note 17, at 144–53 (discussing the working groups and their impacts).

<sup>296</sup> See *id.* at 132; Verhaag, *supra* note 22, at 570.

<sup>297</sup> Verhaag, *supra* note 22, at 570; Arctic Council, About Arctic Council, <http://arctic-council.org/article/about> (last visited Jan. 25, 2009); Declaration on the Establishment of the Arctic Council pmbl., Sept. 19, 1996, 35 I.L.M. 1387 [hereinafter Declaration].

<sup>298</sup> Declaration, *supra* note 297.

<sup>299</sup> See Arctic Council, SDWG, [http://arctic-council.org/working\\_group/sdwg](http://arctic-council.org/working_group/sdwg) (last visited Jan. 25, 2009).

<sup>300</sup> See Verhaag, *supra* note 22, at 570.

<sup>301</sup> See Arctic Council, SDWG, [http://arctic-council.org/working\\_group/sdwg](http://arctic-council.org/working_group/sdwg) (last visited Jan. 25, 2009); Declaration, *supra* note 297, para. 1.

<sup>302</sup> See *supra* Parts II, IV.

<sup>303</sup> See Dubner, *supra* note 16, at 17.

<sup>304</sup> See *id.* (describing the inconsistencies between sustainable development and protecting the Arctic’s fragile ecosystem).

protection of the region as a whole.<sup>305</sup> The AEPS and the Arctic Council also fail to offer effective protection because they lack the funding necessary to take action on their own and they lack the authority necessary to force States to take action. Further, the Arctic Council's goal of sustainable development is inconsistent with its ostensible goal of environmental protection.<sup>306</sup>

#### VI. POSSIBLE PROTECTIONS AGAINST THE ADVERSE EFFECTS OF INCREASED ARCTIC OIL AND GAS DEVELOPMENT

This Part will examine possible protections against the adverse effects of increased Arctic oil and gas development. First, this Part will examine how the Common Heritage of Mankind, a legal doctrine that applies to various global commons, could protect the Arctic environment. Second, this Part will examine the legal regime governing the Arctic's southern counterpart, Antarctica and concludes that the hard-law Antarctic Treaty System could serve as a model for the Arctic.

##### *A. Common Heritage of Mankind*

While Part XII of UNCLOS contains conservation provisions that are legally binding on signatory States,<sup>307</sup> these provisions focus on preventing pollution from ships and not on preservation of pristine areas, such as the Arctic, from all adverse effects of activities such as oil and gas development.<sup>308</sup> However, UNCLOS does designate the Area—the seabed beyond national jurisdiction—as the Common Heritage of Mankind (CHM).<sup>309</sup> CHM has neither a universally accepted definition nor a descriptive term; that is, there is no agreement on whether CHM is a “doctrine,” “rule,” or “regime,” or simply a “concept,” “notion,” or “ideal.”<sup>310</sup> Further, there is no agreement on what areas should be designated as CHM.<sup>311</sup> That said, it is possible to identify three characteristics of CHM.<sup>312</sup> First, CHM areas—referred to as “global commons,” though some are celestial bodies—are not available for appropriation by a single State, though they are available to mankind as a whole for peaceful purposes and even economic development, such as resource extraction in the Area.<sup>313</sup> Second, global commons are managed internationally, such as the International Seabed Authority's (Authority) management of the Area.<sup>314</sup> Third, benefits derived from exploitation of natural resources in the global commons must be shared with all countries.<sup>315</sup>

---

<sup>305</sup> See Rothwell, *supra* note 278, at 298–99 (describing how the Arctic's regimes for protection of animals, while successful, do not create a comprehensive regime).

<sup>306</sup> Dubner, *supra* note 16, at 17.

<sup>307</sup> UNCLOS, *supra* note 4, pt. XII.

<sup>308</sup> *Id.*; VanderZwaag, *supra* note 277, at 303; DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 482 (2007).

<sup>309</sup> UNCLOS, *supra* note 4, art. 136.

<sup>310</sup> DAVID K. LEARY, INTERNATIONAL LAW AND THE GENETIC RESOURCES OF THE DEEP SEA 96 (2007).

<sup>311</sup> *Id.* at 97.

<sup>312</sup> HUNTER ET AL., *supra* note 308, at 485–86.

<sup>313</sup> *Id.* at 485.

