



Iceberg sovereignty

Corine Wood-Donnelly

Associate Professor of International Relations & the High North, Faculty of Social Science, Nord University, Norway

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ABSTRACT

Icebergs have a long history of commercial exploitation and while climate change has accelerated interest in Arctic resources, this enigmatic symbol of the region has received little attention in contemporary legal debates. In an age of growing freshwater scarcity, iceberg harvesting is currently unregulated and without legal status under international law beyond the rule of capture. Positioned at the intersection of water security and economic gain, icebergs are primed as a site for resource conflict. Framing the legal status of ice within historical debates, this paper considers principles of international law that could apply in determining rights derived from sovereignty over this resource. It posits a regulatory pathway via the Arctic Council, although the resource may in time simply disappear from both the legal and physical landscape.

1. Introduction

During the summer of 1998, a conflict raged in the maritime space dubbed 'Iceberg Alley' near Newfoundland, Canada, where icebergs from Greenland drift across the international maritime boundary. In this conflict over competing uses of a resource, two different stakeholder groups disagreed over the irreconcilable consumption of freshwater icebergs. One group included tourists admiring the natural beauty of an Arctic iceberg in its stunning surroundings and the tour operators who make a living from those travelling to see the frozen behemoths. The other stakeholder group are industrial users, who at this moment, brought "a barge equipped with a crane loomed from around the headlands, tethered itself to the iceberg, and started noisily and methodically chipping away at it with a device designed for dredging rock." [1] The first stakeholder group saw this as "people were stealing the iceberg right in front of our eyes." [2] While the conflict resulted in only the sort of reputational damage that can come from news coverage, this situation raises draws attention to questions regarding the legal status of ice in the Polar Regions. While some of these questions can be applied to individual users within a defined geographic space, the legitimacy of sovereignty over icebergs begs a higher consideration. Within national and international governance, who has jurisdiction over icebergs and therefore rights to determine the exploitation of this critical resource, or who is sovereign over glacier ice?

Without a legal status in international law, the 'rule of capture' is the principle that currently applies over ice harvesting, resulting in the 'first come, first served' context seen in the above Iceberg War. However, questions exist about whether exploitation rights are vested in the

sovereign state, common heritage or, in maintaining the current status quo. To rationalise how the intersection of icebergs and sovereignty is more than just an academic discussion, it is important to draw attention to the importance of the *freshwater* composition of icebergs and issues emerging from principles of resource sovereignty. With increasing concern over water security, freshwater water is considered a potential future flashpoint for armed conflict. The United Nations claims that water scarcity already affects every continent and is one of the main problems that will affect society in the next century. [3] With water being essential to not only life and to economic development, "the fact that more than three-fourths of all the world's fresh water is locked up in ice formations, principally those in the polar regions, assumes ever-increasing importance." [4] While this percentage is dwindling at a staggering rate given the impacts of global warming which have an exponential impact on the cryosphere, for the foreseeable future polar ice remains an important source of potable water.

Estimates of the amount of the world's freshwater contained in ice form (such as glaciers, ice sheets and icebergs) have ranged from 75% in the early 1970s [5] to 68% more recently [6] although the World Glacier Monitoring Service continues to use the 75% figure as an estimate. [7] Some research indicates the amount of freshwater entering the ocean from ice melt equals that of the total global consumption for each year, [8] and that there is enough water in icebergs to fulfil the consumption of 5 billion persons [9], including not only water directly consumed but also water used for sanitation and agriculture. While the quantification of freshwater in icebergs is difficult to capture in concrete examples, these figures help to give some idea of the measure of freshwater available in ice form, demonstrating why future water security issues

E-mail address: c.wood-donnelly@nord.no.

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might demand that water from icebergs be utilised and in more shallow terms, determines local exploitation rights between competing users and perhaps ultimately, on human survival.

Ice has a long history as a complex industrial product and brings with it the complexity of water as an economic good, used both as ice and for its freshwater. As early as the 1850s, business known as the 'Ice Trade' for which even trade journals existed, glacier ice was being harvested from Alaska and shipped to California [10] and as far south as Central America. However, consumer demand declined with the advent of modern refrigeration technology [11] and the commercialisation of natural ice disappeared until recently. Today, ice is harvested for its freshwater properties, both as a source of basic drinking water and as a luxury good. Current uses for icebergs include, for example, cosmetics for the Asian market, water for the European market, tourism both from land and sea in the North Atlantic, vodka and beer produced in Canada and ice for boutique cocktails.

