



Material Talk: The Arctic Continental Shelf in the Law of the Sea Convention Discussion of the United States

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Abstract

The legal status of a large area of the Arctic seafloor is currently being redefined as the rapid melting of polar ice is enabling the exploitation and study of resource-rich underwater areas. The United Nations Convention on the Law of the Sea contains legal rules for establishing exploitation rights to the newly accessible seafloor. The United States has not joined the Law of the Sea Convention but may be legally entitled to areas of the Arctic seafloor, which has caused an upsurge of political discussion among U.S. political elites. In this article, I examine the process by which Arctic seafloor and ice come to influence policy discussion in the United States. I highlight the way in which material policy influence can be treated as historical rather than monocausal by using new materialist theory.

1. *Introduction*

The legal status of a large area of the Arctic seafloor is currently being redefined as the rapid melting of polar ice is enabling the exploitation and study of resource-rich underwater areas. Political scientists have addressed this development from several different points of view,¹ but one of its features has received

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¹ E.g., Jason Dittmer et al., "Have You Heard the One About the Disappearing Ice? Recasting Arctic Geopolitics," *Political Geography* 30:4 (2011): 202–214; Andrew King, "Thawing a Frozen Treaty: Protecting United States Interests in the Arctic With a Congressional-Executive Agreement on the Law of the Sea," *Hastings Constitutional Law Quarterly* 329:2 (2007): 329–354; Lotta Numminen, "Sulavan Arktiksen avainkysymykset: luonnonvarat ja hallinnointi," *The Finnish Institute of International Affairs Briefing Papers*, <http://www.upi-fia.fi/publication/103> (accessed July 22, 2012);

scant attention: Arctic matter, particularly sea ice and seafloor, is crucially affecting the way in which state borders are drawn. This is because the United Nations Convention on the Law of the Sea (UNCLOS) sets depth, consistence, and gradient criteria on states' capacity to claim the newly melted Arctic Ocean seafloor as part of their continental shelves.

The possibility of new underwater territories has sparked an intense political debate in the United States. This discussion has been motivated by the concern that even though the U.S. seems to be legally entitled to significant areas in the Arctic, it has difficulty in justifying its expansion because it has not yet joined the United Nations Convention on the Law of the Sea that defines the criteria for such an entitlement. If other economic and political factors align in support of the Convention, details of Arctic matter may even encourage the United States to join the Convention after thirty years of opposition to it.

In this article, I present a new materialist reading of the changes that have taken place in the UNCLOS debate of U.S. political elites as Arctic sea ice has melted. I begin by describing the history of the notion of "the continental shelf" insofar as this is relevant to the policy discussion I later analyze. I continue by presenting new materialist theory as applied in the article. Afterwards, I discuss the current legal definition of the continental shelf and its relationship to certain features of the seafloor that may be claimed by the U.S. in the future. I then analyze the argumentation that has taken place in U.S. Senate committees concerning UNCLOS. Finally, I present my conclusions regarding the ways in which the very being of the United States becomes entangled with Arctic matter on the question of the continental shelf.

2. *On the History of the Continental Shelf*

As Timo Koivurova argues, international relations scholars and journalists often overdramatize the process of defining Arctic continental shelves. Narratives on the subject frequently feature an oil fever that breaks out due to climate change and binds states to a fierce struggle for resource-rich seafloor.² Although competition for resources is certainly a significant aspect of the Arctic seafloor question, giving it too much emphasis tends to over-accentuate the sovereign agency of states and disregard the extensive layers of history that shape state behavior.

Teemu Palosaari and Lassi Heininen, "Arktisen alueen toinen tuleminen: yhteistyötä vai kilpajuoksua?" *Kosmopolis* 40:3 (2010): 35–49.

² Timo Koivurova, "The Actions of the Arctic States Respecting the Continental Shelf: A Reflective Essay," *Ocean Development & International Law* 42:3 (2011), 211–226; Timo Koivurova, "Is There a Race to Resources in the Polar Regions?," in *Canada's and Europe's Northern Dimensions*, ed. Anita D. Nuttall and Mark Nuttall (Oulu: Oulu University Press, 2009), 52–62.

In the following sections, I dissect these layers with a special focus on international law. I begin with the legal history of the continental shelf. After this, I present the current definition of the shelf and discuss the United States' concrete work on delineating its shelf.

The notion of "continental shelf" became established in the vocabulary of international law only around the middle of the 20th century.³ This is relatively late. The legal standing of the sea, by comparison, has been an issue since ancient times. The most important causes of this difference are likely to be found in geopolitics, economics, technology, and science. Unlike the sea, the seafloor has never been important for transport. With a few exceptions such as pearl diving, the seafloor has also not been exploitable for economic benefit before the development of offshore oil platforms in the mid-1900s. Echo sounding technology was taken into use in the 1920s, which greatly facilitated both seafloor cartography and the scientific acceptance of the theory of plate tectonics.⁴

A state's right to its continental shelf was first pronounced in the Truman Declaration made by the United States in 1945. In the Declaration, the United States announced, unilaterally and against contemporary legal practice, that it would take control of its continental shelf. The explicit purpose of this was to guarantee the U.S. right to exploit seafloor resources. In the Declaration, the U.S. defined the continental shelf as all seafloor that is connected to the U.S. coast and covered by less than one hundred fathoms⁵ of water. The Declaration represents a historical turning point: although the legal definition of the continental shelf later changed in many ways, from this point on the shelf was treated as a submerged object of governance that was in some sense contiguous with the governing state's coast.⁶

Other states followed the United States' example, and soon most of the world's coastal states had declared themselves as possessors of continental shelves. According to Suarez, these unilateral declarations of the mid-1900s can be divided into two groups based on the way in which countries justified their declared possession of their continental shelves. The Truman Declaration belongs in the first category since it argues that the shelf belongs to the U.S. because its consistence

³ Suzette Suarez, *The Outer Limits of the Continental Shelf: Legal Aspects of their Establishment* (Heidelberg: Springer, 2008), 21–25.

⁴ National Oceanic and Atmospheric Administration (NOAA), "Ocean Explorer: History: Echo Sounding (1923–1945)," <http://oceanexplorer.noaa.gov/history/electronic/electronic.html> (accessed November 2, 2011); Naomi Oreskes, *Plate Tectonics: An Insider's History Of The Modern Theory Of The Earth* (Boulder: Westview Press, 2003).

