

A New (Cold) Front in Polar Intelligence? Trends and Implications of Technology- Enabled Monitoring in the Arctic

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Executive Summary: The Arctic has gained increasing attention from defense and intelligence policymakers concerned about great power conflict in the High North. United States-Russian competition in the region over polar shipping routes and natural resources seemingly contradicts institutional commitments to retain the Arctic as a “low tension zone.” Superpowers and their allies are receiving international condemnation for advancing kinetic military activity in the region while constituents and interest groups are instead advocating for diplomacy and cooperative restraint. As a result, Arctic nations are turning towards extensive reconnaissance and monitoring of the region to deter conflict. This study draws on strategy documents from each of the eight Arctic nations, scholarly research, and news coverage to assemble a picture of current efforts at technology-enabled monitoring. It also examines the potential of technologies such as long-range surveillance drones, satellites, and seabed monitors to facilitate near-constant reconnaissance by polar powers. The current deterrence mindset of Arctic security postures bears comparison with Cold War-era efforts to prevent outright conflict via monitoring and mitigation strategies. This study provides a historic account of Arctic intelligence in the 20th century and uses a comparative approach to assess what aspects of the contemporary situation are genuinely new and which may benefit from lessons of the Cold War. It concludes with policy recommendations for Arctic states to implement cohesive northern monitoring strategies into their intelligence organizations as well as long-term guidelines for new multilateral fora focused explicitly on Arctic security issues.

I. Introduction

Today the Arctic is one of the fastest-growing regions of study for international security. Russia is scaling up its northern military presence in the Far North and setting off concerns that they might foreclose other Arctic powers from gaining access to polar resources. Thus far, this renewed interest in the Far North has not caused direct conflict, but Arctic states have reacted to growing uncertainty by investing in new northern intelligence capabilities to surveil the situation and warn off rival states (Fleener 2013, 7). Efforts to guard against risk of conflict in the Far North are not new. The Arctic was a crucial theater

of deterrence during World War II and the Cold War, with rival states using intelligence operations to keep war at bay. It was also one of the first regions in which countries overcame environmental challenges to effective human operations by piloting unmanned monitoring technologies (Farish 2013, 14).

The technological advances made in the intelligence field in recent decades have led some scholars to argue that innovations such as near-instantaneous signals transmission, increased data storage capacity, and automated analysis methods are creating a seismic shift in how states collect and use

intelligence (Denece 2014, 28). The nearly century-long history of monitoring in the Arctic makes the region a valuable case study for tracing the evolution of technology-assisted intelligence collection, gauging its relative value in managing international competition, and assessing whether intelligence collection has fundamentally changed since the 20th century

This study will proceed as follows: First, outlining historic and modern elements of intelligence collection in the Arctic. Second, identifying longer-term trends in the discipline, pointing to areas of continuity and divergence between the 20th and 21st centuries. Finally, examining how changes in Arctic intelligence collection (or lack thereof) intersect with the geopolitical challenges of the Far North and propose recommendations for Arctic states to ensure their own security while minimizing regional tensions.

This paper is limited to consideration of the eight member states of the Arctic Council who hold sovereign control over territory above the Arctic Circle as polar nations. This classification includes Canada, Denmark (by virtue of its control over Greenland and the Faroe Islands), Finland, Iceland, Norway, Russia (the former USSR), Sweden, and the United States. Although China has recently proclaimed itself a “Near-Arctic State” (Durkee 2018), it was excluded from this study because of its lack of geographic presence in the Far North and its limited engagement in the Arctic Council.

II. Background of Arctic Intelligence Assets by Domain

To track the technology-enabled intelligence collection methods used over the past eighty years, I draw on strategic documents from all eight Arctic states, scholarly sources, and historical accounts. Given the ever-evolving nature of intelligence technologies, I also pull from news sources and think tank reports for developments occurring in the last five years. This paper is not an attempt to systematically catalogue all the intelligence assets above the Arctic Circle; such an undertaking is likely impossible given classification barriers. Instead, I aim to gain a general picture of the state of Arctic intelligence to draw comparisons between

operations in the 20th and 21st centuries. Because of the nature of geopolitics during the Cold War and into the modern day, this analysis has an outsized focus on the US and Russia. I made a good faith effort to include the perspectives of smaller Arctic states, but their relative dearth of military and intelligence resources skews this paper’s focus. The following sections analyze Arctic intelligence collection efforts in the 20th and 21st centuries. They are grouped by domain, covering monitoring that is carried out by land-, air-, sea-, and space-based systems.

i. Land

Radar, a relatively new technology in the 1940s, proved a vital component of surveillance and monitoring during World War II. In the Aleutian theater, the US rapidly constructed radar stations after Japan’s capture of the Attu and Kiska islands in 1942, surveilling Axis progress into the polar region until the islands could be recaptured in 1943 (Charles River Editors 2016, 90-4). During the Cold War, however, the Arctic gained unique strategic importance as a region geographically destined to be a superpower highway, “since the polar route between Moscow and Washington is the shortest” (English and Thvedt 2018, 339). As missile defense became a crucial element of Arctic states’ intelligence strategies, radar once again came into favor for its long-range surveillance capabilities. The US, Canada, and Denmark collaborated on the Distant Early Warning (DEW) radar belt spanning North America (Huebert 2011, 813) with a subsidiary radar station at Keflavik Air Base in Iceland. The Soviet Union answered by constructing the Missile Attack Warning System (SPRN) series of radar stations (English and Thvedt 2018, 339-40), supported by airbases and anti-aircraft batteries along the country’s northern coast. (Aliyev 2019).

While radar belts were effective at detecting incoming missiles and tracking the movement of enemy assets, their insight into the strategic decision-making of rivals was very limited. The North Americans sought to compensate for this through a series of radio intercept stations to gather information on the USSR. Canada’s proximity to the Soviet Arctic made it the ideal partner for this undertaking. With US support through the newly created North American Aerospace Defense

Command (NORAD), Canada relocated all its existing signals intelligence assets from southerly regions to northerly ones throughout the 1940s and 50s. This network of remote listening posts, including the Alert station at the northern tip of the country, proved invaluable to the US and its allies, routinely intercepting military communications from Soviet Siberian bases (Wark 2020, 320-6).

