

## 10 Materialising Greenland within a critical arctic geopolitics

*Klaus Dodds and Mark Nuttall*

Greenland is an enormous hunk of ice, three times as big as Texas, with a narrow fringe along the southern shore where a few Eskimos and fewer Caucasians scratch out an existence. During World War II the United States spread a protecting wing over this inhospitable territory ... Greenland groans under a ponderous icecap that leaves only a slim margin of land sticking out around the edges.

(Roucek 1951, 239)

In 1951, the American sociologist, Joseph Roucek (1951) penned an essay entitled “The geopolitics of Greenland” for the *Journal of Geography*. Although not formally trained in geography, Roucek was, for the next forty years, an enthusiastic producer of short articles purporting to chart and track the geopolitics of the Arctic and the Antarctic, as well as other places such as central and eastern Europe and the Mediterranean. Indeed, in another piece, “The geopolitics of the Arctic”, published in 1983, he drew attention to the region’s potentially rich resources and its strategic military significance as an air route and waterway, referring to “Arctic fuels” as a way of reducing North American dependence on oil from the Arabian Gulf. “The ‘Arctic Mediterranean’”, he wrote, “is a perfect example of an area in which technological advances, especially in aviation, have caused far-reaching changes which force a new evaluation of locational factors of the region.” (Roucek 1983, 463)

In “The geopolitics of Greenland”, Roucek was at pains to make information and knowledge about the geographical location, size and geomorphological features of the island accessible to a North American readership, but in doing so he ignored the human–environmental relations nurtured and enacted in the dynamic surroundings of an ever-changing Arctic over several thousand years. Roucek simplified its people as those only intent on “scratching out an existence” on the margins of an enormous ice sheet. There is little sense of Greenland as both a lively and lived space, in which human life engages with the more than human entities which constitute that world, and where local, national and global connections, dialogues and forces coalesce and collide. For Roucek, Greenland is, to echo Anna Tsing’s (2000) phrasing, a place without “friction”.

The notion of an icecap being “ponderous” chimes serendipitously with recent work on how glaciers are part of local and indigenous worldviews and are subject to cultural framing (Cruikshank 2004; Orlove et.al. 2008), although Roucek may not have had this in mind. To him, the Greenland ice sheet appears to be a burden – the land “groans” under its weight and the mass of ice emphasises the inhospitable nature of this Arctic territory. And yet that very weight and extent of ice also signals strategic possibility for an extra-territorial party, namely the United States. Roucek was one of many commentators of the time in whose work one finds an evocation of the “desert-like” nature of Greenland, a space with meagre resources making it appear empty and devoid of potential for sustained habitation to non-residents (pace Said 1993). Geopolitically, though, Roucek’s attitude towards Greenland reflects a prevailing view that later American interest in Greenland was shaped by the experiences of World War II, and the move by the Danish administration in 1941 (or more appropriately, the Danish ambassador to Washington Henrik Kauffmann) to sign a defence agreement and allow an American presence in Greenland. In his Greenland essay, Roucek also pointed to the strategic importance of air routes and waterways, which he reiterated in “The geopolitics of the Arctic”. Greenland’s strategic importance during World War II lay not in the possibilities it provided for a northwards mapping and discovery, or access to its resources, but in its position on a North Atlantic stepping stone route for bombers and, critically, for its role in weather forecasting. Several American installations were built during the war, including three air bases – at Narsarsuaq in south Greenland, Kangerlussuaq on the west coast, and Ikateq near Ammassalik on the east coast.

As Roucek observed, Greenland’s ice sheet was also attracting renewed scientific interest, especially in its role in northern hemisphere climate patterns. “Scientists,” he wrote, “have long suspected that Greenland’s icecap manufactures much of the bad weather that sweeps over Europe and perhaps the entire northern hemisphere. But to verify this theory, they needed on-the-spot reports of icecap weather conditions”. An object of scientific enquiry since the nineteenth century, Janet Martin-Nielsen describes how the ice sheet became central to Cold War science diplomacy (Martin-Nielsen 2013). Interest in the ice sheet’s age, thickness and history was closely related to wartime and Cold War strategic concerns with weather, ocean currents and sea ice. This blending of the scientific and strategic and the geopolitical and geophysical was to be further nourished by new expeditions, notably the *Expéditions polaires françaises* (EPF), and later US military investment in glaciological research in Greenland (Martin-Nielsen 2012).

Our chapter is a material, volumetric and discursive intervention into, onto and across Greenland including its ice mass and surrounding seas. It is not a friction-free encounter, but one where the “geo” in geopolitics is scrutinised. Our advocacy of a critical Arctic geopolitics is one rooted in materiality where the Arctic is not simply a backdrop to human events. Rather we advance an interest in how the materiality of the waters, ice, snow, rock, wind and air of the Arctic becomes available for further geopolitical manifestations. As Elizabeth Grosz (2008) has written on the subject of geopower, the Arctic might be conceived as something that also challenges and even subverts the geopolitical, cartographic and scientific.

