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The Arctic

Global Competition of the High North and Its Consequences

EDITOR'S NOTE

Arctic Ledger was founded with the idea of studying the high north in all its aspects, from all angles. This installment of Arctic Ledger establishes that by analyzing various perspectives, international involvement, and the shifting nature of the region. It attempts to pierce the ice of the Arctic by studying from above as well as below, from seabed cables and submarines to orbital assets, NATO's Arctic Sentry and U.S.-Denmark-Greenland treaty ratifications, as well as insurance markets, international leverage and interests.

This edition consists of eleven pieces, with authors from Japan, Denmark, Pakistan, as well as both coasts of the United States. As the Arctic has only seen increasing operational activity, by a large number of parties—from South Korean commercial expeditions, China's Polar Silk Road, and Russian cable-cutting, this issue is not only critical for the present of the Arctic, but also provides an understanding crucial to navigating the future of the region.

While Volume I No. 3 has taken many months to accumulate, the Arctic has correspondingly seen shifts, as such the papers are oriented around the best events of the year (2026) while also utilizing data and research from years prior, to ensure accuracy.

As bows break the ice of the Arctic, anchors cut cables on the seafloor, and the incorporation of the market in the region has only exacerbated competition, conflict, and concerns over jurisdiction.

I appreciate as always the phenomenal contributors to this volume, their research, fieldwork, and the patience the editorial process required to ensure only the highest quality.

We hope you enjoy.

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In This Issue

The Arctic Lifeline: Fortifying Europe's Energy Security

Gregor Kossman

Insurance and Icebergs: What Economic Analysis Reveals About the Polar Silk Road and Northern Sea Route

Jack Lindstrom, Bohdan Bernatskyi

Strategic Anxiety in Southeast Asia: The Polar Silk Road and the Fading Monopoly of the Malacca Strait

Leonardo Gomez

An Open Door in the High North: Commercial Trade & It's International Ramifications

Aimen Wasim

Leverage Lost At Sea: The Story of Russia, China, and the Politics of the Polar Silk Road

Jack Lindstrom

Chokepoints Within Chokepoints: Submarine Warfare in the Arctic

Jack Lindstrom

Autonomy in the Arctic: The Role of the US Coast Guard in Innovation and Fabrication

Jack Lindstrom

The Orbital Funnel

Jack Lindstrom

Interconnectivity in the Ice: Subsea Cables & Their Importance to Sovereignty

Jack Lindstrom

Environmental Storytelling: How the Melting Arctic Ice Affects Geopolitical Power Structures and Its Consequences

Jack Lindstrom

Legitimacy and Locals: Great Powers and the Voiceless Power of the Inuit in Arctic Politics

Jack Lindstrom

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ABOUT ARCTIC LEDGER

Arctic Ledger is an independent research journal covering critical minerals, supply chain security, Arctic and maritime governance, and great power competition. It publishes original analysis from researchers, graduate students, and practitioners working across these fields, with contributors drawn from institutions worldwide. Arctic Ledger accepts no state or corporate funding.

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The Arctic Lifeline: Fortifying Europe's Energy Security

Greg Kossman

A new geopolitical theater is thawing, literally and figuratively. The Arctic has long been understood and appreciated as an arena of military competition, pitting great power rivals as physically close to each other as anywhere else. Yet in a world seeking energy abundance and holding current supply chains under scrutiny, where energy is playing a strategic role in nations' toolbox for statecraft, the Arctic remains overlooked and underprotected in this domain. Its vast energy infrastructure increasingly powers Europe, quietly shifting its dependencies North, following not-so-quiet reductions in Russian dependency. This paper will argue that in Europe's efforts to decouple from legacy supply chains, it must be aware of its shift North and, accordingly, work to include that energy infrastructure in its Arctic defense. Firstly, this article will lay out the energy landscape in the North, outlining the intricacies of the pipeline gas and LNG dependencies, as well as the electricity layer powering Europe and the competitive landscape of critical minerals. Following that overview, this article will examine their vulnerabilities from both the environment and from sabotage, and ultimately determine the gaps that need to be filled in current policy and institutions to adequately secure Europe's energy infrastructure.

I. Mapping the Northern Energy System

One cannot fully understand the role the Arctic plays in powering Europe without first mapping the energy infrastructure undergirding this dependency. Though reservoirs remain untapped and further projects continue to develop, the landscape is best understood through Norwegian gas, Russian LNG, the electricity layer, and an emerging flow of critical minerals. There certainly is no shortage of energy sources for Europe to work with, but many of them keep the continent physically tethered to the North.

Following Russia's invasion of Ukraine, and Europe's abrupt decoupling of Russian gas, Norway quickly emerged as the alternative supplier. As of 2025, Norway provided a third of all EU gas imports, and roughly half of EU pipeline imports^{1,2}. According to Gassco's figures, 114.9bcm of gas was delivered via Gassco pipelines (Norwegian gas operator), equivalent to ~1,271 TWh. One of the key pipelines is the Snøhvit → Hammerfest chain, a 143 km pipeline with no surface installations³. The Hammerfest LNG facility alone processed roughly 2% of EU demand, supplying ~6.5bcm/year, as Europe's first LNG export facility^{3,4}. The Snøhvit Future electrification project will extend this facility's output toward 2050⁵. According to the Norwegian Ministry of Energy and Norwegian Offshore Directorate⁶, 54% of Barents Sea resources lie in areas not currently open to petroleum activity, with estimates of 2,190 million Sm³ o.e. (standard cubic meters of oil equivalent) still untapped, further underscoring the persistent relevance of this region⁶.

Remaining in the world of gas, it is imperative to acknowledge the continued role of Russian Arctic LNG even past the public pipeline gas cutoffs in 2022. Figures from the first half of 2026 show that "Yamal LNG," one of Russia's primary LNG export hubs, sent 136 of 140 cargoes (97%) to EU ports, equivalent to roughly 9.97Mt and €5.96 billion⁷. These shipments primarily went to Zeebrugge, Dunkerque, and Montoir⁷. Admittedly, the figures this year are slightly elevated as buyers maximize long-term-contract volumes before the Jan. 1, 2027 EU ban on Russian LNG, but they nevertheless underscore Europe's continued energy entanglements with Russia. While the region is undoubtedly a central hub for Russia's domestic energy needs, its implications on European supply chains cannot be overlooked.

Beneath this layer of pipelines and ships is the electricity layer more directly tethering the power relationships among European countries, particularly in the North. In 2025, Norway generated 161.8 TWh of electricity, 145.5 TWh (90%) of which came from hydropower ⁸. With over a thousand reservoirs ⁹, this storage works like a giant battery, offering Europe a flexible power supply. Operated with subsea cables, NordLink carries 1,400MW over 620 km to Germany, North Sea Link carries 1,400MW over 720 km to the UK, and NorNed carries 700MW over 580 km to the Netherlands, helping power their grids when wind and solar dip ^{10 11 12}. Viking Link is another important cable network in the region, though it carries Danish wind ¹³. Nevertheless, these long and expensive cables lying exposed on the seabed are what ultimately power many of these countries, and subsequently secure continental grids.

Lastly, an emerging layer is forming around the renewed attention on critical minerals meant to power the energy transition, where the Arctic offers a unique opportunity to decouple from China's dominance. Greenland holds 25 of the EU's 34 critical raw materials, with key deposits of rare earth elements (REE) in Tanbreez and Kvanefjeld ^{14 15}. Sweden sits on roughly 2.2 Mt of REE oxides in Per Geijer, with Norway holding claim to the largest known deposit in Europe, with 15.9 Mt of total rare earth oxides (as of March 2026) in Fen near Oslo ^{16 17}. The key distinction here is that these deposits do not have associated mines, nor processing facilities, nor any ultimate manufacturing capability. It is Finland that holds Europe's first lithium mine-to-refinery chain, producing at a rate of roughly 15,000 tons/yr of lithium hydroxide starting in February of this year ¹⁸. Most of the output from these other large deposits, though, is only estimated to land in the next decade, so China's processing dominance is expected to persist until then. Nevertheless, it is worth noting the potential that this region holds in addition to the already expansive network of gas, LNG, and electricity interconnection physically linking Europe's energy security to the Arctic.

II. Vulnerabilities and Exposure

Having established Europe's vast energy network in the Arctic that is only expanding, the exposure this carries becomes increasingly important. The main sources of this risk are the concentration of nodes on long networks, the physically exposed infrastructure, Russia's capabilities, and climate change, multiplying each other's effects and compounding exposure to Europe's energy security.

Norway's state-owned gas operator Gassco manages roughly 8,600 km of pipe, over an extensive network that can reroute gas around any broken pipe, allowing it to claim 99.6% reliability ^{19 20}. Langed, one of its longest, lies at just over 1,100 km. The exposed node lies in the processing plants where many of these pipelines meet, the largest of such being Kårstø, Nyhamna and Kollsnes, which cannot be rerouted around ¹⁹. An interruption there can be significant, as was proven in June 2024 when the Sleipner outage shut down Nyhamna, and the European benchmark gas price rose 7.2% in one day ²¹. A single node was able to have a continental effect. Admittedly, losing one facility does not necessarily constitute a crisis, especially given recent improvements in European LNG redundancy serving 242 bcm/yr ²². Nevertheless, it highlights the strategic distinction between an extensive network and few centralized nodes, and the inherent risk that carries to limit flexibility and weaken resilience.

The subsea is particularly vulnerable because it is where accidents and sabotage look the same. It is undeniable that, by virtue of the environment, undersea cables and pipelines do break by accident. According to the ICPC, of the 150-200 annual cable faults, approximately 75% stem from accidental human activity ²⁸. That is precisely what makes sabotage attractive: a deliberate fault looks like an accident, and proving otherwise carries a high burden of proof. Confirming damage and identifying vessels is rather straightforward, but establishing and proving ultimate state responsibility is where most of the cases get held up. In October

2023, a Chinese ship's anchor dragged along the BalticConnector gas pipeline and cables, ultimately leading to the captain's arrest ²³. In November 2024, two Baltic telecom cables were severed when the Yi Peng 3 dragged its anchor for 180nm ²⁴. Most prominently, in December of that same year, the notable EstLink 2 power cable (a 145 km long cable delivering 650 MW of electricity), was dubiously damaged, and the tanker Eagle S was seized in relation to it ²⁵. The Finnish court ultimately dismissed the case on jurisdiction ²⁶, but the fact remained that this critical cable was out for months. For a system that carries 99% of intercontinental internet traffic ²⁷, which energy systems depend on for monitoring and control, tampering becomes not only likely but strategic.

A country that has shown no hesitation in such tampering conveniently also takes up over half of the Arctic coastline. Since February 2022, ICCT ²⁹ confirmed 151 confidently attributable Russian hostile hybrid operations in Europe. Recent news about attacks on German energy infrastructure have been consuming headlines, but even indexing solely on official Norwegian and NATO assessments, we see that Russia has the means (special deep-sea units, surveillance ships, fishing vessels), and a track record, to expose the vulnerabilities of Europe's energy infrastructure. From its behavior in Ukraine alone, where 2025 saw 1,225 strikes on Ukrainian energy infrastructure with over \$20 billion in damage on the grid, we see a state that treats infrastructure disruption as an integrated part of its hybrid toolbox, aimed at destabilizing societies ³⁰. As NATO ASG Ellermann-Kingombe said, "European energy infrastructure is a priority target for Russia" ³¹. Norway's Police Security Service 2026 Threat Assessment even concluded with the expectation of continued Russian reconnaissance of Norwegian critical infrastructure through covert intelligence activity from civilian vessels ³². Norway has separately also sanctioned two Russian fishing companies over surveillance of undersea infrastructure ³³. As recently as September 10, 2026, this sentiment was confirmed when it was reported that Norway, the U.K., and the U.S. thwarted a covert Russian GUGI (Main Directorate for Deep-Sea Research) operation that simulated the deployment of deep-sea technology designed to disable critical undersea cables near the Norwegian archipelago of Svalbard ³⁴. For context, Svalbard hosts critical 1,400 km fiber-optic cables supporting SvalSat (one of the world's largest satellite ground stations) and GUGI is a highly secretive branch of the Russian military functioning as underwater special forces operating specialized deep-diving submarines and uncrewed submersibles. These coexisting forces make such conflicts not a matter of if, but when.

As with any conversation about the Arctic, the monumental impact of climate change cannot be overstated. In this case, the developing physical environment that the energy infrastructure is situated in is itself a multiplier of risk to Europe's energy security as a whole. With rapidly rising temperatures, sea-ice decline is bringing about longer navigable seasons, enabling more vessels near critical infrastructure, ultimately proving to be a larger surveillance burden. Natural disasters moving outside original design assumptions also bring about further uncertainty, and the higher average runoff coming from it creates further variability among the hydropower resources. According to Hjort et al. ³⁵, roughly 70% of current Arctic infrastructure will sit in high thaw-potential permafrost by mid-century. Admittedly, permafrost thaw mostly threatens the Russian side, as was seen in Norilsk in 2020 when thaw was attributed as the culprit of the roughly 21,000 tons of diesel released after tank subsidence³⁶. Nevertheless, the paradox stands that a more usable Arctic becomes a bigger security problem.

The key challenge is not that any one asset is uniquely fragile. In the Arctic, spotting an attack, proving who did it, responding, and fixing the damage, are all unusually slow and complex, which makes these scattered vulnerabilities a genuine strategic problem. We established that Europe's energy supply chains are inextricably tethered to the Arctic. The remoteness, the long subsea assets, the concentrated nodes, Russian capabilities, ambiguous attribution, climate accelerants, and scarce repair capacity, make precisely this energy infrastructure all the more vulnerable and exposed.

III. Strategic Security Requirement

With Europe pivoting its energy infrastructure to the North, this new environment (both physically and geopolitically) presents an urgent opportunity to recognize its strategic importance and consequently act to fortify it. The High North is already a security theater, and institutions exist for its protection. The responsibility now is to make sure Europe's crucial energy infrastructure is included.

The EU Critical Entities Resilience Directive treats critical infrastructure as part of a cross-border, interdependent network, and requires it to be assessed against natural hazards, hybrid threats, and sabotage ³⁷. As previous sections of this paper detailed in length, Norway's cables cut across the High North and interconnect the UK, Germany, and the Netherlands (among others). Their similarly connected pipelines require ports, vessels, and power to run and be repaired. One national outage or a break in the node inherently hits several states. They are, without a doubt, critical infrastructure worth protecting.

What does protection actually mean in this context? With seven of the eight Arctic states being NATO members and the EU rapidly mobilizing resources, it would be misleading to suggest that no such protection exists so far. Whether it be preventing and detecting attacks, attributing responsibility, responding to aggressions, repairing damages, or maintaining the infrastructure, there are a number of institutions and policies already at play worth cataloguing, especially to highlight the remaining gaps they have in adequately addressing the vulnerabilities of the energy infrastructure.

The most notable effort in this space is NATO's Arctic Sentry, a multi-domain military initiative launched in February 2026, modeled after their successful Baltic Sentry program ³⁸. Both of them serve to coordinate maritime patrols, air policing, and national exercises like Norway's Cold Response and Denmark's Arctic Endurance, although being military in nature, they cover energy security issues ³⁹. More explicitly, NATO's Energy Security Center of Excellence provides dedicated staff (both civilian and military) towards the study of this issue, and how energy security over the whole of the alliance can be strengthened. A stronger focus on the Arctic as it emerges will be pivotal to ensure NATO remains prepared and alert. A key challenge in operationalizing this focus is that, for example, fitting military sensors to civilian pipelines for better detection could in turn weaken their protected civilian status and be legally justifiable for attack by adversaries as military infrastructure. The Article 5 commitments are already ambiguous with attribution difficulties, and navigating these discrepancies will be important. On the civilian side, the EU Cable Security Action Plan from February 2025 offers €347 million for 2026-2027 to strengthen its cable vessel reserve, where the global fleet currently stands at approximately 60 aging ships dispatched around the world, and 20 of them addressing crucial subsea cable faults ^{27 40 41}. The conversations are undoubtedly here. The EU is working to fund infrastructure resilience, and NATO is adapting to secure the environment, but few are treating the increasingly important northern energy infrastructure as one system spanning both. Denmark in particular has taken action to better secure the region through Greenland, partnering with the U.S. to amend the 1951 defense agreement between the three powers on September 22, 2026 ⁴². Nevertheless, such an amending of an existing agreement does not change the tethered nature of energy and defense in the region.

Certain developments can safely be assumed, even if the extent of them is rightly debated. The energy transition is and the move toward renewables and alternative fuel sources is not abating. The Arctic is being understood as strategic geography, and militarization is increasing across all the stakeholders in the region. The energy resources and commodities are abundant and varied in the region. Gray-zone tactics against energy infrastructure and hybrid warfare will continue to be a tool employed globally by aggressors. The constellation of these seemingly inevitable forces safely demonstrates that the Arctic will not be leaving our

headlines any time soon. Being a unique area where these forces converge means that securing Europe's energy infrastructure in the Arctic will be not only important, but urgent. Having determined the ubiquity of pipeline gas, LNG, electricity infrastructure, and an emerging layer of critical minerals, an increasing European energy dependence on the Arctic becomes apparent. A rapidly changing environment and prolific sabotage expose that infrastructure, which is a critical vulnerability that NATO and the EU must recognize and act swiftly to protect.

Insurance and Icebergs: What Economic Analysis Reveals About the Polar Silk Road and Northern Sea Route

Jack Lindstrom, Bohdan Bernatskiy

Propaganda is no novel strategy employed by nations and their governments to deceive enemies as well as their own domestic population. Shading the truth is simply a part of the practice of governance and international relations in the modern age; be it erasing entire events, cultures, or simply skewing minor data. Moscow requires the Northern Sea Route (NSR) to seem as though it is a real, functioning alternative to Western-dominated maritime order; something emphasized more than ever due to the pressures of sanctions upon Russia. Beijing requires the Polar Silk Road (PSR) to appear equally functional to provide evidence of Chinese interest and therefore a geopolitical foothold in the region. Both nations, therefore, would benefit from propaganda encouraging the viability of the NSR. That is not to say the NSR in practice is not functional, and as ice melts it will not become increasingly so. Rather, this article argues that the role of the NSR in the appearance of China and Russia acts as the exigence for shading the truth in a land that is largely white and blue: the Arctic. The PSR was formalized in 2018 through a Chinese official Arctic policy white paper, established as a viable route to Eurasian commerce;¹ a justification as well for expanded patrols throughout the Arctic, in tandem with Russia. Additionally, China worked to expand icebreakers and ports, funding which would fall in such a strategic policy, as well as a hedge against the pressures applied to China through strategic chokepoints- namely the Strait of Malacca.² Washington and NATO require the Arctic to appear volatile enough, in turn, to justify an expansion of their own icebreakers, base network, pipelines and cables; as well as the American fixation on Greenland, under US President Trump's administration.

So as politicians trace the halls of Congress, heeled shoes clacking in lockstep, and icebreakers are constructed in shipyards in Finland; sparks fly in both cases. The sawing and soldering of steel hulls, and the fiery words of Presidents and Prime Ministers.

The Arctic, despite its contrasts of pale ice and dark waters, is not black and white. It is the individuals who do not benefit- but instead are harmed by white lies who serve as more trustworthy observers of the Arctic region. Such a role is filled by marine insurers; should the Arctic risk be overstated, the premium volume is lost to a competitor. Likewise, should that insurer underestimate the risk, it is forced to absorb the losses itself. Business that survives not by the trust of the customer, but by the reality of the seas. As such, the marine insurance market, and particularly its pricing, as reflected in the Arctic transits, provides a unique angle of analysis of the true viability of the NSR and PSR; as opposed to what the West fears they are, and the East hopes they will be.

Lloyd's Market Association serves as a looking-glass for the Arctic and its shipping routes; the LMA's manager of marine and aviation, Neil Roberts, described the region as “the new frontier of risk.”³ The logic behind this claim was made clear soon after the fact- one a ship is damaged, or in peril in the Arctic, there are very few salvage options. David Lawrence, Lloyd's controller of agencies, also provided the logic that the reputational cost is as unpalatable as the physical cost,

noting that “no ship captain wants to be the first to pollute the pristine Arctic ocean.”³ No captain has a desire to be the first to pollute pristine Arctic waters, as protecting the environment and local populations is imperative to reputational insulation. To be the corporation that spilled oil against ice caps is a dark look indeed, one which is costly not only in reputation but in customer base as well. The notion that there are few salvage options provides a logic, however, past just reputational concern; the market actors with direct money invested perceive the Arctic as a high-risk environment financially, not geopolitically. As such, the reflection provides insight into the analysis of investors, as opposed to the words of politicians. It is imperative to remember that people and their judgement are not always sound- even if there is money or reputation on the line. Investors may be transparent about their best

judgement, but they may be wrong; speakers may lie through their teeth and be right. Such is the world of analytics and judgement; as such, the practical claims themselves provide the hard facts of the case.

Allianz's decade-long tally of Arctic Circle shipping casualties logged more than 500 incidents between 2014 and 2023, with machinery damage or failure- largely due to the freezing temperatures- the leading cause, accounting for almost half.⁴ The operability of the Arctic has long been problematic; it is too cold for survival, and so as ships became more advanced, the issues shifted. First to problems of insulation from the cold; then surviving icebergs and floes; then to machinery withstanding freezing temperatures. The Arctic remains a geopolitical battleground because it is inaccessible; the barrier to entry and cost of involvement in the region is too high to justify operations that elsewhere have a higher return and lower cost. It is easier to prepare to fight in a desert with the risk of loss than to even begin to fight in the Arctic. As such, technology is largely the limit, as well as investment in that technology. While climate change reduces the physical amount of ice in the Arctic, the nature of its cold remains. As such, mechanical and technical failure resulting from the cold is still an innate risk. The Arctic is also an incredibly remote region of Earth, despite serving as the closest point of connection between North America, Asia, and Europe; so ships that break down due to the cold are far from repair yards, spare parts, or search and rescue teams. Additionally, there arises a sunk-cost policy: how many ships can be risked to recover one? Should the ships that endeavor to salvage and rescue the damaged ship also become damaged, the problem only multiplies. Such a cost-benefit analysis and the risk relative to the isolation of the region is not produced by foreign ministries because they lack an exigence to generate it; insurers, by contrast, view incidents one at a time to ensure they never repeat.