⁵ One hundred fathoms equals 183 meters.

⁶ Suarez, *supra* note 3, at 21–25; White House News Release, "Truman Proclamation on the Continental Shelf" (1945), www.presidency.ucsb.edu/ws/index.php?pid=12332#axzz1dmc1dUsX (accessed January 6, 2010); Robert Wilder, *Listening to the sea: The Politics of Improving Environmental Protection* (Pittsburgh: University of Pittsburgh Press, 1998).

resembles that of the U.S. coast. This consistence-based definition was, however, problematic from the point of view of those states that were located on the edge of their continental plate. The consistence of their continental territory was dissimilar to the seafloor near their coast. The continental shelves of states like Chile would have ended up being very small if they had agreed to a delineation method based on consistence. Thus, they simply declared themselves as possessors of all seafloor that was within a specific distance from their coast. The particular distance chosen varied between states.⁷

The continental shelf was first defined by treaty in 1958, when the United Nations Convention on the Continental Shelf was concluded. This treaty was doomed to fail, however, as it defined the extent of continental shelves based on exploitability. In this system, states' continental shelves spread outwards whenever exploitation technology progressed, which would eventually have led to coastal states claiming all of the seafloor. A new compromise was reached in the 1982 Convention on the Law of the Sea, which is still in force with the exception of a number of market-oriented reforms enacted in 1994.

3. *On New Materialist Theory*

As is readily apparent from the previous historical overview, the legal continental shelf has always been simultaneously both material and meaningful: the definition of the continental shelf, despite being in important respects a *linguistic* phenomenon, is strongly connected to material factors such as the boundaries of continental plates. On the other hand, the seafloor was only delineated into legal continental shelves in a specific conjuncture of state interests and scientific-technological development. As such, there can be no question of material determination of any kind. This evokes the question of how the relations between state actors, international law, and tectonic plates should be understood theoretically.

International relations theory offers multiple answers to questions of agency, matter, and meaning. Relevant formulations include, at the very least, different versions and combinations of constructivism, postmodernism, post-structuralism, Marxism, and critical realism.⁸ I have not used any of these alternatives. Instead, I have opted for so-called new materialist theory. My choice should not be read

⁷ Suarez, *supra* note 3, at 21–38.

⁸ E.g., Alexander Wendt, *Social Theory of International Politics* (Cambridge: Cambridge University Press, 1999); James Der Derian and Michael Shapiro, *International/Intertextual Relations: Post-modern Readings of World Politics* (Lanham: Lexington Books, 1989); Eric Darier, *Discourses of the Environment* (Oxford: Blackwell Publishers, 1998); Stefano Guzzini, "Marxist Geopolitics: Still a Missed Rendez-Vous?," *Geopolitics* 16:1 (2011): 226–229; Milja Kurki, *Causation in International Relations: Reclaiming Causal Analysis* (Cambridge: Cambridge University Press, 2008).

as an attempt at synthesis or as promotion of the new materialist reading of matter and meaning over others. Mine is merely one possible perspective among others. However, since new materialist emphases concerning matter and meaning affect my empirical analysis, I will outline some of them before moving on.

Since the beginning of the 21st century, an increasing number of scholars from various disciplines have defined themselves (or have been defined by others, as I do here) as new materialists.⁹ New materialism seems, however, to be particularly strong in the fields of science studies, cultural studies, and political theory. The category of new materialism can be thought to encompass, among others, some applications of actor-network theory, Samantha Frost's Hobbesian materialism, Karen Barad's agential realism, William Connolly's positive pluralism, and Donna Haraway's post-humanism.¹⁰ Although the works of these scholars differ from each other significantly, a number of commonalities seem to run through them to a degree that warrants the label "new materialism".

New materialists' mode of thinking often resembles Marx's "old" dialectics in that they tend to consider phenomena as being distinct from each other, while at the same time forming a network of internal relations.¹¹ Latour, for example, discusses the way in which the designer of a lecture hall must take into account the needs of a generic lecturer concerning factors such as audibility and the performer-audience-distinction, whereas a specific lecturer must work in a lecture hall designed on these presumptions.¹² The designer and the lecturer thus enable and define each other while simultaneously distinguishing each other as perfectly distinct phenomena. Accordingly, new materialist writing often makes explicit or implicit use of the post-structuralist notion of difference.¹³

As another reminder of post-structuralism and Marx, new materialists tend to focus on processes rather than stable shapes. Combining this process-oriented approach with the aforementioned principle of internal relations results in

⁹ Diana Coole and Samantha Frost, ed., *New Materialisms: Ontology, Agency, and Politics* (Durham: Duke University Press, 2010); Sharon Krause, "Bodies in Action: Corporeal Agency and Democratic Politics," *Political Theory* 39:3 (2011).

¹⁰ Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (New York: Oxford University Press, 2007); Samantha Frost, *Lessons From a Materialist Thinker: Hobbesian Reflections on Ethics and Politics* (Palo Alto: Stanford University Press, 2008); Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham: Duke University Press, 2007); William Connolly, *A World of Becoming* (Durham: Duke University Press, 2011); Donna Haraway, *Modest-Witness@Second-Millennium:FemaleMan-Meets-OncoMouse* (New York: Routledge, 1997).

¹¹ Marx's dialectic mode of reasoning has been interpreted in many ways during the course of history. The reading I present here is one of many. Cf. Pheng Cheah, "Nondialectical Materialism," *Diacritics* 38:1–2 (2008): 143–157.

¹² Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (New York: Oxford University Press, 2007), 194–196.

¹³ Gilles Deleuze, *Difference and Repetition* (New York: Columbia University Press, 1995).

analyses such as that in Connolly's book, *A World of Becoming*, where capital flows, theoretical thought, and spirituality come to resemble distinct but non-independent facets of a broader process of becoming.¹⁴ This seems to be a common feature of new materialist analyses: processes of different types and speeds are taken to entwine into broader "bundles".