Today, radar station belts remain one of the primary permanent sources of Arctic intelligence (Charron 2015, 228-9) with both the DEW and SPRN systems still in operation. (US Department of Defense 2019). Since 2014, Russia has taken steps to bolster its Arctic position by refurbishing Soviet-era radar posts in the Far North. These projects are officially tied to civilian purposes such as resource exploration or search and rescue (Rotnem 2018, 4). However, the focus on installations directly paralleling US bases in Greenland (Rahbek-Clemmensen 2020, 6) plus extensive investments in new long-range systems (Devyatkin 2018) suggest at least some degree of military or intelligence involvement. The Russian buildup of Arctic surveillance capabilities has sparked similar investments in North America to re-operationalize Cold War assets. The US is enhancing ground-based surveillance and early warning installations in Alaska and Greenland (Atland 2014, 154-5), sponsoring development of longer-range radar capabilities (English and Thvedt 2018, 345), and putting pressure on Denmark to expand radar stations in Greenland (Rahbek-Clemmensen 2020, 7) and the Faroe Islands (Black 2021).

ii. Aerial

The aerial domain is closely associated with technology-enabled intelligence gathering, epitomized by reconnaissance aircraft collecting images of enemy assets during overflights. Such collection efforts were used to some degree in the Arctic theaters of World War II, specifically to gather information in advance of planned troop movements, as demonstrated by Operation Arctic Fox in Finland (Charles River Editors 2016, 41-2) and American efforts to retake the Aleutian Islands from Japan (93-5).

During the Cold War, the US and its allies set up an extensive system of aerial reconnaissance flights in the Arctic as part of an “air warfare vision” designed to guard against Soviet incursions (Farquhar 2014, 36). From 1946-8 the newly created Alaskan Air Command undertook Project NANOOK and Operation POLARIS which involved launching thousands of reconnaissance flights to map potential air routes for Soviet missiles. Operation EARDRUM, conducted around the same time, photomapped possible flight paths over Greenland and Iceland (38).

Imaging of northern air routes was necessary because prior to World War II, Russia was the only country that had systematically explored the military potential of the Far North. Other Arctic states undertook extensive aerial reconnaissance missions to catch up to their Soviet competitors and gain domain awareness of the region (Doel et al 2014, 61-2). However, other states also used spy planes to gather data on Soviet military assets. In 1948, US General Carl Spaatz warned the American public that the USSR had sufficient firepower to strike any US city from its Siberian airbases. The subsequent panic prompted the US government to fund experimental reconnaissance cameras with longer focal lenses, capable of capturing clear imaging of the Soviet Chukotski airfields adjacent to Alaska (Farquhar 2014, 41-2).

In addition to expanded reconnaissance capabilities at home, the US relied heavily on its Scandinavian allies to supply information on Soviet capabilities. From the 1950s-70s, Finland provided an estimated 100,000 aerial images taken along the Finnish-Soviet border to track the movements of Soviet tanks and submarines, as well as to highlight likely tank routes the Soviets might use to invade Western Europe (E.L. 2011). The Norwegian intelligence services were also a valued source of information on Soviet weapons systems, naval developments, and troop movements, leading one senior operative to remark that “intelligence data is [Norway’s] most important export article, next to fish, oil, and gas” (Trellevik 2019).

In the 21st century, every Arctic nation has continued this pattern of aerial reconnaissance. Canada (Boring

2014, 26), Denmark (The Danish Government 2018, 25-6), and the US (US Department of Defense 2019, 9) have all increased intelligence flyovers to monitor Russia's buildup in the region, and NATO has committed to enhanced aerial surveillance of the Northern Atlantic (US Department of Defense 2011, 3; 14). The dramatic escalation in the frequency of Arctic spy flights prompted a Russian defense official to complain that NATO reconnaissance planes "carry out flights almost daily" (Sputnik News 2014), even as the US, Finland, and Norway bemoan Russian surveillance planes in their airspace (Raymond 2016, 11-2). Although the Scandinavian states have resisted joining NATO-led flyovers of Russia, both Norway (Bye 2018, 22-3) and Finland (Lee 2020) have upgraded their domestic aerial reconnaissance capabilities, and Finland, Sweden, Norway, and Iceland regularly carry out joint air-surveillance exercises (Prime Minister's Office: Finland 2013, 41).

An emerging area of innovation in Arctic intelligence is collection facilitated by unmanned aerial vehicles (UAVs). Several Arctic states have already purchased or produced Arctic surveillance drones, including Denmark (Black 2021), Canada, and the US. However, the high winds, low temperatures, winter darkness, and limited satellite communications in the Far North mean that few drones currently on the market have the endurance to consistently operate in Arctic environments (Humpert 2019). Russia's Arctic UAV program has so far shown the most promise, in part because of the extensive network of drone bases throughout the Russian Arctic that support maintenance and forward operations (Devyatkin 2018). Moscow's ZALA UAV series constitutes large drones capable of collecting images from more than 100 km away (Aliyev 2019), devices which have already been spotted in Scandinavian airspace (Boulegue 2019, 17). Kremlin scientists are also reportedly developing a surveillance drone capable of remaining aloft for days at a time, even in the harshest Arctic conditions (Humpert 2019).

iii. Maritime

Arctic submarines were important during the Cold War in part because it was one of the only spheres in which American and Soviet forces regularly came into direct confrontation (Weir 2005, 414). However, underwater vessels were also an important part of

intelligence collection and monitoring. Advances in sonar and vessel quieting in the mid-20th century made it much easier for submarines to covertly track enemy surface vessels with which they came in contact (418). NATO states patrolled the Greenland-Iceland-United Kingdom (GIUK) gap (NATO n.d.), and Soviet submarine captains were charged specifically "to lose no opportunity to observe NATO naval forces carefully" in their regular under-ice patrols (Weir 2005, 422).

In addition to submarine capabilities, American allies made use of emergent maritime monitoring devices to track Soviet activity, including underwater sensors in the GIUK gap (Huebert 2011, 817) and acoustic arrays embedded in Arctic ice cover (Weir 2005, 411). Technological advances also brought underwater listening devices into use at this time. American and Finnish forces set the devices up in the Gulf of Finland to compile a "voice library" capable of identifying submarines by their point of origin (E.L. 2011) and tracking Soviet submarines near Svalbard (Boulegue 2019, 34).

