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NAVIGATING THE STRUCTURAL COHERENCE OF SEA ICE

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Introduction

In November 2017, Baffinland Iron Mines Corp., operator of the Mary River Mine in Canada's Arctic territory of Nunavut, announced that it was amending the expansion plan filed with the Nunavut Planning Commission. Although residents of Pond Inlet (Mittimatalik), the predominantly Inuit community closest to the mine, had varying views regarding the proposed expansion, one component of the plan had few if any supporters: a proposal for icebreaking vessels to retrieve ore from the mine's loading facility at Milne Inlet on Eclipse Sound during the winter season. The company had already reduced the proposed frequency of winter shipping in response to community opposition. However, even the latest version of the proposal, which called for a maximum of two vessels each year between December and February, was unacceptable to residents of Pond Inlet, which also fronts Eclipse Sound. As Joe Enook, then the region's representative to the Nunavut Legislative Assembly and generally a supporter of the mine, noted, disturbing the winter sea ice would jeopardize local residents' ability to travel and hunt. "Eclipse Sound is our grocery store," Enook said, explaining his opposition. "[With the winter shipping proposal] there was a potential for disruption."¹

As the Pond Inlet residents' intransigence suggests, breaking sea ice,² although usually conducted with the singular objective of enabling maritime navigation, can have myriad negative environmental and economic impacts, on land as well as at sea, from disrupting algal blooms that are at the base of the food chain to upending the lifeways of Indigenous peoples. As such, it would seem to be an

FIGURE 7.1 US Coast Guard's "Healy" (the Coast Guard's icebreaker) in pack ice. Public domain.

activity suitable for environmental regulation, potentially employing environmental impact assessments, cost-benefit analyses, and other regulatory tools. And yet, although icebreaking is fundamentally an act of environmental violence, it is conceptualized legally as a freedom of navigation, essentially the same as a ship gliding over what is idealized as a formless, featureless surface. Thus, although it would appear that managing the impact of ice breaking poses a seemingly simple practical regulatory problem, approaching this problem in a way that values sea ice's structural coherence, and thereby affirms Indigenous peoples' rights to self-determination in governance of their landscapes and seascapes, must necessarily challenge underpinning ideas about surfaces, volumes, structures, and movements of and in ocean-space that are inherent to Western conceptions of mobility, time, and territory.

To address this challenge, this chapter proceeds in four sections. In the first section, we review the role of sea ice in northern economies and ecologies as well as the potential impact of icebreaking. Following this, the second section considers and rejects the argument that barriers to the regulation of icebreaking are specifically *legal*. In fact, frameworks and precedents exist for regulating ocean uses (including navigation) to protect environments and Indigenous livelihoods, and these could be applied to limit the right to break ice, especially when there are communities of interest that have a shared concern for maintaining sea ice as a predictable space with structural integrity. Therefore, we suggest in the third section that, in the absence of overriding legal or political obstacles, the fundamental barrier to adopting sea ice protections that acknowledge Indigenous perspectives and claims instead rests in the ways that Western legal reasoning conceives of the spaces across which vessels move as lifeless, formless, and frictionless surfaces. We therefore turn to the geophilosophical (or ontological) challenges posed when the ocean, including in its frozen state, is understood not as a surface to be crossed but as a lively space of intersecting mobilities, interdependencies, and transformations. Finally, the fourth section situates our brief consideration of icebreaking within a broader literature in marine planning that explores how thinking from an oceanic perspective can challenge the limits of law and territory, and how a legal approach to icebreaking can suggest new modalities for understanding and governing the ocean.