New materialists also seem to share a fairly broad understanding of agency. This is often underpinned by post-humanism or an attempt to break with anthropocentrism. New materialists seek to transcend or render contingent the difference between human and non-human agents in a way that does not prioritize any part of reality as "particularly agential". The specific way in which the question of agency is answered varies in significant and sometimes conflicting¹⁵ ways within the literature. In Haraway's work, post-humanism manifests itself as attentiveness to the ways in which human bodies form cyborgian and multi-species compilations with various contraptions and animals.¹⁶ Barad, meanwhile, studies the generative process of quantum theory at the intersection of physicists, carefully calibrated subject instruments, and suitable objects,¹⁷ whereas Frost focuses on the emotion of fear as a part of the causal complex that enables the Hobbesian sovereign.¹⁸

In addition to the generic new materialist premises of internal relations, processes, and post-humanism, my analysis makes use of Karen Barad's understanding of knowledge. Barad does not place human interests or language at the center of knowledge, but rather treats knowing as a process in which different agencies, both human and non-human, become meaningful in relation to each other. In her account, specific material experimental arrangements, a specific object, and the concept signifying this object are distinguished from each other in an internal process of becoming, or "intra-action". Since experimental arrangements and the concepts related to them are not separate from the rest of reality, however, the same material-meaningful process of signification can also be diffused with any number of institutional, linguistic, economic, gender, or other aspects according to the historical situation. As will be evident from my later analysis, Barad's account of the historical details of objective knowing has interesting points of contact with the knowledge practices that shape and are shaped by the U.S. and Arctic matter.¹⁹

¹⁴ Connolly, *supra* note 10.

¹⁵ *Ibid.*, at 23–32.

¹⁶ Haraway, *supra* note 10; Donna Haraway, *When Species Meet* (Minneapolis: University Of Minnesota Press, 2007).

¹⁷ Barad, *supra* note 10, at 97–185.

¹⁸ Frost, *supra* note 10.

¹⁹ Barad, *supra* note 10, at 340–342.

4. *Definition of the Continental Shelf*

Due to its history, the current legal definition of the continental shelf is rather complex and does not directly resemble the definition of plate tectonic theory or the seafloor. The intricacies of the legal shelf are, however, very important to the process by which the seafloor and the U.S. affect each other in the Arctic. Because of this, the section at hand presents the legal definition of the continental shelf in considerable detail.

The notion of “continental shelf” formulated in the UNCLOS is permeated by compromises between state interests. One of the more important ones is related to the need to limit coastal states’ right to control the seafloor. This is accomplished by establishing deep seafloor as the so-called common heritage of mankind, which is governed by the intergovernmental International Seabed Authority (ISA). The rights of coastal states, by contrast, increase stepwise towards the coast. The continental shelf is potentially the outermost one of these steps, stretching beyond 200 nautical miles from the coast in some areas. As will be shown later, the width of a continental shelf depends on the consistence of the seafloor and the depth of the sea. Even if these criteria are fulfilled, however, the coastal state’s rights to act on its shelf remain rather limited and concern mainly resource extraction. A small percentage of the revenues derived from the exploitation of the shelf in these areas must also be turned over to the ISA, representing concessions by developed states to developing states and by coastal states to landlocked states.

In areas with inopportune depth and seafloor conditions, coastal states are nonetheless entitled to the next judicial step, which is called the Exclusive Economic Zone (EEZ). This stretches 200 nautical miles from the coast and provides states with certain exploitation rights to the seafloor and the water column above it. As such, the EEZ ensures certain exploitation rights to states even if they are located at the edge of their continental plate (see Image 1).

Continental shelf claims are regulated by four rules: two positive rules define the kind of seafloor that is accepted as continental shelf, while two negative rules limit the shelf’s maximal extent. Both of the positive rules are based on the so-called foot of the continental slope, which is defined as the point where the slope between the continental shelf and the deep seafloor levels the fastest. In other words, UNCLOS presumes that the continental shelf ends in a horizontal oceanic plate and that a slope is formed between these. The bottom of the slope is called the foot of the continental slope (see Image 2).

The first positive rule is based on the location of the foot of the slope and the thickness of the layer of sediment covering the seafloor. The thicker the layer of fine-grained sediment that covers the seafloor beyond the foot of the slope, the wider the belt a state may claim as its continental shelf. More specifically, states may claim seafloor that is located between the foot of the slope and the

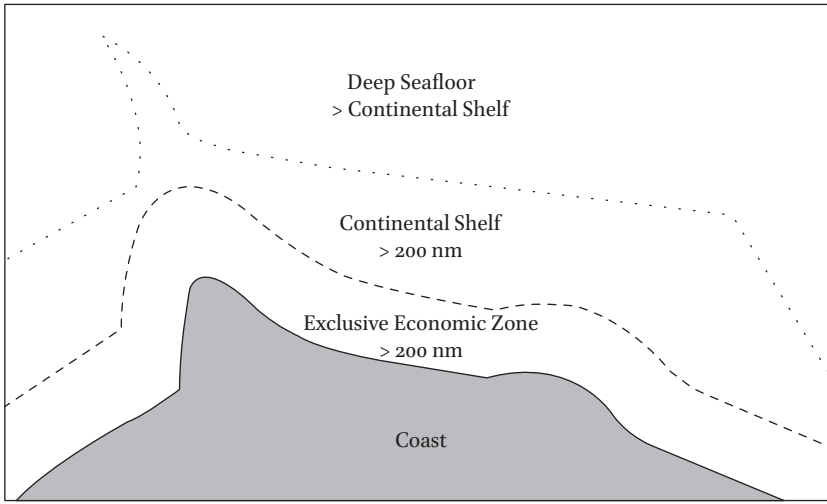


Image 1. A top-down illustration of the deep seafloor, continental shelf, and Exclusive Economic Zone as defined by UNCLOS.²⁰

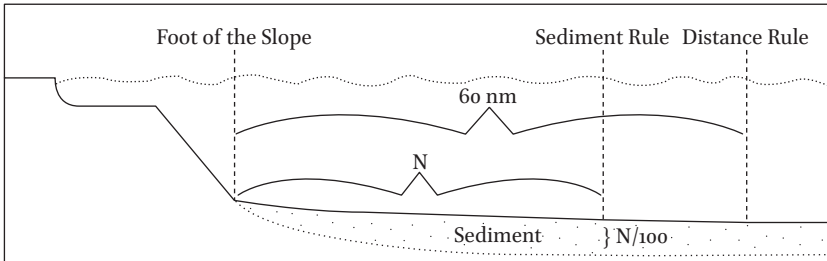


Image 2. A cross-section of the foot of the slope and the positive sediment- and distance-based rules.²¹

outermost point at which the thickness of sedimentary rocks is at least one percent of the shortest distance from the point to the foot of the continental slope. The second positive rule is simpler: it defines as continental shelf all seafloor that is located within 60 nautical miles from the foot of the slope (see Image 2). In practice, both of these points are often so close to the coast that states must settle for the 200-nautical mile exclusive economic zone.