As technology improves, so too does trade in the Arctic; the Arctic Council's Protection of the Arctic Marine Environment (PAME) working group has tracked a 37% increase in the number of unique vessels entering the Polar Code area between 2013 and 2023.⁵ Allianz separately estimates the regional economy has more than tripled since 2003, to over \$650 billion in value.⁴ Naturally, density increases the frequency of accidents; hence a pattern: falling ice, rising temperatures, rising investment and traffic, rising incident count. The Arctic is not more dangerous as before but is rather simply seeing a rise in vessels within it. The risk lies not in the region but in the machinery and technology which is employed in the region, without proper preparation for the environmental dangers.

Moscow and Beijing report consistently that the NSR is an emerging functional trade corridor; 2025 was reported as a record year for NSR activity, and that same year saw the first-ever China-Europe container transit voyage, halving the time of the Suez Canal voyage.⁴ The commercial logic- the lost costs of crew, maintenance, and energy- is sound. Faster trade allows goods to be sold at a premium, creating a significant profit boost. What takes 20 days in the NSR takes 40 through the Suez and 55 around the Cape of Good Hope; such a strategy grants Beijing great value and a wise investment in 2018. A route which braces for sanctions, insulates against chokepoint pressure, and is less surveilled by the West, particularly the US, is of incredible value outside of profit margins alone to China. However, the diversity of shipping in the NSR for the world as a whole, utilizing a novel route, has since been shattered. As of 2024, some 95 percent of international Arctic transit traffic moved from Russia to China, according to shipping data compiled by the Centre for High North Logistics.⁶ Western operations have kept a healthy distance as the route itself is patrolled and escorted by Rosatomflot. Russia's nuclear-powered operator escort through the NSR and Arctic is often mandatory; Rosatomflot is a corporation under significant sanctions by Western powers since the 2022 invasion of Ukraine. The complications of sanctions while also working with a sanctioned corporation are rather messy; additionally, should a US ship require rescue and receive aid from a Russian nuclear icebreaker, it provides Russia immense leverage over the US by holding the ship hostage. The operational risk of the region is enhanced entirely due to the nation that largely patrols the NSR.

The G7 and the EU have imposed a number of sanctions related to the Arctic region, namely targeting the Russian Arctic fleet, the sanctioned Arctic LNG 2 project, the shipping and

infrastructure industries that provide navigation and transportation via the NSR, and Arctic oil exploration and production, among others.⁷

Already in 2019, US Secretary of State Mike Pompeo criticised the Russian management of the NSR, arguing that Moscow's demand to obtain permission to pass through the NSR is “illegal,” and also criticised the increase in military bases in the region.⁸

Russia invests heavily in the Arctic region to maintain its leadership, though it faces few competitors, especially in its icebreaker fleet. The sanctions programmes have never been focused primarily on the Arctic region as such, but rather on reducing Russian energy revenues and maximising expenditures on new critical energy infrastructure projects, since energy exports primarily drive the Russian war economy. Targeted Arctic sanctions packages are missing, aside from some jurisdictions that target specific sectoral sanctions in the Arctic region (as introduced by Canada). In principle, as Russia tightens its grip over the NSR, the presence or absence of sanctions would change little in terms of volumes and voyages completed. However, their application substantially increases the cost of any new construction in the Arctic region, making Russia's goal of growing its share of global LNG exports from roughly 8% to 20% of the global market more challenging.⁹

The NSR and PSR therefore do not aid in diversified worldwide trade; there is not a new shipping route for nations invited to utilize the NSR, such as India. Instead, it remains isolated to China and Russia, and although it benefits such nations, it does not function as promoted by Moscow and

Beijing; in theory, the insurance infrastructure which would make the NSR utilizable is simply absent. Russia and China bilateral logistics are the only engine running the NSR and PSR, which, although beneficial to such nations, is not the final, intended outcome. China's Belt and Road Initiative seeks to connect the world through trade like never before; such trade does not work if only China trades utilizing it. In short, a port will not attract international trade if only one or two nations utilize it, due to high risk and a lack of insurance or search-and-rescue capability. Additionally, the aid which would presumably be provided only by Russia further discourages involvement in the NSR, as Russia has been deemed an untrustworthy nation following the invasion of Ukraine. The role of Western P&I cover, salvage and escort support, and untangled sanctions exposure is not present in the NSR- at least not at this time, and likely not until a ceasefire is established between Russia and Ukraine, and sanctions are dropped. The past four years, however, have indicated only rising tensions between powers, not falling ones; as such, it is likely to assume such sanctions will be retained for some time. Although there is record NSR activity, it is solely dependent upon China and Russia; if those nations, which benefit the most from fabricating numbers, seek to expand the role of the NSR, they are able to do so by subsidising shipments utilizing the NSR. If, for example, Beijing encouraged Chinese ships to transport largely through the NSR, they likely would, and the NSR would seem to have an explosion of usage; but the 95% would remain Chinese and Russian, as such, such a metric holds little true value. Europe, which benefits from faster trade, does not utilize the NSR itself, further establishing the present limitations of the ideal Polar Silk Road.

The Joint War Committee (JWC), which serves as Lloyd's and the International Underwriting Association body, retains a list of “Listed Areas” where shipowners must notify their war-risk underwriter before embarking on any voyages. As such, there is a case-by-case analytical system of negotiation over an additional premium, based on the cargo, voyage, crew, and region. The JWC list added the Ukrainian and Russian Black Sea as well as the Sea of Azov waters within days of the 2022 invasion; money cannot afford to be slow to the draw the way government policy is innately sluggish. In March 2026 the JWC again revised its Listed Areas amid the conflict involving Iran, adding Bahrain, Djibouti, Kuwait, Oman and Qatar, and widening the boundaries of the Persian/Arabian Gulf-Gulf of Oman-Indian Ocean-Gulf of Aden-Southern Red Sea zone to include the Strait of Hormuz in full.¹⁰ In the weeks that followed, additional war-risk premiums for transits through the Strait of Hormuz reportedly climbed as high as

7.5 to 10 percent of a vessel's hull value, while the riskiest Black Sea ports- Odesa among them- commanded a substantially lower, though still elevated, three to five percent.¹¹ In short, the risk of the region is reflected in the premium; the disparity between the Black Sea and the Gulf provides a key example of how finely insurers calibrate geography to actual threat. Such numbers outline clearly and cleanly what government policy construes; risk is present in regions such as the NSR, despite the required maintenance on it. The West benefits from watching the NSR and inspiring concern over it, as it spurs on policy action and retains power in the region; or halts it before it starts. Russia and China, however, benefit from making the NSR appear highly valuable and viable where the West perceives it as volatile. The NSR is not, in and of itself, a JWC Listed Area the way, for example, the Black Sea is; there is naturally no active war in the region. Nonetheless, the absence of any recognition in the NSR is telling of how little-used it is. War premiums are volatile and shift with

conflict; peace and war shape the economy, as is recorded throughout time and place. The Arctic, however, is innately higher risk due to the environment; one which rising temperatures slightly shift, but not significantly; certainly not as significantly as missiles and bullets flying through the air, or pirates with hostages. The Arctic lacks infrastructure; it lacks ports for rest and parts to repair with; it lacks salvaging and search-and-rescue capabilities; in effect, the Arctic is a region built on risk with reward for nations which can incur deep costs.

China is able to absorb the costs of lost ships in the PSR because the PSR is a piece of state security and expansion; Chinese influence in the PSR is not a matter of cost if the government foots the bill. China is as such able to allow losses in the Arctic without significant consequence because it is a national strategy, not a commercial plan. Such is the case in regions such as Balochistan, Pakistan- Chinese-funded projects under the China-Pakistan Economic Corridor have continued to advance despite years of attacks by Baloch separatist groups on Chinese nationals and installations.¹² The lack of commercial viability that deters purely profit-driven operators is exactly what makes state-backed involvement viable for China, due to state-controlled corporations; Russia benefits from the use of the NSR because it allows the nation greater say in international trade, something the West has been hesitant to grant it; further reason for nations to stay away from Russia. With US economic warfare, sanctions and secondary sanctions could be imposed upon the companies which take on Rosatomflot's escort arrangements in the NSR; thus forcing nations to either not use the NSR (if Russia continues to require the escort) or to cut Russia out of the system (if Russia does not require the escort in the future); either way, Russian leverage is lost over the NSR, which exists for exactly that reason. For the time being, however, it will remain a merely Russian-Chinese investment, one which is profitable, but only if nations are able to incur costs directly; otherwise, corporations won't touch the region.

An analysis of the NSR is critical to understand from a policy standpoint, through governance of the region, geopolitical tension, and military potential; China may require its own escort system and thereby utilize "protection" in the form of brigades and convoys in the High North. What is fundamentally revealed when observing the insurance market of a given route is the granular data that government releases do not benefit from extrapolating; the leverage China and Russia hold in the NSR exists only on their tab, the US has workarounds to prevent the NSR from benefiting Russia, and while China will utilize it as a foothold in the Arctic, such will be non-viable until better infrastructure is established, which will enable foreign companies to utilize the NSR without risk of loss of life, inability to salvage. The timeline this article predicts is as follows: China and Russia will continue to utilize the NSR, pouring money into it until proper infrastructure, search-and-rescue, and other establishments are created; this infrastructure will be largely Chinese-owned and run, and thereby the route will be Chinese-controlled. Such control will either discourage international trade, or it will enable other nations to utilize the infrastructure they didn't have to construct to hasten trade. China profits, and as the ice melts, the route becomes more and more viable. Russia loses leverage in the NSR as the Polar Silk Road becomes more prominent, and China is able to establish a firmer place in Arctic politics. Alternatively, the NSR and PSR will largely fail, as trade routes are beneficial but without the infrastructure, too risky to utilize. Such are the paths China and Russia could take, and the world with them. The credibility of the Polar Silk Road is able to be tracked over time, by

which flag states' insurers are willing to write NSR hull cover, the rates, and under what salvage and escort contingencies. The result is a comprehensive guide to understanding the developments of the PSR, its viability and volatility, which rhetoric and propaganda do not populate. Analysts assessing the durability of the U.S.-Russia sanctions regime could track how quickly, if at all, Western P&I clubs and hull underwriters re-enter NSR-adjacent coverage should sanctions ease, a leading indicator of de facto policy relaxation that would likely move faster than, and independently of, any formal diplomatic announcement. Once again, money moves faster than policy. The icebreaker count in the current debate of Arctic security plays less of a crucial role, if the question is asked, Why does this matter? Yes, icebreakers provide access to the Arctic, and at a steep cost; such is critical for research; however, does Russia's more than 40 icebreakers to America's 3 create such a discrepancy in the region?¹³ More specifically, these Russian ships exist as escorts for the NSR, in some capacity; if the route is never utilized, it is a sunk cost, not an investment. Some presently vital arguments for the NSR and icebreakers in the Arctic may become irrelevant if the NSR itself is never metastasized- at least not within a decade or so- due to a lack of insurance viability, search and rescue, or salvage. Cost is a deterrent which almost always maintains the status quo; flying cars are in theory possible, but are they cost-effective? And isn't the status quo still 'good enough'? Such questions must be asked before considering a route that on paper is faster and cheaper, but in practice is restrictive and highly risky. An icebreaker fleet is a capability. An insurable, liquid, competitively priced shipping lane is a market. The Kremlin has demonstrated the former in abundance. The insurance data suggests it has not yet produced the latter, at least not one open to anyone outside the Russia-China axis.

Naturally no argument is without its flaws; and the notion that insurance is telling contains such flaws. The first and foremost is the fact that insurance pricing is deliberately backward-looking. Premiums, loss ratios and exclusion cases are built on the history of claims, not on a prospective-oriented argument. As such, the changing field of the Arctic, the decreasing risk of ice and increasing infrastructure indicate a potential future, without a concrete insurance for it. The role of the Arctic and insurance in it is telling not of what will come but of what has already been established as the status quo. The risk in the Arctic therefore can only be calibrated in reverse using insurance alone. It is the establishment of policy that provides a forward-looking perspective. A market that has not yet seen a catastrophic NSR loss involving a non-Russian, non-Chinese vessel may simply not have had the opportunity to price that scenario correctly, rather than having concluded it is safe. Sea-ice retreat, in particular, is a trend the historical loss data will always underweight relative to its true forward trajectory, because each new ice-free week of the navigating season is, by definition, unprecedented in the claims record. Nonetheless, if policy indicates growth or more importance placed on the NSR, then such an incident provides unique prospective data.

Nonetheless, there is the fact that political risk pricing is rather subjective. The JWC's Listed Areas is innately binary and geography-based, a vessel is either within a boundary or outside of it, there is not such a grey zone, which impacts the volatility of a region. Skirting the edges of a dangerous area holds danger, even if less so, without the corresponding insurance costs, for example. The same principle can be applied to the Arctic, if a vessel travels strictly along the Russian coastline, where aid is slightly more accessible, even if the time frame is longer. A country-by-country or

route-by-route political risk assessment conducted by a serious foreign ministry or think tank produces more credible data in such a situation, with the nuance of travel which is absent in insurance alone. The absence of an NSR war-risk listing reflects the narrowness of what the JWC's mandate actually measures (armed conflict, piracy, terrorism) rather than a comprehensive judgment that the route is politically safe in every other sense that might matter to a policymaker, expropriation risk, dependence on a sanctioned counterparty, the durability of Russian-Chinese cooperation itself. Risk is innately nuanced, not binary, and should be treated as such. As a result, the sheer risk of the Arctic is not yet calibrated. Despite these shortcomings, insurance data provides a starting point of analysis of risk and probability in the NSR, that is otherwise absent, due to the lack of foreign ministry or think tank press releases. The only method of data analysis present is that of insurance binary war-risk

instrumentation, which changes *ex post facto* not preemptively. It is a faster and more falsifiable result than a diplomatic assessment which sits unrevised for years. As such, insurance is not the clearest and cleanest, flawless way to analyze the risk of the PSR and NSR, however it serves as the most viable option at present, due to its real-time response to risk developments regionally. The honest conclusion is not that insurance markets are a perfect Arctic intelligence system. It is that they are the most rigorously tested, financially accountable, and incentive-clean signal currently available, which, set against the alternative of relying on the stated positions of Moscow, Beijing, and Washington, is a considerably lower bar to clear than it should be.

The Northern Sea Route and the Polar Silk Road are, in the political vocabulary both Moscow and Beijing have chosen, framed as instruments of a multipolar trade order; proof that global commerce no longer needs to run through chokepoints the United States and its allies can dominate. Underwriters are not in the business of adjudicating that claim. But by deciding, transit by transit, whom they will insure, at what price, with what salvage contingency, and under what sanctions exposure, they end up adjudicating it anyway, as a byproduct of doing their actual job. The verdict so far, read through the pricing and the participant list rather than the press releases, is that the Polar Silk Road exists- but mostly as a bilateral logistics channel between two sanctioned and semi-sanctioned partners, insulated from and largely uninsurable for the rest of the world's shipping industry. That is a meaningfully different claim than the one being marketed, and it is one no foreign ministry on any side of the relevant conflicts has an incentive to state plainly. The insurers, because they have to get the number right or go out of business, already have.

Propaganda and press releases serve as state-sanctioned posts, but not as entirely accurate summations of risk, or true development. While it is easy to become involved in the emotional fearmongering or risk analysis of a volatile region, true analysis of risk, probability, viability and volatility originates from falsifiable data, not state-sponsored claims. Naturally nations benefit from creating an emotional pull in occurrences such as the development of a novel trade route. That does not mean that the trade route is innately successful, popular, or viable for most nations. While a route established by Russia and China is uniquely strategic, it remains, for now, a channel that connects two sanctioned partners to each other far more securely than it connects either of them to the rest of the world.

Strategic Anxiety in Southeast Asia: The Polar Silk Road and the Fading Monopoly of the Malacca Strait

Leonardo Gomez

The Shifting Center of Gravity

The Strait of Malacca has long been described as the maritime throat of the Silk Road, acting as the indispensable artery for global logistics. Stretching approximately 800 kilometers between the Malay Peninsula and the Indonesian island of Sumatra, this remarkably narrow waterway facilitates the movement of an estimated 82,000 vessels annually. Crucially, it manages over 40 percent of global seaborne trade and handles roughly 80 percent of Chinese crude oil imports.¹ This immense concentration of global commerce has provided Southeast Asian nations, particularly Singapore, Malaysia, and Indonesia, with unparalleled geopolitical leverage, cementing their status as the gravitational center of Indo-Pacific trade.

However, the geographic reality that fuels the economies of the Association of Southeast Asian Nations is the very source of Beijing's deepest strategic vulnerability. Coined as the Malacca Dilemma, the extreme exposure to a potential United States naval blockade in this critical chokepoint has historically plagued Chinese strategic calculus. A disruption here would instantly paralyze the Chinese economy, which relies heavily on maritime trade. Consequently, Beijing has been aggressively seeking viable alternatives. Enter the Northern Sea Route, the frozen frontier at the heart of the Polar Silk Road initiative. While this Arctic route offers a tantalizing bypass to United States maritime dominance, its rapid development is sending ripples of profound strategic anxiety throughout Southeast Asia.

During my seven years living and researching in mainland China, I observed firsthand how the institutional mechanics of the Chinese Communist Party prioritize overarching state security and supply chain resilience far above pure commercial efficiency. For Beijing, the Polar Silk Road, formally unveiled in Beijing's January 2018 Arctic Policy white paper, is officially integrated into its 2018 Arctic Policy and serves fundamentally as a state-directed strategic imperative.

The commercial incentives of the Northern Sea Route are undeniably potent. Navigating north of Russia through the Arctic Circle reduces the maritime journey between East Asia and Western Europe by approximately 7,000 kilometers, an estimate from South Korea's state-run Korea Institute for International Economic Policy, shaving up to ten days off transit times compared to traditional southern routes.² In August 2026, China officially established the first scheduled cargo service between Asia and Europe via the Arctic Ocean, transitioning the Polar Silk Road from a conceptual ambition to an operational reality.

But beneath this commercial veneer lies a defensive doctrine. The Northern Sea Route systematically diminishes Chinese reliance on volatile traditional routes, notably the Suez Canal, the Strait of Hormuz, and the Malacca Strait. By diversifying its transit corridors into the polar domain, Beijing is actively attempting to dismantle the maritime choke point historically held by the United States Navy and its Indo-Pacific allies, securing an uninterrupted logistical lifeline for both energy imports and manufactured exports.

Southeast Asia's Strategic Anxiety and Economic Hedging

For Southeast Asia, the Arctic thaw presents a looming existential threat to its economic architecture. A tiered port network currently anchors the Malacca Strait, with Singapore serving as the premier global throughput hub, while Malaysian ports like Port Klang and Tanjung Pelepas operate as highly efficient transshipment alternatives. A significant and prolonged diversion of containerized cargo and energy shipping to the northern routes directly threatens to marginalize these maritime economies, stripping them of both port revenues and regional influence.

To counter this strategic anxiety, ASEAN nations are executing complex economic hedging strategies designed to preserve the indispensability of their southern corridors, even if absolute cargo volumes eventually plateau.

First, they are pivoting to high-value processing. Rather than relying solely on the transit of traditional fossil fuels and containerized goods, Southeast Asian hubs are rapidly transforming into specialized processing centers. The green energy transition has intensified the trade of critical minerals like lithium, cobalt, and rare earths, and ASEAN states are positioning themselves as the vital refining and transit nodes for these new strategic materials.

Additionally, regional ports are undergoing aggressive digitization, automation, and capacity upgrades to ensure that the efficiency of the Malacca Strait remains unparalleled. The goal is to make the southern route so seamless and economically viable that the Northern Sea Route remains a niche alternative rather than a primary artery.

Furthermore, regional capitals are carefully navigating the strategic competition between the United States and China by actively courting infrastructure investments from both superpowers. By deeply embedding global supply chains into Southeast Asian soil, they aim to ensure that bypassing the region becomes economically and politically unfeasible for any major power.

Contrasting Regional Maneuvers: South Korea and India

While Southeast Asia attempts to defend its maritime primacy through defensive hedging, other major Indo-Pacific players are aggressively capitalizing on the Arctic opening, further complicating the regional geometry.

South Korea: The Commercial Opportunist

Seoul views the Northern Sea Route not as a regional threat, but as a generational economic opportunity. Treating Arctic navigation as a major policy priority, South Korea sent its own first trial container ship, the PanStar Acro, through the Arctic in August 2026, testing whether the route can become commercially viable.³ The Vice Oceans Minister of South Korea recently declared that the Arctic passage is bound to become an alternative to volatile Middle Eastern shipping lanes.³ Leveraging its advanced shipbuilding industry, particularly in icebreaker technology, South Korea aims to dominate polar maritime logistics and transform its own southern ports into the new global hubs of a reoriented supply chain.

India: The Strategic Balancer

Conversely, the engagement of New Delhi with the Arctic is driven by an urgent need for energy security and strategic balancing against Beijing. As China aggressively expands its maritime infrastructure across the Indian Ocean, India views the Northern Sea Route as a vital alternative energy line that remains free from the threat of Chinese encirclement. New Delhi is actively preparing to deepen its polar capabilities to ensure that the opening Arctic does not devolve into a monopolized Chinese corridor, maintaining a balance of power across emerging trade routes.

The physical and economic realities of maritime trade dictate that the Northern Sea Route will not completely render the Malacca Strait obsolete in the immediate future. The Arctic remains an inherently hostile operational environment. Treacherous weather conditions, shifting ice floes, and narrow passages mean the route is primarily accessible only during warmer months or by expensive and heavily reinforced vessels. Furthermore, the environmental toll of polar shipping is severe, as detailed in a 2025 Bellona environmental risk assessment of the route, with increased accident risks and noise pollution threatening to disrupt fragile marine ecosystems.⁴

However, the trajectory is unmistakable. As receding polar ice incrementally extends the navigable season, and as rising geopolitical tensions continue to threaten traditional choke points like the Red Sea, the strategic

allure of the Polar Silk Road will only compound. The launch of scheduled cargo services in 2026 proves that the geopolitical center of gravity is slowly beginning to drift northward.