<sup>314</sup> *Id.*

<sup>315</sup> *Id.* at 485–86.

Natural resources in the oceanic global commons were traditionally up for grabs by the first taker under the common law doctrine of capture.<sup>316</sup> The drafters of UNCLOS were concerned that capture would prove inequitable to landlocked and developing states that did not have the means to exploit the deep seabed resources, and therefore declared the Area “as well as its resources, are the common heritage of mankind, the exploration and exploitation of which shall be carried out for the benefit of mankind as a whole.”<sup>317</sup> Part XI of UNCLOS declares that “[a]ll rights in the resources of the Area are vested in mankind as a whole, on whose behalf the Authority shall act.”<sup>318</sup> The Authority is to ensure that natural resource exploitation in the Area be “carried out in such a manner as to foster healthy development of the world economy and balanced growth of international trade, and to promote international cooperation for the overall development of all countries.”<sup>319</sup> Further, parties to UNCLOS agreed that “that there shall be no amendments to the basic principle relating to the common heritage of mankind set forth in article 136 and that they shall not be party to any agreement in derogation thereof.”<sup>320</sup> The 1994 Agreement Relating to the Implementation of Part XI reaffirmed that the Area and its resources are the common heritage of mankind.<sup>321</sup>

An UNCLOS contemporary, the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Treaty), is one of the few international agreements other than UNCLOS that have expressly incorporated CHM.<sup>322</sup> It declares that the “moon and its natural resources are the common heritage of mankind” and that the “main purposes” of the Treaty are “[t]he orderly and safe development of the natural resources of the moon; [t]he rational management of those resources; [t]he expansion of opportunities in the use of those resources; [and] [a]n equitable sharing by all States Parties in the benefits derived from those resources.”<sup>323</sup> Apart from these main purposes, the Moon Treaty does not define or elaborate on the meaning of CHM in the context of the agreement.<sup>324</sup>

As these two applications of CHM—UNCLOS and the Moon Treaty—demonstrate, CHM not only does not prevent exploitation of natural resources, but in fact often encourages such activities.<sup>325</sup> Thus, CHM’s focus is on equitably sharing the proceeds of resource development rather than protecting the global

---

<sup>316</sup> *Id.* at 482.

<sup>317</sup> *Id.*; UNCLOS, *supra* note 4, pmb., art. 137, para. 2.

<sup>318</sup> UNCLOS, *supra* note 4, art. 137, para. 2.

<sup>319</sup> *Id.* art. 150, para. 1.

<sup>320</sup> *Id.* art. 311, para. 6.

<sup>321</sup> Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 Annex, G.A. Res. 48/263, 48th Sess., U.N. Doc. A/RES/48/263 (Aug. 17, 1994).

<sup>322</sup> HUNTER ET AL., *supra* note 308, at 483; Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, G.A. Res. 34/68, art. 11, paras. 1, 4–5, 7, U.N. Doc. A/RES/34/68 (Dec. 5, 1979), available at <http://www.un.org/documents/ga/res/34/a34res68.pdf> [hereinafter Moon Treaty].

<sup>323</sup> Moon Treaty, *supra* note 322, art. 11, paras. 1, 7.

<sup>324</sup> LEARY, *supra* note 310, at 98.

<sup>325</sup> See UNCLOS, *supra* note 4, art. 137 (discussing the legal status of the Area and its resources); Moon Treaty, *supra* note 322, art. 11, paras. 1, 5 (stating that the CHM “finds its expression” in particular in the provision that States Parties will “establish an international régime . . . to govern the exploitation of the natural resources of the moon as such exploitation is about to become feasible”).

commons themselves as environmental treasures.<sup>326</sup> Granted, UNCLOS's equitable sharing requirement may serve as a disincentive to development; indeed, the primary reason that the United States has not ratified UNCLOS is its rejection of the Part XI resource sharing provisions.<sup>327</sup> As demonstrated in Parts II and III, however, if the coastal States' Article 76 claims succeed—whether with the Commission's approval or not—the Arctic seabed that is now part of the Area will become the coastal States' sovereign territory, thereby rendering the equitable sharing provisions moot.<sup>328</sup>

If CHM had been developed with the aim of protecting the Area, rather than simply seeking to ensure the sharing of benefits derived from Area resource development, then perhaps it could be effective in protecting the Arctic from increased oil and gas development. As shown in the provisions cited above, however, CHM was conceived strictly as a tool to promote equity in resource development.<sup>329</sup>