Following on from that discussion of a critical Arctic geopolitics, we explore how Greenland's ice sheet was an essential, if at times recalcitrant, accomplice to US and Danish Cold War geopolitical performances and practices. An environment in other words that was capable of challenging and undermining the materials, sites and modalities actors such as the US military brought to bear on it. We then move on to consider another form of materiality and what might be a volumetric geopolitics, in this case the Arctic Ocean seabed and the efforts by the Geological Survey of Denmark and Greenland (GEUS) to map and chart outer continental shelves, including those stretching towards the North Pole (Dodds 2010; Strandsbjerg 2012). Seabed mapping off Greenland's continental shelf illustrates how this accompanies claims for sovereign rights to be extended hundreds of miles from Greenland's coastline. In both cases, separated by five decades, was the issue of how far down (i.e. how thick) and how far out (i.e. how wide) did Greenland actually extend. Greenland as territory, as a consequence, exhibits and expresses itself, as a process rather than outcome and an unstable volume rather than a static and flat surface. To reinforce this point about Greenland being in a continuous state of becoming (Nuttall 2015), we finish with a consideration of the creation of resource spaces and the Greenland frontier. This explicitly material and volumetric accounting of Greenland and its geopolitics show how we might approach a more critical form of Arctic geopolitics, emphasising the vitality of the "geo" in the discursive qualities of Arctic geopolitics (Clark 2013).

### **Going volumetric: critical Arctic geopolitics**

Before we drill into Greenland's icy core or descend into its depth-like qualities, we contemplate this chapter's analytical optic. Rising interest in the Arctic's (changing) geographical qualities informs much of which is to follow. From speculation over the future of Arctic sea ice and its complete disappearance (at least in the summer season) to reflection over the region's resource potential, many scholars and commentators have mused on various Arctic futures. It is now taken for granted that the region is geographically dynamic and it has been framed, mapped, imagined and projected in a myriad of ways, many of which resonate with current concern with humans as agents of geophysical transformation and rupture. The Arctic as resource frontier, endangered homeland, unique ecosystem under threat, epicentre of and for climate change and zone of great power rivalries and rising international interest are just some of the framings used in this conversation about regional futures. As Bruun and Medby conclude:

Petroleum potentials, mineral riches, shipping lanes, and national strategies are often at the fore of geopolitical accounts of the circumpolar North, but Arctic spatiality can by no means be reduced to the sum of these parts. "The Arctic" is many different things at once: a frontier, a homeland, a highway, a stage, a laboratory. It is a space that has intrigued people for centuries and continues to do so today.

(Bruun and Medby 2014, 915)

We argue that the Arctic might also be thought of in explicitly volumetric terms and, by peering within, above and around and by taking notice of subsurface and ocean depths, mountain and glacial interiors, as well as the atmosphere, thus build on recent scholarship by geographers that challenge “horizontalism” within social science research, neglecting the vertical and depth-like qualities of social and political life (for example, Bridge 2013; Elden 2013). Rachael Squire, in her analysis of Gibraltar, shows how the disputed United Kingdom overseas territory has been locked into an elemental struggle with Spain that encompasses more than the surface (Squire 2016). The seabed and offshore marine environment have been enrolled in rival sovereignty and security projects. In advocating a volumetric approach, this tranche of work reminds us that the Arctic also has the capacity to be filled, to expand and to contract dependent on earthly and human forces, claims, ambitions, ideas and interventions. An environment where digging through rock, chipping away at ice, drilling into glacial depths, navigating within, though, and under polar waters, flying through and across, as well as observing and monitoring Arctic skies, has profound implications for the scale, scope and intensity of human interventions from pursuing whales and seals, excavating coal and minerals, traversing across and through ice and establishing routes for aviation.

In our book *The Scramble for the Poles*, we take up this challenge (Dodds and Nuttall 2016). For us, a critical Arctic geopolitics is defined as one attentive to the discursive and representational qualities of its subject matter, but also adoptive of a relational understanding of the world, which in turn is attentive to the connections between human and non-human elements. We therefore advocate a view of the Arctic as a lively space characterised by agency, change, and vitality. Our use of the word “scramble” was intended as provocation to highlight historical associations and representations of the Arctic with earlier “scrambles” for knowledge, appropriation of territory, colonisation of peoples, administration, resources and transportation. The framing of the Arctic as “resource frontier” or “super maritime highway” provides a particular historical trope for journalists and popular writers, as well as academics and policymakers. And it also marks attempts by human agents to stabilise, to exploit, to move through and to appropriate the Arctic as a place composed of ice, sea, air, rock, animals, architectures, landforms and people – with varying degrees of success.

The Arctic has attracted, and continues to attract, the language and imaginative framings of colonial expansion and settlement (and Greenland has certainly not been exempt from such language and framings), and to this we add that Arctic spaces are also lucrative and material sites for speculative capitalism. The resource potential of the Arctic has been actual and imagined. Animal furs and pelts and whale oil proved commercially lucrative in the earlier stages of that colonial European encounter, while ambitions to extract minerals and oil and gas dominate contemporary narratives concerning the “opening up of the Arctic”. While, however, there are numerous megaprojects around the circumpolar North concerned with the extraction and processing of minerals and hydrocarbons, there are many more at the planning stages, especially in Greenland, and although some are likely to be implemented, it may well be that for some corporations the Arctic

is more important as a frontier for speculative ventures rather than a space for actual resource extraction.