For Southeast Asia, the era of unquestioned geographic monopoly is drawing to a close. To remain the indispensable crossroads of Indo-Pacific trade, ASEAN states must accelerate their economic evolution. They must transform their infrastructure from mere geographic transit points into irreplaceable and highly integrated nodes of technological and green energy supply chains. The Malacca Strait will endure, but its supremacy must now be actively and strategically defended.

Open Door in the High North

Aimen Wasim

Russia's BRICS courtship in the Arctic has become a prominent topic in contemporary geopolitics and can be visualized as an open invitation for partner countries to explore and contribute to the region's significant maritime routes and natural resources. However, Moscow's deliberate push to broaden its alliances through non-polar countries, while still strengthening its "comprehensive partnership" with Beijing, demonstrates more than just a diplomatic shift. It is a by-product of an underlying anxiety concerning overreliance on China. Notably, this diversification strategy is a symptom of an asymmetric interdependence between the two countries, particularly in the context of the Northern Sea Route (NSR) or polar silk road. The Arctic turns out to be a new territory for this dynamic, and to understand any game's pattern, it's important to examine its previous moves. Similarly, Pakistan has already been a part of the China playbook, just under a different name.

The full-scale invasion of Ukraine resulted in extensive sanctions from the US and Western nations and increased isolation for Russia in the global arena, including the Arctic Council. This pushed Moscow to adopt a geoeconomic strategy centered on leveraging the Russian Arctic by advancing alliances and expanding cooperation with non-Western countries, particularly through BRICS, including China, India, and Brazil, as well as close ally Belarus – in research, economics, infrastructure, and energy.^{4 5} This shift is publicly portrayed as a move away from a China-centric approach toward a broader coalition of "friendly countries."⁶ While strategic interests and actual movements in the Arctic suggest otherwise, raising questions about the authenticity of the BRICS outreach. Brazil's and Belarus's engagement in the Arctic remains nominal; beyond diplomatic participation, there are limited examples of active collaboration in infrastructure and investment. India's Arctic cooperation with Russia predates 2022. The 2019 Chennai-Vladivostok maritime corridor, a bilateral initiative between India and Russia, reflected New Delhi's independent pursuit of alternative connectivity.⁸ Most recently, its growing interest in using the NSR is not merely an expansion of cooperation under the latter initiative but also indicative of its strategic calculation regarding China, which is viewed as a strategic competitor – aiming to ensure that Russia does not become overly dependent on Beijing.^{1 3 7} While India has a clear national interest in the region, its approach remains cautious and selective, often described as "situational trade."

China's Arctic ambitions can be analyzed through the Polar Silk Road, a trade and connectivity project that runs along Russia's Arctic coast, the NSR. Although Moscow controls the NSR waters, it depends on China for financial assistance. This fuels Russia's growing unease about China being the sole operator in the joint development of the NSR, as Beijing holds greater economic weight than the coalition members, especially in investments, shipping, and infrastructure. Consequently, this asymmetry creates an uneven interdependence that puts the cohesiveness of the BRICS as a bloc at stake. Moreover, given China's initiative, the Polar Silk Road has recently moved from just a concept, first appearing in the 2018 white paper, into an operational reality. The Chinese shipping company, Sea Legend, launched its first scheduled container service, with its first vessel sailing from China to Europe via Russia's Northern Sea Route NSR, cutting transit time to 20-22 days.^{2 9} That usually takes 40-plus days from the Suez Canal or the Strait of Hormuz. Chinese official media has justified its motive for creating an alternative route by claiming that this shift is due to ongoing instability at existing routes.

The NSR, as an emerging alternative maritime corridor, poses competitive pressure on the Suez Canal and other chokepoints in the Gulf, which carry most of the world's trade. Including instability from wars in the Gulf and Houthi attacks in the Suez Canal, trade has been disrupted, with traffic showing a steady decline. This poses a potential risk to Egypt and other Middle Eastern countries because it could erode their chokepoint leverage and the rent revenue they have built up to date. However, it is not perceived as an immediate threat or a full replacement yet, as it's seasonal and requires expensive infrastructure.

China's avoidance of conventional chokepoints to reduce dependence, complemented by expanding influence through economic strategies, follows the same structural pattern in the Arctic as it did earlier in Pakistan's Gwadar and CPEC.¹² Pakistan leverages Gwadar to gain economic opportunities; meanwhile, China gains an alternative land route, bypassing the Strait of Malacca, thus reducing its Malacca dilemma and promoting its influence in the region – a counterweight to India. In the same way, Russia controls the NSR, while China aims to bypass the Suez and Hormuz straits via the Polar Silk Road project in the NSR, along with making a "gradual autonomy in the Arctic." This is exactly what Russia fears: the same old China playbook unfolding, driven by its historical tributary system.^{10 11}

China, in partnership with Pakistan, introduced the China-Pakistan Economic Corridor (CPEC) under its broader BRI framework to deepen economic cooperation focused on trade, connectivity, and development projects. CPEC appeared as a "game changer" and "fate changer" for Pakistan, contributing to the country's economic development through major infrastructure and energy projects, including Gwadar Port, the corridor's core. However, it left the country with a serious CPEC-linked external debt of 22 percent, making Islamabad involuntarily dependent on China. Some scholars call this debt-trap diplomacy.¹³ Russia's diversification strategy aims to avoid this exact pattern of creditor-debtor symbiosis, although India and Brazil remain reluctant to invest because of "dependency fear."

Pakistan's relevance to Russia's Arctic BRICS is not entirely outside the circle. Islamabad sought BRICS membership, driven mainly by its search for opportunities to benefit its faltering economy. However, to be accepted, Pakistan needs approval not only from Russia, which already backed its bid, but also from India. That's where the process falls silent, given the mutual rivalry between the two countries and India's perception of the Sino-Pak alliance as a unified strategic threat. Hence, Pakistan's relevance is more structurally confined to Gwadar/Malacca than the Arctic/Suez.¹⁴

Russia diversifying partners, China's alternative routes, and in between, the aim to avoid being dependent. This asymmetric symbiosis that is connecting the three regions the Middle East, South Asia, and the Arctic – revolves around the same old strategy: who controls and who can route around the chokepoints the world trade depends upon. Pakistan's Gwadar case shows exactly what comes out of this contest. Which makes us think: will the NSR remain under Russia's sovereignty, or could it become internationalized, as China aims to do?

Leverage Lost At Sea: The Story of Russia, China, and the Politics of the Polar Silk Road

Jack Lindstrom

Hard power. It is defined, simply, by leverage in fields of economy and military, cash flow and force. It is raw power, although one of the two means of amassing it is less internationally legitimate than the other. Leverage militarily is coercion through threats, strikes, loss of life, damage to infrastructure. It is fundamentally destructive. Nonetheless, for much of history, the military has displayed power. Trade and economic power, however, builds a nation up without costing legitimacy¹ - it is for this reason most rising powers established the economy and justified the corresponding growth of the military due to the expanded cash flow. Not all nations can be Rome, expanding violently to amass wealth, rather, they expand wealth to expand militarily. Domains of economic expansion are endless, primarily, their channel is trade deficits, lending and borrowing, a strong domestic economy, innovation, and resources. The powers of production guide growing nations to their ascent through new technologies and monopolized resources; in this way, nations that mastered steam and railways grew powerful, and nations resting on oilfields grew rich. Nonetheless, there is an option that has throughout history combined both military and economic strategy. Colonialism, expansion, and exploration brought wealth from abroad home; managing the seas, straits, and chokepoints, as Iran notoriously has with the Strait of Hormuz, provides a clear example of taxation through navigation. It is this mastery of trade routes, the way the Dutch empire conducted the Spice Trade, and the way China conducted the Silk Road, that made nations wealthy. To control trade is not simply to control the economic flow of goods and have access to those goods and resources; it is also to hold a monopoly upon them. Consider for a moment if a nation that controls the majority of trade with the world, that is, the highest trading nation for nearly every other nation, simply cut off trade and hoarded the resources. Decrease supply, increase demand; price skyrockets.² It is this very predicament that occurred when China restricted rare earth metals and critical minerals to the United States³ (US) in response to the 145% tariff imposition.⁴ The US has a response, however, isolating nations such as Iran with sanctions, tariffs, SWIFT restrictions⁵, and effectively icing the nation out of the world economy, which runs on the US dollar.⁶

Naturally, leverage is a tug-of-war, and economically it is no different. The US may control the digital infrastructure of the world's financial system; however, China seeks to control the world's physical trade. Such ambitions have been actualized in the initiation of the Belt and Road Initiative (BRI), which the world has watched closely.⁷

What the world has not observed as closely, however, is that which sits just atop it. On its head, as opposed to just under its nose; the Arctic. The Polar Silk Road is a Chinese ambition to master trade in the icy waters of the High North, in partnership with Russia.⁸ Russia lays claim to 53% of the Arctic coastline, and 40% of its land⁹; correspondingly, it issued seven permits for Chinese vessels to travel through the Arctic.^{10, 11} Imperatively, the northern pathway this opened for Chinese vessels¹² dropped shipping times to merely 20 days.¹³ Before this route, shipping through the Suez Canal took roughly 30-40 days¹⁴, and 40-50 days for travel through the Cape of Good Hope.¹⁵ Nearly half the time spent shipping goods from China to Europe has been lost due to an agreement between a major trading nation and a major Arctic power. The result is a dangerous relationship between two ambitious powers, and an uncomfortable place for the United States.

To best analyze the costs and benefits for each nation involved in this deal, Russia and China, this article will observe the incentives and payoffs for each, respectively, as well as the overall ratio, and which nation the deal favors.

China provides critical manufacturing capacity, particularly for Russia, in terms of ice-class vessels¹⁶, which cannot be built effectively by Russia in a post-sanctions economy.¹⁷ This allows China to produce the hardware for the new channel of trade, where Russia depends upon existing fleets.¹⁸ In the short term, this provides Russia with access to its own domain through an alliance, but grants China practical dominance in the region. Additionally, China provides the capital for the infrastructure for the Polar Silk Road¹⁹ (also known as the Ice Silk Road)²⁰; such a playbook China has utilized before, particularly in the Bay of Bengal littoral, wherein by owning the infrastructure China can control the utilization of that infrastructure.²¹ Similarly to the production and thereby ownership of ice-vessels, China is able to own ports, channels, and infrastructure necessary for trade in the Arctic.²² Therefore, China is granted unique leverage and power in the Arctic, particularly over its ally, Russia.

Furthermore, China can establish liquefied natural gas (LNG) projects which Western sanctions on Russia have foreclosed²³, in such a way, China works as a proxy of Russia to work around Western sanctions. Such workarounds, in ships and energy, for Russia, are a critical way of surviving Western sanctions²⁴. The final workaround produced by China is political cover. Russian expansion in the Arctic would be seen as- given the nation is engaged in an unfavorable war- aggressive. China, however, is known as a trade-based nation with a clear incentive to utilize novel trade routes. Europe can stomach Chinese infrastructure in the Arctic because it provides the European continent faster trade with the continent's major trade partner. Europe benefits from the Polar Silk Road (PSR) and is able to tolerate an expanding China²⁵, whereas it cannot tolerate an expanding Russia, which would negate the role of the sanctions imposed. This in turn provides China facilities and legitimacy to establish an export market for LNG, nickel and palladium, after the EU market has shuttered.²⁶

In exchange for these burdens, China gains a commodity supplier in Moscow; Russia has no alternatives for trade, and as such depends upon China.²⁷ As such, China can manipulate costs as it sees fit. Simply put, it is easy to get a good deal when working with a nation without alternatives. Additionally, the access China gains to the Arctic through the PSR allows a low-risk hedge against pre-existing chokepoints that can be imposed upon China. Namely, the Malacca Strait, which funnels Chinese trade through a chokepoint controlled by the United States²⁸, and retains a US Naval presence. As such, it is an insurance plan to slowly slip free of a chokepoint²⁹, to allow China maximum freedom of trade without risking leverage to the United States. In exchange, in theory, it risks leverage being delivered to Moscow; nonetheless, if it controls the infrastructure and ships, as well as serving as Moscow's only trade partner, it is a significantly lower-risk trade. Additionally, this exchange of leverage does not require the contesting of sovereignty or construction of legal systems to implement China into another route. Given that the Arctic is unclaimed land, it permits Chinese freedom of trade without having to negotiate with other nations, merely Russia, who, once again, depends upon China.

Furthermore, it establishes increased Chinese legitimacy as a "near-Arctic state", which permits an expansion of Chinese patrols, seen in the nation's recent movements in the High North in conjunction with Russia.³⁰ Such patrols and expansions mark the furthest north expansion by Chinese naval forces, establishing an enforcement to secure the economic pipeline in the Arctic.³¹ It is physical power supplementing economic power, compounding the influence China holds in the region.³² The forum of Arctic governance is established primarily between North American states (US, Canada), and Nordic nations, as well as Russia.³³ Barrier to entry has thus far been predicated upon physical integration in the region³⁴- China is attempting to expand access to the Arctic through trade, getting a foot in the door of Arctic governance politics.³⁵ Lastly, the financing of the project, such as the Arctic LNG 2, has no real cost, as it exists as an insurance policy, not a grand plan.³⁶ By opening the Arctic as an alternative, and not staking all of China's trade on it, it allows the gradual development of the region and China's influence in it; subtly, financially stably, and pragmatically.

Russia, by contrast, provides the bulk of the responsibility for the PSR, as the project runs directly through its domain.³⁷ Russia, therefore, has the final word on the project, and serves as the sole issuer of permits to Chinese ships transporting goods through the Arctic.³⁸ Primarily, Russia provides EEZ claims, establishing NSR basing from the Soviet era^{39, 40}, as well as the functional insurance and security of the PSR, by providing the nearest support in case of any incidents. Furthermore, it provides the legal backbone of the PSR through the permits and SAR obligations⁴¹, while retaining the fundamental coastline- the actual land the infrastructure is built upon. Lastly, Russia provides discounted commodities as they are sold on Chinese terms, as the sole trade partner; however, these material sacrifices and obligations pale in comparison to the strategic exchange Russia made. Moscow sacrificed power and leverage with China by accepting a subordinate bargaining position, serving as the horse rather than the rider for an operation in its very own backyard. Such a position Russia would likely not have taken, particularly in relation to the EU, pre-2022; as Russia suffers under sanctions, a crippled economy, wartime pressures and an international struggle for legitimacy, it is forced to take what bargains it can. Such bargains as the PSR throw a lifeboat to Russia, at the cost of long-term obligation; China seeks to capitalize on Russia's weakened position, and this trade and the establishment of the PSR crystallizes it.

In exchange for this role, Russia gains an economic lifeline- provided with capital and buyers from China that are otherwise irreplaceable. Russia also gains the aforementioned ships and technology which it could not construct itself due to sanctions⁴², granting the nation continued access to polar waters. Lastly, Russia retains international recognition; China grants Russia a level of legitimacy in asking permission for the PSR, and following issued permits, by respecting Russia it gains easier access in negotiations, which benefits China, as well as a furthered appearance on the world stage as a true great power. China appeals to Russia's desperation and need for recognition by coming forth with a deal which seems to save Russia and grant it ultimate control over its own region, which China desires- it seems on the surface to favor Russia, providing ships and technology, legal power over China, and an economic lifeline. China serves as Russia's workaround for sanctions- and one may assume that such a deal benefits Russia. However, short-term gains for Russia do not negate the long-term power exchange that took place in the dealings of the PSR. China gains significant access to the Arctic, and in turn makes Russia pay for access to its own waters, as it cannot afford its own ice-class vessels.

Such an imbalance of power is marked clearly in an LNG buyer's extract from Moscow⁴³: the discount of Russian crude and LNG to China is not a partnership discount but instead a captive-supplier price; without China buying Russia's energy, Russia starves economically. In 2022, Russian crude and LNG were sold to China at \$15-20 per barrel.⁴⁴ Figures from 2026 point to Russian ESPO, a high-quality crude blend, shipped from Russia's Pacific coast to China, dropping to merely \$9 a barrel below ICE Brent futures⁴⁵, while the cheaper Urals crude dropped to a mere \$2 to \$3 per barrel discount in some cases.⁴⁶ Given the tightening of energy availability due to Russian sanctions and the closure of the Strait of Hormuz⁴⁷, such access to Russian oil so cheaply is imperative to a manufacturing nation such as China during such a volatile period. So China can name its price- that is the tell of leverage more so than any infrastructure or vessel construction agreement⁴⁸, it is a clear, quantifiable figure which encompasses Russia's relationship, trapped in its own Arctic Ocean, suffocated by its borders.

This trade relationship is presented in Figure I. *Polar Silk Road Ledger*

Polar Silk Road Ledger

China / Russia: Gives and Gets

China

China Provides	China Receives
• Ice-class vessels • NSR infrastructure capital • Infrastructure ownership • LNG project investment • Political cover • Export market for Russian goods	• Captive commodity supplier • Pricing leverage • Shipping time: ~20 days vs. 30–50 • Malacca Strait hedge • Access without sovereignty disputes • Near-Arctic state legitimacy • Naval patrol range • Route dominance

Russia

Russia Provides	Russia Receives
• 53% of Arctic coastline • ~40% of Arctic land • Basing and legal apparatus • Permitting authority • Discounted commodities • Deference to China	• Capital and buyers • Shipbuilding substitute • Great-power status (subsidized) • Arctic relevance

Factor	China	Russia
Transit Days × Trade Volume	Outputs Velocity: Reduces shipping time from 30–50 days to merely 20 days. This time savings acts as a multiplier on total annual export capacity and drastically lowers per-voyage logistics overhead.	Inputs Geography: Unlocks the physical corridor through its sovereign claims and administrative permitting, but relies entirely on Chinese shipping volume to monetize the route.
Spot Price × (1 - Discount %)	Outputs Margin: Extracts massive economic value by dictating terms to a captive supplier, successfully securing sanctioned energy assets at steep discounts, such as a 40% reduction on LNG spot prices.	Inputs Distressed Supply: Trades maximum profit for sheer survival. Absorbs the steep discount multiplier as the necessary cost of generating liquid capital while frozen out of Western markets.
Sanctioned Assets × Tech Supply	Offshore Ownership: Leverages its unique position as the sole supplier of ice-class vessels and capital to convert upfront financing into permanent ownership of Arctic infrastructure and transit channels.	Inputs Raw Resources: Mortgages its future sovereignty and territorial control in exchange for the immediate technological workarounds required to keep its energy extraction operational.
Chokepoint Risk × Route Access	Outputs Strategic Autonomy: Drastically reduces its reliance on the US-monitored Malacca Strait. Every	Inputs Geopolitical Risk: Concedes an unprecedented level of access to a rising superpower on its northern

	ton of cargo routed North multiplies China's insulation against global supply chain disruptions.	border, trading its historical geographic dominance for immediate economic backing.
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Multiplying Variables III. How Russia Lost Leverage

Prior to 2022, Russia was established as a major player in the energy market as well as Europe as a whole. The EU held direct concerns regarding Russia, in particular the energy it supplied the Union. It was this leverage that Russia possessed that led to the establishment of German-Russian projects to streamline gas pipelines, including Nord Stream 1 and 2.⁵⁹ However, following the invasion of Ukraine and corresponding economic warfare, Russia was faced with a shuttered EU market, Arctic LNG 2 stagnation, and Rosatom, as well as shipping partners, facing secondary sanctions exposure.⁶⁰, ⁶¹ In short, Russia went from a colossal player in European energy affairs to a minuscule, isolated one. Such endeavors were largely the result of US economic policy and influence; nonetheless, the EU took a more or less united stand against Russia and its war with Ukraine. The bargaining power possessed by Russia, to trade with either the EU or China, was a healthy diversification of demand⁶², resulting in leveraging power amassed in Moscow, not Beijing or the EU's capitals. The shift from high-demand to little-to-no demand left Moscow high and dry; China served as the only partner in trade.⁶³ A desperation Beijing capitalized on. China, by contrast, remains one of the largest trading partners in the world; as such, it held all the leverage in negotiating with Russia.⁶⁴

It was this fundamental shift from a formidable power and energy powerhouse to an isolated nation that led to the leverage lost. The Polar Silk Road serves as the manifestation of this leverage and how it has fallen into the hands of China, perhaps better than other Sino-Russian endeavors.

The loss of a major world player in the Arctic shifted the multipolar world into a more simply polar world. As Russia fell off in the years following the initial invasion of Ukraine, China saw an opening not to make a partner or ally, but instead to claim that which Russia was leaving behind. The vacuum of power and resources Russia left in its wake as it became isolated from the world economically was taken up by China. Such a play was not to befriend Russia; nor is the PSR; instead, it is to gain another pawn, not another player. Therefore, China benefits from utilizing the PSR not simply as a way to show goodwill with Russia and implement a system of direct leverage over the nation, but also to rival the United States in an every-critical region. The role of PSR investment, expanded COSCO transits, and rare-earth diversification from the resource-rich seafloor of the High North serves as a hedge⁶⁵ against the US-controlled chokepoints.⁶⁶ Not only does the Arctic relieve the power the US holds in a chokepoint in the Strait of Malacca⁶⁷, but it also provides resources and access to those resources which are becoming critical.⁶⁸ As the Arctic ice melts, and it has, it opens more opportunities for resource competition and transport across the globe in the smallest chokepoint possible. To control the Arctic is to have direct access to North America, Asia, and Europe, the PSR sets a precedent for China to stake a claim in such an important region, as well as a military presence within it. It is easier to justify defending trade routes and protecting shipping vessels in case of incident than it is to justify an Arctic-roaming naval force. The PSR provides a ploy for military power to amass in the Arctic, seen in the aforementioned Chinese Coast Guard expansion into the High North. Were China simply trying to build teamwork with Russia, the leverage it has imposed would not be as extreme as it is; instead, it would utilize Russian vessels and forces, it would build not its own Arctic ships, but utilize those which Russia, an Arctic specialist, already possesses. Instead of piggybacking off of Russia, China has established a logical reason to expand its own Arctic power. This is reflected not only in the prices China pays for oil but also in it's

reluctance to fully underwrite the Arctic LNG 2⁶⁹; Beijing treats Moscow not as a partner but as a pawn; such symmetry is reflected in Figure I.