²⁰ Image by the author. Not to scale. This illustration presumes that the coastal state has chosen to claim a 200-nautical mile Exclusive Economic Zone.

²¹ Image by the author. Not to scale.

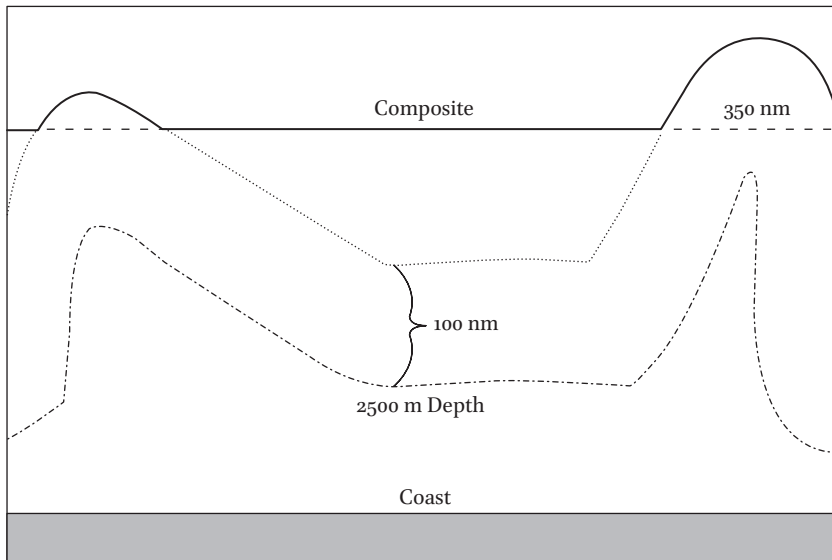


Image 3. A top-down illustration of the negative depth- and distance-based rules. The maximal shelf claim rendered possible by a combination of the negative rules is marked with a thick line.²²

In addition to the positive rules, the extent of the continental shelf is limited by two negative rules. The first one states that the continental shelf may not extend to areas beyond 350 nautical miles from the coast even where the positive rules would otherwise allow this. The second one limits the extent of the continental shelf to 100 nautical miles from the point where the sea is less than 2500 meters deep (see Image 3). States may freely choose which positive and negative rule they wish to implement at which part of their coast. This means that a state may, despite the 350 nautical mile negative rule, claim seafloor that is at any distance from its shore, but this requires that the depth rule and one of the positive rules are obeyed.

In addition to the positive and negative rules presented above, UNCLOS also requires that the continental shelf be the “natural prolongation” of the coastal state’s territory. In practice, this is measured through various geological criteria that are thought to reflect the history and continental nature of the area of the seafloor in question. Although the issue of natural prolongation may sometimes prove significant to states’ shelf claims, I will not discuss it further here as it does not add anything significant to my broader narrative on matter and meaning.

²² Image by the author. Not to scale.

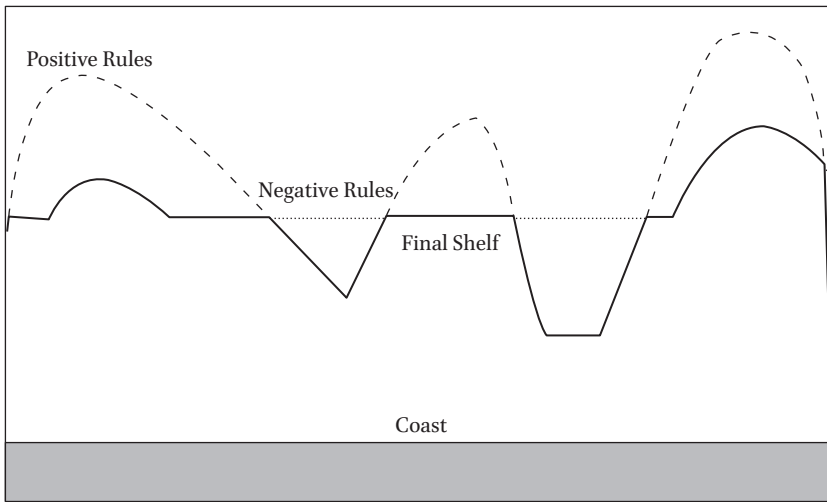


Image 4. The final extent of the continental shelf is established by a combination of the positive and negative rules.²³

As can be deduced from the above account, the definition of the continental shelf is a complex process, requires a great deal of high-quality data, and leaves room for interpretation. To facilitate the delineation, a United Nations Commission on the Limits of the Continental Shelf was founded. Its purpose is to evaluate data provided by states and give recommendations on the extent of their continental shelves. At the time of writing (February 2012), 59 submissions have been filed with the Commission and 14 of them have been processed. A majority of the submissions were filed in 2009, which may have contributed to the widespread notion that a sudden oil fever has erupted in the Arctic. As Koivurova points out, however, the timing has more to do with the fact that 2009 was the deadline by which applications had to be submitted by the states that were the first to ratify UNCLOS.²⁴

5. *The Extended Continental Shelf Project*

Although the United States is not a party to UNCLOS and, as such, cannot submit an application to the United Nations Commission, it has already spent years collecting data on its potential continental shelf. The work began in 2002 with a

²³ Image by the author. Not to scale.

²⁴ Koivurova, *supra* note 2, at 52–62.

report that brought together all existing public and private data that was deemed relevant to a shelf claim.²⁵ The report states that the data have many gaps that must be filled before the U.S. can maximize the area of its continental shelf and defend its claims scientifically. The collection of new data began in 2003 under the Extended Continental Shelf Project.

In this section, I discuss some features of the Arctic seafloor based on reports published by researchers who work as part of the Extended Continental Shelf Project. In doing this, I attempt to show how the seafloor comes to affect U.S. political debate. I make no attempt to estimate the size of the area of the seafloor that the U.S. is entitled to; rather, my goal is to introduce the *manner* in which the seafloor works together with UNCLOS to enable U.S. shelf claims.