In this way, an extractive industry is successful in how it can raise “promissory capital”, as Charis Thompson (2005) terms it, i.e. capital raised on the promise of future returns and, in the case of mining and oil development, interventions in the subterranean and underground. Capital is thus not accumulated – and indeed, projects do not need to undergo construction and operational phases and resources do not necessarily have to be extracted, but the idea of extraction and the hype surrounding it becomes part of a political economy concerned with the reproduction of speculation. Projects, such as the various mining ventures at the exploratory stages in Greenland for instance, become important, assume a political life and a social presence, become central to how politicians and business leaders imagine the future, and are made into capital by virtue of what future success and profits they promise. Imagining the Arctic as a resource frontier may bring the future into the present though its narrative of promise and economic development, but it also brings apprehension and anxiety, especially to those indigenous communities who do not feel they have sufficient information or have not been consulted adequately about a project (Nuttall 2010). So a critical Arctic geopolitics would be attentive to the affective dimensions of social–material relationships and networks enveloping places like Greenland as promising, hopeful and rewarding. But in order to be so, we contend that a substantial body of knowledge produced on Greenland was emblematic of particular forms of Arctic geopolitics, emphasising both the depths and widths of Greenland.

### **Extracting the subterranean: the Greenland ice sheet as Cold War geopolitics**

The US has long expressed a strategic interest in Greenland and other northern regions. As secretary of state in Abraham Lincoln’s administration, William Henry Seward argued the US needed to have both Greenland and Alaska within its national borders so that it could exercise sovereignty over the North Pacific and North Atlantic, and thus control the approaches to the North American Arctic (Hough 2013). Alaska was purchased from Russia in 1867 and Seward continued to eye Greenland as well as Iceland. A military rationale partly inspired this desire, but if the territories could become American possessions Seward saw opportunities for exploration, mapping and ownership of resources in areas already claimed by Russia and British Canada. Seward could not garner sufficient interest in Washington DC to make a formal approach to the Danes, but his ideas supported exploration in the High Arctic. Following the tragedy of Adolphus Greely’s Arctic expedition of 1881–84 (Greely survived, but most of his crew perished), however, the US government ended its financing of Arctic exploration, and American expeditions were largely funded by private sponsors and geographical exploration societies for the next forty years or so (Robinson 2006). It is also worth noting that, in 1916, during negotiations for the transfer (or more accurately, the sale) of the Danish West Indies to the United States, the

Americans accepted a demand from Copenhagen that they would not object to the extension of Danish sovereignty over the whole of Greenland.

In the aftermath of World War II, US strategic planners recognised that Greenland and the wider Arctic region mattered to hemispheric security. As they lie on the shortest route for a possible Soviet attack on the North American mainland, islands such as Greenland were crucial for the construction of military surveillance and transport systems in the Arctic. Detailed knowledge of the Arctic's landscapes and seascapes was essential as planners needed better understanding of the impact and effect of permafrost, sea ice, glacial ice and prevailing weather systems on road construction and maintenance, air flights, ship and submarine mobility, navigation and tracking. The Greenland ice sheet was one of many elements of the Arctic under scientific and strategic scrutiny. Martin-Nielsen has discussed, for example, how between 1948 and 1966 US forces in Greenland were entrenched in the "other cold war". This was a struggle with the environment; the ice was a formidable opponent in how it acted to impede American ambitions in the High Arctic. Martin-Nielsen argues that the Americans faced two choices: they could either approach the Greenland environment, and its ice sheet in particular, as something to conquer and control, or they could choose to enter into a relationship based on strategic cooperation. It was the latter approach which was chosen (Martin-Nielsen 2012).

Control of the North Atlantic was crucial for military and strategic advantage during the war and this depended on having accurate meteorological knowledge. Knowing what the weather was like in Greenland and the northern North Atlantic was vital for knowing what the weather would be like in northwest Europe a few days later. Greenland was placed at the centre of an assemblage of military and scientific technology and infrastructure, as airbases were constructed and manned by several thousand military personnel, and as weather stations measured atmospheric conditions. This Arctic was not, then, seen in horizontal terms as a space in which to enter, explore, traverse, and map. Greenland became important to how we look up into the sky and the atmosphere. Air routes and the scientific-technological mapping and measuring of northern spaces and the control of meteorological knowledge placed Greenland in a new global system in which a volumetric geopolitics was enacted (Squire 2016).

Post-1945, the US–Danish relationship was strengthened by the decision by Denmark to join NATO. At the time when Roucek was writing, in 1951, the US military presence in Greenland was being consolidated by the Danish–American defence agreement in the face of concerns about Soviet intentions, and the importance of Greenland for aerial routes and maritime surveillance in the North Atlantic and Arctic Ocean (Dunbar 1950; Petersen 1998). Thule Air Base was established at Pituffik in 1951 and entailed the forced relocation of the Inughuit living there to Qaanaaq, 140km north, in 1953. Whereas during World War II Greenland's strategic role lay in linking North America and Europe, and in weather forecasting, in the Cold War this role was redefined into a strategic aerial base for the US against the Soviet Union, and later Denmark secretly acquiesced to let the US station nuclear weapons at Thule.