Russian dominance in the Northern Sea Route (NSR) has historically been established on proximity in the region. As the largest Arctic power, claiming the longest Arctic coastline, as well as Soviet-era administration over the region and continental shelf claims, Russia has utilized its geographic positioning to lay claim to the Arctic. Russia's claim through this continental shelf is through the United Nations Convention on the Law of the Sea (UNCLOS), which the United States never ratified^{70 71}; where China did, nonetheless, China has a shaky history with UNCLOS, boycotting the convention when it doesn't suit its purposes⁷², such as with the Philippines and claims over the legitimacy of the Nine-Dash Line.^{73 74}

Russian legitimacy over the Arctic has been enforced through its Northern Fleet and basing establishments throughout the region^{75 76}; however, these bases are highly vulnerable to Chinese chokepoint warfare, as they depend upon Chinese components, financing⁷⁷, and, given the establishment of the PSR, Chinese diplomatic cover as well. Russia holds leverage in the region, naturally, but leverage which is dependent upon financing and defense, in which it is most vulnerable. Russia could utilize its legal authority and claims over the region, but such would require the UN to treat Russia with legitimacy, after it has not treated such conventions with legitimacy in exchange; particularly seen in the Arctic Sunrise Incident (2013–2015)^{78 79}.

That is not to say Russia does not hold some level of agency in the Arctic; particularly in the Rosatom NSR administration, it does.⁸⁰ It also possesses the ability to slow-walk Chinese access to strategic assets, such as Novatek stakes⁸¹. However, fundamentally, the PSR undermines Russian authority in the Arctic by offering a short-term deal with long-term leverage costs. Moscow lacks the resources, money, and legitimacy to preserve its power in the Arctic; hence, it partnered with China in an attempt to save it. Such a partnership has only favored China.

In the balance of the world order, the West seeks to balance the power of nations such as Russia and China in all regions and aspects. Militarily and economically, the powers of the world pull upon chokepoints and leverage vulnerabilities in a tug-of-war of power and influence. The Arctic is the arena not of simply China overtaking Russia but also of China threatening the West. A Western response is not based on responding to military threats by Russia, but instead on economic concerns by China. China's economic influence and ambitions in the Arctic establish a clear goal of capitalizing on unclaimed regions of the world⁸², resources lying asleep on the seafloor, and a global chokepoint with access to the entire Northern Hemisphere.⁸³ The lack of Western icebreakers, dependence upon Chinese critical minerals, and absence of a financing pathway are all subsets of the US-China competition⁸⁴. It manifests nowhere better than in the Arctic, where critical minerals sit side by side with untapped energy reserves, a highly lucrative region to establish trade through.⁸⁵ Although such competition takes place in the Indo-Pacific, Africa and Latin America, the Arctic possesses something no other region, aside from the deep sea and space, possesses- novelty. The Arctic has never before been utilized to the extent it has the potential to be as a final surface front of competition, as the ice melts. The deep sea, like space, like the Arctic previously was a barrier-to-entry issue, wherein the technology had to adapt to the environment; as the ice melts, that becomes less true, and opens higher realms of competition. The role of the Arctic in the future of world affairs cannot be understated. Correspondingly, China's desire to monopolize the region as its greatest power has declined, while the West does nothing is an indicator of a dire future indeed.

The prospective upcoming years provide a clear plotting of China's ascent in the Arctic. Russia remains a durable, although junior, partner in the PSR⁸⁶, as the status quo continues, while China slowly increases its control in the region. Alternatively, Russia likely will attempt diversification from this dependence, likely

with states such as India and Gulf states.⁸⁷ The final potential outcome is that Russia suffers a leadership transition or economic shock- likely due to tightened sanctions, civil unrest, or a significant blow in the Russo-Ukraine War- and China consumes what Russia no longer can retain in the Arctic.

The implications for Western policy then are a response directed not, as it has been in the past, towards specifically Russia and solely Russia. Instead, a more holistic approach is targeted with an emphasis on responding to Chinese expansion in the Arctic. The competition between powers in the Arctic does not necessarily force other powers out. Historical collaboration or competition between Western alliances does not change the facts of Chinese leverage.⁸⁸ Additionally, treating the expansion of China in the Arctic as a low-risk expansion of a trading partner, the status quo, results in no actions being taken. Instead, Western powers should treat it as an imminent threat and risk losing the Arctic to a non-Arctic power. Icebreakers and mineral investment plans are therefore, under such a framework, not large expenditures on mere research or refineries⁸⁹, but instead practical tools to fight competition and investments protecting sovereignty against chokepoints. Western powers cannot simply attempt to contain Russia and relax in the Arctic, which presumes Russia as the primary threat and a declining one; but instead establish policies to respond to Chinese aggression and leverage in the Arctic.⁹⁰ Coalition-building is made easier by allies who are wary of Beijing and fatigued of Russia, establishing a strong Western Arctic pact to retain authority in an ever-critical region. China has held a precedent of more Machiavellian tactics than simply brute conquests; more recent governmental hesitance regarding the PSR results in an interesting thought experiment. Should China hold off on a larger-scale incorporation of the PSR, and instead approach control from a different strategic angle, what remains of what has been built?

The Arctic may not be thawing incredibly rapidly, but it is thawing. Perhaps in 20 or 30 years, the PSR will become a revolutionary piece of world trade. For the present, however, it is not. The West remains largely unified in the region, and the viability of the route remains in question. Much of the land of the Arctic has been claimed; it is the role that land plays, and who sails over it, that remains the center of future strategic debate.

As the world warms and ice caps melt, as AI races forth and critical minerals are required to build better, faster technology, and as access to energy and water becomes more imperative for national security, only one region remains as a dominant, yet-unclaimed and contested sector: the Arctic. Russia's influence in the Arctic and Europe has greatly declined. US and EU influence in the Arctic has stagnated; only China's has accelerated.⁹¹ The Polar Silk Road establishes a pattern of China utilizing Arctic nations for its own leverage, pursuing unique ambitions in volatile regions, establishing economic power under the cover of a trading partner, and backing it with military expansion. A response therefore cannot remain tailored to a Russian threat, but instead to a rising Chinese one.

Chokepoints Within Chokepoints: Submarine Warfare in the Arctic

Jack Lindstrom

There is a unique beauty in the Arctic; the ice, twisted and contorted by undercurrents and winds, made into irreplicable sculptures. The dark hues of the ocean and the lightness of the sky, tinged with northern lights. There is a beauty in the Arctic, for there is also a danger to it. The fatality of the air, the impossible cold of the churning water, the glacial pace of its movements, and its sudden, cascading collapses. The barren isolation of it. Much the same can be said of the cold steel alloy, which rests beneath the icy surface; which never glimpse the burning colors of the Northern lights. The only life for miles, but conscious life, human life. There is an elegance to the curvature of a glacier, of its shifting colors; such elegance is echoed in the streamlined body of a Borei-Class Russian submarine, powered by a nuclear reactor. Some of the hottest matter on Earth, in one of the coldest regions.

There is a beauty to a submarine, as well, because there is a distinct danger to it.

Nuclear capabilities, covert warfare, sitting above mineral deposits, undersea cables, rest within an arm's reach of such submarines; Russia has roughly 30 such submarines.¹ The United States, by contrast, rotates submarine usage in the Arctic, as seen in Operation ICE CAMP Boarfish, wherein a Virginia-class submarine was deployed in the Arctic as recently as March 2026.^{2,3,4} Despite these US movements, a concerning threat becomes obvious. US Intelligence Community's 2026 Annual Threat Assessment found that Russia concentrates two-thirds of its sea-based nuclear second-strike capability in Arctic bastions near the Kola Peninsula.^{5,6} Therein lie seven nuclear-powered ballistic missile submarines (SSBNs) that can reach Barents Sea patrol zones, just northeast of Norway, Finland, and Sweden, in under 24 hours after leaving their stationed bastions.^{7,8}

NATO's response was Operation Arctic Dolphin, an annual Anti-Submarine Warfare (ASW) training exercise that specifically trains for combat in Arctic terrain, while certifying new submariners.⁹ Additionally, NATO hosts Operation Dynamic Mongoose, a second ASW training program- albeit one not specifically limited to the Arctic.^{10,11} While Arctic Dolphin takes place off Norway's coasts, particularly in Arctic littoral zones, Dynamic Mongoose occurs directly in the High North; the Norwegian Sea and Arctic Circle itself. Mongoose serves as a strategic exercise to establish a stronger Arctic base for NATO, while Dolphin acts as a certification, practical training and commanding exercise. Put in blunter terms, Arctic Dolphin is the micro training of individuals and their certification; Dynamic Mongoose is the training of the international coalition of NATO nations in coordination and cooperation. Both exercises are in part trained against Russian security threats, as well as to better defend the Greenland, Iceland, UK (and sometimes Norway) Gap (GIUK[-N]).^{12,13} The GIUK(-N) Gap serves as the Arctic's key chokepoint; given that the Arctic is an increasingly significant region of geopolitics, particularly due to the role of icemelt (the Arctic Circle reached a temperature of 100 F or 37 C this July),^{14,15} and critical minerals (of which there are 30-50 unique types in the Arctic),^{16,17} as well as the role of energy resources such as oil and liquified natural gas (LNG) - containing an estimated 22% of the world's untapped supply.¹⁸

Therefore, the GIUK(-N) serves as not only a chokepoint between the Arctic and Atlantic, but a chokepoint within the world's most significant chokepoint, the Arctic. A physical chokepoint, as the world is not connected as closely anywhere else; even the Antarctic, which has more landmass than the Arctic¹⁹ and therefore cannot run undersea cables, submarines, or ships, is farther from significant land outside of Australia. The Arctic, by contrast, is nearest to Europe, Asia, and North America, wherein the center of the

modern world order lies. In terms of technology, the Arctic holds the necessary minerals for advancements; to power that technology, it requires the oil and LNG; to utilize that technology, it has the highest density of satellites above it, of anywhere in the world.²⁰ For trade, military movements, for minerals or energy, the Arctic is a critical chokepoint, most imperatively, because it is not yet claimed or constricted by any one nation. Furthermore, as the ice melts, it becomes more accessible to all nations, and not only the waters, but also the competition becomes increasingly heated in a more resource-scarce world.

The GIUK(-N) serves as the corridor from the Arctic to the Atlantic, serving as the primary point of movement for Russia's Northern Fleet. Naturally, NATO has strategic interest in defending and retaining this Gap, as it did initially in the Cold War, where it served as the line of defense against Russian submarine movements, tracking them utilizing a Sound Surveillance System (SOSUS)^{21 22} as well as maritime patrol aircraft. The Gap was also utilized to protect allied ships from World War II German U-boats attacking allied trade routes.²³

Clearly, the GIUK(-N) holds significance; correspondingly, NATO treats it as such, with such Arctic operations serving to better defend and train for such a specific reason.

Part of the reason the GIUK (-N) is so significant, though, is because it remains ice-free year-round. However, with rising global temperatures, three new chokepoints are slowly thawing into existence. First is the Northern Sea Route (NSR), which acts as Russia's path to the Pacific; increasingly ice-free summers allow this path, which connects the Barents Sea to the Bering Strait,²⁴ from Russia to the United States, with China acting as a support just south of the route. China holds a direct stake in the NSR, as it seeks to utilize it for its Polar Silk Road initiative,^{25 26 27} to expand trade to Europe, and so benefits from working with Russia to establish and secure such a route. Then there is the North West Passage (NWP), which acts as a bridge between the Atlantic and Pacific oceans, just above Canada. As ice has been reduced over the summers in the NWP, access has been created between the two great oceans, resulting in direct access for Western powers, namely the United States, with interest in both the Atlantic and Pacific regions, to establish faster access from one to the other. This greatly reduces not only time but also dependence on southern routes; nonetheless, it is not as commercially viable as the NSR; and as such serves only as a military corridor,²⁸ and one that is not yet particularly useful so long as much of the ice remains, for most of the year. In such a way it serves as a unique kind of chokepoint- a time-sensitive one, a gate, occasionally swinging open and closed with the seasons, but which, each summer, opens a little longer than the last.

Additionally, there is the Transpolar Sea Route (TSR), a route directly across the Arctic Circle, which dances around the North Pole. It is a deep-water route which has historically been greatly inaccessible due to ice; however, like all other aforementioned routes, ice-free summers, potentially as soon as 2050,^{29 30} would allow direct passage across the smallest- and therefore fastest- route from Asia to North America to Europe. This is where the thaw would be most prominent; not only because the ice here is the thickest and oldest, but also because the area is entirely unclaimed. Exclusive economic zones (EEZs) for Arctic nations stretch across the Circle and Sea, but do not touch the North Pole.^{31 32} The center of the world, wherein more nations would be able to stake claim due to their proximity and its centrality, establishes a new ground for competition. The world has never before been connected at a centralized location, wherein East and West are bridged at the top of the globe. As the ice melts, the North Pole- and its route, the TSR- become just that. This route would also allow for a bypass of the GIUK(-N) gap entirely, putting Russia, Scandinavia, and the US and Canada closer than ever. Russia and the United States have long stood eye-to-eye, across the world. However, the thawing of the North shrinks this distance to mere miles.

Lastly, the route of Western Bypass rests, a bridge between Baffin Bay and the Davis Strait. The Western Bypass sits between Canada and Greenland, and historically has already been largely ice-free. However, as the rest of the region becomes more accessible, it becomes more viable. During the Cold War, Soviet attack submarines were able to bypass NATO's GIUK monitoring system by traveling north, over Greenland, and cutting through the Davis Strait into the Atlantic.³³ And so the fox found its way into the henhouse, as it were. Nuclear submarines sandwiched between the United States and Europe, ready and able to strike. As the waters around Greenland become more viable, naval planners must treat Greenland as an island that is not only threatened from the East by Russia, but can also be flanked from above on the West,^{34 35} through the Bypass. NATO would benefit, therefore, from expanding its maritime surveillance beyond the GIUK(-N) boundary line, and instead look up, where Russia has already shown it's able and willing to go.

How, therefore, is the Arctic to be defended- or attacked? What warfare takes place in one of the most hostile environments in the world, where little life exists? The answer lies not on the surfaces of the Arctic, with the ice and bitter wind, but instead beneath it, with Submarines, GIUK(-N) Gap patrols have persistently worked with ASW projects to defend against submarines, and has been explicitly framed by NATO as a vital gateway to the Atlantic. NATO's newly announced Arctic Sentry mirrors the alliance's expansion, seen in the Eastern Sentry and Baltic Sentry establishments elsewhere.^{36 37} The High North, in short, is formally elevated to the same vigilance category as NATO's eastern flank.^{38 39}

The Kola Bastion for Russian submarines hosts the Northern Fleet at Severomorsk, Gadzhiyevo and Zapadnaya Litsa;^{40 41 42} the platforms accommodate Delta-IV and Borei SSBNs, which are armed with ballistic missiles of Layner and Bulava class^{43 44} (submarine-launched ballistic missiles- SLBMs). These establish one arm of a nuclear triad, which is defended by layered air defense, coastal missile systems, aviation, and dense electronic warfare (EW) coverage.⁴⁵ The role of these tools is to restrict NATO's freedom of access near the patrol areas. This evidence, put in conjunction with the critical chokepoint of the Arctic, displays a clear Russian strategic logic. This is a multi-domain, rich defense system built around a strategic asset; there is a difference between a base which exists to project power, and a base which exists to defend it. Such a fortress around these submarines works not as additional firepower, but as insulation. The logic is as follows: If Russia's SSBNs are pinned in port, located and tracked leaving the base, or destroyed early in the crisis, Moscow's nuclear deterrent is lost. Instead, it becomes hostage to NATO escalation dominance. Nuclear powers work only if the weapons cannot be located and struck. The strategic basing and firepower accompanying the submarines exist to protect the nuclear warheads. Therefore, this bastion and its defense are not any other base in the Arctic, not to Russia; instead, it is an existential, vital piece of power which must remain protected. It is not a power project, then, so much as deterrence for survival.

Naturally, this is where NATO's ASW operations come into play. Arctic Dolphin patrols in the GIUK(-N), and Dynamic Mongoose serve large-scale, international efforts, based in Norway and Iceland, and involve standing NATO Maritime Group One.^{46 47} The Gap patrols act as a security measure for the Atlantic Ocean, while also enabling Russian Northern Fleet transit. War is not an idle game; Russia does not simply watch NATO's drills in the Arctic in ignorance or apathy; instead, it responds with innovation. Russia's GUGI acts as the main directorate on deep-sea research, and operates the Yantar-class special-purpose survey ship, designed for oceanographic research; nonetheless, Western navies assessed the unit as a seabed-warfare vessel, not a research submarine.^{48 49} This is largely due to the fact that Yantar is capable of deploying submersibles to 6,000 meters in depth, which is able to reach almost any transatlantic cable, armed with equipment for tapping, mapping, or pre-rigging infrastructure for future disruption.^{50 51} The warfare of the Arctic rests not only in the waters broken by icebreakers and the satellites mapping the world, but also on the floor of the sea. This potential tampering of cables has the capability to disrupt communication between the United States and its allies, as well as other access to the internet, across the Atlantic as a whole. Open-source tracking has

marked Yantar departing Olenya Guba in the Russian Arctic; then appearing off Ireland and Scotland, not far from transatlantic cable routes.^{52 53} It is the Arctic and its geography which enables Russian interference in Western infrastructure. The naval threats of the Western world come not from the traditional routes of conflict and combat; no longer are there sea-battles and blockades, but rather new domains, far below the surface and far above the equator. Baltic Sea cable-sabotage has already been conducted to apply pressure on a technological communication chokepoint; the Arctic is merely the expansion of an established principle of strategy.^{54 55}

Arctic Dolphin reflects NATO's deliberate exercising into the seabed-warfare section of strategy and combat, corresponding advancements with the Arctic Sentry's novel role in NATO.⁵⁶ Yet, such strategy does not come as striking or shocking; the publicity of Arctic Dolphin is not merely a way of projecting power by displaying it internationally, but also works as a normalization of seafloor combat. It seems as routine as any other naval exercise; as does Russian tampering with transatlantic cables.

The status quo has slowly shifted to accept undersea operations as classical warfare tactics, and the abuse of chokepoints, such as cable-tapping, as only an extension of existing strategy. What is changing is where these operations are conducted. The Baltic is no longer the center of pressure by Russian naval power; instead, it is an ever-expanding empire,^{57 58} claiming mile after mile, as ton after ton of ice dissipates into the salt water.

Ice is elegant, and dangerous. In the same way, Russian submarine systems pose elegant threats, slowly taking the place of the ice in the Arctic. New routes, new resources, and new technologies are becoming available to the world and to the great powers that battle over it; a new theater of war has opened. Potential growth is also potential power; expansion in the Arctic, in any capacity, breeds rivalry, with nations that, with history dating back to the Cold War, hold animosity and distrust. New frontiers, between Greenland and Canada, across the Northern Sea Route, through the Northwest Passage, and of course, resting directly above the North Pole in the Transpolar Sea Route, are emerging. The technology and combat strategy have been studied and ingrained, but merely for one region, directly West of Russia. Russia will not play into Western hands; it is unwise to strike where an opponent is strongest; it is much easier to approach silently, invisibly, from the other direction. Submarines drift just outside Alaska, having taken the NSR;⁵⁹ or resting between Canada and Greenland in the Western Bypass, or above Canada in the High North, having taken the Transpolar Route. As the ice of the Arctic Ocean thaws, Russia's potential for power expands, while NATO remains focused on a region becoming increasingly obsolete. The GUIK(-N) Gap is critical, no doubt, but its critical nature decreases as these other routes become available. The nature of submarines is to be the stealth force, to tamper with cables and disrupt communications, to drift with nuclear arms just a few hundred miles away from NATO soil, just in case.

Arctic pilots and icebreaker captains have a name for a specific kind of ice; growlers. These growlers rest just below the surface of the ice, small, floating pieces which are hidden to the ships, but are still capable of punching holes in hulls.⁶⁰ Shoal ice, by contrast, sits on the floor of the ocean, scraping the bottom of ships and sinking them.⁶¹

The Arctic is like the ice it holds; it is largely invisible, as is the undersea combat aspect. The world watches for icebreakers, for Coast Guard patrols and planes, all the while there is the subtle amassing of strength underneath the waves, which will act as the major actors of both offense and defense in the battle of the new, thawing front.

Autonomy in the Arctic: The Role of the US Coast Guard in Innovation and Fabrication

Jack Lindstrom

Three to Forty-Five. That is the present ratio of US to Russian icebreakers.¹ The US, despite making an ICE deal with Canada and Finland to establish 11 more icebreakers, is still floundering behind Russia. However, the United States has not limited itself to the mere construction of steel, but to the increased technological capability to counter Russian icebreakers. Silicon trumps steel in US Arctic policy.

The US pivot to autonomous and AI-enabled systems in the Arctic is not, however, a strategy of modernization which is future-first, but rather an attempt at compensation. The United States is undeniably playing a game of catch-up with Russia in the Arctic, but autonomous systems are a method of projecting power despite a lack of it. In such a situation, it is beneficial for the United States to appear powerful and capable in the region even if it is merely a facade to disguise a lack of capability in the Arctic, while the construction of icebreakers is underway. The actual progress made in the US Arctic fleets is under fabrication; seen through the projects of Polar Security Cutters and Arctic Security Cutters, which are years behind schedule.² This begs a question, then: to what extent do automated and AI systems substitute sovereignty enforced by a physical presence?

Vermilion on white, a stark contrast reminiscent of blood on snow, is seen throughout the coasts of Alaska, particularly best in the steel hulls which shatter their way through the walls of ice standing in their path. However, only one vessel marks this splash of red in the cold High North: the USCGC *Storis*.³ Its counterparts, the *Healy* and *Polar Star*, sit docked in Seattle, Washington, waiting for use. The *Healy*, commissioned in 1999, has seen significant use, operating as a research vessel throughout the Arctic.⁴ In its twenty-seventh year of service, on July 13, 2026, an engineering casualty occurred, according to the US Coast Guard (USCG), including an "engine crankcase explosion."⁵ The *Polar Star*, however, is in arguably worse shape, as it takes on its fiftieth year of service, since its commission in 1976.⁶ Certainly, such ships are outdated, outclassed, and as a result, prone to malfunction, as seen in the USCGC *Healy*. As a result, only one ship braves the thick ice and high waves of the Arctic: the *Storis*. Washington has not ignored its dangerous lack of icebreakers relative to Russia, with the Polar Security Cutter program initiating in a 2019 contract with an original delivery target of 2024. However, the current GAO estimation is 2033, with overrun costs of roughly \$3.4 billion for the lead ship alone.⁷ As a result, the USCG is unable to maintain a physical presence in the white and navy landscape of the High North. Such a weak point must be shielded with short-term patches, while the long-term solutions are slowly established. The result is a more autonomous Coast Guard in the Arctic.