After the decline of the pre-electric ice trade, ice disappeared from the market until the mid to late 20th century as the problems of water scarcity in arid areas of the world received the attention of international developers. In this period, researchers developed models for calculating the costs and benefits of harvesting and transporting icebergs from Antarctica for water and potential use as an energy resource. [12] Some of these early proposals centred on discussions of water scarcity and with access to clean drinking water declared as a human right, the water contained within icebergs was sometimes thought of as a universal good. [13] However, transporting icebergs to water-deficient regions has yet been seriously considered, in part due to economic inefficiencies, sometimes arising in competition with other alternatives such as water desalination, and part due to logistical complexities.

In a return to early trends of ice harvesting in the Arctic, usage of iceberg resources largely appears to centre on economic incentives over the relief of water scarcity. This difference contextualises the nature of the debate on the status of icebergs in international law between that of a common good versus private good. In this, it also narrows the focus of acquisition and consumption of iceberg water on economic profits rather than for the benefit of humanity. This opposition brings considerable contrast in evaluating the different arrangements possible for iceberg jurisdiction between the normative good and legal pragmatism.

While the rule of capture certainly provides a conceptual explanation for current exploitation practices, remaining unanswered are questions of legitimacy of control, and ultimately understanding where the rights to this water resource are situated in both principle and practice. Icebergs present a complex subject for legal consideration, as although they are technically mineral [14], they are also a fugacious or 'migratory' resource, making the principle of permanent sovereignty over resources problematic. The determination of iceberg sovereignty is made unwieldy due to the complex legal and physical transit path exercised across its lifespan, crossing international boundaries and challenging the notions of sovereign jurisdiction. In relations between states, the principle of absolute sovereignty applies to areas within clearly defined and delineated land borders. In transboundary matters, many bi- or multi-lateral regulatory regimes exist for resources such as oil or water. Beyond the shoreline, international law has created areas of relative sovereignty in various classifications of territory, including the exclusive economic zone (EEZ) extending 200 nautical miles from the shore with spaces beyond as part of the global commons. While a variety of resource exploitation regimes have been determined for fisheries or minerals, no such regulatory frameworks have been explicitly agreed upon for freshwater icebergs.

The issue of sovereignty of icebergs is a question of where the rights of the sovereign state begin and end in the exploitation of freshwater captured in mineral form. Iceberg sovereignty is a question of both who has the authority, if any, to regulate the use and capture of this resource within a given jurisdictional space—particularly when that space is the marine environment. While sovereignty ultimately delimits certain sets of rights emerging from territorial privileges including the exclusion and

exploitation of property on one hand and the other, it also raises questions related to normative responsibility. With Arctic governance developed for the express purpose of managing national interests in resource exploitation and environmental protection, freshwater ice emerges as a resource for regulatory consideration. By establishing a governance framework for iceberg exploitation states could provide clear expectations regarding resource rights for this water as mineral, preventing future conflict over this valuable resource and may also provide for environmental protection— which in the case of the Arctic environment would support fulfilling the mandate of the Arctic Council.

While the legal status of ice, broadly conceived, is indeterminate and undefined within international law, there are a variety of existing principles and legal models to consider precedence for arriving at a legal status for freshwater ice. This remainder of this paper is a discussion of the legal status of ice and how icebergs— as a material resource, can be perceived within privileges and limitations of sovereignty and sovereign jurisdiction, at times beginning from territorial privileges and at others, invoking normative responsibility both for environmental and human well-being. It does this through reviewing the historical debates on the legal status of ice and identifying existing legal arrangements that offer principles and considerations for regulating iceberg exploitation in marine spaces.