As the geographer Isaiah Bowman noted in 1949, “Survey, survey, and survey may be said to be the three basic requirements of present-day polar research, and we do not restrict the word to cartography” (Bowman 1949). As the Expéditions polaires françaises demonstrated, new endeavours were brought to bear on Greenland’s ice using tracked vehicles, airplanes and new scientific instruments. Between 1949–1951, the EPF carried out hundreds of seismic and gravitational readings, carried out altitude measurements, and used theodolites to survey and map the extent of the ice sheet. The EPF’s work also represents some of the earliest examples of ice coring. EPF scientists in collaboration with the Danish Geodætisk Institute were also interested in the mass balance of the ice sheet, the relationship between accumulation and ablation and thus overall ice sheet stability. The end result was a different kind of mapping of Greenland, emphasising the volumetric. An emphasis addressing the depth, the surface and volume of the ice sheet. In addition to the dissemination of the purely scientific data, maps of the profile and interior depths of Greenland were published, most spectacularly in 1956 via the *National Geographic* magazine, for public audiences.

Using cutting-edge scientific techniques, supported by an extensive logistical programme, and well-versed in public engagement, the research raised the profile of Greenland within the popular global imagination. However, growing strategic interest in the Arctic was something the Soviet Union and United States shared in the early Cold War. Soviet interest in sea ice to the north of the Russian Arctic coastline was matched by American investment in the ice-filled environment of the North American Arctic, including Greenland, and so framing the island as a “bastion” for the defence of the North American continent. As historians of Cold War science and technology have noted, investment in snow and ice research followed and the US Army’s Snow, Ice and Permafrost Research Establishment (SIPRE), which had been founded in 1949, was moved to Wilmette in Illinois in 1951. In 1953, Project Mint Julep was launched to investigate whether the southern area of the Greenland ice sheet could be used to support aircraft landing strips. Further north, US engineers were constructing the airbase at Thule to develop and sustain distance early warning capabilities, in the event of a sneak attack by Soviet bombers.

Further, SIPRE in their Operation Icecap, probed beneath the surface of the ice sheet in the north west of Greenland. SIPRE scientists, working closely with US Army personnel, were leading research on the movement of glacial ice, the properties of snow and ice, and the stability of glacial masses such as the Greenlandic and Antarctic ice sheets. Remarkably, Greenlandic ice was being transported to cold rooms at the SIPRE headquarters. Once there, scientists began the task of archiving the ice, measuring accumulation layers and probing the physical and chemical composition of the ice core.<sup>1</sup>

The calculative and investigative qualities of this ice core work had important implications for Arctic geopolitics. By the late 1950s, the US had established a series of sites for military and scientific investigation and operation including Thule Air Base, Camp Tuto (18 miles from the main Thule complex), Site 2 (further east in the interior of northwest Greenland) and Camp Century (the



so-called “City under the Ice”). Inspired in part by the 1957–8 International Geophysical Year, Camp Century was intended officially to be a test site for subsurface engineering. The engineering rationale for Camp Century was actually a cover-story for a more sinister project called Ice Worm, designed to facilitate an extraordinary complex of tracks and tunnels to store, hide and deploy nuclear missiles.<sup>2</sup> Accordingly, the Greenlandic ice sheet became enrolled and implicated in a strategic investment to use the dynamic qualities of snow and ice to conceal US missiles. The material geographies of Greenland, its ice, seabed and snow, and its rocks and minerals, are central to any geopolitical auditing of Cold War Arctic geopolitics and beyond. The interior of Greenland also became bound up with a popular culture that amazed North American and European audiences, as the US Army revealed in its work when building the “city under the ice” at Camp Century (SIPRE scientists were key participants in the project) (Kinney 2013).

The lively materiality and movement of ice proved to be the downfall of Project Ice Worm. By the mid-1960s, ice deformation was compromising the safety of the tunnel network and the growing importance of US submarines as a mobile missile nuclear force compromised its strategic value. The digging, moving, manipulating, and managing of mobile ice overwhelmed American engineers while the mobility of another object (the submarine) gave new opportunities to circumvent the material constraints of Greenlandic terrestrial ice. The Cold War was dominated by interest in onshore Greenland as an icy platform for US strategic operations, while for the Danes it emerged as a possible resource frontier for significant minerals such as uranium. The marine geographies of Greenland also captured interest.

From being framed as a possible strategic/geographical gap (the Greenland-Iceland-United-Kingdom (GIUK) gap) in the Cold War, the last decade has witnessed a growing appreciation of how to think of Greenland as possessing a stretchable quality with implications for the sovereign rights of Denmark/Greenland, its position as an Arctic nation, as well as Greenland’s aspirations for nation-building and state formation (Nuttall 2014). Precisely when Greenland appears to be more confident in asserting greater economic and political autonomy, Denmark has moved to declare its position as a major Arctic state with a significant role in international diplomacy. Ocean depths and subsurface geological environments are important for the Kingdom of Denmark as an Arctic state whereas they assume quite different meanings for Greenlandic ambitions for independence. This stretchable quality of Greenland has implications in territorial and geopolitical ways – some for the consolidation of an Arctic state, some for the creation of a new Arctic state. Geologists and oceanographers have been integral to the mapping and making of offshore Greenland, the development of an emerging oil/gas sector, and an island with extended outer continental shelves, stretching all the way to the central Arctic Ocean. At the same time in Greenland, the government of Greenland’s Ministry of Industry and Mineral Resources supports the gathering of geo-data through its department of geology to inform strategy-making, licensing, and the marketing of mineral resources for economic development.