Internationally, the rewards of militarization have been made clear. Russia shifted from an economic policy to a deliberately militant one following 2022, corresponding with Russia's initial invasion of Ukraine. The result was an expanded Northern Fleet, *Yasen-M* submarines, and bases in the Kola Peninsula.⁸ This is compounded by the forty-five-ship icebreaker fleet Russia has established, including specifically combat-designed icebreakers, such as the *Ivan Papanin*,⁹ and Sergei Lavrov's aggressive posture towards Russia's international role.¹⁰ China, in tandem, has claimed its role as a "near-Arctic state," and as such has expanded its *Xue Long* fleet with nuclear icebreaker prototypes, as well as a record number of vessels in and around US Arctic waters and airspace in 2025, according to DHS.^{11 12} Such a development of these international roles is, as previously stated, in tandem, because Russia and China have worked together deliberately to expand their Arctic footprint, conducting joint operations, allowing Chinese ships and planes to travel farther north than ever

before.¹³ What is more significant than a Russian northern neighbor with fifteen times the icebreakers, or a Chinese expansion of naval capability, is the combination of both powers seeking to lay claim to a region which remains highly contested. As the world has become more intertwined, it is less palatable for a nation to invade another nation directly; instead, it is the unclaimed spaces and territories, such as those China has experienced, particularly surrounding the Philippine Batanes and regions of the South China Sea,¹⁴ as does Russia, as seen in Crimea.¹⁵ Such contested, unclear spaces, particularly the mineral-rich Arctic, provide the perfect battleground for Russia and China to amass power without risking international legitimacy. There is minimal loss of life; it is out of sight and out of mind for much of the world, the United States lacks a strong presence, and expansion is seen not as an act of provocation or invasion, but simply exploration. Nonetheless, nations do not patrol waters they do not intend to stake some claim to, sooner or later. As a result of this international pressure, the pivot from shipbuilding to technology-supplementing in the USCG's Arctic policy should come as no surprise. Such a shift towards autonomy provides more presence in the Arctic than the US would otherwise have, at such a critical time.

The USCG's use of autonomy as a structural strategy, rather than merely an addition to an existing structure, is reflected in its organization. The establishment of the Robotics and Autonomous Systems Program Executive Office (RAS PEO) in 2025 marked the first clear indication of the USCG taking technological policy by the helm in the Arctic.¹⁶ The RAS PEO was framed deliberately as a core piece of Force Design 2028 and described as "poised to be the most transformational enhancement to capability . . . since the inception of aviation."¹⁷ This is not merely a different distribution of funds so much as a fundamental shift in USCG policy, strategy, and organization. Unmanned systems have, prior to RAS PEO, remained scattered across multiple offices without centralization, and served as isolated pet projects.¹⁸ This newly developed structure the USCG has implemented instead organizes the portfolio by domain-specifically land, air, space, and shoreline. Such a design mirrors the Navy in its own unmanned programs; such is the path the USCG has taken. It is not simply increasing its stock of robotics technology or drones, but rather has reoriented specifically around a system the Navy utilizes for scaling autonomous programs.

The RAS PEO leadership has avoided traditional Federal Acquisition Regulation (FAR) based procurement in favor of commercial solutions openings, and other transaction authorities as a means of accelerating fielding.¹⁹ This high-speed acquisition is a direct response to the pressure exerted from Russia and China upon the USCG. The USCG is deliberately selecting a technology which is faster to acquire and implement, less traditional in US government contracting; this reflects the fact that the USCG cannot afford to wait for ships to be built. Instead, it establishes a faster pipeline of technology and equipment: equipment like Saildrone-type USVs,²⁰ under-ice AUVs such as the Tethys-class,²¹ as well as small-satellite constellations like the Polar Scout-type CubeSats.²² This hardware is in part run through AI-processed synthetic aperture radar (SAR) imagery; however, it is imperative to note that the US is rapidly closing the gap with Russia in terms of awareness in the Arctic- these tools serve as the eyes of the USCG in the seas, shore, and surface. The lack of physical combatants and icebreakers, however, does indicate an absence in the region. Awareness is greatly beneficial, and autonomy is a multiplier of this awareness, but it is not a substitute for the platforms and materiel which interdict, escort, engage, and coerce the way a proper fleet is able.

These autonomous systems, however, are not fully operated by the USCG; they are bought as well as rented by the USCG. Contractors fly and maintain the systems while the government pays for the hours or effect delivered, technology launched from cutters and shore sites, as opposed to the USCG deploying this technology on its own, without paying contractors.²³ The sluggish aspect of much technological adaptation is the process of learning, utilizing, and training; the USCG avoids this step entirely by paying these contractors, immediate power and action, no training necessary. However, a contractor-dependent ISR posture in a contested Arctic environment raises continuity-of-operations concerns should a contractor be unable or

unwilling to operate in a crisis or dangerous situation. These contractors are not private military companies, but rather drone operators; as such, their roles do not include specifically acting in crisis or conflict; it is such situations, however, in which their skills would be particularly required. That is not to say the USCG lacks the manpower and training to adapt this technology without contractors, merely that it is in the early stages of development. The USCG has confirmed it is developing a Robotics Mission rating as one of the RAS PEO's lines of effort, clearly demarcating a shift in structure as opposed to just the technology utilized.²⁴ One of the slowest-moving personnel structures in any armed service has gained a new pathway, one which indicates that autonomy serves as a permanent operational specialty, not an auxiliary skill. Specialization of labor, therefore, has been embedded in a system as sluggish as rank.

The RAS PEO serves as one of the most efficient responses in the US military system; the project began as a concept and quickly came to life in mere months, achieving Initial Operating Capability. Furthermore, it is designed specifically to grow and adapt to advancing and evolving software cycles. Icebreaker programs, as seen above, are long endeavors, taking years between contracting and steel-cutting, then further years to officially commission.²⁵ The arduous path to shipbuilding an icebreaker is time- and cost-consuming on a great scale, whereas the implementation of a semi-permanent contractor force with technology and training already in the works is a swift course to cut. That said, it is not an accelerated system because it is of greater strategic importance than a physical presence; rather, because it is fast, it has been prioritized. A quick fix is what the USCG required, and received; the long-term issue of physical power in the Arctic remains, with the icebreakers in the shop.

The shop itself does provide relief to the pressure mounting from China and Russia in the Arctic. The Arctic Security Cutter (ASC) program indicates that the USCG does not simply believe sensors and software will solve the issue of presence- or lack thereof- in the Arctic. A simultaneous push for steel and silicon provides the USCG a pathway, as the USCG attempts to force through the fastest hull-recapitalization effort in the service's modern history, directly distinct and deliberately faster than the Polar Security Cutter (PSC) program, which faced significant delays. The ASC program totals eleven ships, built through a trilateral agreement under the 2024 ICE Pact between the United States, Canada, and Finland.²⁶ To accelerate the shipbuilding process, contracts have been issued to multiple yards, namely Rauma Marine Constructions in Finland and Bollinger Shipyards in Louisiana,²⁷ and the Davie Defense/Helsinki Shipyard, which constructs both in Finland and in the United States, under a \$3.5 billion contract running through February 2035, covering the Davie-built portion alone.²⁸ Steel was first cut for the cutters in Finland in mid-2026 for the initial hull, with the fastest delivery expected in 2028 for the Finnish-built ships and 2029 for the US-built vessels at Bollinger's Louisiana yard.²⁹

The role of Finland participating in an icebreaker pact also establishes a future precedent: that the US will not serve alone on the international stage in protecting freedom of navigation, trade, and the security of the globalized economy.³⁰ Such a role of international participation in naval and oceanic endeavors is novel and imperative for US policy; the world following the rise of the US-led order in 1945 did not participate significantly in the security of its own order-instead, that burden fell upon the United States. However, as a new frontier quite literally breaks open, international northern powers are participating with the United States to defend against threats such as Russia and China. Although playing catch-up, the nations working in conjunction are able to craft significant gains through the leveraging of teamwork, which was previously absent, particularly in US icebreaker endeavors. The industrial base is leveraging overseas capability and proven shipbuilding in Finland to onshore more work into the United States and rebuild the defense industrial base, while also supporting allies- and being supported by them. The ominous perspective of this is difficult to disguise, however: the United States depends upon an allied nation for security and a defense industrial complex, in a volatile region. Nonetheless, even while leveraging allies, the project still sits years away.

Ultimately, such coordination between the United States, Canada, and Finland is imperative for long-term Arctic security, while the USCG utilizes short-term solutions in a structural way. The USCG's usage of autonomy is not simply a short-term solution, although it is; it is also a structural change designed to allow future accommodation of software with hardware- regardless of how long the hardware takes. What must be analyzed, then, given these compounding factors of software and hardware, is the viability of the solution the USCG has selected. In short, has silicon, even temporarily, substituted steel?

Historically, the Arctic has never been secured by surveillance or remote sensing; instead, physical presence of ships in the ice has proven such a stance. Given the role of Chinese ships and planes reaching farther north than ever before documented, the inability of the United States to respond, merely to surveil, is significant. The United States may be able to observe these trends remotely, but fundamentally it cannot do anything to prevent them. As Russia's nuclear-powered icebreakers take to the seas, contracted drones accomplish little in the short term, even if in the long term they may provide critical intelligence; they merely watch as the Russian vessels barrel forth. Arctic cutters utilizing AEGIS and potential kill-web architecture provide a unique solution; nonetheless, questions must be asked of the USCG's role.³¹ It appears the USCG is serving as a sensory nerve for the Department of Defense, rather than a strike force, and the mission creep of Arctic activity utilizing robotics remains untested. In the end, a maritime domain awareness (MDA) system that perceives Russian and Chinese vessels may improve awareness but does not provide deterrence. A shield of cameras is no shield at all. That said, a future in which intelligence and hardware are used in tandem provides the greatest leverage the USCG could hold in the Arctic. Intelligent warfare changes the game significantly; sensing the enemy first provides early warning, strategic response, offensive options, and unique power to the USCG. Knowledge, in short, is power; software provides the knowledge, but the icebreakers and hardware required are still unready, and so the power cannot find a proper channel at this time.

This article argues that such developments are not in vain, however, and although they may be designed as band-aids on bullet holes, they serve a larger purpose. Innovation and the utilization of novel technologies in a testing ground such as the Arctic serve two goals. First, it provides a substitute for presence, regardless of how effective, relative to a pure absence as a whole. Second, it provides a proving ground for technological change, incorporation, and cost. Such an argument would be quite different if the USCG instead utilized old ships, such as the USCGC Polar Star, in the Arctic, and simply made do without innovation. Instead, the USCG deliberately contributed material to establish a stronger technological base in the Arctic, even if the hardware that will utilize it is still in the works. The long-term solution of a fleet of icebreakers is, of course, critical, but such a fleet requires tried-and-true technology to supplement it; such technology, made to endure the cold and pierce through ice with radar as well as steel hulls, is a step in the right direction, even if it is not the leap that is required.

The Arctic region may not yet be an international hot spot. No shots are fired, merely patrols and practice operations. Nonetheless, it was such training exercises that preceded the Russian invasion of Ukraine;³² it is such exercises China practices directly around Taiwan.³³ The playbook remains the same: China's history of harassing fishermen in international waters is even present in the Arctic, as the northernmost operation conducted by China- in tandem with Russia- was explained away as a fisheries enforcement patrol, not a military drill of expanding capability.³⁴ The Arctic, therefore, is not the most obvious region of the world for geopolitics to play out; the Middle East, by contrast, is significantly hotter, particularly with the US-Iran conflict.³⁵ However, it is this very concealment which provides Russia and China room for expansion and conquest in an unclaimed, resource-rich region. The world likely has many years until conflict over the Arctic breaks out. Nonetheless, such a day will come, as the ice slowly cracks not under the force of icebreakers but under the heat of the sun and Earth. The more accessible the Arctic becomes, the more critical it is; it serves as one of the final frontiers of conquest, and perhaps one of the most valuable pieces of Earth. The USCG's

actions to expand into the Arctic by 2033 are ambitious, and rightfully so; however, they may be too little, too late, even with an additional eleven icebreakers, the United States would only have a fourteen-to-forty-five ratio against Russia alone.³⁶ The implications of China's expansion only worsen such odds.

Technology, therefore, is the saving grace where mere power falls short. It is superior to have one tank than a hundred horses. Should the USCG's innovations, meant to buy time in the Arctic, improve during their duration therein, such an advantage could greatly aid the United States in the region and, through a policy of deterrence, help prevent the expansion of too many powers in the ocean. Peace through deterrence is a viable strategy; nonetheless, it is imperative to prepare a strategy for the case in which the United States lacks the same capabilities as Russia or China in the Arctic, and to understand what that means for US power and policy.

AI and autonomous technology in the Arctic bridges a strategy that resulted from dysfunction in acquisition, and does not serve solely as a leap forward. It is the covering of a lack of quantity, materiel, and firepower with technology. US influence in the Arctic is not stagnant, however, and should the ASC and PSC deliveries fall further behind schedule, the risk could be high; likewise, if the technology is not truly beneficial, and MDA data does not feed into real interagency capability, the risk is higher still. Lastly, the variables of Russia and China, their cooperation or potential competition in the Arctic, only increase competition in the region and exacerbate concerns for US northern security. Substitution is not a strategy; however, technology is crucial if implemented in accordance with a timeline. Software is powerful, but it requires hardware; the USCG strives to utilize both, and a successful pairing of the two will greatly strengthen the USCG after a period of trailing Russia in the High North. If the Arctic is to remain free of blood on ice and snow, the presence of vermilion USCGC ships such as the *Storis* is imperative; the role of the technology now aboard remains to be seen.

The fundamental question, therefore, is one of time. If the Arctic remains physically uncontested by the time the USCG retains a physical presence with a fleet of icebreakers, enabled by the new technology, then the United States retains security in the region. If instead the ice melts faster, Russia becomes more ambitious, China more aggressive, or vital resources are strained, forcing extraction from the region before the USCG is able to act, the United States is at high risk in the High North.

The Orbital Funnel

Jack Lindstrom

Black and white. That is the world modern competition lives in, while two clocks count the pace of nations working ceaselessly for leverage.

The place is the Arctic; and the space above it. The ticking of clocks poses a pressure of timeline; one measured in years, the other in minutes and seconds.

In the most desolate regions accessible to humanity, there is strategy, there is power, and there is politics. Not unlike the plastics which have been found in the deepest reaches of the world's oceans, mankind leaves a mark truly universally. The paradigm of a white landscape contrasted with one almost entirely black is a remarkable juxtaposition, one which, nevertheless, serves as a modern point of friction. The Arctic serves as an orbital funnel in two ways, firstly as a zone with maximal satellite traffic density as well as maximal global navigation satellite systems (GNSS), thus making it a distinct proving ground for electronic warfare as well as a competition in two of the most recent frontiers.¹ Space and the Arctic, both unclaimed, serve as proving grounds for rising powers, such as China, and vulnerable spaces for nations which, despite their power, have not seized them, such as the United States. The physical strategy employed in the Arctic is traditional; like most traditional warfare, one purely of hardware, constructed of icebreakers and ships, not distant satellites. Despite that, and due to the ever-hastening timeline of AI advancements and increased necessity for satellites, this pressure, as such technology becomes increasingly ubiquitous, applies to the Arctic and, more importantly, the space above it.

The transit time of the Northern Sea Route is measured in multiple weeks,² while the procurement and commission of icebreakers is measured in years,³ and the Coast Guard's SAR response time is measured in days. A polar orbital period of a polar satellite is, by contrast, roughly 90 minutes; while the utility of those satellites for GPS and GNSS is measured in sub-seconds; data transferred from space to a system of location and pathfinding, which can be jammed or spoofed by an attack, thus deactivating all the advantages of knowing one's location. These ticking clocks are not only a matter of speed, but also distance; they hold little direct influence on one another. That is to say, a nation can have a formidable icebreaker fleet, as Russia does, and still be strategically and navigationally blind, while another state which may not come near the ice floes of the Arctic is able to exercise its presence through electronic warfare (EW) capability and space-based intel.

The lack of connection, wherein the approach to the Arctic has been primarily physical, based in the practicality of icebreakers and utility of resources in the Arctic, without acknowledging the critical nature of the systems which hover just above, leads to a blind spot. One cannot measure geopolitics merely in the cost or tonnage of an icebreaker, nor the count in a fleet, and believe they hold a holistic picture, while discounting a critical technology.

The practical criticality of orbital mechanics lies in the unique shape and nature of Earth's poles. Nowhere else does the world converge, like at its poles, creating the perfect environment to establish a consistent local solar time without fail. Simply put, the reason most communications satellites roam the poles, or are otherwise near-polar, is that it provides information valuable for imaging, weather monitoring, and systematic surveillance.⁴ Orbits which provide consistency in turn provide quality; polar orbits do both. Because satellite ground tracks are widely spaced at the equator due to the Earth's width, they are able to record long stretches of Earth without the same depth of data. As such, satellite tracks necessarily converge when approaching the

poles, so that every polar-orbiting satellite crosses the North Pole region on every single orbit, regardless of which longitude its ground track is established on.⁵ Effectively, for satellites, all roads lead to the North Pole.

The Polar Scout mission established this geometric notion, as two 6U CubeSats were launched in 2018, with a sun-synchronous orbit at roughly 575km altitude, with a 98-degree inclination, which were built to detect and geolocate emergency beacon transmissions from Arctic vessels.^{6 7 8} Each satellite passes over the North Pole every 90-100 minutes. That is 15 to 16 orbits a day, with over 3 total hours of cumulative Arctic SAR coverage per day; because the Arctic is so small and serves as a pinpoint of the globe, as a pole, satellites can orbit it faster.⁹ That means more data, more depth, more clarity, and higher quality. The equator, by contrast, has no such benefits.

The Coast Guard's Polar Scout mission serves as an indication of the viability of polar satellites, despite the fact that it was deliberately constructed as a low-cost gap-filler to buy time ahead of the more complete Medium Earth Orbit Search and Rescue (MEOSAR) capability the US Coast Guard (USCG) was working towards.^{10 11} This also reflects how thinly spread the resources for Arctic-space-related endeavors are, and the criticality of the US Arctic domain awareness, all the while orbital geometry resting just above the Arctic is in fact favorable to dense coverage. In short, Polar Scout is not only an example merely of the quality specific to polar-orbiting satellites, but also exemplifies the problem with the Arctic-Space Domain in US strategic policy; it ignores what is out of sight and out of reach, by resting in space.

The consequences of evolution fall in line with the benefits. The strategy of GPS sits at 55 degrees, no higher. Until, of course, it did, in the Arctic. This high-latitude geometry, which allows for dense satellite overflight, in turn degrades the accuracy of GPS, as every satellite for GPS sits inclined 55 degrees to the equator.¹² This configuration was optimized to provide strong, evenly spread satellite geometry, while other satellites overhead or otherwise spread out around the horizon mapped the globe. And yet, exceeding 55 degrees latitude, the geometry of satellites shatters; no GPS satellite passes directly overhead, and by the time a receiver reaches the Earth's pole, visible GPS satellites are clustered no higher than 45 degrees above the horizon. And so, little black dots sit in the evening sky, invisible until they catch and reflect the light of the setting sun, and trickle past in dreams like the soft tears rolling down the face of the sky, as it lies on its side.

That image is a striking one, and yet there are more striking images still, or, perhaps, the lack of images. A loss of GPS, of satellites, of Western authority over space and EW; that is what polar satellites and their nature change. The threat of technological darkness is hopefully as memorable as those teardrops.

Russia is structurally positioned better to exploit the gap in GPS operations in the High North than any other Nordic or Arctic state. The practical result of the satellites sitting higher than 55 degrees is a loss in positioning accuracy, particularly in the vertical dimension, for any GPS-dependent platform which operates in the increasingly volatile region of the Arctic. Russia is able to outplay other states in this domain. GLONASS, a Russian constellation of satellites, is specifically engineered to outperform GPS and Europe's Galileo at high latitudes, its orbital inclination of roughly 64.8 degrees, nearly ten degrees steeper than GPS, gives it materially stronger observation geometry above the Arctic Circle.¹³ It is supplemented by additional satellites in high-inclination Molniya orbits. These Molniya orbits are a Cold War-era orbital design which have been optimized precisely for reliable coverage of polar territories.¹⁴ Russia's armed forces have paired this navigational advantage with sustained, active EW deployment. EW centers operated by Russia's Northern Fleet are reported to project jamming and spoofing effects across ranges as far as 8,000 kilometers; a blanket over the globe, gone dark.¹⁵

Everyday life for people navigating;-pilots of planes and ships alike, military and trade, commuter ferries, so on and so forth, made lost. The maps which Scandinavian nationals utilize to map their trade routes or

military deployments, without a clue to location.¹⁶ GPS has become ubiquitous, so much so that the world relies, perhaps, too much upon it. Nonetheless, such dependence will be terribly consequential should Russia engage in electronic warfare attacks against the satellite systems established over the world. More than anywhere else, however, such a threat is present in the Arctic. As Russia has progressed to capitalize on the Arctic and master navigation within it, it has also created a system which allows it to shut off those same capabilities for the rest of the world. In short, there is only so much space above the 14 million square kilometers of the Arctic to position satellites, which orbit it, without becoming cramped. Should Russia take up the majority of that orbital space, the West is forced to have a permanent blind spot; or else have to negotiate for an eye in the sky. GPS jamming and spoofing have been extensively documented throughout the world, namely the Baltic Sea and Middle East, contemporary theaters of conflict. However, the Arctic is unique in that it holds a GPS vulnerability which has a specific, direct weakness in GNSS geometry, which exists nowhere else on Earth to the same degree. Additionally, it is home to the only nation which has an independent satellite structure which is designed to exploit that very vulnerability.