2. Historical overview of legal debates on ice

Legal scholars have debated the status of polar ice since Peary's 1909 expedition to the North Pole, although as a legal subject ice situates itself across a broad spectrum of materiality. It is subjectively interesting as due to its ephemeral nature it can lose its status by changing its physical properties when by melting it transforms from ice to water. For international law, this transformative ability of ice to change physical properties makes it difficult to handle ice under the same categories as other resources such as minerals or living resources, also omitting it from legal discussions of water. Ice has also eluded codification due to the varied types of ice (i.e., salt vs freshwater) and respective uses of these different types. Although debated across the 20th century, codification failed to be realised due to relative abundance and lack of any real conflict. In addition, ice has also avoided a legal status through customary law due to a lack of consistent state practice in its uses and exploitation.

Questions around the sovereignty of freshwater icebergs are embedded in a history of debates of ice usage—where there was no consideration of the chemical composition of the ice as either freshwater or saltwater. In this legal history emerge discussions of sovereignty over sea ice, ice islands, and shelf ice and focus on its status as not being *terra firma* and formed of the crustal components of land or, on its itinerant predisposition. The legacies of these debates have implications today, impacting decisions for contemporary issues such as Indigenous uses of ice as land, jurisdictional responsibility for emergency or environmental disaster response and ultimately, for exploitation and commodification of ice into market value chains.

The introductory debate focussed on the notion of whether polar ice around the North Pole could be conceived of as land. This was tested when the American explorer Peary attempted to claim the prize of the pole through normative processes for annexing newly discovered lands in a nation's sovereign domain. This was attempted was rejected on the legal grounds dating back to normative principles developed by Grotius on the freedom of the seas that "title by discovery applies to land, not to water ... as it is universally held that the open seas, beyond the limit of territorial waters, are insusceptible of appropriation." [15] With the North Pole positioned in the high seas, the United States established state precedent that the North Pole on the surface of the *Mar Glaciale* was beyond the territorial jurisdiction of any state. It is this restraint that determined the first checkpoint for the legal status of ice in international law, by suggesting sea ice is not equivalent to land. The results of this thinking are inadvertently reflected in some Indigenous land claims

treaties which do not include recognition for ice used as land.

Ice used as islands for scientific exploration and semi-permanent habitation brings issues regarding the migratory, or itinerant, nature of icebergs to the fore. This is found in two different potential considerations, the first result included the possibility of ice islands designated as ships—which was also rejected on the basis that as the navigation of the ‘ice ship’ could not be effectively controlled, legal assimilation and legal liability proved problematic. The second consideration and a decisive factor included issues of national security emerging from the Cold War militarization of the Arctic where it could be problematic for enemy troops and weapons to sail or drift into another nation’s territory via an uncontrollable ice island, if said ice island, calved from *terra firma* was treated as sovereign territory.

A final ongoing consideration for why sovereignty over ice and, especially of icebergs has avoided codification, relates to the different legal regimes operating in the Arctic and Antarctic regions. In the Antarctic, where the vast majority of freshwater ice can be found, sovereign claims to territory have been suspended. So even though continental ice is generally agreed to hold sovereignty parallel with land, states are not permitted to claim sovereignty and therefore there has been little impetus for states to promote this on regulatory agendas. However, the situation is very different within the Arctic not only because it is an ocean surrounded by land, but also because it is surrounded by sovereign states. In this regard, it could be considered that “sovereignty over the ice sheet follows sovereignty over subglacial *terra firma*.” [16] This indicates that ice originating from a landmass in the Arctic could benefit from the principle of permanent sovereignty and belong to the state of origin. This could be considered within both land claims treaties and designation of responsibility for emergence response on frozen waters.

3. Normative considerations in existing legal frameworks

Although ice affixed to land is currently muted in legal debates on its status as sovereign territory in its own right, freshwater ice that traverses the maritime environment continues to provide a different dilemma against the backdrop of water scarcity. The management of freshwater resources and water scarcity present enormous challenges and some principles for approaching the issue have been developed, including those in the UN’s Millennium Development Goals. [17] The legal provision for freshwater governance is especially difficult in the context of international boundary management. While there are bilateral agreements governing water resources, an international legal framework for managing transboundary water resources has eluded international consensus.