### **Probing the Greenlandic seabed: Denmark as “Arctic state”**

The Russian flag planting on the Arctic Ocean seabed in 2007 attracted attention because it employed a self-knowing colonial-imperial gesture of marking territory through the importation of a flag to a place far from human settlement. Dismissed by some as a publicity stunt and declared irrelevant under international law, it nonetheless unleashed a tsunami of commentary about “Arctic scrambles”, suggesting that many instinctively understood the discursive-material significance of an event occurring far below the water, on the seabed and seen through the window of a submersible. The private provenance of the expedition added further intrigue to the expedition and possible Russian intentions towards the Arctic Ocean. Was Russia about to stake a claim to this oceanic space? Or was it a display of technological-exploratory chutzpah akin, as Russian commentators suggested, to the United States planting a flag on the surface of the moon in 1969? What the event demonstrated, though, was a different register of Arctic geopolitics to the one of Cold War Greenland. Rather than the ice sheet, the seabed becomes productive of the geopolitical. Exploring the depths of the Arctic continental shelf and submarine rights has emerged as a crucial element in the sovereignty politics of the Arctic Ocean. Legal regimes such as the UN Convention on the Law of the Sea (UNCLOS) have become conduits for bringing subterranean knowledge to the surface in order to justify and legitimate the Arctic Ocean coastal states roles.

In 2008, the five coastal states agreed to the Ilulissat Declaration, reiterating their collective desire to manage, in an orderly fashion, and within existing international legal frameworks, the issues and changes affecting the Arctic Ocean from climate change to shipping and fishing. The intervention was decisive in using international legal and geographical categories to establish, what in critical race studies is termed, a “somatic norm” – a naturalised domain for some people/bodies/ideas/states as opposed to others (Puwar 2001). The “somatic norm” at play revolves around the five Arctic Ocean coastal states stating that they are the rightful symbolic and geophysical occupiers of the maritime Arctic region. Using geographical proximity, discussions of Arctic geopolitics and governance privileges these states and their interests. Conversely “space invaders” in the form of other states and communities play a disturbing role in this space. Proximity, in this context, is working on two registers; geographical/geophysical and racial.

Geographically the Ilulissat Declaration privileged some Arctic states with Finland, Iceland and Sweden not being invited to the meeting. Racially, the Declaration was accompanied by a ceremony highlighting the role of white men as representatives of those five Arctic Ocean coastal states. No representatives from indigenous peoples’ organisations were invited to participate let alone endorse the Declaration (a criticism levelled at the meeting by the Inuit Circumpolar Council, which later organised its own summit with a declaration on Inuit sovereignty). Although the Greenlandic premier Hans Enoksen was there, as were other Greenlandic politicians, they were participants as part of a state delegation rather than as representation of any assertions of indigeneity. The Ilulissat Declaration codes Arctic coastal states, and their white representatives, as a naturalised norm

with the affect of making non-white bodies and non-coastal states (albeit with very different experiences and trajectories) unwelcome and alien, as well as ignoring and even erasing the presence of indigenous peoples.

The Danish government convened the meeting and selected the Greenlandic town of Ilulissat, a symbol of rapid climate change and tipping points. It did so against a backdrop of concerns about global climate change and a desire to promote its role as an Arctic Ocean coastal state, courtesy of Greenland. Six months later, Greenland hosted a referendum, which confirmed a popular desire for autonomy and further self-government including rights to administer and exploit the island's subsurface resources. Enacted in 2009 this ushered in a new era of Government of Greenland controlled mineral licensing in coastal lands and offshore licensed drilling zones (Nuttall, 2012). As Greenlandic voters were casting their votes, representatives from Inuit and other indigenous communities met at the Inuit Leaders' Summit in Kuujjuaq, Nunavik, Canada to express their views about the Ilulissat Declaration in their own Circumpolar Inuit Declaration on Sovereignty in the Arctic:

On 7 November, International Inuit Day, we expressed unity in our concerns over Arctic sovereignty deliberations, examined the options for addressing these concerns, and strongly committed to developing a formal declaration on Arctic sovereignty. We also noted that the 2008 Ilulissat Declaration on Arctic sovereignty by ministers representing the five coastal Arctic states did not go far enough in affirming the rights Inuit have gained through international law, land claims and self-government processes.

(Inuit Circumpolar Council, 2009)

Rather than “not go[ing] far enough” perhaps what they actually did do was to go deeper into the ocean and further offshore to cement their sovereign rights in the Arctic Ocean. While the Inuit Leaders' Summit manifested indigenous autonomy in the form of international legal recognition and land claims, the Arctic Five (A5) were codifying themselves as volumetric occupiers of the maritime Arctic region.