Mobilities on/of Sea Ice

As Joe Enook reminds us in his opposition to icebreaking in Eclipse Sound, sea ice is foundational for regional ecologies and economies across much of the Arctic. Sea ice is never just “frozen water,” as expressed in the hundreds of local names used to distinguish sea ice types.³ It is always in a process of becoming and dissolution across space and time, undergoing continuous structural alterations through snow accumulation, lead formation, wind advection, brine rejection, and countless other ice processes.⁴ The underside of sea ice, particularly in marginal zones, hosts algal communities that provide the base energy for some

of the world's richest marine ecosystems.⁵ Conversely, the upward-facing surface of ice provides crucial denning and feeding grounds for a range of species from seals to polar bears.⁶

Sea ice, in its fascinating complexity, is a fundamental aspect of lives and livelihoods for Indigenous peoples throughout much of the Arctic. During winter months, sea ice provides a stable hunting platform for Inuit whose diet largely depends on marine ecosystems. Shorefast ice (stationary ice extending from shore, usually fixed by sections of thicker ice that are grounded on the seabed) allows hunters to follow whales, seals, polar bears, and other game far out into what would be summertime open water.⁷ Sea ice acts as a “highway” that connects communities to each other; in some cases it is the only route between settlements.⁸ Reindeer herders in parts of Russia use sea ice to move their herds to summer pastures, circumventing rivers that have already melted.⁹ In Alaska, sea ice provides protection from winter storms that cause coastal erosion and claim vital infrastructure, homes, and lives.¹⁰

Additionally, for the Inuit in particular, sea ice is central to a traditional culture that is characterized by a deep attachment to and respect for the ocean (including when frozen) as well as land.¹¹ Being able to use sea ice to provide for one's family and community contributes to wellbeing as part of what it means to live a fulfilling life.¹² As a demanding environment, sea ice teaches important lessons of patience, endurance, courage, and good judgment.¹³ Arctic Indigenous



FIGURE 7.2 Children playing on sea ice, near the settlement of Igloolik, Nunavut, Canada. Photo by Claudio Aporta. Used with permission.

peoples know “all possible facets of sea ice”:¹⁴ its numerous forms but also its numerous material, cultural, and spiritual functions.¹⁵

The value of sea ice lies not just in its *quantity* but also in its *quality*. For traveling, sea ice must be thick, strong, and smooth so that hunters and herders (and their equipment) can easily move by dog sled or snowmobile without falling through the ice and risking hypothermia or drowning.¹⁶ Multi-year ice (sea ice that has survived at least one summer melt season) provides additional stability and is a source of fresh drinking water, an essential resource when hunting for long periods away from shore.¹⁷ In marginal zones where hunters catch whales and seals as they break through the ice to breathe, sea ice must be the perfect balance between a breakable ceiling for the animals and a sturdy platform for the hunters. When the quality of sea ice is degraded, knowledge that had been accumulated over millennia loses its relevance, or needs adapting, reducing hunters’, herders’, and travelers’ ability to interpret the icescape, its opportunities, and its dangers.¹⁸

While climate change is partially responsible for destabilizing the qualities of sea ice that sustain Indigenous lifeways in the Arctic,¹⁹ disturbance by icebreaking vessels also plays an important role. Break-off events, where large sections of sea ice separate from shorefast ice, pose a significant danger, as they can lead hunters and herders (and their herds) to fall into the water or be carried away on a broken-off floe.²⁰ Sea ice disturbance increases the likelihood of such events and makes them more difficult to predict.²¹ Icebreaking can also impact the trails used by snowmobiles and sleds, as well as the migration patterns of land mammals, such as caribou.²² While in some cases it might be possible to cross the ice as soon as one hour after a ship has passed, the ice will refreeze as a rubble mess that hunters might need to axe their way through, and snowmobiles risk getting stuck or breaking down.²³ Potentially fatal delays can result if, when returning from a hunt for instance, one finds that a vessel has cut through the ice trail being used for the return journey, or that it has separated ice floes that were previously close enough to step across.²⁴