In addition to other freshwater issues, freshwater ice specifically remains untouched by legal regimes and at present, “International law concerning ice remains incomplete and unclear [and] no international legal regime is set in place which comprehensively sets out the legal status of ice in its various forms or specifically assigns jurisdictional competence over its use.” [18] However, existing legal models in both domestic and international law can be drawn from to establish precedence on how the legal status of ice could be determined during the four different material forms that freshwater iceberg can take during its lifecycle. This absence of a legal status for ice extends even to the most principal regime of international law governing the maritime Arctic, the *United Nations Convention on the Law of the Sea 1982*, which makes only provision for the environmental protection of ice-covered waters through national legislation in Article 234. The academic discussion on the legal status of shelf ice in the Antarctic has produced a consensus that “icebergs may be privately owned in the academic sense,” [19] based on arguments dating back to Grotius that the resources of the water column can be privately owned has not translated into explicit national policy or international regulatory frameworks for iceberg exploitation in maritime spaces.

Although *UNCLOS 1982* is silent on the treatment of ice, there are several other legal regimes with the potential to provide normative

guidance on establishing the legal status of ice in the Polar Regions. These include the Argentine *Ley de Protección de Glaciares 2010*, the U.S.-Mexico *Rio Grande Treaty 1906*, the *North Pacific Fur Seal Convention 1911* and finally, the work of the International Law Association culminating in the *Berlin Rules* applied in the *Convention on the Law of Non-Navigational Uses of International Watercourses 1997*. Like *UNCLOS 1982*, none of these legal frameworks provides an absolute remedy for the issue due to the complexities of the material properties and location of freshwater ice in the EEZ of sovereign states and on the high seas. However, cumulatively these instruments provide guidelines for considering the regulatory handling of icebergs as they address many of the issues surrounding freshwater ice, including its value as a water resource, the fugacious nature of icebergs and deliver principles on the equitable appropriation of freshwater.

The first condition in the lifecycle of an iceberg begins at the point of origin, in a glacier or continental shelf on *terra firma* and the Arctic, originating from sovereign territory. This would mean that a state, such as Denmark, could utilise any freshwater resources of Greenland while they are within their territorial boundaries because “the natural wealth and resources located within the territorial jurisdiction of a sovereign state belong to the community, i.e., the people themselves.” [20] This concept has recently been exercised by the State of Argentina over glaciers within its territory. In the *Ley de Protección de Glaciares 2010*, the Argentine government has mandated that glaciers are public property in order “to preserve as strategic reserves of water resources and water providers charging watersheds.” [21] Due to the *Antarctic Treaty System*, a regime of international law and the *Ley de Protección de Glaciares*, a body of domestic law, it appears that freshwater ice in a glacier or periglacial environment would qualify as a resource eligible for permanent sovereignty. [22].

This is pertinent as the principle of permanent sovereignty does not make provisions for specific types of resources, nor does it regulate rates of exploitation. Deriving from the legislation declaring glacial ice a public resource in Argentina, and the arrest of a man for stealing glacial ice in Chile [23], it is clear that freshwater ice is considered to be a sovereign resource within geopolitical boundaries. Applying the principle of permanent sovereignty, any ice originating on sovereign territory would establish permanent ownership by that state until the end of the lifecycle of the iceberg, regardless of its location. For ice resources located within a single state, this designation is unproblematic. However, glaciers are flowing and frozen rivers and in the Arctic, this leads to icebergs crossing geopolitical boundaries.

This leads to the second condition in the lifecycle of an iceberg—the point at which it departs land and joins with the sea which introduces another problem with the legal status of ice. Ice is a natural resource and thus the condition of permanent sovereignty should apply, however, it is also a fugacious resource belonging to a watershed. Within is a second concept, the EEZ, which provides some answers for who can exploit the frozen resources before they enter the high seas [24] and from where those resources can be exploited. This legal principle is the method that states are currently using to apply sovereignty over iceberg resources. Article 56 establishes “sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living.” [25] With regards to the exploitation of freshwater ice, it would also seem that Article 56 of *UNCLOS 1982* grants full rights of exploitation of the resource within the limits of a state’s territorial waters. While providing a temporary method for determining the legal status of ice, this article fails to address first, the potential ownership of glacial ice from its location of origin, the fugacious and transboundary nature of icebergs and also fails to address issues around the sustainability and equitable sharing of water resources. In this condition, the exploitation privileges of the EEZ could conflict with the principle of permanent sovereignty.