Given Russia's strength, the West's weakness, and the modern race to claim both space and the Arctic, as well as the acceleration of technology including satellites, with limited orbital convergence, there is a clear tension brewing. Three main reasons accelerate this tension and amplify it: firstly, satellite traffic density is highest at the poles; therefore, more sensors, cross-links, and more opportunities for coordination or interference are concentrated in the Arctic.¹⁷ Think of it not as an abyss of cold, thin air above and thick, churning ice below, but instead as a crowded room. Perhaps that makes it easier to make friends; it is a more sociable atmosphere due to proximity and density, or perhaps it leads to increased altercations. Then add in the fact that one nation holds more or less the controls to leave most of the room in darkness, who already hold a distaste and mistrust of that nation for its invasion of Ukraine, and run the numbers again. Clearly, confrontation and therefore its manifestation in EW interference in satellites is inevitable. Secondly, the underlying infrastructure of GPS is weakest, particularly where the traffic is the densest; therefore, there is a combination of both maximum activity and maximum vulnerability which occurs at no other latitudes. Lastly, Russia has both the capability to secure its own navigation systems through GLONASS, while closing it off to others through electronic warfare. This is not just an advantage against the United States, but against all members of NATO who are reliant on the American GPS. The EW will likely not be a physical strike on infrastructure the same way bombing a power grid may be; instead, it is fundamentally digital. The strategic implications of a contest for Arctic operational advantage are not merely in icebreakers, no, but instead in orbital periods and electromagnetic range rings, wherein the assumptions which govern surface-based Arctic security apply weakly, if at all.

War is fought over three main domains: space, time, and scale. As Russia has enhanced its EW systems to combat GPS in the High North, particularly as a result of the usage of EW in the Russo-Ukrainian War, it gains leverage in these domains. Russia has shifted from centralized strategic jamming systems to tactical, AI-integrated layers which are designed to adapt to shifting communication frequencies, additionally, they are positioned in smaller, local jamming nodes. The Arctic is a smaller, more localized region, despite its incredible scale; the potential for EW in the Arctic, due to its electronic density, is high. Additionally, Russia has incorporated an automated command-and-control (C2) system developed through initiatives such as *Svod* to automate spectrum surveillance.¹⁸ These innovations, spurred on by the war in Ukraine, bled into the Arctic policy of EW as well. The Murmansk-BN Complex, for example, serves as a strategic mega-jammer which targets high-frequency bands off the Kola Peninsula, not far from the Finnish border. It can range up to 8,000 kilometers, enabling it to disrupt long-range communications systems, as well as the capability to blind NATO warships and aircraft moving through the High North.^{19 20} The Divnomorye Platform acts as a second station

of EW near the Kola Peninsula, as it is designed to spoof and suppress airborne radars, radar spy satellites, and drone navigation arrays over thousands of square miles.^{21 22}

Combined with the fact that the US Coast Guard is pursuing specifically these kinds of drone swarms to make up for its lack of icebreakers in the Arctic, the implications are dire.^{23 24 25} Russia is building strength exactly where the United States is weak.

Additionally, with operational centers of EW positioned at entrance points to the Russian Arctic, Murmansk in the west and Kamchatka in the east, Russia creates a clear digital border, which protects its submarine fleet. This submarine fleet is therefore insulated within Russia's walls of EW capability, disrupting any powers that attempt to strike its second-strike capability nuclear submarines, while expanding influence in the Arctic.²⁶ These centers work as both shields of insulation for defense, and mark an expansion of Russian power in the region; a wall, slowly pushing outward. And it isn't pushing out alone. As Russia and China expand joint maritime and aerial patrols in the High North, the maneuvers are utilized to calibrate electronic signatures and practice exchanging signals intelligence (SIGINT) and coordinated radar-jamming techniques against NATO detection nets; such are employed in the Greenland, Iceland, United Kingdom and Norway Gap (GIUK-N) to keep surveillance on the Russian Northern Fleet and submarine warfare.^{27 28 29 30} To blanket the world's Arctic Circle in darkness for NATO and the Western powers, due to a GPS EW wall which serves to scramble US reconnaissance and coordination, is undoubtedly a threat to Western influence in the High North. As the Arctic expands in terms of its strategic value, such a barrier to Western coordination and communication must be overcome to ensure Russia and its ally in China do not overtake the West in unclaimed waters.

Russia utilizes a policy of sword and shield; it creates its own GLONASS web for navigation, while threatening GPS; it creates an EW barrier to the West in the High North, which strategically works against US Coast Guard utilization of robotics and drones in that very region, while continuing to develop and field-test its own unmanned systems and electronic-warfare hardware for reliable operation in sub-zero Arctic conditions.

The black and white of the High North is slowly going dark, as Western vision and navigation go blind, due to Russia's power not merely in the region, but specifically in the space above it. In the thinnest stretches of air, Russia's influence over EW, GPS, and communication between NATO nations becomes most volatile. The action that must be taken, therefore, is GNSS-independent position, navigation, and timing. Navigation and positioning provide the space aspect of warfare, which takes place not only in the Arctic, but above it. The timing of signal-authentication technologies deserves the same sustained investment priority that Arctic defense planning has seen in icebreaker recapitalization given the structural weakness and corresponding density of GPS satellites in the Arctic. The chokepoint of space in the Arctic is unique and critical as it is narrow; nonetheless, it is the eyes of the Western world. The time which ticks by constantly for both the hardware and software only accelerates as Russia develops Arctic space systems such as its EW wall. Time is a valuable asset or costly liability in competition, as a dimension of war, particularly in the Arctic, where the melting of ice and rising temperatures only increase the risk of lethargy. A response then should be allied GNSS diversification, leveraging what already exists in Galileo, while pursuing authentication and anti-spoofing upgrades, as an Arctic-specific requirement, not a general resilience measure.^{31 32} GPS is demonstrably the weakest performing major constellation at the latitudes in and around the Arctic Circle.³³ Following the mold set by Polar Scout, low-cost CubeSat and smaller constellations offer a comparatively affordable path to increased allied space-domain awareness density in the Arctic, with expanded investment based on merit given how favorably orbital geometry already concentrates coverage at the poles.^{34 35 36} Furthermore, because Northern Fleet EW effects are able to reach up to 8,000 kilometers, allied Arctic exercise, planning, and civil aviation as well as maritime strategy and safety coordination should assume

GNSS interference as a planning baseline, rather than an anomalous event.³⁷ When the opponent directly displays EW technology, that is not the time to turn a blind eye and assume it will not be used. It is exactly that thinking which leads to the blinding of Western military power, such as NATO, if and when EW is used to blind GPS systems to the Western world. It is then, while half the world sits in darkness, that Russia is able to strike disoriented, uncoordinated, and isolated units in the Arctic, risking immediate disaster.

Icebreakers and patrol vessels remain visible, countable, and politically legible measures of Arctic capability, which is precisely why they dominate public and legislative debate. But orbital mechanics ensures that an entirely different, largely invisible contest is unfolding directly above the same ice: a convergence of satellite traffic that is structurally denser at the poles than anywhere else on Earth, layered onto a GPS positioning system that is structurally weaker at the poles than anywhere else on Earth, exploited by an adversary whose own satellite architecture and electronic-warfare posture are specifically built for exactly that environment. A complete accounting of Arctic strategic competition has to include this orbital layer, not as a footnote to the icebreaker debate, but as a parallel contest operating on its own clock, largely indifferent to how fast, or how many, ships any nation can put through the ice.

The black and white of the Arctic and space are desolate, brutal regions of combat. Nonetheless, the tension remains, and such contrast and difficulty does not excuse a lack of Western initiative to combat EW where it matters most.

The key to remaining in power is not by ignoring chokepoints, but by fortifying them, one by one, until they are chokepoints no longer, but points in a constellation of empire, not leveraged or threatened by other nations. Relieve the pressure on a chokepoint, relieve its critical nature, and you relieve the risk; a chokepoint is valuable only because it is vulnerable. The systematic fortification of chokepoints, then, is critical to any nation's national security. Nonetheless, the Arctic as a chokepoint is complex and holds further chokepoints within it, and some are only now thawing out of the ice.

Interconnectivity in the Ice: Subsea Cables & Their Importance to Sovereignty

Jack Lindstrom

In the tenebrous waters beneath the Atlantic and Arctic lie, resting beyond where sunlight can pierce the nervous system of the world. Where the light does not touch, energy runs fast and fiercely, rushing through cables resting in the tenebrous atmosphere of the seafloor. As the world becomes deeper and deeper engrained in the internet with the explosion of Artificial Intelligence (AI), it faces further dependence on these undersea cables; strategic networks, such as NATO, require communication to one another, secure lines where data cannot be tapped or disrupted, nonetheless, the expanding domains of nations like China and Russia usher in change like a vacuum of space in the ocean, allowing the water to come cascading in.

Submarine cables transmit 99% of data traffic, enabling the world to function not only as a globalized trading system and financial system, but also to share information, navigation, innovation, and ideas. Nonetheless, the focus of the Arctic as a strategic battlefield lies largely in the strength and size of icebreakers, the hard power of the economy and military, the Polar Silk Road, and vessels. Money and guns, in other words. That does not change the fact that the world is within an explosion of information in a digitalized network. Cybersecurity is a modern imperative for national security, as well as national strength, for it is through such systems; SWIFT, for example, depends nearly entirely upon submarine cables. So as electricity rushes underneath the quaking oceans, currency is exchanged, stocks rise and fall, news is transferred, and military intelligence is analyzed. NATO messages are sent and received, ships adjusted in their trajectory as a result. The coordination of the strongest military alliance in history depends in large part on the invisible and discrete nature of a subsea cable. Correspondingly, they act as a chokepoint. A policymaker who ignores such a volatile source of power and communication risks a detrimental loss of coordination and cohesion with allies, financially and militarily. The striking power of US economic warfare with China, for example, depends upon such cables; as does communication with economic allies, or the transfer of payment for resources such as oil. To ignore that which is invisible is to risk all that is. Chokepoint strategy functions entirely due to the sparsity of alternatives and concentration of vulnerabilities and strengths. To have options, therefore, is a key strategy in relieving pressure and vulnerability of a chokepoint. Undersea cables lack just that: alternatives.

It is because of this vulnerability that nations utilize undersea cables as targets to destroy or tamper with; Russia, for example, has utilized GUGI to plant explosive charges on the cables and intercept data through taps, as well as dragging anchors on the seafloor, which destroys the cables and their infrastructure. For this reason, from Norway to Greenland, Arctic undersea cables have become a priority for a plethora of nations, although approaches vary.

To defend national interests in an increasingly exposed region, where chokepoints play a vital role in the methods of warfare and strategy, is also to defend digital sovereignty. The same way the United States deliberately defends against cyberattacks, the insulation of its cables from threats is critical as well. One such solution is to increase quantity to decrease risk: diversified assets. Cut off one head, and it is problematic, but not detrimental. The solution proposed then was a contract between US-based SubCom, an undersea cable contractor, and Norwegian state-owned enterprise, Space Norway.¹ The ramifications of the agreement, as approved in March of 2025, include a 2,350 kilometer cable connecting Bodø, Jan Mayen, and Longyearbyen landings.^{2 3} The cost is roughly 2.8 billion Norwegian Krone, coming out to about \$250 million USD.⁴ This cable is known as the Arctic Way, an accurate title given how the cable connects Norway and its archipelago through the Arctic region. Naturally, given US involvement and the US's own utility of Arctic cables in and around Alaska, the United States holds a stake in the success of not only a US-based company, but also an

ally's digital sovereignty. Such sovereignty of digital infrastructure in the Arctic is imperative for a world where Arctic interests, as Russia and China expand into the region. An additional proposal, Polar Connect, seeks to connect Europe to East Asia through the Arctic Circle, around the North Pole, and is funded by the EU, while being coordinated by NORDUnet.⁵ NORDUnet is the leading cable supplier in Scandinavia and throughout European Arctic nations, working under Denmark, Finland, Iceland, Norway, and Sweden for research, communication, and educational connection.

Nonetheless, Arctic Way has a fixed price tag; each kilometer of traditional undersea cables, such as Marea, owned by Meta, runs roughly \$30,000 to \$45,000 per kilometer. The Arctic Way, by contrast, is estimated at \$178,500 per kilometer, in part due to the difficult conditions the Arctic presents. Despite this, the difference in length between 6,600 and 7,000 kilometers for a transatlantic cable, compared to only 2,350 kilometers for the Arctic Way, is telling of the difficulty as well as the value of producing such a cable. Undersea cables, despite this, are not treated internationally as infrastructure or categories of strategic investment, so much as one-offs. NATO states treat dual-use infrastructure categorically, as seen with the redundancy of GPS and PNT, or satellite ground stations; while undersea cables are not conventionally treated to such an extent, outside of Norway and the Arctic Way, with other NATO nations. The Arctic Way replaces the dual-cable Svalbard Fibre system, which has been in place since 2004, but was quickly becoming outdated; hence, the replacement of the Arctic Way is expected in 2028.^{6 7} Nonetheless, Norway has stated that existing cables will be kept in place serving as backups for years past 2028, as a redundancy measure.⁸ Thus, it is not a chokepoint, but an insulation and protection of one. In short, it is easier for an enemy power to cut one cable than two; it is also much more tempting, if it can kill communications in one fell swoop, to strike only one. The same cannot be said of redundant systems.

Space Norway, as a state-owned enterprise, works with SubCom not for a merely commercial endeavor; rather, it is specific and strategic. The Norwegian Armed Forces are a designated primary customer for certain capacity segments. The population of the islands is dwarfed by the strategic value of a cable system, one which is redundant to a pre-existing system. The Arctic as an opening frontier is naturally at the front of the mind for an Arctic nation such as Norway, hence the coordination with the construction and utility of the Arctic Way through Norway's Ministry of Defense and Forsvarsbygg defense estates agency.⁹ Forsvarsbygg is also independently building the Jan Mayen landing station on an island without a permanent civilian population; therefore, it is sound to reason that the utility of the Arctic Way is entirely military, as well as research, as only the Armed Forces and Meteorological Institute personnel routinely stay on the island.¹⁰ Such a doctrinal logic is already applied to NATO infrastructure and systems, particularly seen in GPS and PNT as mentioned prior, wherein categories of infrastructure which were once commercial provision are in the modern era routinely purchased directly by the government for defense purposes of the state. The Arctic Way is the flagship indicating NATO strategic logic, in the Arctic as well as in undersea cables, as the emergence of a larger pattern of NATO categorization. Norway is not alone in this endeavor and the expansion of infrastructure. The Pan-Arctic Cable System (PACS) established in February 2025, an MoU among six European parties, including the Dutch Subsea Cable Coalition, Cinia Oy, NORDUnet, Tusass, GlobalConnect and Tampnet, has been designated as a cable project of European interest; and is co-funded directly by the EU's Connecting Europe Facility (CEF) digital project.^{11 12} The expansion of undersea cables as a strategic asset before it is utilized against European nations is a replicating process. While it may be most prominent in the Arctic in Norway's example, the expansion of submarine cables as a whole displays a shift in European chokepoint policy. The PACS project is estimated to be ready for service in early 2030, and is conducted largely by Cinia Oy, a Finnish-owned company.¹³ The aforementioned NORDUnet provides the other five Nordic nations, while Tusass is Greenland's state telecom operator. The interested nations in undersea cables are not those like the United Kingdom, France, or warmer-climate countries. They are instead the ones with

proximity to Russia in the Arctic, and strategic concerns regarding the tampering, restricting, or cutting of subsea cables. The interconnectivity of Europe as a whole is, of course, imperative to EU policy and strategy; that does not change the fact that it is prioritized in action in the Arctic and Nordic regions. The Far North Fiber, which works with Cinia and Alaska's Far North Digital, launched initially in 2021, a shift for Finland to work with the United States rather than Russia, following the Finland-Russia Arctic Connect Cable collapse in May 2021.¹⁴ Arctic nations are looking for secure submarine cables for strategic purposes.

Put simply, there is a pattern, one of Nordic European states working to secure sovereign digital infrastructure as a strategic precaution against chokepointing by other Arctic nations, namely Russia.

Greenland follows a unique approach to the same strategy, in that it is selective in its allies, and utilizes domestic infrastructure to own the cables it utilizes, so that it is not caught flat-footed in terms of cable sovereignty, if and when such a jurisdiction becomes a question. Tusass holds a legal monopoly on Greenland's submarine cable market, not because Greenland is an island which encourages monopolies, but because it does benefit from subsidies favoring one specific company to act quickly and effectively to establish safeguards to national security concerns. A nation does not care for a temporary monopoly if it protects long-term security. Furthermore, Greenland, by working only with Tusass, effectively excludes Starlink.¹⁵ A partnership with Eutelsat OneWeb was explicitly framed, by this logic, around sovereign control over subsea cables.^{16 17} In an interconnected world, where the connection between nations is more imperative for military and economic reasons, as well as commercial and domestic requirements, no assurances can be built on alliances which can lose contact with the cutting of a single wire. Instead, building that web to connect the nations is a prerogative for nations which have seen disruption in subsea cables in their neighboring regions, and desire protection from Russian tampering. Greenland's insulation, then, by excluding Starlink, may at first seem counterintuitive- isolationist, in fact. However, this is not the case; instead, by working with the EU to fund a separate new cable around Greenland's Coast, while Tusass invests its funds to build out a new Nuuk data center, Greenland is instead strategically selecting its allies and partners. Such logic is furthered by the remembrance of US dominance towards Greenland, with quotes of ownership emanating from the White House regarding the nation. Greenland is not acting in an isolatory way, despite utilizing a monopoly and acting out of a desire to cut out specific alliances; instead, it is picking and choosing which leverage and exposure it is comfortable with, and what trade-offs correspond. It is, as chokepoint warfare fundamentally comes down to, assets and liabilities.

The original, classical definition of a chokepoint is geographical; it is the Bosphorus's thin opening between two great bodies of water; it is the Malacca Strait's potential to constrict Chinese trade flow, or Bab-el-Mandeb, or the Panama Canal, and so on and so forth; most recently depicted in the Suez Canal (2020) and the Strait of Hormuz. However, chokepoints are more critically just vulnerabilities; they are a limited route or limited action; in short, they are dependence upon rather than independence from. A nation which obtains all its grain from another- or all its oil for that matter- lacks leverage, and holds a deep dependence. Such is a chokepoint, if pressure is applied. The undersea cables connecting northern Europe are no different. The leverage in the Arctic runs through the dependence- namely the sparsity of alternatives and concentration of vulnerability- in undersea cables. There are only so many cables; there is, however, so much dependence upon them. The relaxation of dependence upon these cables exists in the expansion of them, as the Nordic nations clearly are conducting. It also requires increased legal and regulatory terms of a cable's operation, regardless of ownership, as so many nations depend upon cables. The security of the cable is imperative to all nations which utilize them, not just those who own them, in short. The precedent for restrictive access, as Greenland has conducted, is a strategic decision, even if a short-term limiting one; the US withdrew a landing approval for the Hong Kong segment of the Pacific Light Cable Network due to national security concerns, for example. Such mirrors the actions taken by Greenland to isolate itself from Starlink.

The line a nation must walk is that between being far too open; wherein a nation takes cables from all who offer, and the data is more exposed to tampering and tapping, and being too tightly shut; wherein a nation has only one or two cables which have high vulnerability and act as a chokepoint. Part of the chokepointing of the Arctic therefore lies in this second explanation, as only three global cable manufacturing firms dominate the market: Alcatel Submarine Networks, a French company, SubCom, the aforementioned American company, and NEC, a Japanese company. Even narrower, SubCom is the only publicly identified as holding polar-certified work, with Reliance-class ships; hence its selection for Norway's Arctic Way.¹⁸ There is effectively only one path to take for nations wishing to expand their Arctic cable security, and it is a United States-owned company.

Additionally, the concentration of landing sites for the cables is limited in the Arctic, particularly Greenland, Iceland and Russia. Russia naturally holds direct interest in the development of sea cables not only for its long history of tampering, seen on Christmas Day 2024, the cuts of the Baltic cables by Russian shadow fleet, wherein the *Eagle S* dragged its anchor along the seafloor, severing five telecom links, one which connected Finland and Estonia- thus denoting Finland's deep interest in investment of new cables, as well as tampering and physical data plants, and explosive charges.^{19 20 21 22} The Bosphorus is a single chokepoint in that it has no alternative routes; once closed, there are no alternatives. The undersea cables are akin in that there are such limited options; it creates an effective chokepoint, even if not to the same extent. A limitation of options (a lack of diversity of investments) leads to a vulnerability, bluntly put.

The Polar Express, despite its nomenclature, is a vital Russian cable, initially announced per an October presidential decree in 2020, which was followed up by the actualization the month after announcement, that November. The water does not crystallize on the ocean floor in the Arctic, not at the depth at which undersea cables are placed, in any event. In short, ice is no obstacle at the bottom of the top of the world. For this reason, Russia has worked towards 12,650 kilometers of cable, stretching from Murmansk to Vladivostok, along the entirety of the Russian Arctic coastline.^{23 24} As opposed to just one or two cables, there are six fiber pairs, able to process 52 to 104 terabytes in their ideal capacity; the cost was steep, roughly 65 billion rubles or \$889 million USD, which was financed entirely and exclusively by the Russian state, after a prior private-led initiative stalled- a project known as Russian Connect.^{25 26} The Ministry of Transport operates the initiative, while the first phase, which connected Teriberka to Amderma, was completed two years after the initiation, in October 2022.^{27 28} The remaining sections are scheduled for service from 2026-2028, an extension from the 2026 target. Arctic Way is designed to be smaller, swifter, and narrower. It is cheaper, shorter, and built around military needs to provide redundancy and security for a small Arctic NATO state. The Polar Express, by contrast, is an expensive long-term investment aimed at sovereign presence projection across the entirety of the Northern Sea Route coastline. Russia is in effect laying the route for a modern railroad, a digital one, and a maritime one, built to take advantage of an increasingly valuable piece of the world. Norway is simply trying to eliminate a chokepoint; the message is therefore rather simple: offense and defense.