Additionally, shipping vessels and icebreakers are loud, potentially scaring polar bears and caribou (overall, from the region, but also specifically during a hunt), and increasing animal deaths from collisions with passing vessels.²⁵ Icebreakers emit noise from bubbling systems which blow pressurized air underwater to push ice away and their propellers make sharp, intermittent ramming noises when stuck in ice; these noises mask cetacean inter-species communication, possibly causing behavioral and physiological changes that affect their well-being, reproduction, and migration.²⁶ Icebreaker activity also creates waves that can flood and freeze the openings to polar bear dens and seal breathing holes.²⁷ Waves can also pose a danger to hunters, as their small boats are unable to cross ship wakes safely.²⁸

Furthermore, when ice re-forms after disruption by a passing vessel, new, unpredictable variables are added that may confound the calculations of experienced hunters. Usually, hunters’ judgments of the strength, thickness, and structural integrity of sea ice are based on close monitoring of weather and

sea ice conditions prior to and during time out on the ice. However, icebreaking causes the ice to fracture and refreeze in erratic ways, creating unpredictable conditions.²⁹ Finally, by hindering sea ice formation and speeding sea ice breakup, icebreaking can shorten the period during which animals can use the ice for breeding and migrating, further impacting livelihoods in both animal and human communities.³⁰

It is unsurprising, then, that when the Arctic Corridors and Northern Voices project held meetings with 13 Inuit communities to gather perspectives and recommendations regarding Low Impact Shipping Corridors in Canada's North, residents consistently referenced the threats posed by icebreaking.³¹ Many communities voiced concerns about how icebreaking activities disrupt animals and their habitats and jumble ice trails and routes, endangering communities' and hunters' lives and livelihoods. They proposed areas where icebreaking should not happen, others where noise should be kept to a minimum, and suggested better communication with shipping traffic control to be able to plan around ships and their routes. Such concerns are nothing new, nor are they restricted to Canada. In 1975, a group of Greenlandic hunters physically blockaded an icebreaker *en route* to a mining site at Marmorilik, as it was disrupting their hunting practices in the Uummanaq Fjord.³² Negotiations there and then on the ice edge resulted in an agreed route that would be less disruptive to hunting.

At one level, the differences between Indigenous peoples, who share sea ice environments with nonhuman inhabitants, and shippers, who seek to cross the



FIGURE 7.3 Tourist boat surrounded by icebergs, Iceland. Photo by Anna Stammler-Gossmann. Used with permission.

ocean's surface, appear insurmountable: Shippers perceive ice as an obstacle and aspire to navigation on an ice-free ocean while Indigenous peoples perceive a continuum by which land, frozen water, and liquid water are all spaces that enable and constitute the web of Indigenous and animal livelihoods. However, both groups have an interest in understanding conditions in an environment that changes both seasonally and over the long term. Indeed, although the Arctic Corridors and Northern Voices project identified some Indigenous concerns that stemmed from Inuit ways of valuing, thinking of, and using ocean-space that are largely foreign to Western thinking (e.g., the value of ice as a "highway" of hunting trails), other concerns voiced by Indigenous peoples were likely shared by shippers (e.g., concern over lack of accurate navigational charts), or were in broad alignment with the environmental priorities that already underpin marine management (e.g., protection of breeding grounds).³³ A survey of cumulative effects of marine shipping conducted by Transport Canada and an initiative organized by the ICE LAW Project and the Company of Master Mariners of Canada resulted in similar findings.³⁴ In particular, the ICE LAW Project initiative found significant points of overlap between "Western" and "Indigenous" interests, once one turns away from viewing ice as a legal abstraction and instead focuses on encounters with sea ice in its materiality.³⁵

To summarize, Indigenous communities and shipping companies share an understanding that watery spaces, in their multiple frozen states, require addressing on their own terms. The challenge for lawmakers (at international and national scales) is thus to manage navigation in a manner that safeguards fragile Arctic ecosystems, protecting both the biota that thrive above and below the sea ice surface and the lives and livelihoods of Indigenous peoples. As we argue below, this requires attentiveness not just to sea ice's multiple functions and uses, but also to its underlying structural coherence.