The third condition of an iceberg relates to its fugacious, itinerant and transboundary nature. Over the last century, international law has developed an alternative approach to fugacious resources, such as oil,

water and fish, beyond the notions of permanent sovereignty. The sovereign right of a state to use its natural resources within its territory is not in dispute, albeit with caveats, including transboundary resources and *fugacious* resources where often the ‘rule of capture’ [26] has been applied. [27] This is evident in the case regarding the use of water in the Rio Grande between the United States and Mexico in the early twentieth century. Here, US Supreme Court Justice Harmon applied the principle of sovereign immunity or the absolute sovereignty of every nation within its territory—and thus the absolute right to dispose of the water as it will. [28] This dispute culminated in the *Rio Grande Treaty 1906*, with the US conceding that although it was the upper riparian, Mexico could claim prior appropriation of the water resource—like Mexico, was the first to use the resource due to Mexican farmers having used the Rio Grande long before U.S. territorial expansion had reached the region. The U.S. was required to use water *with* consideration to downstream dependents.

In the Arctic, the difficulty of legislating for fugacious resources for arguments of economic sustainability and environmental protection already has some history, although the application to freshwater ice is a new extension of the problem. The complexity of jurisdiction over fugacious resources first surfaced in the Arctic over the issue of the migratory fur seals introducing the idea of environmental stewardship into international law when following the *Alaska Treaty 1867* entrepreneurial individuals from various states took advantage of the lack of effective administration and policy of the United States in Alaska and engaged in extensive hunting and killing of fur seals, which had breeding grounds located in the Alaskan Archipelago. When Washington learned of the practice of using methods that profoundly impacted the fur seal population, but more importantly impacted the economic revenues of the Alaska Commercial Company, they moved to prevent indiscriminate destruction of the species with an 1870 Act [29] prohibiting the activity by unauthorised individuals. While the United States never tried to prevent the freedom of navigation or the right of other nations to fish upon the high seas but had only attempted to protect the fur seal from extinction, an international arbitration court found the United States in violation of the principles of the freedom of the seas. Thus, the United States lost their moral appeal to the international community in their fur seal stewardship claims with Canada winning the arbitration based on economic injustice caused when the U. S. confiscated the equipment of their citizens. However, within a few years, the maritime nations around the north Pacific entered into the *North Pacific Fur Seal Convention 1911*, creating a regulatory regime for fur seals, including hunting moratoriums to allow the population to regenerate.

While harvesting directly from glaciers in the Arctic is not a significant problem, this parallel issue reflects the need to protect glacial ice from those who would practice ruthless business practices, resulting in the degradation of the resource or the immediate marine ecosystem. The fur seal issue demonstrates two different difficulties in the management of fugacious resources that could be applied to freshwater ice. These include the difficulty of managing a fugacious resource from unsustainable predatory practices and the difficulty of protecting these resources from degradation, even if under the guise of the ‘protection of the common heritage of mankind’, while simultaneously abiding by principles of international law. In this case of protecting fur seals, the freedom of the sea was the principle of international law under consideration and in the case of freshwater ice, it is the provision of EEZ under *UNCLOS 1982*, the notion of permanent sovereignty over natural resources and notions of equitable sharing for fugacious resources. In addition, a potential framework for the protection and management of freshwater sea ice would be developed in an entirely different political and legal climate. This includes the notions of rights of exploitation found in *UNCLOS 1982*, which did not exist in the early twentieth century and also ideas of equitable distribution, environmental sustainability and economic efficiency.

It is entirely possible that freshwater ice deserves not only status as a

natural resource, but that it also must be considered as a fugacious water resource, with all the characteristics of a transboundary water resource, including a watershed. The *United Nations Convention on the Law of Non-Navigational Uses of International Watercourses 1997* defines a watershed as “a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus.” [30] Ordinarily, the terminus of the watershed would be located at the point where both the surface and ground waters flow into the sea. This is because at this intersection of fluids, freshwater and oceanic, it becomes impossible for man to physically separate freshwater from seawater and thus the ocean becomes the natural boundary for the watershed.

