

Collaborative Infrastructures: A Roadmap for International Cooperation in the Arctic

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Climate change has spurred global interest in the Arctic as an arena of new potential for petroleum and mineral exploration. The prospect of increased access to resources has informed scenarios depicting the region's future as a theater of geopolitical aggression. Militarization has been increasing in the Arctic despite the existence of multilateral region-building institutions, such as the Arctic Council. However, existing international frameworks for resolving maritime border disputes (UNCLOS) and emerging opportunities for collaborative resource development indicate that cooperation is more likely to occur than conflict among Arctic states in the coming decades. Contrary to recent media tropes signaling an impending Arctic 'Great Game' for resources, many oil and gas deposits are providing the impetus for international cooperation constituted through development and implementation of shared infrastructure. I invoke the term 'collaborative infrastructures' to describe a new paradigm of state and private collaboration within which Arctic actors are pursuing mutual economic and environmental interests. These collaborations work to address an imbalance between despotic and infrastructural power in the Arctic, manifest in a rise in post-Cold War militarization and nationalist rhetoric. The benefits to society conferred by infrastructural power are a powerful incentive for long-term cooperation among Arctic states. Even as states unilaterally increase their military presence, they are forging multilateral agreements to promote security and resource development at local and regional scales.

Introduction

In a world in which relations between states dominate geopolitical discourse, questions of the extent of territorial sovereignty become rather uncomplicated. Sovereignty becomes inextricably linked to territory itself once a doctrine of non-interference has been established among adjacent states. This Westphalian world of neatly-drawn borders leaves “no space between or around the states once the entire world is in sovereignty's orbit” (Agnew, 2009: 79). Of course, geopolitical realities rarely afford such simplicities. Lines on a map are a poor indicator of power exerted over bounded space or

control of populations within: territorial boundaries fail to represent the power of non-state actors (Agnew, 2009; Shadian, 2010) and misrepresent the power wielded by many nominally sovereign but effectively impotent governments (Agnew, 2009). Moreover, the fact that oceans cover over 70% of the globe undermines the simple fiction that we live in a completely territorialized world. The provisions of the United Nations Convention on the Law of the Sea (UNCLOS) have led to much of the world's oceans falling within some sphere of state control, whether by establishing territorial waters (up to 12 nautical miles offshore) or exclusive economic zones (EEZ, up to 200 nautical miles offshore). The latter limits are not immutable: Article 76 allows a state to claim economic exclusivity over sea floor extending beyond the 200 nautical-mile limit if it can scientifically prove that the sea floor is a geological extension of its continental shelf. Nowhere are the implications of this stipulation more salient than in the Arctic.

Far from being a space entirely within “sovereignty’s orbit,” the Arctic is a place that defies the comfortable association of sovereignty with territory. Unlike Antarctica, a continent surrounded by an ocean, the Arctic is an ocean surrounded by continents, to which five countries - Russia, Norway, Greenland (Denmark), Canada, and the United States - have direct access. Because the region is relatively small (approximately 6% of earth’s surface), and because it has unusually broad continental shelves, a large proportion of the Arctic Ocean is “at risk” of being claimed (Dodds, 2010; Smith, 2010). Article 76 was not written exclusively in relation to the Arctic—it was intended to settle ocean claims worldwide—and until recently, debates of Arctic seabed sovereignty have been largely confined to the academic realm. However, recent sea ice recession driven by climate change has led to a wave of new maritime sovereignty claims by Arctic littoral states, as well as military activities intended to reinforce sovereignty over existing territory.

There are obvious economic reasons for these claims: receding sea ice means increased access to potentially immense petroleum reserves for those states whose EEZs overlap with oil and natural gas fields. A widely-cited assessment by the U.S. Geological Survey estimated that the Arctic contains approximately 30% of the world’s undiscovered natural gas and 13% of its undiscovered oil, most of which is offshore and in less than 500 meters of water (Gautier et al., 2009; Bird et al., 2008). In the Russian Arctic alone, the total value of proven and potential petroleum reserves is estimated at \$15 trillion US (Solozobov, 2009). Climate models project increased year-round maritime access by midcentury within the EEZs of the five littoral states, particularly in Canada, Greenland, Russia, and the U.S., using ice-strengthened vessels (Stephenson et al., 2011).

The prospect of new access to these vast reserves has sparked a series of sensational media tropes touting such themes as a “great rush for virgin territory,” “race for Arctic riches,” and “fight for the top of the world (Krauss et al., 2005; Shalal-Esa, 2011; Graff, 2007). This surge in geopolitical interest has coincided with a militarization not seen since the Cold War (Huebert, 2009). While violence has yet to erupt, the fact that all Arctic littoral states have exercised demonstrations of military force or made plans to expand their military presence suggests the possibility of armed conflict. Furthermore, anticipation of military engagement remains prevalent in policy literature (Cohen, 2007; Borgerson, 2008; 2009), fueling anxiety over an emerging northern “Great Game.”