Law, Navigation, and Ice-Covered Waters

By any measure, a central feature of the United Nations Convention on the Law of the Sea (UNCLOS) is its commitment to safeguarding freedoms of navigation. In addition to asserting that "Every State, whether coastal or land-locked, has the right to sail ships flying its flag on the high seas" (Article 90), UNCLOS extends navigation rights to other areas of the ocean, including exclusive economic zones (EEZs), territorial seas, international straits, and archipelagic waters.³⁶ However freedom of navigation is not absolute. Numerous articles in UNCLOS mandate that international navigation rights must be exercised with due regard to the rights of coastal states in zones of national jurisdiction (e.g., Articles 19, 21(4), 39, 40, 41(7), 43(4), 53(11), 58(3), and 60(7)) and navigation in ice-covered EEZs must accommodate heightened environmental vulnerability (Article 234). Even on the high seas the right to navigation is balanced with rights of overflight, laying submarine cables, constructing artificial islands, fishing, and conducting scientific research (Article 87). Furthermore, state practice has evolved to permit

the establishment of temporary zones on the high seas where shipping (and fishing) are prohibited to allow for weapons testing.³⁷ This suggests that Article 87's list of enumerated rights is not exhaustive and potentially could be extended, with further restrictions placed on navigation.

All of this is to suggest that, hypothetically, current legal instruments could be employed to balance the right to navigation in ice-covered waters (including the right to engage in icebreaking) with other interests.³⁸ Furthermore, as Indigenous activists have noted, when international laws that guarantee the rights of states are balanced with those such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) that guarantee the rights of Indigenous peoples to maintain their livelihoods, cultures, and collective identities through control of ancestral lands, waters, and the resources contained therein, these protections can be extended to cover preservation of the environment that enables the maintenance of Indigenous peoples' lifeways. This is precisely the argument made by former Inuit Circumpolar Council (ICC) Chair Sheila Watt-Cloutier in *The Right to be Cold*: "I believe the campaigns to link climate change to human rights protection—efforts that acknowledge our shared humanity and our shared future—are the most effective way to bring about lasting change."³⁹ Additionally, whether in international law or domestic legislation and practice, the recognition of Indigenous peoples' rights to their environment and the appreciation of nature as multi-faceted and dynamic often are inseparable from each other: Indigenous self-determination involves the articulation and implementation of Indigenous perspectives on the environment, and vice versa, a point that is acknowledged in UNDRIP (Article 5) and by Indigenous leaders such as ICC Chair Dalee Sambo Dorough.⁴⁰ Although some of the best documented examples of Indigenous perspectives on the marine environment being incorporated into state-led planning have occurred in Aotearoa/New Zealand,⁴¹ initiatives in the Arctic also stand out. For instance, the Agreement to Protect High Seas Fisheries in the Central Arctic Ocean links recognition of Indigenous knowledges and perspectives on the environment, protection of Indigenous rights and interests, and empowerment of Indigenous peoples in participation and decision-making.⁴² A further example can be seen in the Pikialasorsuaq Commission, a trans-boundary, ICC-led marine management initiative endorsed by the governments of Canada and Greenland to develop a management regime for the Pikialasorsuaq Polynya, an exceptionally biologically productive area of open water surrounded by sea ice that spans the two countries' EEZs.⁴³

Notwithstanding these examples, however, efforts at securing the integrity of sea ice by balancing navigation rights with those of communities that derive other values from frozen ocean environments may be limited as a means for conserving the environment, while respecting Indigenous self-determination. Not all Indigenous people are in equivalent positions regarding their relationship to either the state or the environment which suggests that different situations may require targeted approaches. For example, Watt-Cloutier's embrace of a human

rights agenda (mobilized through UNDRIP) for preserving Inuit culture and, by extension, the environment that sustains that culture, has been challenged by some legal scholars who question whether Indigenous interconnections with the environment can be adequately articulated through instruments that see all rights as derived from the anthropocentric, universalist notion of individual human rights.⁴⁴ Turning to Arctic Canada, Todd, for instance, argues that protection and recognition of Indigenous culture requires not simply securing the right to culture through Western law but recognition of Inuit law which, in the case of coastal Inuvialuit, is based on an understanding of human–fish entanglements that sits outside the Western tradition.⁴⁵