However, this is not the case with ice from ice shelves or glaciers, which even when in the ocean, retains its freshwater form. Unlike water, freshwater ice does not lose its separate identity from oceanic water at the moment that the ice of the glacial watershed enters the sea but retains it until the point where the sea reaches sufficient temperature to melt it. This creates another problem for determining the legal status of ice: if ice is part of a watershed, does this watershed terminate at the point where it flows into the ocean, or does it terminate at the point where the ice melts? And does sovereignty of the natural freshwater ice, as designated by the principle of permanent sovereignty, continue until the edge of the EEZ or international border, or until the finality of the watershed is reached—providing that the definition of the terminus of the watershed is considered as the melting point of glacial ice?

At this point, additional principles of international law, which have developed over the last century can be considered, including notions of prior use, equitable appropriation and responsibility for injury across frontiers. In the case which eventually led to the *Rio Grande Treaty 1906*, even though the United States did enjoy the sovereign and exclusive right to the resources within its territorial boundaries, it also had the duty under international law to “prohibit riparian states from causing harm to other states, and call for cooperation and peaceful resolution of disputes.” [31] Applying this to freshwater ice because Canadian industries have been established utilising ice resources that may have originated from Greenland, it would be against principles of international law for Denmark to cause injury to those industries from Greenlandic overuse of freshwater ice, even though it originated from within sovereign territory. The same would hold for any other non-Polar entity utilising polar ice for economic gain.

In international law, the principle of efficiency is “a norm that offers an optimal allocation of global or transnational resources among states.” [32] this efficiency principle should likely apply to freshwater ice even with the constraint of customary law that “state sovereignty – as it is understood today – entails the authority of states to use resources under their sole ownership at their discretion, even inefficiently.” [33] This prompts the question: If there is sovereignty over ice, then does the state ever lose it when the resource crosses a boundary and does it then become the sovereign resources of the next state? Ordinarily, a state can utilise or waste a resource as desired, but the problem in this instance is that glacial ice, representing a scarce resource, will eventually melt into the ocean. Therefore, the lack of utilisation will eventually mean a total loss of the resource to the state of origination and also to any other states that could utilise the water resource further ‘downstream’, likely representing a complete opportunity loss for the use of this resource to mankind.

The final condition of the lifecycle of an iceberg involves the potential condition as part of the global commons. The idea of designating freshwater ice as common heritage as a remedy for the inefficient maximisation of the resource by states who could claim a priori rights introduces a final idea to consider regarding the legal status of ice. This is the notion of the principle of *res communis*, which is applicable because many other resources in the ocean, especially those on the high seas are considered a collective good. So perhaps freshwater ice, under conditions of water scarcity, should also be considered as a collective good? [34] There are some implementation difficulties with this

concept, as seen in the debates on the possibilities of transporting polar ice to drought-stricken areas of Africa [35]. However, as many icebergs will be located inside of the EEZ, there is some jurisdictional difficulty with designating all ice as *res communis*, especially given that this could cause economic injury to those in prior use of the resource.

This discussion presents the continuing problems in concluding a legal status for ice, which for this generation are different to those faced in earlier discussions of the legal status of ice. Four legal conditions possible during the lifecycle have been identified including consideration as permanent resources, as being part of the jurisdiction of the EEZ, a condition fugacious or as a transboundary resource and finally, as part of the global commons. However, there are existing legal models such as those on glacial ice in delimited political boundaries, on fugacious resources, and on principles of transboundary water providing an example of how the legal status of ice could be determined. Although it appears that Article 56 of *UNCLOS* provides the dominant underpinning for sovereignty over ice, the section has shown that this condition could become problematic as the commercial value of icebergs increase or become the source of conflict in an era of water scarcity.

4. Regulatory framework for freshwater ice: a legal responsibility?

Although the legal status of ice has been neglected by the policy-makers of individual states, it is important for scholars to proffer a discursive framework for a legal regime for the management of freshwater ice as it is not only a potential source of fresh water, but also is increasingly used as a commodity. A legal regime could provide guidelines for finally determining what sovereignty and thus what rights, if any, can be held over ice in both the Arctic and Antarctic regions, preventing potential conflict between States and industries utilising icebergs for economic gain. A legal regime also could provide for the protection of glacial features protruding into the ocean and could provide for the prevention of pollution of the environment in which these features exist. This could be achieved through a regulatory framework, that through licensing determines who has access to the areas in which icebergs exist, what type of equipment is allowed into these areas and finally, how much ice one is permitted to harvest.