China, by contrast, for its claims of being a "near Arctic power," has no coastline in the Arctic, and therefore no landing access. Nonetheless, in 2017 China and Finland held talks on the Arctic Connect cable, which was to be implemented by Cinia Group potentially in conjunction with China's Telecom. Despite its distance from the region, China seeks to get a foot in the door. The project for the Arctic Connect also required the Russian partner, MegaFon, which failed to establish the initial Russian Connect project, hence forcing the state to take over. MegaFon announced in May 2021 a reconsideration of Arctic Connect's structure and financing; and so the project lay dead in its tracks.²⁹ Finland nonetheless persisted; it pivoted instead to Far North Fiber, working with US-based Far North Digital.³⁰ Finland chose the West in this instance, but that does not alter the fact that it initially chose to work with Russia and China instead; it was only because the initial project failed

to come to fruition that Finland's hand was forced. Nonetheless, Finland's ambition for such cables led to what would become part of PACS, by working with Far North Digital. China was fundamentally locked out of negotiation unless it could buy in through a third party; namely Russia. China depends upon Russia for its access to the High North and was iced out when the project faltered. Interestingly, in 2011 Chinese investor Huang Nubo bid to buy land in northeastern Iceland, assumed for tourism, which was rejected by Icelandic authorities due to concerns regarding Chinese state access and influence. Nations are wary of China due to its lack of legitimacy and shadowy undertakings, and despite China's desire for a Digital Silk Road, the Arctic remains a firmly Russian and NATO-contested ground, at least in terms of the cables which sit in the murky waters underneath the thick ice.

The conclusion to draw therefore is that three main powers vie for influence in the Arctic for digital sovereignty and influence. Most prominently is Russia, focused on expansion and domination in the region, seeking to crystallize the way the ice cannot, on the seafloor, the Northern Sea Route as a viable and live pathway for trade and data. Norway, by contrast, seeks not to expand its reach but to defend its sovereignty; a shield rather than a sword, which is insulated and protected by newly built cables to protect from Russian tampering. Lastly lies China, which seeks to get in the room with the Arctic powers for its own interests, but is faced with great difficulty and skepticism in doing so. It is fairly plausible China seeks to expand influence in the Arctic utilizing its tell-tale infrastructure as a leverage strategy, wherein it implements a technology or means for one infrastructure and holds it hostage to the nations who depend upon it. Put simply, it is the deliberate creation of a chokepoint; give the state the carrot, then use it as a stick.

And then there is the United States. While Norway reflects broader patterns among North European powers and NATO members, the United States seeks a dual-pronged approach of insulation from chokepoints and expansion of influence. Passing the Strategic Subsea Cable Act of 2026, a law that directly imposes bellicose economic sanctions on foreign entities that sabotage underwater lines; a threat which protects legitimacy while retaining power, and one clearly directed at Russia, at least at present.^{31 32 33} That is not to say other powers will not later on utilize the same tactics- perhaps under the cover that it was Russia- to harm the United States. The US naturally has also worked to expand the 14,500-kilometer Far North Fiber project; however, US action is limited largely to the Alaskan region and depends upon reliance on Finland, Japan, Canada, and Ireland to bypass Russian territory.³⁴ Such a project would connect the Western world like never before, from East to West, across the chokepoint of the Arctic. The Subsea Cable Act also allows for coordination with these Western powers in case of a strike- to harm this Far North Fiber anywhere from Japan to Ireland would be to enact US sanctions, thus defending allies and alliances without signing any new treaties.^{35 36 37} This Far North Fiber is critical not only in US expansion in the Arctic and the physical tethering of allies, but also due to its novel technology- SMART (Scientific Monitoring and Reliable Telecommunications) capabilities. These are embedded sensors within the seafloor which track seismic activity, ocean temperatures, and acoustic data. Such sensors are not merely for nature analysts and oceanographers, however; they double as defensive listening ports, an ear in the Arctic which allows the US and allies to listen to Russian submarine movements, and potential sabotage in real time. Combined with the Act, this creates a dynamic occurring in minutes: the US senses cable tampering within minutes of its occurrence, is able to brace with other domestic cables for the damage to data; or else stop transmitting so it is not intercepted by Russia, and then immediately enact sanctions upon Russia for the incident. Like Norway, the United States is also establishing multiple domestic lines around Alaska, including the presently operating 1,900 kilometer which stretches around the northern coast of Alaska, connecting Prudhoe Bay and Utqiagvik to Nome, better involving Native communities as well as industrial sites.³⁸ 2027 holds the promise of a \$77 million project to lay an additional 1,545 kilometers to close the circuit between northern Alaska and the state's southern cities, down to Homer, as well as extensions throughout Hooper Bay to bring modern

telemedicine and economic access to the isolated sections of Western Alaska; although it is not as strategically critical as the insulation of the main circuit. Additional redundancies have been established, including subsea cables established through Prince William Sound and slated to open in 2027, to connect the terrestrial grid to the subsea grid, granting highly secure, redundant lines to the US military and civilian populations. Reduce chokepoints, increase options; that is the game.

The implications of the world's expansion in the Arctic and its seafloor are critical for national security, world communication and coordination of allies, particularly in the case of NATO. While the Arctic Council and NATO frameworks are not as capable in terms of categorical designation, they must be developed to ensure greater security and reduction of risk. The High North seabed infrastructure serves as a response to the subsea sabotage in the Baltic, only a few years prior. US and allied Nordic states hold a vested interest in ensuring Greenlandic and Faroese connectivity is provided by trusted, allied partners, despite Beijing's persistent attempts to hold influence over Greenlandic infrastructure. Such domineering by the United States has in turn only darkened Greenland's interest in working solely with the United States, and so it shares cables for its sovereignty, rather than alliances with the US alone. Nonetheless, the options for Polar cable expansion are limited largely to the only certified Arctic provider in SubCom, which in turn limits development due to a lack of competition in the market, not unlike the US's problem with icebreakers. While Russia strives to expand, Norway seeks to defend, and the United States attempts to balance both, China is stuck outside the market. The FCC's July 2025 Report and Order bans certain Chinese technologically linked firms from building cables that connect to the US, establishing a precedent outside the Arctic which will be applied within it, should China attempt to establish Arctic lines- as it had in the Arctic Connector.^{39 40} This precedent, however, must be reinforced to continue to limit Chinese expansion in a region it holds no claim.

The world runs on wires; it is a modern truth, and perhaps a strange one. Nonetheless, it is a truth; more concerning than Russian explosives or anchors dragged across these wires and their sensors is the role of chokepoints in the Arctic as a whole. The world is dependent upon these deep and murky submarine cables; as the ice in the Arctic melts, and the world seeks to replace the Suez route with the Northern Sea Route, as finances such as SWIFT travel through cables running alongside continental shelves, risk is only increased. If the world is only held together like a ball of yarn, wherein one cable being cut severs all the connections, then protecting that cable is truly vital. It is this same logic that has caused Nordic nations to establish their own cable routes, which they protect and defend, and which are being built even now. It is a different logic; one of ambition, which drives Russia and pushes it to string such cables across the entirety of the NSR; it is an attempt to control a region of the world which may become highly critical for trade in the coming years, as the ice thaws more and more. Digital connection is just as, if not more, imperative than trade routes themselves. They serve as a different kind of chokepoint, a novel one, but one nonetheless, in their nature of limitation, if not their nature of geographic power, such as the Bosphorus. Different nations grapple with varying strategies: to expand or defend, or, as Greenland diversify? China sits on the sidelines, striking at any opening to enter, all the while the United States works in conjunction with allies both to its East and West, but most imperatively nations with Arctic interests, to connect the world securely and effectively. The world adjusts to changing landscapes and novel technologies; nations do in their unique ways, but despite that, the competition between great powers, between Russia, the EU, China, and the US, all hold a stake in the ever-thawing Arctic Ocean.

Sunlight cannot pierce the ground on which the cables rest; and yet Russian anchors can- all the same, US sensors can detect and respond to such threats. Likewise, ice cannot form on the Arctic floor, only on coastlines; and as such, despite the complications and danger of the surface, which requires icebreakers to cut through and protect against icebergs, progress can be made. Each kilometer of connection ensures a more intertwined world, and one that cannot come apart at the seams with only one cut- but the world must retain

that interconnectivity; it must defend and expand it, as the US seeks to. It must build an empire of connection built not on negotiations and with nations as shadowy and murky as the water where those cables sit; but instead with nations transparent and allied, with trusted interests. Sovereignty has entered a new era, a digital one, and the heartbeat of that era sits not simply under the sea, but on top of the world, where the Far North Fiber seeks to connect great nations, across great distances.

Environmental Storytelling: How the Melting Arctic Ice Affects Geopolitical Power Structures and Its Consequences

Jack Lindstrom

Ice cracks, glaciers fall from their pale pedestals into the ocean, blue and all-consuming, hundreds of feet below. There is a splash, a flurry of white spouting like a geyser into the air, and then there is nothing. White flowers bloom in fields as permafrost thaws, their water hydrating soil which has lain dormant, but pregnant with frozen seeds, only now rising, as the warmth of the sun first reaches the soil in the High North. These are the changes of a new Arctic, a world which once stretched for a small infinity, at the roof of the world, come to life. The question of stability in the region is as much geopolitical as it is physical; and the answer is as obvious: *Is melting, fracturing ice stable?*

The decay of the Arctic, namely the loss of Arctic ice, is seen as an opening window for many great powers; China, Russia, and the United States all seek to capitalize on it. China angles mainly to utilize the Northern Sea Route's new long-term accessibility due to less and less sea ice.¹ The US, in turn, expands autonomous Coast Guard patrols throughout the region to preserve manpower and funding while icebreakers are under construction to further the push north, where the ice has not yet thawed.² However, the loss of Arctic ice is not simply the unlocking of a new domain of great power competition and resources but also a changing landscape. The environment itself is physically changing beyond simple icebergs melting into the sea; three unique physical processes all shape and restructure the terrain in different ways, which change the physical battleground for great power competition. The thawing of permafrost, the hydrological disruption, and the post-glacial isostatic rebound are all critical changes in a critical region which have thus far gone uncovered in international forums.³ Such strategic variables, however, cannot be ignored to any benefit. The shifting physical change in turn outpaces governance, monitoring, and legal architecture within a region which has for most of human history been treated as a static domain. Additionally, such changes in nature are not equal, and their long-term consequences benefit and harm nations disproportionately; nations must prepare for an inevitable future, and not simply through climate concern but also through strategic action.

The Arctic is contested in domains most easily seen in a simplistic map: trade, resources, and military. The Northern Sea Route provides trade access to China and Russia; in turn, it provides military routes to Russia, which grants the Chinese Coast Guard extensions in the Arctic region.⁴ The United States (US), by contrast, seeks to retain influence by expanding its continental shelf claim to capture resources, an act Russia has strongly contested in international forums.⁵ The ground itself is changing, however, and the competition between these nations does not account for it, at least not visibly. Ice loss fundamentally does not change what is accessible but instead what fundamentally exists in a stable way, and what nation holds authority over it. As such, this paper approaches the three-pronged geopolitical battle (trade, resources, military movements; Russia, China, US) with a three-pronged approach of its own; starting with Permafrost.

In 2016, an anthrax outbreak in Yamal led to the contraction of one documented human case. The outbreak was attributed to permafrost thaw, the result of a heatwave.⁶ As the ice clears sea lanes for shipping, it in turn thaws off ground which it has carpeted for millennia; a biologically inert land coming to life in a resurrection. Flowers may bloom from the permafrost for the first time in millennia (such as the *Silene stenophylla*),⁷ but diseases do as well. The incident on the Yamal Peninsula, Russia, remains the only reported and confirmed human case of a pathogen re-entering circulation from thawing Arctic ground. Researchers have since found that pathogens, along with other dormant organisms in permafrost, are only revived enough to infect amoebae in laboratory conditions.⁸ Unsettlingly, however, genetic fragments akin to those in smallpox were found in

permafrost-preserved remains near the Kolyma River.⁹ There has not been a second outbreak since, and no permafrost-derived virus has yet demonstrated the capacity to infect another human or animal host.¹⁰ Nonetheless, what occurred in Yamal marks the beginning of something humanity does not yet fully understand and cannot replicate effectively in a lab; permafrost is alive as a biological archive, what lies within it is largely unknown, and it is melting faster than it is being understood. The permafrost, which contains potential miracles of life or pathogens as destructive as anthrax, sits largely in Russia, regions where Western research access has nosedived since 2014 and has been grounded since 2022.¹¹ Additionally, no international parties or institutions exist which monitor permafrost pathogen risk, research, or documentation; as far as the world is concerned, science is blind to the largest region of permafrost in the world.¹² Whatever strange science is held in the frozen ground, whatever flowers bloom or bacteria awake as the sun warms them for the first time in thousands of years, may be lost as quickly as they were resurrected. The only party with access to the region- Russia- is also the least inclined to open it to outside verification; in turn, Russia is also the most vulnerable of any nation to any destructive forms of life, such as a novel strain of smallpox, without assistance. There is no oversight with organizations such as the WHO or Arctic Council, which can find themselves involved in Russia; as such, the biological volatility of a region, for better or worse, serves as a complete unknown in any calculations regarding the future of the Arctic and Russia as a whole. The fact of the matter is it is fairly possible there are no miracle forms of life in the permafrost; no lifeforms which kill cancer or can halt dementia; however, it is certainly possible that diseases survived in the permafrost, as evidenced by the anthrax outbreak. Perhaps it is a one-off in history and in nature; regardless, it serves as a concerning omen for the future of the Arctic. Species are lost to climate change and the decimation of their environments. A bullet is fired from a marksman on a helicopter, piercing the clear coat of a polar bear, as it catches the sunlight. Suddenly red erupts from the white scene, like Technicolor coming on for the first time again. The marksman fires again, and the polar bear is slain; the helicopter lands, the bear is bagged in a net, and flown off. This is how hunters claim polar bears; and yet all the same, beneath the feet of people living near and in Siberia, life replacing the polar bear, in some cases even more lethal, may awaken. The cold air sliced by the helicopter, and the strain of bacteria multiplying before it is ever understood, within the human body. Speed is the variable in both. However, time is not on researchers' side in the Arctic, as permafrost melts and Russia remains inaccessible to most nations. The nation that controls access to the grounds controls the narrative of what the ground contains, a useful form of leverage as well as suppression of the truth, which costs nothing to maintain and requires no outbreak to serve as politically useful. The Arctic's opacity functions not due to its remote nature alone, but also due to the jurisdictional power of the nation which owns such a territory.

As the permafrost thaws, the ice elsewhere melts. Glacial ice is released not in a slow trickle of freshwater, but instead in rushes, the collapse and shatter of a glacier into shards, sea ice drifting to shore. The result is thermokarst lakes, which swell for years and drain in days; wetlands which destabilize the land through oversaturation; waterlogging it.¹³ Then their absence leaves unstable ground, dry lakes like craters where glaciers once sat, but which shift the regulation of seasonal water tables. For millennia, the ice preserved water tables with consistency of freshwater; now the inverse is true. Communities and infrastructure strategists throughout Siberia and the Alaskan Arctic established an understanding of their world that permafrost served as a stable foundation. Pipelines, water treatment plants, and building foundations were engineered to sit on frozen ground; ground which now cracks and shifts, sinking and turning into mud.¹⁴ The infrastructure established for an Arctic world that is finding its streets turned into rivers is not the result of rising water levels but instead the result of thawing ice and permafrost. The pale ground, which was once a permanent, firm truth; the very ground some cultures and communities were built upon, trickling away as the temperature rises. Once the land was dry and cold, bitter and brittle, and then came the sun, and it was wet; the firm and hard soil turned to mud, the rivers overrun. A trickle at first, from the southern stretches to the

sea, and then further and further north, as the ice decreased and the Arctic instead became a cold swamp of glacial ruin. Such is the world to communities embedded in Siberia, northern Canada and rural Alaska.

The problem daunting these communities is twofold. Primarily, it is hydrological: the water which used to arrive in a seasonal rhythm arrives instead in floods, or worse, simply never comes. The subsistence patterns of Indigenous communities established on reading the seasons, on predictable water flow, are now disrupted and unstable.¹⁵ A dust storm in Saudi Arabia picks up dark particles and tosses them to the upper atmosphere; they drift, and fall upon the Himalayan mountains; the dark particles attract heat, and cause the melting of the snow atop the world's tallest peaks. This shifts the temperature of the wind, and correspondingly the intensity of rain, and where it lands; such is the origin of monsoon season in India.¹⁶ The problem with the Arctic is more direct and much more significant; the ice melts, the towns sink. The permafrost melts, and people get sick. The pattern is true for the rhythm of flooding and drought in the Arctic, and comes directly from the melting ice affecting the water tables.

The second problem is that of infrastructure; a community can be flooded, and all the while lack functional water; the physical systems which deliver and treat water were not built for thawing substrate and, in turn, have nothing to do with the quantity of water but rather the ability to process it.¹⁴ This unique vulnerability rarely stays domestic; contested regions such as Central Asia, Africa, and the Pacific islands have become points of contention between great powers trying to win over populations. China has already involved itself in infrastructure projects within the Inuit communities of the Arctic Circle; such pressure from a water supply issue is exactly the kind of issue China will capitalize upon.¹⁷ A vested interest, a legitimate cause, and a requirement to defend that cause provide a nation full capability to get a foot in a region it has no legitimate claim to. The influence of soft power as well as physical power plays a critical role in what nations hold influence where, and why. Such a subtle thing as the thawing of ice in Inuit communities could prove to be the very thumbscrew which, in turn, allows China greater leverage in the Arctic; and which would redefine the future of competition in the region.

Nations are rarely blessed with an expansion of their land by doing nothing. Greenland was once such a nation; however, gaining a 125-foot outcropping which had never been visible before in 2007.¹⁸ The land was dubbed by an Oxford scholar, Stefan Talmon, as "Stray Dog West."¹⁸ Stray Dog West was unique in that it was not rising land as the result of any volcanic action, plate tectonics, or classical understanding of why rock structures rise from the sea. However, it was a reflection of a warming climate and an input to where a maritime boundary sits; something great nations deliberate over fiercely. There are few ways to obtain more land without violence; most is already claimed. The Arctic and stretches of the world's oceans remain shared territories, although claims through exclusive economic zones (EEZs) and continental shelf claims take slices out of this common ground and establish ownership. A single rock exposed is not much of a geopolitical story; not the way missiles fired from aircraft carriers or the intrigue of submarines in contested waters are. Nonetheless, such a subtle claim holds great value for the nations of the world in that it allows for an expansion of Greenland's claim to the Arctic. As ice melts, water may rise elsewhere, but land rises too. The term for such an occurrence is post-glacial isostatic rebound; the rise of land once compressed under the weight of Pleistocene ice sheets.¹⁹ This rise under ice sheets is accelerated as the remaining ice retreats, no longer pressing the crust down, and out of the water, where ice once stood, land emerges. It may not be much land, but land legally is critical. The law governing Arctic maritime claims was not established under the notion that the earth itself would provide or take territory. As such, UNCLOS is anchored to territorial seas, EEZs, and the aforementioned continental shelf claims, which are set to the low-water line and to features which are capable of sustained habitation or economic life.²⁰ These anchors are physical qualities; qualities land possesses. It is such physical qualities that change as features of old coastlines shift, and features of land emerge where they were once buried under ice. There is no spirit of the law for a law established in physical

facts, assuming the world's physical features would not dramatically change, particularly in regard to rising ocean features. Nonetheless, as the world shifts, literally, no new treaties or delegations redraw lines; instead, the lines of territory in the Arctic move on their own. Legal instability is a unique form of the Arctic's unstable nature, one which nonetheless shifts nations' claims to the Arctic. Should other formations rise from the waterline, extensions around Alaska- or perhaps an Island chain connecting Russia's Rudolf Island to the latitude of 89° just outside the North Pole- such would mean Russia holds claim to a majority of the Arctic, simply the result of geography and fortune.²¹ Clearly then, shifting landscapes are critical to understand, prepare for, and to hold legal precedent upon. An inflexible law is a deeply fallible one. As Russia and the US contest one another in the Arctic Council and ISA due to continental shelf claims, the US remains outside of the UNCLOS signatories and as such, holds little legitimacy; such legitimacy and legal cohesion between great powers in the Arctic prepares for and preserves peace when the ice melts and land takes its place.²² While military engagement in the region through NATO or controlling the GIUK-N gap can secure physical chokepoints, the legal risk is present for the resources underlying the ocean.²³

Three physical processes; three uniquely, particularly interested parties, and three bodies of international law and monitoring. There is only one, however, shared failure. It is a lack of institutional influence: biosecurity monitoring, water and infrastructure governance, and updated, flexible UNCLOS baseline law.¹² The jurisdiction as well as practical effects of such changes hold dire consequences. Land can provide docking; floods and swamps can decimate cities and infrastructure; awakened bacteria can cause scientific innovation or a pandemic. Despite the effects of each, which largely remain to be seen, the overall role of legal precedent and international cohesion and order is left, like the ice, fractured. The consequences of unanticipated environmental shifts change not only the dichotomy of the Arctic powers but also their unique strengths and weaknesses. If Alaska's Indigenous population is vulnerable to coercion by Chinese infrastructure companies, the US has a critical Achilles' heel.¹⁷ If instead it gains a monumental stretch of rising land from the Arctic, it gains a rich claim to the resources within it; the same is true for any Arctic nation.²⁴ The pattern is singular, despite its fractioning into three separate cases; overall, the changing environment lacks an institutional response, which forces nations to neglect such problems until they worsen, or to utilize them as opportunities for expansion into a region where every action counts. A simple infrastructure project domestically undertaken in the High North provides a foothold for later communities to thrive, despite unpredictable water tables- an analysis of bacteria in permafrost awakens concerns of viral outbreaks as well as a deeper understanding of biology and evolution. Biosecurity is national security; land expansion is an extension of sovereignty, and water tables provide life for citizens of a nation, regardless of where they fall within that nation's borders.

As ice cracks in Alaska, land rises in Russia; flowers bloom and so to does bacteria, exposed to the air once again. The competition of great powers and their interest in a novel region tell a story of greater interest than simply environmental changes and challenges but an overarching connection of institutional fragility. The shifting landscape of what was once a tundra has since bloomed, and with it a unique combination of risks and rewards; what matters most is specifically how these nations play to their strengths and insulate their weaknesses, before more than just the ice cracks.