Submarine surveillance has continued to be a focal point of Russia's Arctic strategy into the 21st century. The country's submarine program has consistently received annual funding increases (Atland 2014, 153-4), both in support of conventional tracking activities (Raymond 2016, 11-2) and as investments in new deep sea data gathering capabilities. As part of these innovative programs, Russian vessels routinely monitor undersea communications cables for strategic intelligence (Dettmer 2019).

NATO has continued submarine surveillance in the GIUK Gap to the present day (NATO n.d.) and Norway's submarine program remains robust, most recently demonstrated with the unveiling of the *Marjata*, one of the most advanced spy ships in the world (Berglund 2016). North American Arctic states, however, have shifted their focus away from traditional submarine warfare. The US and Canada have jointly invested in a "system of systems" to monitor Arctic waters, bringing together conventional patrol vessels, radar stations, underwater sensors, and other assets to monitor the maritime domain (The Government of Canada 2008, 17). Among the most innovative of these

developments are sensor-enhanced buoys equipped with networked communications, data sharing (Trevithick 2020), drone subs and other unmanned maritime systems (Trevithick 2017). Other features also include fixed-position underwater and shore-based sensors (US Department of Defense 2011, 14).

iv. Space

Satellite monitoring first came into use during the Cold War with predictions that Sputnik and subsequent developments “would fundamentally change the pattern of intelligence investment” (Gioe, Goodman, and Stevens 2020, 201). With the mid-20th century advent of solid-state electronics, the US and USSR could, for the first time, surveil their rivals from the safety of outer space (201). Space assets continue to make up vital components of the Arctic monitoring regime. Canada’s RADARSAT-II is one of NORAD’s primary permanent sources of Arctic intelligence, offering a nearly constant feed of information on Russian behavior (Atland 2014, 155). Likewise, US space assets controlled from bases in Alaska and Greenland periodically survey the region (US Department of Defense 2019, 15), with imaging passes estimated to be made over the Far North once every thirty minutes (Bamford 2015).

As technological advances and interest in outer space continue to expand, state satellite capabilities will only grow further. The US military is exploring how innovations like over-the-horizon radar, technologies capable of detecting objects at much longer ranges, could be coupled with organizational developments like the Space Force to open doors for Arctic domain awareness (The Department of the Air Force 2020, 7-8). Norway has constructed a new space-based Automatic Identification System (AIS) capable of surveilling the country’s entire coast (The Norwegian Government 2006, 32) to monitor shipping, support search and rescue, and in “exercise of sovereignty” (32). This growth of space-based intelligence has prompted Russia to invest in anti-satellite (jamming) capabilities to counter incursions from the US and its allies. Norway and Finland are reporting frequent “electronic harassment” during Arctic military exercises, and experts have speculated that Russian assets likely

already have the capacity to jam UAV communication and navigation systems (Aliyev 2019).

III. Comparing 20th and 21st Century Intelligence Capabilities

In comparing Arctic intelligence capabilities across the 20th and 21st centuries, operational and technical concerns are the most visible indicators of a revolutionary shift within the discipline. While these issues do merit attention, I also assess how Arctic intelligence regimes intersect with broader geopolitical trends to better gauge state motivations and tangible policy concerns. There are four key areas that relate to Arctic intelligence regimes: 1) limits on the use of kinetic force, 2) tightly coupled institutions, 3) emergence of non-military interests, and (4) magnification of global attention.

i. Areas of Continuity

One point of continuity between 20th and 21st century Arctic intelligence is the necessity of embracing technological means of collection. World War II highlighted the difficulty of pursuing human missions in the harsh polar environment, not only in terms of human losses and operational challenges but also in coping with the isolation and depression soldiers experienced in the region (Farish 2013, 14). These environmental factors contributed to the rise of remotely controlled intelligence assets during the Cold War and into the present day. Despite the rise of new technologies for intelligence collection, collection techniques in Arctic intelligence and how they are situated within security institutions have not significantly changed. Many of the truly innovative practices in intelligence collection, such as amalgamating social media posts in open-source analysis (Denece 2014, 34), aim to monitor human activity, and are therefore of limited value in minimally inhabited polar spaces.

Limits on the use of kinetic force

Since the end of World War II, the Arctic has been a focal point for deterrence policies, first to avert nuclear strikes between the US and the Soviet Union and later as part of a commitment to preserve the Far North as a “low-tension zone” with the establishment of the Arctic Council (Atland 2014, 157). A vital component of this successful deterrence has been greater transparency surrounding other

nations' intentions and gathering intelligence of the intentions and capabilities of rival states (Mazarr et al 2018, 20).

Over the last fifteen years, Arctic states have begun to expand polar military deployments, either through the construction of new bases or the refurbishment of 20th century installations. Importantly, all these revitalized Arctic bases include a robust intelligence unit (Raymond 2016, 11-2; Bye 2018, 22; US Department of Defense 2011, 29) — northern states have invested in monitoring the situation even as they demonstrate their ability to fight. This idea, that information becomes essential when geopolitics limits the use of kinetic force, was also evident during the Cold War. A description of US Arctic submarine policy in the 1960s perhaps best exemplifies this dynamic:

Since using even conventional offensive weapons could easily precipitate horrible and nearly uncontrollable geopolitical consequences, undersea warriors measured victory in terms of surveillance, detection and constant monitoring. If you knew the enemy, his vehicle or ship, his location and capability, and could follow or 'shadow' him without betraying yourself, you claimed victory by Cold War standards (Weir 2005, 414).

In a deterrence situation, information is king. Increased collection of surveillance data and the ability to derive strategic intelligence products reduces the risk of hot conflict among long-standing geopolitical rivals, even if it does not lead to outright cooperation.

Tightly-coupled intelligence institutions

Although there are no intelligence bodies specifically focused on the Arctic regions, there are three multilateral intelligence-sharing institutions with a critical mass of Arctic states as members: NORAD, Five Eyes, and NATO. Not only have these institutions existed for sixty years or more, but they have evolved into more mainstreamed bodies. In the 20th century, Denmark (Morrison 2014, 583), Norway (Trellevik 2019), and Canada (Wark 2020, 325) contributed intelligence products to multilateral security fora with the explicitly stated goal of remaining under the protection of conventional American forces and the

US nuclear umbrella. Today, these institutions have their own intelligence capabilities with staff operators drawn from all member states (Von Loringhoven 2019). As intelligence collection and analysis become more onerous due to increased quantities of data, collaboration among allies will only increase (Hare and Coghill 2016, 869), especially in areas of shared interest, such as Arctic securitization (Bury and Chertoff 2020, 51).