Despite these limits, this review points to the existence of legal mechanisms that potentially could protect sea ice amidst its entanglements with individuals, communities, environments, biogeophysical processes, and the lives of more-than-human entities. Additionally, the presence of shared interests among a diversity of groups suggests that viable regulations should be politically feasible. Nonetheless, we note that sea ice, as a material form to be structurally preserved, remains beyond the scope of legal regulation. We therefore suggest that the fundamental obstacle to the implementation of effective sea ice protection is *ontological*. That is, in order to protect the structural integrity of sea ice a shift is needed in the way that territory and oceans are understood in the Western geographic imaginary.

Rethinking Ocean Territories

Land and sea are often counterposed as binaries in Western political and legal thought: the former understood as capable of being transformed, developed, and bounded (i.e., “territorialized”) and the latter as immune to these social exertions, a featureless space of frictionless flows and untethered resources, capacious in its liquidity. This binary can be found in, for example, Hugo Grotius’s 17th century *Mare Liberum* or Carl Schmitt’s 20th century works *Land and Sea* and *The Nomos of the Earth*.⁴⁶ In fact, recent scholarship has explored how modern notions of both land and sea, although seemingly in opposition to each other, are grounded in a common understanding of territory, in which the reduction of space to fixed points, with relative resource values, in relative location to each other on an inert, two-dimensional field is conceptually divided from the experience of engaging with and strategizing movement through the planet’s biogeophysical materiality.⁴⁷ The same logic that isolates points on land as places to be developed and bounded, distinct from the features of terrain that join these points, facilitates the construction of the ocean as ideally the opposite. In a modern, point-based ontology, the ocean is understood as a space where distance can be annihilated through mobility (since the ocean is understood as having no terrain) and where the ocean’s points exist solely as mathematical abstractions, freed from the differentiating power of nature that makes land suitable for development and enclosure.⁴⁸ As Schmitt puts it, the ocean has no “character,” no places,

and hence no potential for transformation or territorialization.⁴⁹ In the history of state formation on land, the ocean has played the role of “constitutive other,” the obverse side of territory: a formless, placeless, liquid environment “outside the lines,” an essential space of unmanageable fluidity across which one navigates to traverse between land-based territories or into which one descends to extract “free” resources that are brought back to develop land.⁵⁰

Having inherited this idea of the ocean as a fluid essence, however, jurists and regulators have struggled at the margins of its liquidity, because the ocean is not simply a formless surface or a placeless, voluminous depth that exists in determinate opposition to the territories of society. At the most obvious level, the geophysical binary between land and ocean that underpins the geopolitical binary between territory and non-territory breaks down at the coast, where boundaries between land and sea are often indistinct and mobile, not only in tidal zones and estuaries but also due to the subjective nature of sea-level calculations and long-term trajectories of climate change.⁵¹ UNCLOS makes little effort to accommodate the dynamic nature of oceanic systems or the complex nature of ocean-land-human-animal-atmosphere interfaces, as is acknowledged both by those who view this disassociation of the hard boundaries of law from the vicissitudes of geography as a weakness in the system and by those who see it as a strength.⁵² Even when UNCLOS attempts to accommodate geographic dynamism, complexity, and indeterminacy, the “fixes” implemented fail to account for the ways that watery spaces are used and experienced. For instance, although UNCLOS acknowledges that a line that consistently follows the low-water mark may not always be the best means for distinguishing land from ocean, its alternative, permitting the drawing of straight baselines “where the coastline is deeply indented and cut into, or if there is a fringe of islands along the coast in its immediate vicinity” (Article 7), only secondarily considers the interests or practices of coastal communities.⁵³ Likewise, UNCLOS’s regime for archipelagic states (Articles 46–54) permits states, under certain conditions, to draw straight lines that designate areas of ocean as internal water, but this fails to reflect the ways that people and other biota surrounding islands inhabit the ocean-spaces that interweave with islands.⁵⁴