Legitimacy and Locals: Great Powers and the Voiceless Power of the Inuit in Arctic Politics

Jack Lindstrom

Men, some no older than 17, stand on the bow of a steel ship, its engines roaring as the waves break beneath the speeding mass of flesh and metal. They wave at other ships in the convoy, flags waving; cheers can be heard, the glint of teeth in the sunlight marks the thousand smiles coating that small region of the much larger ocean, the much larger world. These men are American, of all colors and creeds, who have survived a day at war, who have won a battle against what they see as powers of evil, utilizing underwater weapons to strike their ships in the Atlantic. They villainize those who drive planes into their comrades' hulls in the Pacific. These men are American; some are immigrants, others have been native to the land since before the continent had a name, or borders.

The United States has held a unique position in the world order and in world history alike; no other nation has ever been so constantly engaged with war, and retained legitimacy as well as it has. War is unpalatable; a nation driven purely by it overexpands and collapses, like the exertion of a sprinter in a marathon; it is left floundering. Internationally, nations that war constantly only gain and retain power in the world order for their lack of opposition; who would dare challenge a nation so mighty in combat? The unique reason this fate has not fallen upon the United States is due to the exigence and justification of these wars. Although there are a fair share of regretted American wars, a large number were fought- or at least were justified fighting- by the notion of justice, freedom, and democracy. A fight of good against evil, of moral against immoral; if the fight is legitimate, there is no international cost of legitimacy for fighting.

It may be easy to picture those boys and men in black and white photographs, still frames of smiles and flags, wherein the imagination can't help but add touches of color- the red of the flag, the dark of their eyes, as well as motion in their hands, expressions, and the wind. Nonetheless, legitimate warfare has not been the recent strong suit of the United States; military strikes in Iran, the conflict between Israel and Palestine in the Gaza Strip, much of the conflict in the Middle East, and so forth. The United States has held to its habit of war, and its reputation of power, while risking time and risking loss of legitimacy. It has retained it, in large part due to its initiation of organizations such as the UN, and more diplomatic actions taken internationally. The support of aid to Ukraine is a key example; the United States did not risk intervention with Russia, but did wish to show its support for a nation being invaded, and so it engaged in a supporting role of finances and material. The US also responded to nuclear threats with economic warfare in Iran, prior to the 2026 outbreak of conflict in Iran, as a means of strategic, non-harmful pressure.

The American soldiers fought a legitimate battle, and the response was legitimacy; a seat at the international table reserved for the United States, purchased by force. Some nations did not have that force, and were instead quietly left without power or legitimacy on the world stage.

Yet some nations cannot war; some nations have very quiet voices among the great powers gallivanting around the world. The Inuit Communities of the Far North are one such people. The indigenous Arctic community is represented on the world stage by the Inuit Circumpolar Council (ICC), an organization with some voice, but not a significant amount relative to key Arctic players such as Russia or the United States.¹² The ICC never had an army, nor held a UN Security Council seat; the convoy crossing the Atlantic had no mirror in the High North. Despite that lack of force, the traditional Inuit territory covers roughly 40% of the Arctic region, more homeland than any single Arctic state can claim.

So the question remains for the role of the ICC: what does a seat at the table look like for a people without an army to back it?

The waves flag and ripple, cracking in the cold boreal wind, but not American flags, and not upon any convoy. Instead, it is a flag of blue and white, the logo of the Arctic Council, an Arctic fox; a delegate steps into the building and through the corridor; step by step, the delegate enters an Arctic Council ministerial in Rovaniemi. There are no naval guns, the size of men, nor any flags of the ICC and Inuit peoples; merely a briefing folder and a seat which cannot cast a vote.

Nonetheless, Inuit communities are not powerless; it is just that power takes different forms. Some nations and peoples are more clearly hawkish; with a motif of an eagle holding arrows- others are more foxlike.

The ICC's seat on the Arctic Council is that of a Permanent Participant. Founded in 1977, the ICC represents roughly 180,000 Inuit across Alaska, Canada, Greenland and Chukotka.³ The ICC holds a UN ECOSOC Consultative Status II; its seat on the Arctic Council, one of six indigenous organizations who sit as Permanent Participants, sits merely a tier above observer, and one below member.⁴ Crucially, however, the Permanent Participant status holds no power to actually vote. Only the eight Arctic states are able to vote; nonetheless, Permanent Participants serve as co-constituting the Council's development over time, without a formal decision power.^{5 6} Influence need not manifest itself in the casting of a vote, but can instead take the form of subtle guidance, strategic conversations, and actions. Despite this form of manifestation, it does not change the simple fact that an organization representing 180,000 people across three continents lacks a practical vote in a council which determines the affairs of a vital region of the world, one populated largely by those 180,000 people.

In 2019, the Arctic Council failed to issue a joint declaration; reportedly due to disagreements on language concerning the climate.^{7 8 9} The ICC leadership publicly called the failure a "moral" one- the phrase came from International Chair Dalee Sambo Dorrough, who noted the organization then represented roughly 165,000 Inuit- making the specific designation that the Inuit communities suffer directly from the effects of climate change daily, while states debate semantics over a text concerning it.¹⁰ Such is the cost of bureaucracy and legitimacy- inaction. This is the cost of a presence without a voice; a shadow in the room and a fly on the wall- the ICC is not able to make any meaningful impact within the Arctic Council; in turn, it is also unable to have any impact outside of it. No economic might, no military force, merely a seat at a table it cannot change.¹¹ The conclusion that follows is rather stark; those who suffer the most from deliberation can do the least to stop it. The abstraction of climate change does not hold any real bearing on representatives from nations whose people do not directly see the effects of it; the ICC, however, does, and yet cannot do a thing within the ICC.

Real Ice, a company focused on preserving and researching Arctic ice, began an operation in Ikaluktutiak (Cambridge Bay), and did so in a way no Arctic Council ministerial required of the state; it asked permission through the Nunavut Impact Review Board, through field tests with local partners, plans presented to the affected community, and obtained permits.¹² It also obtained a letter of support from the Ekaluktutiak Hunters and Trappers Organization, a community-based non-profit Inuit organization with a strong presence in the community and town.¹³ The board itself, upon reviewing the same project, concluded the work to date is unlikely to cause adverse effects either socially or environmentally.^{14 15} The hunters and trappers organization of a town of under 2,000 people held more practical physical authority over the consequences of a project than the ICC holds over any Arctic Council resolution. It is a control over the local to affect the international, although such policy often goes over the head of such an organization.

The ICC's international chair, Sara Olsvig, has spoken out against testing a similar seabed-curtain geoengineering idea in her native Greenland, presenting arguments that governments need to seek the free, prior and informed consent of local communities prior to unethical interference.^{16 17} This cultural and communal bypassing by industries and organizations leads to native disgruntlement; nonetheless little action can be enacted. A UK-funded geoengineering trial met with the hunters and trappers organization, and found within that community that such an organization has more impact and influence than any Arctic Council ministerial conducting the same question and research.¹⁸ The fact of the matter is, to rule an army, one must individually rule over the rank and file. The Inuit communities are no different; in fact they are arguably harder to hold such power over because they lack conventional governing roles.

In Greenland, a nearly identical proposal sits gridlocked because it lacks any channels for enactment and approval; because it did not ask for local support and approval initially. Without the rank and file, there is no army, and certainly no empire.

Such rank and file allowed for the successful combat operations of the US Navy in their convoys; the Inuit have a different kind of army, not a material one, and one which does not fight with guns or steel, but instead with community resistance.

To own this army, however, and to appeal to its best interests, where the Arctic Council has failed, is nothing more than an opportunity. The power which holds sway over the Inuit and ICC communities in turn holds sway in a critical region of minerals, energy and geopolitical strategic power. As such, the nation which appeals to the best interests of the Inuit and ICC gains a critical foothold in a critical region.

Enter: China.

Chinese outreach in the Arctic takes one clear form above all others: money. Positive cash flow. Investment. China provides funding for mining projects and offers collaboration with Chinese polar research vessels, as well as financial support for badly needed infrastructure, such as transportation links and broadband internet.¹⁹ Undersea cables and bridges, ports and docks which aren't just used by the native peoples, but also by the Chinese providing the infrastructure and research therein. China builds long-term infrastructure, but it also owns it, benefits from its existence, and uses it. Additionally, should China hold leverage over the Inuit, and thereby the West, through this infrastructure and debt, then it forces alignment within the Arctic Council and Arctic region as a whole. Given that the Arctic Council has been largely frozen since the icing out of Russia in 2022 due to the Russo-Ukrainian invasion,²⁰ nations must deal with all interested parties, not just those with a flag. And so, China capitalizes on Russia's isolation from the Arctic Council, and its inactivity thereby.

The offers provided by China are not theoretical but instead such infrastructure investment offers from China appear attractive because they address what specifically these communities need. Listening to the people on the ground; that is how to win over the rank and file. Ottawa, Washington and Copenhagen have neglected and underfunded the Inuit community projects and needs; the cumulative effect, warns Elizabeth Donkervoort, a Canadian security researcher, is "an incremental strategy which builds access relationships and influence in the Arctic over time."²¹ The Polar Silk Road already serves as a waterway extension of the Belt and Road Initiative, China's masterplan for expansion of trade throughout the world.²² In fact, China did attempt to construct undersea cables and discussed a project involving Russia to do so, until the plan was abandoned and companies pulled out; China tried to work with the larger nations, but upon failing to get a foot in the door, found its way into a smaller, more manipulable room.^{23 24 25} Smaller nations worldwide have been indebted to Beijing, subject to its political coercion through infrastructure-as-alignment; the ICC is no different, except it emphasizes Chinese influence in a region of the world China cannot get another claim to, the Arctic.

Greenland represents the furthest extent of this case; China's declared 2018 Arctic policy dubbed the nation a "Near-Arctic State,"^{26 27 28 29 30} and Beijing's continued strategic interest in the region is telling of China's interest in Greenland. Additionally, from a strategic psychological standpoint, it makes direct sense; the US has expressed continued, direct interest in Greenland through threats and bluster. China sees the same strategic value- perhaps because the US so bluntly pointed it out. In turn, China used the carrot, rather than the stick, to win Greenland over. Greenland holds a significant rare earth deposit, part of the reason the US has acted so strangely possessive over the island. Beijing, controlling roughly 60% of all rare earth mining and around 91% of its processing, has a vested interest in retaining that monopoly.^{31 32 33} Greenland is a region which could break that monopoly and weaken China's position- naturally, that is to be avoided. As such, China, by winning over Greenland, would be able to help secure such a monopoly, as Kvanefjeld specifically holds deposits of neodymium and praseodymium, used for permanent magnets, as well as dysprosium and terbium, which are critical for jet engines and missile systems.³⁴ The Chinese rare-earth firm Shenghe Resources took a 12.5 percent stake in Greenland Minerals in 2017; its largest shareholder is China Geological Survey, a government-owned research institute under China's Ministry of Natural Resources.^{35 36 37}

³⁸ All roads lead to the CCP, as it were. Greenland's own minister of business and resources has stated plainly that without Western investment and involvement, Greenland must turn to other buyers; namely China. As recently as March 2025, Greenland's foreign minister publicly identified stronger cooperation with Beijing, including discussions about a trade agreement, as a government priority.³⁹

The Inuit Ataqatigiit party has campaigned against critical mineral mining, particularly on uranium mines in Greenland, as well as for shelving the Kvanefjeld project altogether.^{40 41 42} Despite this, the native voices in Greenland are divided; a documentary filmmaker, Jørgen Chemnitz, has spoken outright that "I think we should be very, very afraid of the Chinese."^{43 44} Despite that, Greenland is, in the eyes of some officials, left with few alternative buyers, and as such faces continued pressure to engage China.

However, China's courtship has stalled, as the Kuannersuit (Kvanefjeld) project ground to a halt after Greenland reinstated its ban on uranium mining in 2021^{45 46}; as a result, Chinese firms have found mining in Greenland costly, particularly due to a lack of infrastructure, which must be constructed from scratch for each project. Furthermore, Chinese offers to invest in infrastructure led to concerns over security risks. It is imperative to remember, however, that such Chinese costs and investments do not run back to a firm but to the Chinese government. As a result, no cost is too high for China's monopoly- a national security concern. Denmark, in the end, holds a formal check: the current security arrangement between the US, Denmark and Greenland effectively grants Copenhagen veto power over Chinese investment on security grounds.⁴⁷ Despite the public contention between the US and Greenland, no formal changes have been made to that arrangement. Nonetheless, keeping it that way is crucial to retaining Western influence over a nation which would otherwise allow a Chinese presence directly in the Arctic.

Russia and China both hold an anti-western influence in the Arctic, and Russia cannot be forgotten. Russia holds leverage directly over the ICC not through infrastructure but instead through government power. The Inuit population of Chukotka need not infrastructure to be told what to do; instead they already serve as citizens of Russia.⁴⁸ Moscow has the final say in Russian territory- Moscow thereby has the leverage to cut a quarter of the ICC's constituent population off from the three other sectors, spread across the Arctic Circle, as it benefits Moscow. The ICC represents 180,000 people in total; Russia was the sitting chair of the Arctic Council in 2022- hence the Council standstill.⁴⁹ As such, the Inuit population of Russia effectively holds no say in Arctic Council affairs, and struggles to hold influence or a voice within the ICC itself, due to their isolation in Siberia.

On March 7, 2022, the ICC received a joint statement from the Senior Arctic Officials of Canada, Denmark, Finland, Iceland, Norway, Sweden and the US announcing a pause of participation in Arctic Council meetings- a request the Russian chair agreed to.⁵⁰ The ICC is not the only native population, however; the Aleut International Association and Saami Council are also Permanent Participants in the Arctic Council, and their influence in the Council was likewise frozen and constrained.⁵¹ The Arctic Council's halt saw roughly a third of its nearly 130 circumpolar projects paused- spanning science, shipping lanes, and Indigenous youth suicide prevention.^{52 53} Such projects bore the burden of the split in the Arctic Council.⁵⁴ ICC Canada's leadership has tread carefully to ensure the war does not erase the prominence of the fourth region, at least rhetorically; ICC Canada president Lisa Qiluqqi Koperqualuk has said the organization "cannot but cast our eyes to Russia, which occupies a very large part of the Arctic," raising support for the ICC Russia sector.⁵⁵ Nonetheless, it is more difficult to amass international strength and credibility when a fourth of the members of that organization are effectively cut off from the Arctic Council. Russian influence is not a stick so much as a wall, cutting off the Inuit population, rather than granting them infrastructure or not allowing them to voice a vote. A Permanent Participant which speaks for four regions holds less legitimacy when it can only fully act for three. Three-fourths of a voice is hardly a voice at all. At the very least, not a firm one.

Dust and smoke rise from the pits of Greenlandic soil, extraction here, infrastructure there. Simultaneously, a fourth of a faction loses its voice as the nation it resides in wages a war widely regarded internationally as illegitimate. Nations vie for power over a nation without a flag or army, the rank and file of Arctic policy. Russia isolates, China invests, but the West does something different. The West, namely the United States, has leaned into Greenland with excessive pressure.

Since January 2025 the US has sustained pressure, and threats of force, to annex Greenland as a whole.^{56 57 58} Trump has stated that the US requires Greenland for defensive purposes- "we do need Greenland, absolutely. We need it for defense," he said in January 2026⁵⁹- and as of January 2026 the administration openly discussed a range of options, including the potential use of military force, as well as floating a Compact of Free Association arrangement; such a legal structure the US also utilizes with Micronesia, the Marshall Islands and Palau, which would require Greenland to separate from Denmark first.^{60 61 62 63 64}

The ships cut through the choppy waters, steel hulls gathering layers of thin ice, patterned frost, elegant and fragile, but which stick the warm fingers of the men to the hull as they grip it. The flag does not wave, there is no wind, nonetheless the cold pierces the vessel, like a long sharp blade, which nothing can stop. There is, in the eyes of many critics, little legitimacy in this pressure campaign, only what they characterize as ambition and leverage dressed in vague claims of defense. The legitimacy, built on the power the US once wielded so carefully, would be spent for little if a military enforcement to annex Greenland were ever undertaken.

In January 2026, Trump threatened tariffs upon Denmark, Norway, Sweden, France, Germany, the UK, the Netherlands, and Finland, "until such a time as a Deal is reached for the Complete and Total purchase of Greenland."^{65 66 67} Days later, at Davos, a substantial reversal of this policy was made public, with Trump describing instead a negotiated "framework of a future deal" on Arctic security reached with NATO Secretary General Mark Rutte, and no tariffs or force ultimately imposed to annex Greenland.^{68 69}

The legitimacy of alliance, and the threat of force thrown around so bluntly, mark not an evolution in the US role in the world order but instead, in the view of many allied observers, a small decline- the principles of legitimacy strained by a moment of raw ambition.

Denmark's own prime minister, Mette Frederiksen, stated that "if the United States decides to militarily attack another NATO country, then everything would stop" in terms of NATO and therefore "post-second world war security."⁷⁰ The response was brief and telling: NATO's Secretary General pledged publicly that the US is

"absolutely committed" to NATO.⁷¹ Denmark and Greenland already contribute to Arctic security; antagonizing the nations does nothing to advance US national interests, and only harms it in the view of many analysts. It is such antagonism which some observers argue emboldens Russian assertiveness- seen as the US straining relations with allies- as well as Chinese opportunism. Critics of the pressure campaign argue that a hegemon pressuring an allied nation sends a troubling signal to other alliance members about their own security. It is threats and needless aggression, in this reading, which erode legitimacy; it is power, used carefully, that reinforces it. The protection of power allows for the enforcement of alliance and peace through deterrence; legitimacy fades if deterrence is invoked for goals other than peacekeeping.

A question lies at the center of these powers dueling for influence in the Arctic- who has the consent, exactly, to favor one nation over another? Denmark's consent is formally required; nonetheless Frederiksen bluntly stated the nation "cannot negotiate our sovereignty."⁷² Such is rather telling- Greenland is self-governing and its leaders have made a point of answering for themselves as opposed to allowing Copenhagen to call the shots from afar. Greenland's Prime Minister, Jens-Frederik Nielsen, spoke directly, urging Trump to forgo his "fantasies of annexation."⁷³ The population, mostly indigenous, is a mere 57,000.⁷⁴ The smallest, local actors, such as the hunters and trappers in Canada, are among what determine the pivot of the Arctic as a whole. Should Greenland and the indigenous communities throughout the Arctic favor China specifically, it would give that nation incredible influence in a region it claims no land in. If instead influence accrues to Russia, through pressure exerted via the quarter of the ICC located in Russia, then Russia holds substantial leverage over the region. Greenland's role is a linchpin in Arctic geostrategy, and pressure from the US risks fracturing NATO the way the Arctic Council itself was fractured by Russia's war with Ukraine. The Arctic's real leverage point is not the formal institutions nor the great powers alone; it is the careful navigation of local governance, native claims, and the protection of legitimacy and power alike.

Arctic Council votes that lack the voice of the natives play into a narrative of a neglectful, less-than-fully-legitimate institution. Nonetheless, such votes are far from the only contests of power on the ground. The competition is no longer fought with warships crossing the Atlantic, nor merely icebreakers cutting through the Arctic; it is the infrastructure within the native communities, the resources extracted and who they belong to. It is also who is appealed to, what nations or individuals are asked for input, and the value of that simple ask. The consent of the people- be they the ICC Russian Inuit, the Greenlandic people considering sovereignty and the threats of the US, or the Canadian native hunters and trappers- is at the center of it. It is the people, the rank and file, which construct the army that the convoy of geopolitical pressure consists of. The native peoples of the Arctic may lack an army, they may lack a formal vote, but that does not change their pivotal role in the future of the Arctic. China could very well gain a foothold in the Arctic, as it desires; the war in Ukraine could halt Arctic Council projects and influence for years to come, and further delay could mean stalled permitting for nations like Canada regarding deep-sea mining, or reduced assistance to native communities.⁷⁵ Thus, they, like Greenland and its mines, could be pushed to turn to whoever will help- despite how that helper may take advantage of the situation. The policy fix favored by many Arctic analysts is not sanctions on China, nor threats on Greenland, nor extraction in the Arctic alone; it is the act of consulting natives, working with the people of the Arctic rather than around them. Russia's leverage over the ICC means international unity within the organization is a vulnerability, and Arctic policy should treat the ICC's four-region structure as something that can, and likely will, be fractured again. The value of the Arctic cannot be understated, but it also cannot simply be conquered; there is power and there is legitimacy, and both remain crucial for a stable, successful world order.

The men in the photograph smile for they know they have fought what they, and many at home, considered a good war- a legitimate battle which provided their nation with influence on the world stage; influence not merely to extract or expand, but to organize, support, and protect. The Inuit Circumpolar Council has spent

almost fifty years fighting for a seat at the table, and while it holds a seat, it still lacks a vote. With no army, merely a scattered population trying simply to do what is best for its people, spread across three continents in one of the harshest environments in the world, the influence of the ICC stands as an example of what people, even separated, isolated and pressured, can accomplish. 2025 and 2026 provided a timeline of expansion in the Arctic driven not by these native peoples but instead by those attempting to win over their voice and their land- whether through investment, pressure, or both- to secure a seat at the table in the Arctic. Such, after all, is one reading of China's strategy: to work with and through local communities to justify a durable Arctic presence.

The convoy's flags meant something because an army stood behind them. The ICC's flag, and the hunters-and-trappers' letters, and a Greenlandic government's refusals, mean something differently- no army stands behind them, and yet great powers are finding themselves trying to win over the locals all the same.

Power takes many forms, and while it is most obvious on the fore of a barreling battleship, it exists just the same in the bleak tundra where hunters and trappers gather. Legitimacy is most obvious in the banner rippling in the wind, so vivid a color can be seen despite the monochrome nature of an old photo. Legitimacy likewise can be seen not only in the signatures of the Arctic Council, but in the voices of natives raised in favor of, or against, foreign investment, and against uranium mining. Who controls the balance of legitimacy and power depends upon the nations; but nations are made of people, and it is those people- particularly the natives of the region- who will continue to shape the fate of the Arctic.

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