The data for the reports I discuss were collected mainly using echo sounders. Of the seafloor features relevant to UNCLOS, ships equipped with echo sounders can locate the 2500-meter depth line and the foot of the continental slope. In some areas, geological samples were taken and sediment thickness was measured, as well. The project has altogether charted an area of over a million square kilometers around the U.S. coast. At the time of writing (February 2012), the mapping effort continues.²⁶

A curious disparity is apparent concerning the thoroughness of the data collection: 12 mapping cruises have been conducted in the Arctic Ocean, whereas only 21 have been conducted in all the other, significantly larger areas surrounding continental U.S. and its islands.²⁷ This disparity is likely due to two main factors. First, it is more difficult to gather data in the far North due to ice conditions. Some of the mapping cruises suffered delays despite the use of icebreakers.²⁸ Since the ice has started melting only recently, there is also a lack of previous data pertaining to the Arctic region. Second, the oil and gas reserves under the Arctic Ocean are likely to be considerable,²⁹ which is why shelf optimization

²⁵ Larry Mayer, Martin Jakobsson and Andrew Armstrong, *The Compilation and Analysis of Data Relevant to a U.S. Claim Under United Nations Law of the Sea Article 76: A Preliminary Report* (2002), <http://ccom.unh.edu/unclos/reports.htm> (accessed July 1, 2009).

²⁶ Extended Continental Shelf Project, <http://continentalshelf.gov> (accessed February 1, 2012); James Gardner, Larry Mayer, and Andrew Armstrong, *From the Arctic to the Tropics: The US UNCLOS Bathymetric Mapping Program* (2008), <http://ccom.unh.edu/unclos/reports.htm> (accessed July 1, 2009); Larry Mayer and Andrew Armstrong, *U.S. Law of the Sea Cruise to Map the Foot of the Slope and 2500-m Isobath of the U.S. Arctic Ocean Margin* (2007), 9, <http://ccom.unh.edu/unclos/reports.htm> (accessed July 1, 2009).

²⁷ Extended Continental Shelf Project, <http://continentalshelf.gov> (accessed February 1, 2012).

²⁸ See James Gardner, Larry Mayer, and Andrew Armstrong, *New views of the US continental margins* (2005), <http://ccom.unh.edu/unclos/reports.htm> (accessed July 1, 2009).

²⁹ Donald L. Gautier et al., "Assessment of Undiscovered Oil and Gas in the Arctic." *Science* 324:5931 (2009), 1175–1179.

enabled by good data – discussed in more detail later – can be expected to be more profitable in the Arctic Ocean than elsewhere.

5.1. U.S. Seafloor?

One of the most promising seafloor areas revealed during the U.S. mapping effort is the Chukchi Borderland region between northeastern Siberia and northwestern Alaska. It covers 400 000–500 000 square kilometers. By comparison, this constitutes some four percent of the Arctic Ocean and equals one third of the land area of Alaska. The Borderland consists of three roughly parallel mountain chains with wide summits that reach up to a water depth of 250–1000 meters, which is more than 3000 meters higher than the surrounding seafloor. They form vast undersea plateaus that are claimable as continental shelf insofar as depth is concerned. The area also meets the criteria of the Convention in several other respects. The sides of the plateaus are very steep and level off quickly toward the deep seafloor of the Canada Basin, thus adhering to the definition of the foot of the slope. It is likely that thick sediment on the deep seafloor surrounding the elevated areas enables extensive claims beyond the foot of the slope based on the first positive rule of UNCLOS.³⁰

It is uncertain how much, if any, oil and gas the U.S. stands to gain if the Chukchi Borderland becomes defined as part of its continental shelf. If the neighboring areas provide a viable indicator, however, the assets could be considerable.³¹ It is also unknown how much of these potential resources can be extracted profitably, and on what time scale. In addition to areas such as the Chukchi Borderland, which seems to fit the UNCLOS definition of the continental shelf quite well, U.S. studies have also revealed seafloor features that can be used for continental shelf optimization in a way that was perhaps not intended by the negotiators of UNCLOS. These possibilities are due to the fact that the Convention's definition of the continental shelf is a high-level abstraction and its presumptions do not apply to all areas of the seafloor.

There are two main categories of formations relevant to potential U.S. claims, the first of which, “peninsulas”, are long, narrow protrusions of elevated seafloor that reach outwards from the coast. Such features occur every 3–6 nautical miles in the Beringian margin in the Bering Sea and the Barrow margin in the Arctic Ocean, both of which constitute likely outer bounds of a U.S. continental shelf. Some of the peninsulas are over 40 nautical miles long and over 500 meters high.

³⁰ Larry Mayer, Andrew Armstrong, and James Gardner, *Mapping in the Arctic Ocean in Support of a Potential Extended Continental Shelf* (2009), <http://ccom.unh.edu/unclos/reports.htm> (accessed July 1, 2009).

³¹ Donald L. Gautier et al., “Assessment of Undiscovered Oil and Gas in the Arctic,” *Science* 324:5931 (2009): 1175–1179.

The significance of the peninsulas becomes clear upon close reading of UNCLOS article 76 paragraph 7:

The coastal State shall delineate the outer limits of its continental shelf, where that shelf extends beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, *by straight lines not exceeding 60 nautical miles in length, connecting fixed points, defined by coordinates of latitude and longitude.*³²

This means that the state is allowed to select the points it wishes to use for the definition of the foot of the slope and the 2500-meter depth line, as long as these points are no more than 60 nautical miles apart. Since the distance between the U.S. seafloor peninsulas is only 3–6 nautical miles, delineation points may be placed on carefully selected peninsulas that reach as far out as possible at a depth of less than 2500 meters. With this strategy, it may be possible to push the negative bound of the legal shelf far into the oceanic tectonic plate in some locations. It is not possible to evaluate the area that is rendered claimable in this way here, but considering the length of the margins that exhibit these features, the benefit should be significant.³³

The second category of claim-optimizing features will be referred to as “gradient ambiguities”. The significance of this feature is linked to the highly idealized method used to delineate the foot of the slope. While UNCLOS presumes a clean, straight slope that descends from the continental to the oceanic plate, this kind of geometrical precision is not often found on the seafloor. Rather, the cross-sections of continental slopes frequently exhibit bulges and recesses that render the definition of the point of maximum gradient change difficult at best and arbitrary at worst. A state may thus place delineation points in locations where sudden gradient changes occur at maximal distances from its shore. The U.S. can likely utilize gradient ambiguities to some extent along many of its continental margins. Some of the most promising sites are to be found on the northeastern Atlantic margin. The Atlantic margin deepens very quickly, however, so that claims beyond the 350-mile negative line will not be possible even if the definition of the foot of the slope would otherwise allow them.³⁴

³² Italics by the author.