Just as the construction of the ocean as an idealized non-territory of formless liquidity is challenged by murky distinctions between land and sea, it is also challenged by the presence of solid land at the bottom of the ocean.⁵⁵ Beyond the territorial sea (and its seabed), ocean law, both pre- and post-UNCLOS, has distinguished the seabed from the waters above, rendering the ocean floor, but not the water column, suitable for point-based investments (for oil and gas drilling) and bounded enclosure (for seabed mining).⁵⁶ This separation of the marine environment into distinct strata with unique and differentiated territorial properties has implications for the regulation of deep-sea mining, as it could lead to environmental impact assessments that inadequately account for the ways in which “harms” and “losses” extend across both space and time.⁵⁷ More broadly, this reification of a binary between land (even if submerged) as a



FIGURE 7.4 Fishing trawlers in port, Kirkenes, Norway. Photo by Anna Stammler-Gossmann. Used with permission.

“character-full” space of bounded, developable places (i.e., “territory”) and the ocean as a formless liquid abstraction (i.e., “non-territory”) limits one’s ability to extend insights about the ocean’s turbulent materiality to the greater hydrosphere.⁵⁸ It constrains the Western legal tradition’s comprehension of oceanic features, like waves or currents, as simultaneously forces *and* objects; as entities that simultaneously occur in place, move across space, *and* constitute place; as unique entities *and* analytic categories; as metonyms that both reflect *and* shape the conceptual foundations that are used to understand livelihoods that largely occur beyond ocean-space’s geographic limits.⁵⁹

Returning to the specific question of regulating icebreaking, the idealized binary between territorial land and formless ocean directly challenges any effort to preserve the structural coherence of sea ice: how can one preserve *form* in a space that is legally constructed as formless? Despite the advances made in the collaborative governance of Arctic waters discussed above, efforts to preserve sea ice’s structural integrity through recognition of its value have been necessarily limited by the overarching ontology applied to the ocean. Indeed, the one article in UNCLOS that acknowledges that seawater can ever take non-liquid form—Article 234, which gives states the right to impose additional environmental protections in ice-covered areas of their EEZs—constructs sea ice solely as a hazard, a potential source of disruption to the formless surface idealized by Western navigators, not as a valued form to be preserved for its specific capacities.⁶⁰ It would be difficult to align Article 234’s perspective with one that acknowledges sea ice’s existence as a dynamic object at the intersection of biological, geophysical, and

cultural processes, let alone one that affirms sea ice's many functions and affordances for more-than-human ecologies and climate systems.

The power of the territory-non-territory binary and the difficulties encountered when one attempts to apply it to sea ice are evidenced in Canadian justifications for defining the waters of the Arctic archipelago as its historic internal waters. Secretary of State Joe Clark's address to Parliament when Canada declared straight baselines around the archipelago—affirming that “from time immemorial Canada's Inuit people have used and occupied the ice as they have used and occupied the land”—flips sea ice to the other side of the binary. However, it rather misses the point raised earlier in this chapter about the distinct ways in which northern peoples incorporate sea, ice, and land into their lifeways in ways that mimic neither the Western sense of land as territory nor its idealized maritime negation.⁶¹

Finally, efforts to incorporate and govern sea ice as territory have been confounded not just by its presence in the ocean, which is legally designated as a space beyond territory, but also by its indeterminate and dynamic properties. Sea ice is constantly moving as well as melting and freezing, it exists in varying concentrations that change rapidly over time, and it generally has indistinct borders, and this has led to inconsistency and uncertainty in the development and implementation of ice-sensitive regulations.⁶² Each of these properties not only makes sea ice a difficult environment to regulate; it also makes it difficult to conceive how, from the perspective of Western law, we might protect its material integrity as a spatial object.