### *B. The Antarctic Treaty System—South Pole Hard Law Protection*

Five hard law treaties, known as the Antarctic Treaty System (ATS), protect Antarctica.<sup>330</sup> The world faced a crisis in Antarctica immediately prior to the ratification of the ATS similar to the one it now faces in the Arctic. Argentina, Australia, Chile, France, New Zealand, Norway, and the United Kingdom all claimed sovereignty over portions of Antarctica—based on claims that ranged from exploration to a sixteenth century Papal Decree—and disputes between Argentina, Chile, and the United Kingdom almost resulted in armed conflict.<sup>331</sup> The two Cold War superpowers, the Soviet Union and the United States, had scientific stations in Antarctica, but had not made territorial sovereignty claims.<sup>332</sup> At the behest of the United States, the United Nations created a trusteeship over Antarctica in 1948, but it was unsuccessful, and in 1955, the United Kingdom brought proceedings against Argentina and Chile in the International Court of Justice.<sup>333</sup> By 1959, the sovereignty question had grown even more volatile, and as a result, the United States invited claimant States to a conference in Washington, D.C. in an effort to resolve the intense dispute.<sup>334</sup>

---

<sup>326</sup> See Arvid Pardo, *The Convention of the Law of the Sea: A Preliminary Appraisal*, 20 SAN DIEGO L. REV. 489, 499–501 (1983) (asserting “the common heritage regime established for the international seabed area is little short of a disaster,” and providing as evidence the example of manganese nodule exploitation in the international seabed).

<sup>327</sup> See HUNTER ET AL., *supra* note 308, at 485 (explaining that because the United States never fully accepted the application of CHM to the deep seabed, CHM was removed from Part XI to get the United States to join the Law of the Sea Convention).

<sup>328</sup> See *supra* Parts II, III.

<sup>329</sup> See UNCLOS, *supra* note 4, pt. XI (discussing topics related to the Area, including principles governing the Area, development of resources of the Area, and the International Seabed Authority).

<sup>330</sup> See Verhaag, *supra* note 22, at 571 (introducing the ATS).

<sup>331</sup> HUNTER ET AL., *supra* note 308, at 1125.

<sup>332</sup> Koivurova, *supra* note 26, at 205.

<sup>333</sup> HUNTER ET AL., *supra* note 308, at 1125–26.

<sup>334</sup> See Mark Jarashow et al., *UNCLOS and the Arctic: The Path of Least Resistance*, 30 FORDHAM INT'L L.J. 1587, 1637–38 (2007) (describing the conference's production of the Antarctic Treaty, which “allowed the States to look past any territorial disputes and focus on other important problems facing the continent”).

The result of the conference was the first of the ATS treaties, the Antarctic Treaty.<sup>335</sup> Article IV of the Antarctic Treaty declares that the Treaty does not renounce the Parties' sovereignty claims or prejudice Parties regarding their recognition or nonrecognition of other Parties' claims.<sup>336</sup> Further, Article IV declares that no actions by Parties while the Treaty is in force "shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty in Antarctica."<sup>337</sup> Finally, Article IV declares a moratorium on new sovereignty claims while the Treaty is in effect.<sup>338</sup> Thus, Article IV acknowledges the claimant States' claims as potentially valid, but freezes them in time, with what has been termed an "agreement to disagree."<sup>339</sup> Article IV allowed States to put their territorial disputes on hold and instead concentrate on scientific cooperation in Antarctica.<sup>340</sup>

Although Antarctic environmental protection was not the primary objective of the original Antarctic Treaty, since the Treaty's inception, its approach to environmental issues has been one of precaution and prudence.<sup>341</sup> The 1964 Agreed Measures established protections for Antarctic seals even though there was no pelagic sealing but only concern that such activities might one day take place.<sup>342</sup> Additionally, the Antarctic Treaty Consultative Parties sought to limit mining on Antarctica, even though mining had never taken place on the continent and there were no plans to mine.<sup>343</sup> This ethos of precaution culminated in the 1991 Protocol on Environmental Protection to the Antarctic Treaty (Protocol), which set forth its sole objective of "comprehensive protection of the Antarctic environment" and declared Antarctica a "natural reserve."<sup>344</sup> The Protocol also announced that "[a]ny activity relating to mineral resources, other than scientific research, shall be prohibited" and that prohibition will be re-evaluated in fifty years.<sup>345</sup> Finally, the Protocol called for managing Antarctic resources in a comprehensive manner, because protecting "the Antarctic environment and dependent and associated ecosystems is in the interest of mankind as a whole."<sup>346</sup>