³³ James Gardner, Larry Mayer, and Andrew Armstrong, *New views of the US continental margins* (2005), <http://ccom.unh.edu/unclos/reports.htm>, (accessed July 1, 2009); Larry Mayer and Andrew Armstrong, *U.S. Law of the Sea Cruise to Map the Foot of the Slope and 2500-m Isobath of the U.S. Arctic Ocean Margin* (2007), <http://ccom.unh.edu/unclos/reports.htm>, (accessed July 1, 2009); Larry Mayer, Andrew Armstrong, and James Gardner, *Mapping in the Arctic Ocean in Support of a Potential Extended Continental Shelf* (2009), <http://ccom.unh.edu/unclos/reports.htm> (accessed July 1, 2009).

³⁴ Larry Mayer, Martin Jakobsson and Andrew Armstrong, *The Compilation and Analysis of Data Relevant to a U.S. Claim Under United Nations Law of the Sea Article 76: A Preliminary Report* (2002), 50–51, <http://ccom.unh.edu/unclos/reports.htm> (accessed July 1, 2009).

It seems fair to say that the definition of the continental shelf is a relatively non-political affair when viewed solely from the point of view of law and cartography. Examined in this way, the delineation of the continental shelf is a matter of applying legal norms that were developed in a different historical situation to a complex set of scientific data. Although states may be left with some degrees of freedom, such as claim optimization, there is hardly a trace of the oft-presupposed liberal and sovereign state subject that chooses between alternatives in accordance with its preferences. On the other hand, the linguistic turn in the social sciences has made it clear that the continental shelf can never affect state policy “directly”, for it must necessarily become intertwined with the various linguistic-semantic processes that are underway within the broader political process. An analysis that emphasizes international law and scientific-technological measurement tends to obscure this aspect of reflexive agency that social scientists are often the most interested in. In the following section, I expand my analysis in the direction of traditional state agency and language by analyzing the development of U.S. political discussion with respect to the continental shelf and UNCLOS.

5.2. *U.S. Policy Debate*

As the cartography project of the U.S. advances, knowledge of the results and their legal implications diffuses to U.S. political elites through research reports, experts, and industry lobbyists. In this section, I examine the arguments that have been made concerning the continental shelf in Senate committee hearings. I propose that the melting of the Arctic Ocean and the suitability of the Arctic seafloor with respect to the U.S. shelf claims seem to have lent support to, in particular, proponents of the treaty.

My data consist of all Senate committee hearings concerning UNCLOS that are known to me. Hearings have taken place in 1994, 2003, and 2007 in the Committee on Foreign Relations and in 2004 in the Committee on Environment and Public Works. The year of the first hearing, 1994, is when an Implementation Agreement was adopted to make UNCLOS more market-friendly. Many developed states ratified the treaty only after this. The two hearings in the first half of the 2000’s were influenced by Russia’s claim submission to the UN Commission and the UNCLOS memberships of two Arctic states, Canada and Denmark.³⁵

My analysis makes use of Karen Barad’s method of diffractive reading, in which phenomena are read through each other and attention is paid to their

³⁵ U.S. Senate Committee on Foreign Relations, “Hearing: The Convention on the Law of the Sea” (2007), <http://foreign.senate.gov/hearings/hearing/?id=bb2cc2b3-c66a-115a-ba1f-ab6796bf6d4a> (accessed January 6, 2010).

constitutive differences.³⁶ I focus on both implicit and explicit references to the continental shelf and their development over time. I have also made note of whether the speaker referring to the shelf supports or opposes the U.S. joining UNCLOS – since the U.S. must, as a practical matter, either join the treaty or not, the statements usually contain a mention of the speaker's position.

In general terms, it can be said that the committee discussion of 1994 differs significantly from the later ones with respect to the Arctic Ocean and the continental shelf. In 1994, the Arctic and the continental shelf were, with one exception, discussed separately.³⁷ The Arctic Ocean was discussed almost exclusively in terms of seafaring, whereas the continental shelf was referred to in fairly vague terms as an aspect of UNCLOS. For example, Senior Deputy General Counsel for International Affairs and Intelligence John McNeill claimed in 1994 that “[p]ossessing one of the longest coastlines in the world, America relies on guaranteed access to living and non-living resources in its exclusive economic zone and on its continental shelf for its economic well-being”.³⁸ Later, the Arctic Ocean and the continental shelf appear together frequently and the discussion becomes more concrete. In 2003, for instance, U.S. Department of State legal adviser William Taft implicitly refers to the Chukchi Borderland in stating that “[t]he United States has large areas of continental shelf seaward of 200 nautical miles in the Atlantic Ocean, the Gulf of Mexico, and the Arctic Ocean north of Alaska. In the Arctic, our shelf could run as far as 600 miles to the north”.³⁹

When attention is turned to the differences between the proponents and opponents of UNCLOS, it becomes apparent that the connection between the continental shelf and the Arctic Ocean is highlighted exclusively by the proponents of the treaty. Speakers underlining this connection are almost without exception addressing the ways in which U.S. participation in the mechanisms of UNCLOS would facilitate the utilization of Arctic resources.⁴⁰ This basic resource argument is, however, frequently augmented by additional concerns: control of Arctic resources is portrayed as strengthening U.S. sovereignty;⁴¹ it is argued that the legal definition of the shelf would bring the seafloor within the unfettered

³⁶ Barad, *supra* note 10, at 87–94.

³⁷ U.S. Senate Committee on Foreign Relations, “Current status of the Convention on the Law of the Sea: Hearing Before the Committee on Foreign Relations” (1994), 37, <http://archive.org/details/currentstatusofcoounit> (accessed January 6, 2010).

³⁸ *Ibid.*, at 21.

³⁹ U.S. Senate Committee on Foreign Relations, “Hearing: The UN Convention on the Law of the Sea” (2003), 3, <http://foreign.senate.gov/hearings/2003/hrq031021a.html> (accessed January 6, 2010).