Managing Dynamic Ocean-Space

UNCLOS and, more broadly, the laws and regulations of the sea, are fundamentally spatial. After defining the ocean as a juridical space (the area of earth's surface and subsurface beyond the limits of internal waters), UNCLOS defines the contours of state power in subsidiary areal zones (territorial seas, contiguous zones, EEZs, the high seas), horizontal strata (surface, water column, seabed), and features (rocks, islands, low-tide elevations, archipelagos). Marine planning initiatives then work within this spatial framework to define the spaces within which management can be applied (the marine protected area, the regional fishery management organization zone, et cetera) in order to govern specific uses. Some scholars have described this process as one of marine territorialization, as areas of the ocean's surface, water column, and floor are bounded and allocated, a process by which land-based ontological assumptions and spatial planning mechanisms are applied to the ocean.⁶³

However, building on the understanding of territory as a political technology, we take issue with this characterization.⁶⁴ Rather than seeing territory simply as a bounded space, this approach seeks to analyze the making and remaking of territory, comprehending territory as a process rather than as an outcome. It seeks to explore the practices or techniques—such as cartography, surveying,

and population management, as well as legal instruments and abstractions—and their relation to the places that are measured and controlled. The abstractive measurement and control of territory gives one aspect of its political-legal form but masks the complexity of the dynamic nature of territory, through the forms of its terrain, understood as the material surfaces and depths encountered and affected by moving bodies.

When management lines are drawn at sea the concept of terrain is elided as the ocean's dynamic materiality is reduced to an atemporal abstraction.⁶⁵ Returning to Schmitt, when abstract lines are drawn in the ocean with little regard to its geophysical dynamics (its connections to land, atmosphere, and distant seas), its changes in form, or the mobilities of its (nonhuman and human) inhabitants, the ocean is perceived as a space without “character,”⁶⁶ a point frequently noted by critics of hard-bordered spatial management tools.⁶⁷ And if the ocean—even the managed, governed, conserved ocean—is seen as having no terrain, or no “character,” then it likewise has no places, no features, no form. In such an environment, preserving sea ice as an oceanic feature that serves specific functions makes no more sense than conserving an individual wave or water molecule. In the eyes of the modern planner or jurist, the ocean's parts, disaggregated into points, are never reaggregated through the practice of terrain into meaningful entities. Instead, they are stranded as ephemeral elements adrift in ocean-space, to be managed rationally and spatially through calculative linear abstractions. Sea ice, an unacknowledged and unacknowledgeable feature, is simply allowed to melt away.

Could the spatial nature of ocean governance be mobilized not to constrain possibilities but to open new alternatives? Numerous scholars have pointed to the ocean as a site of potential legal innovation. For Mann Borgese, the ocean's global value as a space that connects the world's economies and ecologies, its local meanings as an arena of livelihoods, and its political status largely outside state territorial boundaries can be mobilized through law to bring new ethics of care, stewardship, and self-determination to governance.⁶⁸ Van Dyke et al. extend this agenda, calling for the norm of “freedom of the seas” to be replaced with one of “freedom *for* the seas,” wherein, instead of understanding the ocean as a space of individual, protected rights, the ocean is understood as a socionatural space that joins a diversity of biogeophysical (including human) functions, services, and interconnections.⁶⁹ From such a perspective the value of the ocean's forms—its waves, its currents, its ice, et cetera—would lie not just in their present functions (as a hunting surface, as a global climate regulator, et cetera) but in the meanings that have been ascribed to and derived from them over millennia by the inter-species web of inhabitants who engage the ocean environment.