Arctic governance and geopolitics was further “tested” in the ministerial meeting of the Arctic Council in Nuuk in 2011 when the Arctic states and permanent participants considered the question of whether further states and organisations should be admitted as “observers” to the forum. Encouraged by Nordic member states, predominantly Asian countries such as China, Japan and South Korea had expressed interest in joining an overwhelmingly European group of existing observers. The ministerial meeting agreed to new guidelines, ensuring that all observers would have to recognise formally the sovereign rights of the eight Arctic states as well as the rights of their indigenous communities. Designed to reconcile the Arctic states A8 and A5 and Arctic communities (indigenous and non-indigenous), new rules of engagement with old and new observers were agreed upon. However, the admittance of new nation state observers in 2013, led to concerns from permanent participants that their collective voice and influence might be disrupted and even diluted by a reassertion of traditional state-centric governance.

The reassertion of state-centric governance in the Arctic has also manifested itself through scientific knowledge and practice about Arctic ice and seas. Governance, geopolitics and geophysics have co-constituted one another. The intersection of science and geopolitics in the Arctic remains significant in spaces and in areas such as the ocean depths and seabed. Science is a powerful mode of governance complicit with claims to authority and governance. The five coastal states have invested millions of dollars, roubles and kroner in the mapping of the continental shelves and seabed to demarcate the outer limits of their sovereign rights in the Arctic Ocean. These mapping projects become accomplices to traditional state-centric power, producing an Arctic geopolitics, which privileges the rights of the coastal state and the cartographic conventions of the modern nation-state. Denmark and its specialist agencies such as the Geological Survey of Denmark and Greenland in collaboration with international partners (including Sweden, Russia and Canada) remains active in mapping, charting and promoting this geo-vision of the Arctic Ocean as the rightful space of coastal states, as legitimated by the UNCLOS. The place of Greenland and its communities, however, remains ambivalent in this Arctic geopolitics. Made complicit with the ambitions of Denmark as coastal state and key Arctic player, most notably in declarations and articulations of Arctic political and cultural identity evident in the Kingdom of Denmark's Arctic strategy, in Danish submissions to the United Nations Commission on the Limits of the Continental Shelf (CLSC), and with increased funding for Danish Arctic research (Nuttall 2014), it is also a complex space with colonial encounters and Cold War histories and geographies, as we outlined earlier.

Without the continued constitutional relationship with Greenland, Denmark's identity as an Arctic Ocean coastal state would be jeopardised. Consequently, Denmark's "Arctic activism" (Rosamond 2015), combining a strong emphasis on Danish military presence allied with a public commitment to multilateralism and its special relationship with Greenland, needs to be seen in relation to the stakes at play for Danish sovereignty and identity. The Danish invitation to convene a meeting in Greenland also has local origins in Danish–Greenlandic politics. The then Danish foreign minister Per Stig Møller was deeply involved in climate-change diplomacy and had been active in launching a "Greenland dialogue" in 2005, which sought to draw attention at ministerial level to the implications of climate change for Arctic environments. In 2007, he warned an audience in London that climate change was geopolitically significant with implications for Arctic resource extraction, shipping, maritime policing and territorial ownership. Two months later, "evidence" for possible tension could be found in the Russian flag planting. The "scramble for the Arctic" discourse had begun in earnest, and the fate of the Greenlandic ice sheet has since been at the epicentre of popular and political discourse, as well as scientific narratives, about a warming world.

The Danish submission to the UN Commission on the Limits of the Continental Shelf (CLCS) was delivered in 2014 and the Minister of Foreign Affairs Martin Lidegaard noted at the time that:

The submission of our claim to the continental shelf north of Greenland is a historic and important milestone for the Kingdom of Denmark. The objective of this huge project is to define the outer limits of our continental shelf and thereby – ultimately – of the Kingdom of Denmark.

(Government of Denmark 2014)

Within the submission, the Danish government contended that the Lomonosov Ridge, which extends some 1100 miles across the Arctic Ocean and dividing into the Eurasia and Amerasia basins, is “both morphologically and geologically an integral part of the Northern Continental Margin of Greenland”. The submission suggested that the outer continental shelf from the baselines of Greenland covers some 895,000 square kilometres. The Lomonosov Ridge is one area of the Arctic Ocean seabed that is of great interest to not just to Denmark – the submission overlaps with the Canadian, Norwegian, Russian submissions to the CLCS. The extent of sovereign rights over the seabed is still to be determined but is likely to extend at least 350 nautical miles beyond the coastal baseline, and possibly further. The eventual settlement of outer continental shelf delimitation will involve multinational negotiation regardless of any recommendations from the CLCS. What this process might eventually reveal, however, is the outer limits of how the territorial extent of an independent Greenland may look like; an Arctic state stretching possibly to the North Pole itself, and an entity with its own sovereign rights over the exclusive economic zone and vast area of continental shelf.

## **Conclusion**

For a time, Arctic geopolitics became rapidly reassembled around the politics of fear and even dread within a context of rapid climate change, sovereignty and territorial claims. Articles and books appeared with warnings about weak Arctic governance, resource and territorial scrambles, a “Cold Rush”, and a “New Great Game” (e.g. Potapov and Sale 2009). The central Arctic Ocean – and what lies within and deep below it – was one such area. This subterranean territory invited a new era of colonial mapping, exploitation and administration. Informed by international law, attention turned to the provisions that allowed the coastal states to extend their sovereign rights to the outer continental shelves of their national territories. Defining themselves as an Arctic 5, Canada, Denmark/Greenland, Norway, Russia and United States reimagined themselves as coastal states with substantial interests and rights in the Arctic Ocean.