⁴⁰ U.S. Senate Committee on Environment and Public Works, “Hearing: United Nations Convention on the Law of the Sea” (2004), 15, <http://www.access.gpo.gov/congress/senate/senate09sh108.html> (accessed January 6, 2010). U.S. Senate Committee on Foreign Relations, *supra* note 39, at 3–4.

⁴¹ U.S. Senate Committee on Environment and Public Works, *supra* note 40, at 71.

operation of the market mechanism and away from the collective deep seafloor regime;⁴² and the definition of the shelf is said to deny resources to the competitors of the U.S. For example, the then-chairman of the Senate Foreign Relations Committee Richard Lugar argued in 2007 that if the U.S. refrains from joining the treaty, it will end up in a “position of self-imposed weakness as we are forced to rely on other nations to oppose excessive claims to Arctic territory by Russia and perhaps others”.⁴³ In 2003, oil industry representative Paul Kelly stated that UNCLOS would “provide a means to ensure the security of tenure crucial to capital-intensive deepwater oil and natural gas development projects”.⁴⁴

In the argumentation of the opponents of UNCLOS, the continental shelf is portrayed as a benefit to U.S. rivals and as a security threat. Unlike the treaty’s proponents, its opponents do not associate the shelf with northern areas, but discuss it in general terms that are reminiscent of the overall tone of all shelf arguments in 1994. Three types of arguments concerning the continental shelf are discernible in the debate: the shelf is thought to benefit U.S. rivals by, among other things, enabling area claims for them;⁴⁵ the share of the shelf exploitation revenues that must be paid to the International Seabed Authority are thought to represent collectivism or theft;⁴⁶ and the data necessary for the definition of the shelf are thought to support attacks against the U.S. In 2004, for example, independent expert Peter Leitner argued that U.S. adversaries could use the data “to develop submarine routing schemes, find underwater bastions or hiding places where a potential hostile can implant sensors, and use a cruise missile launching submarine in order to menace our coast”.⁴⁷ In 1994, Republican House representative Jack Fields claimed that revenues from the continental shelf “will be targeted not only for the countries of the Third World, but even for groups of national liberation like the PLO and the IRA”.⁴⁸

It seems that the meaning of the concept “continental shelf” has changed in the language of U.S. political elites as the Arctic ice has melted and the charting of the seafloor has progressed. It also seems, however, that the change concerns the proponents of the treaty more than its opponents. The significance of the

⁴² U.S. Senate Committee on Foreign Relations, *supra* note 39, at 4.

⁴³ U.S. Senate Committee on Foreign Relations, *Hearing: The Convention on the Law of the Sea* (2007b), Lugar testimony, 1, <http://foreign.senate.gov/hearings/hearing/?id=bafa7c95-ca92-8929-e85f-b03b15cebcb7> (accessed January 6, 2010).

⁴⁴ U.S. Senate Committee on Foreign Relations, *supra* note 39, at 4.

⁴⁵ U.S. Senate Committee on Foreign Relations, “Hearing: The Convention on the Law of the Sea” (2007), 17, <http://foreign.senate.gov/hearings/hearing/?id=bafa7c95-ca92-8929-e85f-b03b15cebcb7> (accessed January 6, 2010).

⁴⁶ *Ibid.*

⁴⁷ U.S. Senate Committee on Environment and Public Works, *supra* note 40, at 25.

⁴⁸ U.S. Senate Committee on Foreign Relations, *supra* note 37, at 4.

resources of the Arctic Ocean and the competition over them has amplified in the proponents' rhetoric, whereas the opponents' argumentation still revolves around themes like sovereignty and security in a way that does not seem to have changed a great deal since 1994. The general impression from the data is that the melting of the Arctic has supported the proponents of the treaty. On the other hand, both parties are able to support their arguments by reference to the seafloor – the shape of the seafloor, for instance, can be thought to either enable claims to economically significant territories or to provide hiding places for enemies.

UNCLOS has historically been more popular among Democrats than Republicans, but this difference has diminished somewhat in recent years. In 1991, the Democratic chairman of the Senate Foreign Relations Committee, Claiborne Pell, stated that he is not familiar with anyone beside himself who favors the treaty.⁴⁹ In 1995, President Bill Clinton's proposal to join the treaty was halted before the Foreign Relations Committee had even considered it. In 2004 and 2007, the Republican-led Foreign Relations Committee sent the treaty to Senate with an overwhelming majority and with the support of President George W. Bush, but the Senate did not vote on it. At the time of writing, supporters of joining UNCLOS include, among others, President Obama and the Senate Foreign Relations Committee Chairman John Kerry. The Senate has not voted on the treaty as yet, so it is not known what percentage of senators support the treaty.

Based on the above, it is justified to claim that the melting of the Arctic Ocean has, in the present historical conjuncture, supported the proponents of UNCLOS. No single factor determines the fate of the treaty in the U.S. legislature, however. The material aspects of the continental shelf and the Arctic Ocean are so thoroughly entwined with political, legal, and scientific-technological processes that these become inseparable even for the purposes of analysis – Arctic matter is historical through and through. In the following, I present some summarizing thoughts relating to the historical nature of matter and new materialist theory.

5.3. *U.S. Process*

The results of my case study can be examined from three complementary points of view. The first two are roughly compatible with the traditional division between agent and structure.⁵⁰ From the point of view of the *United States*, the delineation of the continental shelf concerns the conscious self-definition and

⁴⁹ Claiborne Pell, "The Critical Need for United States Support of the Law of the Sea Convention," in *Fifteenth Annual Seminar: Issues in Amending Part XI of the LOS Convention*, ed. Myron Nordquist and John Moore (New York: Oceana Publications, 1991), 24.

⁵⁰ Alexander Wendt, *Social Theory of International Politics* (Cambridge: Cambridge University Press, 1999), 139–245.

differentiation of the U.S. and its internal interest groups. The *degrees of freedom* viewpoint, by contrast, highlights the enabling and constraining factors within which this self-definition occurs.⁵¹ The final *decentered* point of view stems from the new materialist tradition. Its emphasis is on the broader bundle of processes of which the U.S. is merely one aspect.

From the point of view of the United States, my article is first and foremost a description of the internal self-definition process of one state. Viewed in this way, the controversy over the continental shelf concerns the location of the outer bound of the U.S. and the rules according to which this is delineated. All of the parties to the discussion I analyzed seem to agree that it is desirable to extend the U.S. as far as possible in geographical terms. The disagreement is about whether this extension should be attempted by joining UNCLOS or not – in other words, whether the shelf defined by the Convention is more market-friendly and governable, or collectivist and hostile than the one defined without it.