The challenge, then, is to reterritorialize the ocean through new understandings of terrain that can be applied to the sea, recognizing the “character” that the ocean already has and that is continually being reproduced through biogeophysical processes and human interventions. If earlier attempts to theorize terrain and its relation to territory emphasized the political-strategic aspects of its control,⁷⁰ more recent work has stressed the way the complex materiality of terrain helps to



FIGURE 7.5 Snowmobile tracks from land to sea ice, off Melville Peninsula, toward Igloodik, Nunavut, Canada. Photo by Claudio Aporta. Used with permission.

ground and add depth to our understanding of territory.⁷¹ Thinking through terrain to grasp the materiality of territory forces an analysis of the relation between land and sea, in complex and dynamic environments, and ultimately collapses any straight-forward binary division.

Yet this is not an easy task. Implementing “territory beyond *terra*” presents a range of challenges,⁷² and to use the concept of terrain to understand spaces which were previously seen solely as water (whether liquid or frozen) may be particularly problematic.⁷³ Critical marine planners have shown, however, that when we replace the hard boundaries of the marine protected area with an understanding of ocean-space as existing within flows—flows of histories, data, knowledges, and practices, as well as water and biota—we develop new perspectives that shed light on the processes through which terrain is encountered and enacted.⁷⁴ Conversely, when we reorient ourselves toward oceanic terrains, by listening to those who engage the ocean as a material space, new planning mechanisms (and, potentially, legal institutions) emerge for the ocean environment.

Of course, people who actually encounter the ocean have long understood the ocean as terrain, and there may even be common perspectives held by divergent users. As the Arctic Corridors and ICE LAW Projects both found, sea ice users with seemingly diametric interests in the integrity of ice—the Inuit hunter who wishes to preserve frozen hunting trails and the Coast Guard officer who wishes to maintain liquid shipping routes—likely still have more in common with each other than does either with the drafters of UNCLOS who largely ignored ice’s presence. This suggests that in the ocean (as elsewhere), it is crucial that law be

developed and implemented by those who experience a space in its multiplicity. To be sure, differences in interest remain even among users with shared concerns and perspectives, and there may be no singular perspective on sea ice that joins them together. However, as Squire proposes, a “pluriversal” understanding of terrain, including oceanic terrain, may well be tenable.⁷⁵

To conclude, the fundamental obstacle to development and implementation of a comprehensive legal regime that protects the integrity of frozen ocean environments from icebreaking is neither strictly legal nor political: It is *ontological*. The challenge is to understand the ocean not as a formless surface—the antithesis of land-based territory—but as ice/water terrain, with character and form, with history and affordances. Only then, we argue, can one develop a regime to protect sea ice from acts of environmental violence that would undermine its structural integrity and socioecological functions.

Acknowledgments

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Notes

- 1 Lisa Gregoire, “Nunavut Mining Company Takes Icebreaking off the Table,” *Nunatsiaq News*, November 6, 2017, https://nunatsiaq.com/stories/article/65674nunavut_mining_company_takes_ice_breaking_off_the_table/. Since 2017, opposition has strengthened. Prior to hearings in February 2021, Pond Inlet’s mayor took a stand against the expansion, which also called for building a railroad from the mine to the Milne Inlet dock. As the hearings concluded, local hunters protested by blockading the company’s airstrip for seven days. Randi Beers, “Mary River Mine Protesters Announce End to Blockade,” *Nunatsiaq News*, February 11, 2021, <https://nunatsiaq.com/stories/article/mary-river-mine-protesters-announce-end-to-blockade/>.
- 2 Due to the importance of various sea ice stages to Indigenous activities and animal habitats, we take “icebreaking” to mean all forms of sea ice disruption to facilitate navigation by ships, including where icebreakers are not required. This ranges from breaking routes through solid pack ice to pushing already broken up ice floes further apart.
- 3 Igor Krupnik et al., eds., *SIKU: Knowing Our Ice—Documenting Inuit Sea Ice Knowledge and Use* (Dordrecht: Springer, 2010).
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