The presence of long-standing military and intelligence institutions limits the incentive for states to adopt new partnerships in the Far North. When presented with the 'safe' option of aligning with existing allies with a decades-long record of loyalty and interoperability, national leaders would be hard pressed to seek cooperation with a historic adversary (Weitsman 2014, 37). This dynamic is exacerbated by the general lack of Arctic-specific institutions. By virtue of its founding documents, the Arctic Council is prohibited from engaging on hard power issues (Atland 2014, 160). This limitation, combined with the extremely sparse nature of diplomatic offices above the Arctic Circle, means that issues related to Arctic securitization tend to be dealt with on an ad hoc basis by government officials who are not polar experts. In the absence of high-ranking advocates for Arctic cooperation or institutional pressure to do so, Arctic states will likely continue their Cold War-era bifurcation with North American and Western European military and intelligence interests remaining in opposition to Russian ones.

ii. Areas of divergence

The most important change in Arctic intelligence collection is the shift in the function and scale of information gathered, a trend that began in the mid-20th century. States specifically collected World War II-era intelligence to support kinetic operations, with aerial imaging gauging enemy threats ahead of campaigns in Alaska or Scandinavia. Information operations expanded during the Cold War but remained limited to monitoring the GIUK gap and likely routes for Soviet incursions. It was only with the turn of the 21st century that technology-enabled monitoring expanded in the Arctic. Intelligence powers like the US, Russia, and Canada are deploying more missions than ever, as confirmed by reports of

near-daily reconnaissance flights and hourly satellite passovers. Smaller Arctic nations are establishing their own robust domain awareness programs, no longer content to support the intelligence operations of the US or NATO.

Interestingly, the evolution of Arctic intelligence from the tactical (single-issue reconnaissance) to the strategic (routine domain awareness) has bucked global trends. In the 21st century, Western intelligence agencies have overwhelmingly focused on “intelligence for action,” generally in support of counter-terrorism operations. In 2005, just 20-25% of US intelligence resources were devoted to the kind of long-term, strategic products that today seem to be the norm in the Arctic, as compared to 60% in 1990 (Bury and Chertoff 2020, 46).

Emergence of non-military interests

The broadening of state interests in the Far North to include economic interests is likely part of the reason that the Arctic has resisted this trend towards tactical intelligence. Climate warming has already made possible new polar shipping lanes and undersea resource extraction. In February 2021, a Russian gas tanker completed an experimental trip of the Northern Sea Route. This voyage, which was previously impossible even in the summer months, “tak[es] Russia one step closer to its goal of year-round commercial navigation through the warming Arctic” (Odynova 2021). Amidst newly discovered oil deposits in the Norwegian Arctic, Norway has significantly expanded its offshore commercial licensing rounds. Because of geopolitical pressures and Norway’s economic dependence on oil exports, industry insiders argue that “there is de facto no alternative to entering the Arctic” else Norway risks being left behind in the global scramble for undersea resources (Morgunova 2020, 72-3). These are just a few examples of the economic activity that is already escalating in the Far North. With further ice melt poised to exacerbate these trends, Arctic states now have an economic incentive to keep tabs on their rivals – an undertaking that requires much more extensive monitoring than awareness of likely ICBM routes.

Improved electronic surveillance capabilities are certainly also a contributor. While

technology-enabled monitoring in other parts of the world is limited by dense urban settings (Denece 2014, 31), the Arctic landscape facilitates the collection of huge packets of data. At that scale, strategic intelligence is more viable than tactical intelligence — analysts are tasked not with finding a needle in a haystack but searching for trends or anomalies in the haystack as a whole (Regens 2019, 674). This potent combination of technology and geopolitical interests creates an incentive for states to invest in Arctic surveillance assets capable of near-constant, all-domain awareness, a marked departure from World War II or Cold War capabilities.

Prospects for dual-use technology

As has been previously discussed, the emergence of climate monitoring and new natural resources in the Far North has created economic interests above the Arctic Circle. These new areas of concern have changed the way that states collect intelligence and have also opened new avenues for potential cooperation. Climate monitoring in particular is an area of common ground for disparate polar states. Arctic nations have a robust record of scientific cooperation through fora like the Arctic Council (Arctic Council n.d.), the Arctic Regional Climate Centre Network (Arctic Regional Climate Network n.d.), or the newly formed International Cooperation Engagement Program for Polar Research (Eversden 2021). As technology-enabled monitoring becomes more sophisticated, however, there is potential for direct state-to-state cooperation and collective use of intelligence assets.

There is precedent for Arctic states to adopt multi-use assets that jointly collect intelligence information and monitor non-military conditions in the Far North. The Canadian Department of Defense has committed to using aerial surveillance sites to detect weather anomalies contributing to climate warming (The Government of Canada 2011, 126). NORAD has likewise modernized its radar systems for all-domain awareness, not only monitoring potential threats to North America but also compiling data on severe weather and melting sea ice (Charron 2015, 229). While these efforts have thus far taken place unilaterally or within the context of a longstanding alliance, there is clearly

goodwill for using science-based initiatives as “non-contentious opportunities for cooperation” with longstanding adversaries (US Department of Defense 2013, 5).

A key justification for existing arrangements for multi-use intelligence assets has been avoiding infrastructure duplication (Charron 2015, 229), making use of cutting-edge intelligence technologies to further initiatives in the civilian domain. This approach is advantageous for a single national government or for institutions like NORAD with a long history of interoperability. Efforts to engage historic adversaries through such initiatives, however, face two major hurdles. First, the notion of wasteful duplication is less pressing if both nations have existing robust infrastructure for intelligence collection and scientific monitoring, as do the US and Russia. Second, proposals to cooperatively entertain climate monitoring via intelligence assets would certainly raise implications for compromised national security, risking the exposure of a suspected adversary to vital intelligence methods.