Between 2008 and 2015, the Arctic Ocean coastal states have reinforced their special geographical relationship. While the seabed has been a very powerful material marker of that relationship, in more recent years the fate of the high seas of the central Arctic Ocean has provided further incentive. In 2014, Nuuk was host to a meeting on potential fishing activity in the central Arctic Ocean, which later led to an agreement by the coastal states to prohibit their vessels from fishing in the region until a regional fisheries agreement is in place including extra-territorial actors such as China, South Korea and the European Union.

The net result has been to reinforce, according to some Danish observers, a view of the Kingdom of Denmark as a “middle power” with a vested interest in the governance of the Arctic Ocean. Greenland’s geographical qualities are clearly critical to this in terms of identification of Denmark/Greenland as a coastal state with specific sovereign rights. What complicates this understanding is the growing autonomy of the government of Greenland (self-government) and its formal competence to take ownership and control over its subsurface resources both on and offshore. Granted home rule in 1979, the introduction of self-government in June 2009 has been followed by increasing desires for greater autonomy from Denmark in which discussion of foreign and security policy often come to the fore. The 2011 Strategy for the Arctic reinforced the role of the Danish military in terms of protecting Danish sovereignty in Greenland and the wider Arctic region.

Greenlandic politics has been closely influenced by the role and extent of the extractive sector and whether the government of Greenland should be working more closely with foreign companies and investors to help generate revenue streams, to help fund a shift away from economic reliance on Denmark. Resource stakeholders (politicians, government bodies and institutions, local businesses, multinational companies) are imagining and making the resource frontier in Greenland, and the extractive industries are re-imagining onshore and offshore areas as being of great potential, as part of a wider trans-national “New North” closely connected to the world economy (Nuttall 2012; 2013). Despite a dip in global commodity prices, as well as other global processes, the subterranean and the ocean depths nonetheless remain critical for Greenlandic notions of nation-building and state formation. Plans for mining and oil development projects, even with their accompanying social and environmental impact assessments, as well as discussions of the environmental and social impacts of seismic surveys and mineralogical mappings, involve extractivist discourses and spatial technologies of power that privilege particular techno-centric and economic views of the Greenlandic environment and do not take into account local community perspectives on human–environment relations (Nuttall 2015). Particular places become emptied of human presence and activity and are reimagined as resource spaces marked out for economic development and accompanying ambitions for Greenlandic state formation. Within the discursive space created by the idea and formulation of a resource frontier as a “zone of unmapping”, to use Anna Tsing’s phrasing (2000), a diverse range of actors have become engaged in the production, mediation and reproduction of different kinds of Greenlandic futures, something which involves a new mapping and classification of Greenlandic spaces filled with possibility, opportunity and ambition. While it has become a stated aim of recent Greenlandic governments to “extract” revenue from hydrocarbon projects, mining activities and energy and industrial development, official plans have provoked highly charged political and social debates within Greenland about the nature and desirability of such a development and how it may redefine the nature of place and territory. At the same time, contested perceptions and understandings of the environment have become increasingly apparent with concerns expressed by local people and grassroots organisations, as well as international environmental and conservation groups, about threats to community viability, to wildlife and to

biodiversity. Local understandings of human–environment relations are ignored, especially within social and environmental impact assessments for possible projects, and local experience and knowledge, as well as local histories of past mining activities, are erased by the production of technical knowledge and in political and industry discourses about Greenlandic environments and subsurface resources.

All of this has social and political implications within Greenland, as well as for relationships within the Kingdom of Denmark, and for Greenland's place in the world. As we have argued in this chapter, to locate Greenland within a critical geopolitics involves a consideration of the science and politics of and about ice, land and water, as well as the subsurface and Greenland's depths and widths: this is vital for contemporary understanding of how the subsurface is imagined, probed, mapped and politicised, how territory is thought about, and what happens at the intersection of both Greenlandic political discourse and extractive industry narratives surrounding resource development and its possibilities, the emergent public responses to it and the growth of social movements and assemblage of local protest, debates over decision-making processes and the extent and nature of public participation, and the growing influence of corporate transnationalism over Greenlandic politics and even everyday life (Nuttall 2015). Our concern with how Greenland is not just placed but how it is materialised within a critical geopolitics, however, also illustrates a broader process of the reimagining of the Arctic as a resource frontier and a space for economic possibility, and the way in which ice sheets, mountains, waterways, ocean depths and subterranean geologies are enrolled in geopolitical imaginaries and narrative concerning resource futures, and the hopes and ambitions, as well as the anxieties and resistances to which this gives rise.

## Notes

- 1 In 1961, SIPRE was merged with the Arctic Construction and Frost Effects Laboratory to create a Cold Regions Research and Engineering Laboratory based in Hanover, NH.
- 2 There was a substantial European–US partnership in Greenland ice core research between the 1950s and 1980s. See (Elzinga, 2011)

## References

- Bowman, I. (1949). Geographical interpretation. *Geographical Review* 39(1), pp. 355–370.
- Bruun, J. and Medby, I. (2014). Theorising the thaw: Geopolitics in a changing Arctic. *Geography Compass* 8(12), pp. 915–929.
- Bridge, G. (2013). Territory, now in 3D!. *Political Geography* 34, pp. 55–57.
- Clark, N. (2013). Geopolitics at the threshold. *Political Geography* 37, pp. 37–40.
- Cruikshank, J. (2004). *Do Glaciers Listen? Local Knowledge, Colonial Encounters, and Social Imagination*. Vancouver: University of British Columbia Press.
- Dodds, K. (2010). Flag planting and finger pointing: The law of the sea, the Arctic and the political geographies of the outer continental shelf. *Political Geography* 29, pp. 63–73.
- Dodds, K. and Nuttall, M. (2016). *The Scramble for the Poles*. Cambridge: Polity.