The similarity between the situation leading up to the ATS and the one faced in the Arctic is striking. However, the Arctic and Antarctica have significant differences that could complicate the formation and enforcement of an ATS-style Arctic Treaty. First, and most obviously, Antarctica is a continent surrounded by ocean, while the Arctic is an ocean surrounded by land.<sup>347</sup> While the boundaries of Antarctica are obvious to anyone glancing at a map, the Arctic region has no

---

<sup>335</sup> *Id.* at 1637.

<sup>336</sup> Multilateral Antarctic Treaty, art. IV, para. 1, Dec. 1, 1959, 12 U.S.T. 794, 402 U.N.T.S. 71 [hereinafter Antarctic Treaty].

<sup>337</sup> *Id.* art. IV, para. 2.

<sup>338</sup> *Id.*

<sup>339</sup> Verhaag, *supra* note 22, at 571–72.

<sup>340</sup> *Id.* at 572.

<sup>341</sup> Koivurova, *supra* note 26, at 214.

<sup>342</sup> *Id.*

<sup>343</sup> *Id.* at 214–15.

<sup>344</sup> Protocol on Environmental Protection to the Antarctic Treaty, pmbl., art. 2, Oct. 4, 1991, 30 I.L.M. 1461 [hereinafter Protocol]; Verhaag, *supra* note 22, at 572–73.

<sup>345</sup> Protocol, *supra* note 344, art. 7; Verhaag, *supra* note 22, at 573.

<sup>346</sup> Protocol, *supra* note 344, pmbl.; see Verhaag, *supra* note 22, at 573.

<sup>347</sup> *E.g.*, Verhaag, *supra* note 22, at 559.

universally accepted boundaries: some commentators define the boundary as the tree line; others define it as the ten-degrees Summer Celsius isotherm line; and still others define it as the sixty-degrees North line.<sup>348</sup> In other words, while the area covered by the ATS is easily discernible, the area that would be covered by an Arctic hard law treaty is not.<sup>349</sup> Second, the Arctic is home to over ten million people, while Antarctica has no permanent residents.<sup>350</sup> Therefore, any agreement regarding environmental protection in the Arctic would have to balance such protection with the needs of the human population—much of which is comprised of indigenous people who have special rights under national and international law—while no such consideration was necessary in Antarctica.<sup>351</sup>

That said, the two poles share many characteristics. First, both are extremely cold and receive little sunlight.<sup>352</sup> Second, their ecosystems are simple and contain just a few key species, making them particularly vulnerable to human activities and pollution.<sup>353</sup> Third, both poles contain significant oil, gas, and mineral reserves.<sup>354</sup> Finally, both the Arctic and Antarctica are aesthetic, scientific, and environmental treasures and deserve to be protected as such.<sup>355</sup>

The ATS should serve as a guide for a hard-law Arctic Treaty. The primary differences between the two regions—the lack of clear Arctic regional boundaries and the region's human population—are not insurmountable. Treaty negotiators could arrive at a consensus boundary for the area to be protected by the Treaty. Treaty negotiations would also include representatives of the region's human population to ensure that their interests are protected. The similarities between the two regions argue for hard law protection in the Arctic. The ATS expresses the world's appreciation for Antarctica as a pristine area that should be preserved in its natural state. The Arctic shares many of the characteristics for which Antarctica is valued. Therefore, the Arctic should be afforded similar hard law protection.

## VII. CONCLUSION

The Arctic is one of the last pristine places on Earth and is home to some of the planet's most majestic creatures.<sup>356</sup> However, global warming is raising temperatures in the Arctic and causing sea ice to melt at increasing rates.<sup>357</sup> This melting and thinning of Arctic sea ice is making feasible the development of the Arctic's significant, yet previously inaccessible, oil and gas reserves.<sup>358</sup> As a result, Russia, Canada, Denmark, Norway, and the United States seek to claim the Arctic as sovereign territory in order to develop its oil and gas.<sup>359</sup> Article 76 of UNCLOS

---

<sup>348</sup> *See id.* at 558.