Despite national excitement over science and technologies as a potential bridge over geopolitical enmity, the prospect of true Arctic climate cooperation among historic adversaries is currently a pipedream. The issue is further complicated because a warming Arctic is fundamentally tied to economic interests in the region, raising the prospect of freer shipping lanes and more easily accessible deep-sea resources. Interstate competition to reap these economic benefits may further forestall climate cooperation, especially among historic enemies.

Magnification of global attention

The Far North has received a flood of global attention in recent years, with the region classified as an emerging area of great power competition (Saxena 2020), a security dilemma (Atland 2014), or a new Cold War (Heininen, Sergunin, and Yarovoy 2014). This growing coverage of the region and the accompanying public attention incentivizes states to have security assets in the Far North, thereby driving a proliferation of military and intelligence installations. The language of Arctic and defense strategies best demonstrates this trend. Russia’s

position has been the harshest, with a commitment to defend national territory and interests “to the maximum degree” with an Arctic military presence and an unparalleled information and telecommunications infrastructure (Devyatkin 2018). While other states have been less hawkish in their tones, their national security strategies clearly outline a commitment to securing, exercising, or defending Arctic sovereignty through surveillance of the region (The Government of Canada 2013; Government Offices of Sweden 2020; Kingdom of Denmark 2011).

A second implication of renewed interest in the Far North has been the mapping of existing geopolitical tensions onto Arctic engagement. The US, particularly under the Trump Administration, leaned heavily on existing allies to support a preeminent American position in the Arctic. Strategy documents published under the Trump Administration prioritize “maintaining flexibility for global power projection” and “limiting the ability of China and Russia to leverage the region as a corridor for competition” (US Department of Defense 2019, 5). This rhetoric of securing the US as a dominant Arctic player has pressured NATO states to increase their Arctic monitoring capabilities (McGwin 2019) as well as disengaging from Russian natural resource industries. (Rahbek-Clemmensen 2020, 7)

Similarly, the Scandinavian states have long formulated their Arctic policies to balance between NATO alignment and potential Russian aggression on their borders. During the Cold War, Scandinavia’s geography made them a valuable source of intelligence to the US, but such operations were always conducted covertly and with American resources to avoid inviting suspicion (E.L. 2011). Today, Scandinavian states moderate the region’s policies even more and have explicitly designed them to reassure their Russian neighbors. Scandinavian Arctic policies reflect a common language of self-sufficiency, monitoring (not action), and domestic readiness (Lee 2020; Khorrami 2020; Government Offices of Sweden 2020). Even Norway, the only Scandinavian state to also be a member of NATO, has taken a middle-ground position, explicitly stating that reconnaissance flights and maritime patrols by allies are “welcomed by Norway” but will

not be undertaken unilaterally (The Norwegian Government 2020, 16).

It is difficult to point to a single precipitating cause for Scandinavia's shift to a less assertive posture on Russia, especially since the states in the region have historically been out of sync with one another in formulating policies on Russia (Mellander and Mouritzen 2016, 447-9). It is important to note, however, that all the moderated strategy documents emerged in 2020, and may represent a response to the drawdown of US commitments to NATO under the Trump Administration (Danilov 2017, 29-47). Under the perception that Americans did not prioritize trans-Atlantic partners, Scandinavian states may have softened their stance towards Russia to hedge their bets.

The complicated state of Arctic geopolitics creates a difficult venue for regional cooperation. Even if robust intelligence programs give the polar states a perfect understanding of a rival's intentions and capabilities — a best-case scenario unlikely to emerge in reality — domestic politics, international instability, or competing foreign policy priorities might demand a competitive posture in the Far North.

IV. Recommendations and Conclusion

Intelligence collection in the Far North has used new technologies to increase the efficiency and quality of information gathering. However, essential elements of the discipline have stayed constant since the 20th century: Collection methods and typologies still closely mimic those used in World War II, the relative distribution of intelligence capabilities has been stagnant, and the US, Canada, and Russia continue to dominate the Arctic security space. While changes in the motivation for and scale of information collection deserve attention, these observed trends might be better classified as an evolution in intelligence collection rather than a revolution (Gioe, Goodman, and Stevens 2020, 196).

i. Recommendations

Given these points of continuity and divergence between 20th and 21st century Arctic intelligence activities, I propose the following recommendations for Far North states to maximize their own security

and, when possible, foster cooperation with other Arctic states:

- **While new intelligence collection technologies can improve operational outcomes, their full value will not be realized without organizational changes.** The integration of new technologies into internal intelligence community practices was outside the scope of this paper, given the extensive classification barriers protecting this area. However, the personnel and doctrinal policies surrounding security innovations are just as important, if not more so, than the technological advancements themselves (Krepinevich 1994, 40-1). Arctic states should examine how effectively they employ and embed intelligence technologies into the full collection-analysis lifecycle. One organizational model for consideration is the US Executive Branch designation of czars for topics of strategic importance, ensuring that the issues are addressed cohesively across agencies.
- **In the short-term, Arctic states should rely on long-standing partners for intelligence-sharing operations.** As discussed above, the political and security risks associated with intelligence cooperation between adversarial states is high under any circumstances. The Arctic is a region in geopolitical flux, with states still struggling to enumerate their interests and strategies in the Far North. This uncertainty makes the risk of miscalculation extremely high.
- **In the long-term, non-military interests such as climate monitoring may serve as a space to open cooperation among historic adversaries.** Arctic states already have a robust track record of scientific cooperation on climate change detection and mitigation. Efforts to initiate climate monitoring in governmental spaces — not just academic ones — is a first step towards technological cooperation between adversarial states. While such programs will not create goodwill overnight, they do represent an opportunity to begin building trust among Arctic nations and reduce incentives for near-constant

monitoring of the Far North for predatory military or economic activities.