- Dunbar, M. (1950). Greenland during and since the Second World War. *International Journal* 5(2), pp. 121–140.
- Elden, S. (2013). Secure the volume: Vertical geopolitics and the depth of power. *Political Geography* 34, pp. 35–51.
- Elzinga, A. (2011). Some aspects of in the history of ice core drilling and science from IGY to EPICA. In: C. Ludecke, L. Tipton-Everett and L. Lay, eds, *National and Trans-National Agendas in Antarctic Research from the 1950s and Beyond*. Columbus, OH: Byrd Polar Research Center.
- Government of Denmark. (2014). Denmark and Greenland will today file a submission regarding the continental shelf north of Greenland. Available at: <http://a76.dk/cgi-bin/nyheder-m-m.cgi?id=1418619842%7Ccgifunction=form> [Accessed 17 February 2017].
- Grosz, E. (2008). *Chaos, Territory and Art*. New York: Columbia University Press.
- Hough, P. (2013). *International Politics of the Arctic*. London: Routledge.
- Inuit Circumpolar Council (2009): A Circumpolar Inuit Declaration on Sovereignty in the Arctic 2009. Available at: <http://inuit.org/icc-greenland/icc-declarations/sovereignty-declaration-2009/>. [Accessed 21 May 2017].
- Kinney, D. (2013) Selling Greenland: The big picture television series and the army's bid for relevance during the early Cold War. *Centaurus* 55(3), pp. 344–357.
- Martin-Nielsen, J. (2012). The other cold war: The United States and Greenland's ice sheet environment, 1948–1966. *Journal of Historical Geography* 38(1), pp. 69–80.
- Martin-Nielsen, J. (2013). *Eismitte in the Scientific Imagination: Knowledge and Politics at the Centre of Greenland*. New York: Palgrave.
- Nuttall, M. (2010). *Pipeline Dreams: People, Environment, and the Arctic Energy Frontier*. Copenhagen: IWGIA.
- Nuttall, M. (2012). Imagining and governing the Greenlandic resource frontier. *The Polar Journal* 2(1), pp. 113–124.
- Nuttall, M. (2013). Zero-tolerance, uranium and Greenland's mining future. *The Polar Journal* 3(2), pp. 363–383.
- Nuttall, M. (2014). Territory, security and sovereignty: The Kingdom of Denmark's Arctic strategy. In: R. Murray and A. Nuttall, eds, *International Relations and the Arctic: Understanding Policy and Governance*. New York: Cambria Press.
- Nuttall, M. (2015). Subsurface politics: Greenlandic discourses on extractive industries. In: L. Jensen, and G. Hønneland, eds, *Handbook of the Politics of the Arctic*. Cheltenham: Edward Elgar, pp. 105–127.
- Orlove, B., Wiegandt, E., and Luckman, B., eds., (2008). *Darkening Peaks: Glacier Retreat, Science, and Society*. Berkeley, CA: University of California Press.
- Petersen, N. (1998). Negotiating the 1951 Greenland Defense Agreement: Theoretical and empirical aspects. *Scandinavian Political Studies* 21(1), pp. 1–28.
- Potapov, E. and Sale, R. (2009). *The Scramble for the Arctic*. New York: Frances Lincoln.
- Puwar, N. (2001). The racialised somatic norm and the senior civil service. *Sociology* 35(3), pp. 651–670.
- Robinson, M. (2006). *The Coldest Crucible: Arctic Exploration and American Culture*. Chicago, IL: University of Chicago Press.
- Rosamond, A. (2015). The Kingdom of Denmark and the Arctic. In: L. Jensen and G. Hønneland, eds., *Handbook of the Politics of the Arctic*. Cheltenham: Edward Elgar, pp. 501–516.
- Roucek, J. (1951). The geopolitics of Greenland. *Journal of Geography* 50(6), pp. 239–246.



- Roucek, J. (1983). The geopolitics of the Arctic. *The American Journal of Economics and Sociology* 42(4), pp. 463–471.
- Said, E. (1993). *Culture and Imperialism*. London: Vintage.
- Squire, R. (2016). Rock, water, air and fire: Foregrounding the elements in the Gibraltar–Spain dispute. *Environment and Planning D: Society and Space* 34(3), pp. 545–63.
- Strandsbjerg, J. (2012). Cartopolitics, Geopolitics and boundaries in the Arctic. *Geopolitics* 17(4), pp. 818–842.
- Tsing, A. (2000). *An Ethnography of Global Connection*. Princeton, NJ: Princeton University Press.
- Thompson, C. (2005). *Making Parents: The Ontological Choreography of Reproductive Technologies*. Boston, MA: MIT Press.