<sup>349</sup> *See id.*

<sup>350</sup> Koivurova, *supra* note 26, at 212.

<sup>351</sup> *Id.*

<sup>352</sup> *Id.* at 204.

<sup>353</sup> *Id.*

<sup>354</sup> Verhaag, *supra* note 22, at 558.

<sup>355</sup> *See id.* at 558–59.

<sup>356</sup> *See supra* Part IV.

<sup>357</sup> *See supra* Part II.A.

<sup>358</sup> *See supra* Part II.A.

<sup>359</sup> *See supra* Part II.

provides the coastal States with the legal means by which to establish this sovereignty.<sup>360</sup> If the coastal States' Article 76 claims succeed, oil and gas development in the Arctic will increase, and the resulting development will have an adverse effect on the Arctic environment.<sup>361</sup>

The existing set of disparate agreements, the AEPS, and the Arctic Council are insufficient to protect the Arctic from the adverse effects of increased oil and gas exploitation because they are soft law.<sup>362</sup> UNCLOS's implementation of the Common Heritage of Mankind principle is also inadequate to protect the Arctic from these adverse effects because it treats only the proceeds of development of the Area, and not the Area itself, as CHM.<sup>363</sup> This Comment proposes that the solution to this lack of protection is a hard-law Arctic Treaty.

The Arctic Treaty would incorporate an "agreement to disagree" provision similar to Article IV of the Antarctic Treaty.<sup>364</sup> Such a provision would freeze in time the Article 76 claims of Russia and Norway and the potential claims of Canada, Denmark, and the United States.<sup>365</sup> The Arctic Treaty would also incorporate a prohibition on natural resource extraction similar to Article 7 of the Protocol on Environmental Protection to the Antarctic Treaty, which prohibits mining in Antarctica for fifty years. The Arctic Treaty's moratorium, like that of the ATS, would be reassessed in fifty years. Thus, the Arctic Treaty would satisfy the coastal States' desire to stake a claim in the region, but prevent oil and gas development for fifty years. In fifty years the world could reassess the Arctic Treaty and decide what direction it wants to take. Perhaps some of the "mitigating factors" discussed in Part IV—warm, ice-free seas and loss of wildlife—will argue for oil and gas development. On the other hand, perhaps the Arctic Treaty will have helped to slow or reverse some of these global warming-induced effects. In the meantime, the Arctic will be protected and, because safe and economically feasible oil and gas development may not be possible for at least fifty years anyway, the coastal States will not have lost anything.<sup>366</sup>

By forcing the coastal States to stop and think about whether they really want to despoil one of the last pristine places on the planet, the Arctic Treaty may prevent a tragedy of the commons in the Arctic.<sup>367</sup> Perhaps during this "cooling off" period the coastal States will come to see the Arctic in the same light as the countries whose claims were frozen by the ATS came to see Antarctica—as an aesthetic, scientific, and environmental treasure. Some may argue that the coastal States would never freeze their sovereignty claims over valuable oil and gas reserves. However, this is exactly what States did when they ratified the ATS. The coastal States may well be just variations on Hardin's herdsmen; that is, they do not

---

<sup>360</sup> See *supra* Part II.

<sup>361</sup> See *supra* Parts II, III.

<sup>362</sup> See *supra* Part V.

<sup>363</sup> See *supra* Part VI.A.

<sup>364</sup> See *supra* Part VI.B.

<sup>365</sup> See *supra* Part VI.B.

<sup>366</sup> See *supra* Part IV.

<sup>367</sup> See Garrett Hardin, *The Tragedy of the Commons*, 162 *Sci.* 1243, 1244 (1968), available at <http://www.sciencemag.org/cgi/reprint/162/3859/1243.pdf>.

wish to degrade the commons, but will do so in order to prevent another State from doing so first.<sup>368</sup>

In 1961, the world faced a choice in Antarctica between conflict and environmental degradation on the one hand, and peace and environmental protection on the other. No one can argue that those were more environmentally enlightened times, yet the world wisely chose peace and environmental protection. The world faces a similar situation today in the Arctic. We should look back to that similar time in our history and again choose the more lasting natural treasure of the place itself over the fleeting treasure it contains.

---

<sup>368</sup> *Id.* at 1244–45.