- **Multilateral fora focused explicitly on Arctic security issues are a necessary component of policy dialogue on northern intelligence.** With the Arctic Circle prohibiting security discussions, state-to-state engagement is limited to bilateral talks or agenda items in non-Arctic institutions such as NATO. The Far Northern environment poses unique operational challenges that would benefit from more targeted dialogue with all Arctic states. Furthermore, existing conversations tend to exclude Russia (Bye 2021), leaving the state with the biggest Arctic presence and arguably the most ambitious Arctic agenda out in the cold.
- **Agreed-upon frameworks for acceptable Arctic monitoring are an important first step to guiding behavior and expectations in both the military and civilian spaces.** This area could benefit from the lessons of the Cold War, concerned as it is with the familiar problems of new technologies and non-territorial spaces. Arctic states could consider collectively drafting guidelines for using monitoring devices in Arctic waters or airspace, modeled on the 1972 Incidents at Sea Agreement used to regulate US-Soviet

maritime interactions and prevent escalation (US Department of State 1972). While states should not expect perfect compliance with these agreements, having a record of agreed-upon expectations for intelligence collection or civilian monitoring — such as Russia’s patrols of the Northern Sea Route (Sergunin and Hoogensen Gjørsv 2020, 263-5) — would represent clear-cut rules of the road.

ii. Conclusion

Intelligence collection policies alone do not dictate interstate relations, but the ways in which information operations are designed, executed, and communicated to neighbors can be taken as signals of relative openness or hostility. The technological and doctrinal evolutions that have shaped Arctic intelligence collection since World War II suggest a deepening of the competitive posture among rival polar states. However, emerging areas of non-military interests, such as climate monitoring, suggest potential for opening cold rivalries. Arctic intelligence is currently missing a space for multilateral dialogue. Efforts to engage northern partners through formal frameworks, shared institutional arrangements, or progressive steps towards bilateral cooperation could offset the need for the intelligence deterrence situation developing at the top of the world.

References

- Aliyev, Nurlan. 2019. “Russia’s Military Capabilities in the Arctic.” *RKK ICDS*, June 25, 2019. <https://icds.ee/en/russias-military-capabilities-in-the-arctic/>.
- Arctic Council. n.d. “Arctic Monitoring and Assessment Programme.” Accessed April 6, 2021. <https://arctic-council.org/en/about/working-groups/amap/>.
- Arctic Regional Climate Centre Network. n.d. “Climate Monitoring.” Accessed April 6, 2021. <https://www.arctic-rcc.org/climate-monitoring>.
- Atland, Kristian. 2014. “Interstate Relations in the Arctic: An Emerging Security Dilemma?” *Comparative Strategy* 33, no. 2 (2014): 145-166. <https://doi.org/10.1080/01495933.2014.897121>
- Bamford, James. 2015. “Frozen Assets.” *Foreign Policy*, May 11, 2015. [https://foreignpolicy.com/2015/05/11/frozen-a](https://foreignpolicy.com/2015/05/11/frozen-assets-arctic-espionage-spying-new-cold-war-russia-canada/)
- [ssets-arctic-espionage-spying-new-cold-war-russia-canada/](https://foreignpolicy.com/2015/05/11/frozen-assets-arctic-espionage-spying-new-cold-war-russia-canada/).
- Berglund, Nina. 2016. “Norway ready for spying of its own.” *News in English Norway*, February 29, 2016. <https://www.newsinenglish.no/2016/02/29/norway-ready-for-spying-of-its-own/>.
- Black, Bernard. 2021. “Denmark raises investment in Arctic surveillance to counter Russia’s accumulation.” *Eminetra*, February 14, 2021. <https://eminetra.com/denmark-raises-investment-in-arctic-surveillance-to-counter-russias-accumulation/372399/>.
- Boring, Maj and T Keith. 2014. *Operational Arctic: The Potential for Crisis or Conflict in the Arctic Region and Application of Operational Art*. Fort Leavenworth: United States Army Command and General Staff College.

- Boulegue, Mathieu. 2019. *Russia's Military Posture in the Arctic: Managing Hard Power in a 'Low Tension' Environment*. Chatham House.
<https://um.fi/documents/35732/0/Chatham+Ho+use+Russias+Military+posture+in+the+Arctic+Ma+naging+Hard+Power+in+a+Low+Tension+Enviro+nment.pdf/9e353596-2c1d-bc59-f66a-5487937268be?t=1568107600468>
- Bury, Patrick and Michael Chertoff. 2020. "New Intelligence Strategies for a New Decade." *The RUSI Journal* 165, no. 4 (2020): 42-53.
<https://doi.org/10.1080/03071847.2020.1802945>
- Bye, Hilde-Gunn. 2021. "Arctic Council, EU, NATO on Agenda as Military Leaders Addressed Arctic Security Issues." *High North News*, May 14, 2021.
<https://www.highnorthnews.com/en/arctic-cou+ncil-eu-nato-agenda-military-leaders-addressed-arctic-security-issues>.
- Bye, Hilde-Gunn. 2018. "National Interests and Security Policies in the Arctic Region among Arctic States." Master's diss., University of Denver.
- Charles River Editors. 2016. *World War II In the Arctic*. New York: Charles River Editors.
- Charron, Andrea. 2015. "Canada, the Arctic, and NORAD: Status quo or new ball game?" *International Journal* 70, no. 2 (2015): 215-231.
<https://doi.org/10.1177/0020702015572998>
- Danilov, D. 2017. "NATO: Trump's Burden." *International Affairs* 63, no. 3 (2017): 29-47.
<http://dx.doi.org/10.21557/IAF48992136>
- The Danish Government, Ministry of Foreign Affairs. 2018. "New Danish Foreign and Security Policy Strategy." Accessed April 6, 2021.
<https://um.dk/en/news/newsdisplaypage/?new+sid=01fc577b-6bf2-4fd7-8572-5af0534cf599>.
- Denece, Eric. 2014. "The Revolution in Intelligence Affairs: 1989-2003." *International Journal of Intelligence and Counterintelligence* 27, no. 1 (2014): 27-41.
<https://doi.org/10.1080/08850607.2014.842796>
- The Department of the Air Force. 2020. "Arctic Strategy." Accessed April 6, 2021.
<https://www.af.mil/Portals/1/documents/2020+SAF/July/ArcticStrategy.pdf>.
- Dettmer, Jamie. 2019. "Deadly Arctic Submarine Blaze Casts Light on Russia's Underwater Intel Service." *Voice of America*, July 8, 2019.
<https://www.voanews.com/europe/deadly-arctic-submarine-blaze-casts-light-russias-underwater-intel-service>.
- Devyatkin, Pavel. 2018. "Russia's Arctic Strategy: Military and Security (Part II)." *The Arctic Institute*, February 13, 2018.
<https://www.thearcticinstitute.org/russias-arctic-military-and-security-part-two/>.
- Doel, Ronald E., Robert Marc Friedman, Julia Lajus, Sverker Sorlin, and Urban Wrakberg. 2014. "Strategic Arctic science: national interests in building natural knowledge – interwar era through the Cold War." *Journal of Historical Geography* 44, no. 1 (April 2014): 60-80.
<https://doi.org/10.1016/j.jhg.2013.12.004>
- Durkee, Jack. 2018. "China: The New "Near-Arctic State."" *Wilson Center*, February 6, 2018.
<https://www.wilsoncenter.org/article/china-the-new-near-arctic-state>.
- E.L. 2011. "Secret history: How close were Finnish-American relations in the Cold War." *The Economist*, December 1, 2011.
<https://www.economist.com/eastern-approache/s/2011/12/01/secret-history>.
- English, Robert and Andrew Thvedt. 2018. "The Arctic." In *Routledge Handbook of Russian Foreign Policy*, edited by Andrei P. Tsygankov, 338-350. New York: Routledge.
- Eversden, Andrew. 2021. "7 allies sign onto polar research project." *C4ISRNet*, April 11, 2021.
https://www.c4isrnet.com/c2-comms/mobility/2021/04/11/7-allies-sign-onto-polar-research-project/?utm_source=Sailthru&utm_medium=email&utm_campaign=EBB%2004.12.21&utm_term=Editorial%20-%20Early%20Bird%20Brief.
- Farish, Matthew. 2013. "The Lab and the Land: Overcoming the Arctic in Cold War Alaska." *History of Science Society* 104, no. 1 (March 2013): 1-29.
<https://doi.org/10.1086/669881>
- Farquhar, John T. 2014. "Arctic Linchpin: The Polar Concept in American Air Atomic Strategy, 1946-1948." *Air Power History* 61, no. 4 (December 2014): 34-45.
- Fleener, Craig L. 2013. "US Arctic Policy: A Race for the Arctic, Intelligence and National Security Implications." Master's diss. American Military University.
- Gioe, David V., Michael S. Goodman, Tim Stevens. 2020. "Intelligence in the Cyber Era: Evolution or Revolution?" *Political Science Quarterly* 135, no. 2 (2020): 191-224.
<https://doi.org/10.1002/polq.13031>
- The Government of Canada, National Defence. 2008. "Canada First Defence Strategy." Accessed April 6, 2021.
http://www.forces.gc.ca/assets/FORCES_Internet/docs/en/about/CFDS-SDCD-eng.pdf.
- The Government of Canada, Northern Economic Development Agency. 2011. "A Matter of Survival: Arctic Communications Infrastructure in the 21st