Even if the U.S. were to remain outside UNCLOS, it could still attempt to argue its case through customary international law. As such, the seafloor data that the U.S. is currently gathering may prove useful for upholding future shelf claims irrespective of whether the state is a member of UNCLOS or not. The careful mapping and optimization of the Arctic shelf can thus be seen as alleviating the conflict between the proponents and opponents of UNCLOS by maximizing both the shelf's exploitability and its governability at once. The cartography work can be seen as U.S. collective agency in its own self-definition process *at the same time* as U.S. policy elites and their members are distinguished as distinct and competing agencies with respect to U.S. self-definition.⁵²

From a degrees of freedom viewpoint, however, it becomes apparent that the U.S. and its political and economic elites are not conducting self-definition in a vacuum. They are dependent on the resources, both figurative and literal, provided by the seafloor, technology and science, international law, capitalism, and the broader matrix of language. These resources include basic assumptions concerning causality and morality, such as the virtuous consequences of market-based exploitability as opposed to the threat of collectivism. The discussion is also enabled and constrained by factors such as the content of UNCLOS, the results of seafloor measurements, and the material peninsulas and gradient ambiguities signified by these measurements.

⁵¹ Milja Kurki, *Causation in International Relations. Reclaiming Causal Analysis* (Cambridge: Cambridge University Press, 2008).

⁵² Bill McSweeney, *Security, Identity and Interests* (Cambridge: Cambridge University Press, 1999), 126–151.

This decentered viewpoint differs from previous ones in that it does not frame United States at the center of its narrative. In a decentered reading, my article concerns the ways in which differently paced processes of becoming, such as international law and Arctic seafloor, become entwined. These entanglements produce distinguishable but internally related agencies such as the seafloor peninsulas discussed earlier. In time, the new agencies form new bundles of processes and agencies, such as the potential U.S. membership in UNCLOS, and so on.

Of the processes I have considered, the movement of the tectonic plates is perhaps the slowest in relative terms. This movement is a prerequisite of the scientific-technological study of tectonic plates because, if processes of relative movement did not distinguish aspects of the Earth's crust as distinct wholes, the scientific concept of "tectonic plate" would not be possible in its present form. The notion of tectonic plate, in turn, enables the legal definition of the concept of "continental shelf", which provides the institutional continuity required for the exploitation of the shelf's oil and other resources. The shelf's resources participate in the processes of capitalism and climate change. This is because capitalism requires resources for its characteristic surplus accumulation, thereby causing climate change as planetary balancing mechanisms (including the one maintained by weathering and the movement of tectonic plates)⁵³ no longer store carbon into the Earth as rapidly as it is displaced into the atmosphere. Climate change melts the Arctic Ocean, enabling the mapping of new areas of coastal shelf, which combines with seafloor shapes to cause a mapping urge and political discussion in the U.S.

From the decentered perspective, it is evident that the U.S. has affected all of the processes I have mentioned (with the possible exception of the movement of the tectonic plates). This means that the U.S. has also affected the new phenomena and agencies that have emerged as the processes have become entwined with each other. The U.S. has been affected by its participation in these processes as well: its outer bound is connected to tectonic plates, international law, and the climate, and its economic system owes much to oil, science, and technology.

It seems clear that, even though the conscious political will of the U.S. is crucial to the trajectory of each of the processes the state participates in, the U.S. is only one aspect of a manifold bundle of processes of becoming. The U.S. does not control or even steer the processes it is involved in. It has not, for instance, upheld capitalism to cause climate change, nor did it coin the notion

⁵³ Sigurdur Gislason and Eric Oelkers, "Silicate Rock Weathering and the Global Carbon Cycle," in *Frontiers in Geochemistry: Contribution of Geochemistry to the Study of the Earth*, ed. Russell Harmon and Andrew Parker (Chichester: John Wiley and Sons, 2011).

of continental shelf in anticipation of the melting of the Arctic Ocean, nor support technoscience for the purpose of charting the Chukchi Borderland.

In this article, I have wanted to pay special attention to the question of matter and meaning, which is why I have written primarily about the internal relations of international law, tectonic plates, seafloor, the Arctic Ocean, and U.S. political debate. This is a decidedly political act: there are innumerable human and non-human agencies at work within the phenomena I have analyzed. Some of the more important alternative topics for discussion in this field might concern the expansion of capital, attempted securitization of the seafloor, changes in global tensions, oil and gas price fluctuations, the development of alternative energy sources, and shifts in U.S. internal politics and ideology. It seems to me, however, that without some political commitment around which to organize narratives, new materialist analyses are in danger of fragmentation, as the theory does not prioritize between processes and their aspects *a priori*.

6. Conclusion

It is an open question as to what degree the ongoing enclosure of the Arctic is due to a systematic progression of a legal process and to what degree it reflects a struggle brought about by oil fever. I nonetheless agree with Timo Koivurova that it is important to note the legal aspect of this process, if only for reasons of consistency.⁵⁴ There is no evidence of the coastal states of the Arctic Ocean abandoning UNCLOS over Arctic resources. Even the U.S. has shown strong domestic signs of commitment to the treaty since the presidencies of George W. Bush, who is otherwise unlikely to go down in history as a champion of international law.

I find, however, that the most pressing reason for emphasizing the historical and material nature of Arctic policy concerns the worldview embedded in such a conception. In a new materialist reading, states do not appear singularly as liberal subjects that project their existential angst, preferences, or linguistic constructs to a relatively detached reality surrounding them. States prove to be organic and inseparable parts of reality. They are as much at the mercy of the Arctic Ocean as vice versa. This lesson becomes increasingly important as climate change melts lubricant for the ever more frictional gears of capitalism – unless the growing incidence of severe weather and catastrophes akin to the Deepwater Horizon prevent further Arctic exploitation from within the politico-economic process.⁵⁵

⁵⁴ Koivurova, *supra* note 2, at 211–226; Koivurova, *supra* note 2, at 59–60.

⁵⁵ Erik Kolstad and Thomas Bracegirdle, “Marine Cold-Air Outbreaks in the Future: An Assessment of IPCC AR4 Model Results for the Northern Hemisphere,” *Climate Dynamic* 30:7–8 (2008): 871–885.