As outlined, many of the early debates on the legal status of ice revolved around the notion of establishing sovereignty, or sovereign ownership over the ice. However, it can be seen that there is no apparent desire by states to establish such sovereignty over ice used for habitation, nor at present does there appear to be an impetus for establishing sovereignty over ice as a natural resource. However, as ice is a potentially much-needed source of fresh water, and with its increasing use as a commodity, there are compelling reasons to establish some jurisdiction over freshwater icebergs, beyond the provisions of the exploitation rights found in the law of the sea as this does not address earlier identified provisions of international law such as permanent sovereignty over resources, notions of transboundary water law and finally, the problems created through economic and practical inefficiencies of exploitation.

Without regulation, ice, as with other fugacious resources, could be affected by the creation of economic inefficiencies as “no one owns the resource, there is nothing to stop anyone from capturing the benefits of resources, which leads to an unproductive race to capture as much of the resources as possible. eventually a point will be reached when resource exploitation is saturated and no rent is gained,” [36] as was seen with the competition over fur seals in the early part of the twentieth century. Applying the problems of inefficiency to the capture of freshwater icebergs, if icebergs continue to remain an unregulated resource, as their benefits and scarcity are realised the competition for harvesting these resources will intensify, likely with degradation to the environment, despite attempts of international law to prevent the harming of the ocean environments. [37].

The use of icebergs as an economic resource in itself is not a problem.

The problem lies in the fact that often ice that is incorporated into one nation’s economic activity originated from another state’s territory, and there is no clear indication from international law if there are rights to do so. As freshwater ice originates from *terra firma* it is the resource of a state, which thus holds both sovereign rights and property rights over the resource. The sovereignty of ice originating from land has been assumed to belong to the territory of origin by the *Antarctic Treaty System 1959 (ATS)*. [38] The trouble with this ‘probably’ status in the *ATS* is the lack of sufficient title to the territory for any state to be able to make a claim to exclusive rights over a resource. In an examination of the legal status of ice in the Antarctic before the development of *UNCLOS 1982* and the addition Conventions of the *ATS*, Lundquist held that, in all likelihood, principles of international law dictated that shelf ice held the status of *glacia firma*, the same sovereign status as *terra firma* and that “international law points toward open access for reasonable iceberg harvesting for all nations on the high seas.” [39] So at a minimum, icebergs in ocean spaces beyond the EEZ may be considered *res communis*.

Yet in addition to the sovereign status of ice likely granted in the *ATS*, which sets some precedent for determining the treatment of all freshwater ice, the United Nations has established principles of permanent sovereignty over resources in a resolution by the General Assembly in 1952, saying that “The right of peoples to use and exploit their natural wealth and resources is inherent within their sovereignty.” [40] As a natural resource, freshwater ice, no matter its form (glaciers, ice shelves, icebergs, etc), would thus be the resource of a state with that state retaining rights to permanent sovereignty. So, should territorial claims ever be an option in the Antarctic, the freshwater resources of the ice shelves would belong to the claimant states.

A key issue is the lack of a framework for the legal status is that this ice is harvested from the ocean and used by coastal communities, providing revenues to groups who hold no recourse for the protection of an industry-based solely around freshwater icebergs as in the Newfoundland iceberg war. While ice has been harvested as a commodity for over a century, harvesting from icebergs and iceberg tourism are relatively young industries providing substantial economic revenues to isolated economies. [41] The lack of a regime to date can be attributed to two factors: the state avoidance in pursuing a regime on the status of ice islands and ice shelves for fear of losing potential use of the resource, and due to the “absence of resource users who are already owners or holders of conventional rights under common law which has translated into an absence of the chief means by which uses of other resources have exercised demand for modifications of their rights.” [42] Because there has been no overall designation on the legal status of freshwater ice it is difficult for those who use it to pursue a regime which establishes rights over the resource, which, for example, makes it impossible for the iceberg tourists to make a legal complaint regarding the destruction of their iceberg by an iceberg harvester.