- Century.” Accessed April 6, 2021. http://www.aciareport.ca/resources/acia_full-v1.pdf.
- Government Offices of Sweden. 2020. “Sweden’s strategy for the Arctic region.” Accessed April 6, 2021. <https://www.government.se/4ab869/contentassets/c197945c0be646a482733275d8b702cd/sweden-strategy-for-the-arctic-region-2020.pdf>.
- Hare, Nick and Peter Coghill. 2016. “The future of the intelligence analysis task.” *Intelligence and National Security* 31, no. 6 (2016): 858-870. <https://doi.org/10.1080/02684527.2015.1115238>
- Heininen, Lassi, Alexander Sergunin, and Gleb Yarovoy. 2014. “Russian Strategies in the Arctic: Avoiding a New Cold War.” *Valdai*, September 2014. https://www.uarctic.org/media/857300/arctic_eng.pdf.
- Huebert, Rob. 2011. “Submarines, oil tankers, and icebreakers.” *Canada’s Journal of Global Policy Analysis* 66, no. 4 (December 2011): 809-824. <https://doi.org/10.1177%2F00207020110660040>
- Humpert, Malte. 2019. “Canada and Russia are looking to deploy surveillance drones in the Arctic.” *Arctic Today*, February 26, 2019. <https://www.arctictoday.com/canada-and-russia-are-looking-to-deploy-surveillance-drones-in-the-arctic/>.
- Khorrami, Nima. 2020. “Small and Non-Aligned: Sweden’s Strategic Posture in the Arctic (Part II).” *The Arctic Institute*, September 4, 2020. <https://www.thearcticinstitute.org/small-non-aligned-sweden-strategic-posture-arctic-part-ii/>.
- Kingdom of Denmark. 2011. “Strategy for the Arctic 2011-2020.” Accessed April 6, 2021. <https://um.dk/~media/um/english-site/documents/politics-and-diplomacy/greenland-and-the-faro-islands/arctic%20strategy.pdf?la=en>.
- Krepinevich, Andrew F. 1994. “Cavalry to Computer: The Pattern of Military Revolutions.” *The National Interest*, September 1, 1994. <https://nationalinterest.org/article/cavalry-to-computer-the-pattern-of-military-revolutions-848>.
- Lee, Connie. 2020. “Finland Upgrading Military Capabilities.” *National Defense*, May 20, 2020. <https://www.nationaldefensemagazine.org/articles/2020/5/20/finland-upgrading-military-capabilities>.
- Mazarr, Michael J. Arthur Chan, Alyssa Demus, Bryan Frederick, Alireza Nader, Stephanie Pezard, Julia A. Thompson, and Elina Treyger. 2018. *What Deters and Why*. RAND Corporation. https://www.rand.org/pubs/research_reports/R2451.html.
- McGwin, Kevin. 2019. “Denmark will triple Arctic defense spending.” *Arctic Today*, December 3, 2019. <https://www.arctictoday.com/denmark-will-triple-arctic-defense-spending/>.
- Mellander, Maria and Hans Mouritzen. 2016. “Learning to assert themselves: Small states in asymmetrical dyads – two Scandinavian dogs barking at the Russian bear.” *Cooperation and Conflict* 51, no. 4 (2016): 447-466. <https://doi.org/10.1177%2F0010836716652427>
- Morgunova, Maria. 2020. “Why is exploitation of Arctic offshore oil and natural gas resources ongoing? A multi-level perspective on the cases of Norway and Russia.” *The Polar Journal* 10, no. 1 (2020): 64-81. <https://doi.org/10.1080/2154896X.2020.1757823>
- Morrison, John N.L. 2014. “Intelligence in the Cold War.” *Cold War History* 14, no. 4 (2014): 575-591. <https://doi.org/10.1080/14682745.2014.950248>
- NATO. n.d. “Iceland & NATO.” Accessed March 26, 2021. https://www.nato.int/cps/en/SID-21A87C2D-BE06D3F1/natolive/declassified_162083.htm?selectedLocale=en.
- The Norwegian Government, Ministry of Foreign Affairs. 2020. “Arctic Policy: People, opportunities and Norwegian interests in the Arctic.” Accessed April 6, 2021. https://www.regjeringen.no/globalassets/departmentene/ud/vedlegg/nord/whitepaper_abstract2020.pdf.
- The Norwegian Government, Ministry of Foreign Affairs. 2006. “High North Strategy.” Accessed April 6, 2021. <https://www.regjeringen.no/globalassets/upload/ud/vedlegg/strategien.pdf>.
- Odynova, Alexandra. 2021. “Russian tanker cuts a previously impossible path through the warming Arctic.” *CBS News*, February 23, 2021. <https://www.cbsnews.com/news/russian-tanker-cuts-a-previously-impossible-path-through-the-warming-arctic/>.
- Prime Minister’s Office: Finland. 2013. *Finland’s Strategy for the Arctic Region 2013*. Helsinki: Prime Minister’s Office Publications. <https://vnk.fi/documents/10616/334509/Arktinen+strategia+2013+en.pdf/6b6fb723-40ec-4c17-b286-5b5910fbecf4>.
- Rahbek-Clemmensen, Jon. 2020. “Denmark Walks a Tightrope in Greenland.” In *Geopolitics and Neglected Arctic Spaces: Three Perspectives on Balancing External Interests*. CSIS Northern Connections.

- https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/201102_Northern_Connections_Geopolitics_Neglected_Arctic_Spaces.pdf
- Raymond, Vanessa Lee. 2016. "Projecting Absence: A Decade of US Arctic Intelligence, Policy, and Perceptions of Russia." Master's diss., University of Alaska, Fairbanks.
- Regens, James L. 2019. "Augmenting human cognition to enhance strategic, operational, and tactical intelligence." *Intelligence and National Security* 34, no. 5 (2019): 673-687. <https://doi.org/10.1080/02684527.2019.1579410>
- Regeringskansliet. 2020. *Summary of Government bill 'Totalforsvaret 2021-2025' (Total defence 2021-2025)*. Regeringskansliet. <https://www.government.se/4af8fa/globalassets/government/dokument/forsvarsdepartementet/ip-2021-2025/summary-of-government-bill-total-defence-2021-2025-final.pdf>.
- Rotnem, Thomas E. 2018. "Putin's Arctic Strategy: Collaboration or Conflict after Ukraine?" *Problems of Post-Communism* 65, no. 1 (2018): 1-17. <https://doi.org/10.1080/10758216.2016.1222869>
- Saxena, Abhishek. 2020. "The Return of Great Power Competition to the Arctic." *The Arctic Institute*, October 22, 2020. <https://www.thearcticinstitute.org/return-great-power-competition-arctic/>.
- Sergunin, Alexander and Gunhild Hoogensen Gjør. 2020. "The Politics of Russian Arctic shipping: evolving security and geopolitical factors." *The Polar Journal* 10, no. 2 (2020): 251-272. <https://doi.org/10.1080/2154896X.2020.1799613>
- Sputnik News. 2014. "US Planes Flying Near Russian Border Almost Every Day: Russian Air Force." *Sputnik News*, December 16, 2014. <https://sputniknews.com/russia/201412161015907245/>.
- Thompson, John. 2017. "Canadian military seeks underwater sensors for Arctic surveillance." *Nunatsiaq News*, November 29, 2017. <https://nunatsiaq.com/stories/article/65674canadian-military-seeks-underwater-sensors-for-arctic-surveillance/>.
- Trellevik, Amund. 2019. "Norway has spied on the Russian military for 70 years. Only with Frode Berg did it go seriously wrong." *High North News*, November 19, 2019. <https://www.highnorthnews.com/en/norway-has-spied-russian-military-70-years-only-frode-berg-did-it-go-seriously-wrong>.
- Trevithick, Joseph. 2020. "The Navy Is Building A Network Of Drone Submarines And Sensor Buoys In The Arctic." *The Warzone*, October 1, 2020. <https://www.thedrive.com/the-war-zone/36821/the-navy-is-building-a-network-of-drone-submarines-and-sensor-buoys-in-the-arctic>.
- US Department of Defense. 2013. *Arctic Strategy*. Washington: US Department of Defense. https://dod.defense.gov/Portals/1/Documents/pubs/2013_Arctic_Strategy.pdf
- US Department of Defense, Office of the Under Secretary of Defense for Policy. 2019. *Report to Congress: Department of Defense Arctic Strategy*. Washington: Defense Media. <https://media.defense.gov/2019/Jun/06/2002141657/-1/-1/1/2019-DOD-ARCTIC-STRATEGY.PDF>
- US Department of Defense, Office of the Under Secretary of Defense for Policy. 2011. *Report to Congress on Arctic Operations and the Northwest Passage*. Washington: Defense Media. <https://media.defense.gov/2019/Jun/06/2002141657/-1/-1/1/2019-DOD-ARCTIC-STRATEGY.PDF>.
- US Department of State, Bureau of International Security and Nonproliferation. 1972. *Agreement Between the Government of The United States of America and the Government of The Union of Soviet Socialist Republics on the Prevention of Incidents On and Over the High Seas*. Moscow: US Department of Defense. <https://2009-2017.state.gov/t/isn/4791.htm>.
- Von Loringhoven and Arndt Freytag. "A new era for NATO intelligence." *NATO Review*. October 29, 2019. <https://www.nato.int/docu/review/articles/2019/10/29/a-new-era-for-nato-intelligence/index.html>
- Wark, Wesley. "Favourable geography: Canada's Arctic signals intelligence mission." *Intelligence and National Security* 35, no. 3 (February 2020): 319-330.
- Weir, Gary E. "Virtual War in the Ice Jungle: 'We don't know how to do this.'" *The Journal of Strategic Studies* 28, no. 2 (April 2005): 411-427.
- Weitsman, Patricia. *Waging War: Alliances, Coalitions and Institutions of International Violence*. Palo Alto: Stanford University Press, 2014.

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