A licensing system for harvesting icebergs in the Antarctic was suggested as a possible solution during the 1970 s to rectify the problems of these economic inefficiencies, but at the time there was not an available regulatory body to manage the system. [43] However, this obstacle has been overcome for the Arctic with the advent of the Arctic Council and its development in 2011 to include a permanent secretariat. For the Antarctic, legal addenda have been created for the region prohibiting the exploitation of living resources and mineral/hydrocarbon resources and provided for environmental protection. [44] However, these additions still do not guide the exploitation of ice, which is neither living nor a mineral resource.

While to date, there appears to have been little impetus for states to make explicit claims to the sovereignty of ice, this does not mean that this status for ice should continue indefinitely especially as it appears that under international law there is a legal duty to provide regulation for water resources to prevent conflict and to provide environmental protection. The legal duty is a two-step process beginning at the domestic level; “Individual states, as a first measure, are expected to adopt

adequate legislative and administrative provisions to regulate and control frontier water pollution within their jurisdiction.” [45] In the Arctic, some of these environmental legislative protections are already in place, but this has led to overlapping legal protection systems, such as the Canada Arctic Waters Pollution Prevention Act and the Polar Code. The second step of the process of fulfilling the legal duty to cooperate in the development of “long-term, systematic planning of the use of shared water resources,” [46] something that to date is absent in reference to glacial icebergs in the Arctic.

Given the transboundary and itinerant nature of freshwater icebergs, this is a question best resolved through international cooperation. The creation of a regulatory framework for the harvesting of ice in the Arctic and providing the settlement of its legal status could be promoted by the Arctic Council whose aim as an intergovernmental organisation is to “promote cooperation, coordination and interaction among the Arctic States” [47] and focuses on the interests of the states with sovereignty over the Arctic. The Arctic Council has been responsible for the coordination of several Arctic specific cooperation agreements, including a moratorium on fishing and preparedness for oil spills, in the interest of environmental protection and responsible consumption. A mandate for any regulatory framework would necessarily need to have establishment in a realm with supra-jurisdiction beyond the realm of the state as no state individually has the authority to legislate for the resources found on the high seas. [48] With the Arctic Council is the primary forum for intergovernmental activity between Polar states it is the logical administrative location for an iceberg harvesting regulatory system that protects both the polar environments, national interests and future exploitation trends.

5. Conclusions

Ice, in both its freshwater and saltwater forms, holds an uncertain legal status under international law for historical political and legal reasons, but it may be the time has come to remedy this status. It is clear that the economic value of ice increasing due to its life-giving properties in a world with growing freshwater needs; ice is also increasing in interest as an economic commodity. Although ice has no real legal status, despite indication in the ATS that it should have a legal status, ice in the oceans could be treated as a fugacious resource within the confines of the EEZ, however, because of the preciousness of freshwater, it likely should not be considered as a permanent sovereign resource but should instead be considered as a transboundary water resource. Thus, there is a need to provide a regulatory system for the harvesting of ice to prevent conflict between those who would capture and transform the ice into commercial products and those who enjoy admiring its beauty as an experience.

Additionally, the sources of icebergs– glaciers and ice shelves, need to be protected from those who would engage in predatory practices to acquire this resource and there is also a need to prevent the degradation of the environment from pollution and industrial accidents caused by boating traffic in the area. It has been demonstrated that there are mechanisms in both international and domestic law that aim to provide for some of these problems, but none of them is sufficient to protect the entire extent of the seas from which icebergs are harvested or to account for the hazards of operating in the subarctic environment. Given the legitimacy of sovereignty and of decision-making through governance over the Arctic embedded in charter of the Arctic Council, this paper suggests that a regulatory system be established, using the political will of the sovereign states in the Arctic Council to establish a licensing agency for iceberg harvesting. This should include the designation of the fields from which it can be harvested and to extend the guidelines of the Polar Code by specifying the types of equipment that must be used when operating in the subarctic environment to protect the valuable resource of freshwater ice and to protect the integrity of its the surrounding environment from other negative consequences of resource conflict. Although, we may find this debate disappears as climate change melts

these icebergs from the legal and physical landscape of the Polar Regions.

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