Despite the allure of oil and gas, there is little reason to believe that international “resource wars” are in the Arctic’s future (Brigham, 2010; Smith, 2010). While the UNCLOS framework allows states to pursue national interests by claiming resources beyond their current EEZ, it provides for such activities to be done through peaceful and internationally-recognized means. Furthermore, many petroleum deposits are themselves providing the impetus for international cooperation constituted through the development and implementation of shared infrastructure.

In this paper, I invoke the term ‘collaborative infrastructures’ to describe a new paradigm of state and corporate collaboration within which Arctic actors are pursuing mutual economic and environmental interests. Even as states unilaterally escalate their military capacity in the High North, they are forging multilateral agreements to promote security and resource development at local and regional scales. While provocative displays of titanium flag-planting may grab the headlines, less heralded collaborative efforts are guiding the future of Arctic governance.

Sovereignty Anxiety and Limits to Shared Governance

In his discussion of Alfred Mahan’s argument for securing state power through sea control, Paul Hirst (2005) points out that “even with modern technology like nuclear submarines, basic facts of geography and the qualitative features of space do matter, and they benefit some powers at the expense of others. The sea is only a great common to some” (70). Like other oceans, the Arctic Ocean is “a single continuous space across which vessels may move relatively freely” (Hirst, 2005: 53) in comparison to overland travel. Unlike other oceans, however, the Arctic Ocean imposes unique restrictions on vessel movement. The navigational limits and uncertainties created by temporally and spatially variable sea ice mean that season and regional geography determine the extent to which vessels move freely. Barring the use of ice-strengthened ships, Arctic navigation is

currently possible only in ice-free seas, which tend to be located at relatively lower latitudes along coastlines. Thus, territorial coastal waters (such as the straits of the Canadian Archipelago and Russia's Vilkitsky strait) are necessary through-points for shipping along established routes such as the Northwest Passage (NWP) and Northern Sea Route (NSR). Vessels may only avail themselves of these routes under the right of innocent passage, which allows legal transit only in an "expeditious and continuous manner," which is not "prejudicial to the peace, good order or the security" of the coastal state (UNCLOS, 1982).

This necessity of travel close to (if not directly through) territorial waters increases the likelihood of a foreign vessel entering an area unpatrolled by state authorities (such as the Coast Guard)—a scenario any state government would prefer to avoid. Alexander Sharavin, head of Russia's Institute of Political and Military analysis, justifies the need for special forces in Russia's Arctic: "because we have thousands of kilometers of border [passing] through the Arctic Ocean. This huge space is not generally covered up with anything [or] anybody" (Bennett, 2011). Canada's long-standing dispute with the U.S. and EU over whether the NWP constitutes internal waters or an international strait is in part generated by anxiety over unmonitored foreign vessels entering territorial space. This anxiety was brought into sharp focus in 1999 when the Chinese vessel *Xuelong* arrived in the Beaufort Sea undetected, raising questions about whether foreign exploitation of Canadian resources could occur without state knowledge (Lasserre, 2010). Recent and projected increases in the volume of Arctic maritime traffic raise the chance of intrusion further: destination transport driven by resource development, community resupply, and tourism is expected to increase significantly over the next decade. By 2020, it is projected that annual demand for resupply operations in Canada alone will exceed the capacity of the current fleet (AMSA, 2009).

That states have begun to increase their Arctic military presence and rhetoric following reports of dramatic sea ice recession (NSIDC, 2007) is not mere coincidence. A recent Russian plan for developing the Arctic asserted that "it cannot be ruled out that the battle for raw materials will be waged with military means" (Borgerson, 2009). Others are even more blunt: Konstantin Simonov, Director of the National Energy Security Fund in Russia, predicted a military clash between Russia and NATO forces in the next 20 years (Solozobov, 2009). In diplomatic cables leaked by WikiLeaks in May 2011, Russian Ambassador to NATO Dmitriy Rogozin asserted that "the 21st century will see a fight for resources, and Russia should not be defeated in this fight" (Jones and Watts, 2011). States have backed up such rhetoric with military exercises and policy initiatives. Russia's Arctic Strategy

calls for the creation of a polar forces unit fortified by tanks and all-terrain tracked vehicles to be deployed in Pechenga, 100 km from Murmansk near the Norwegian border (Government of Russia, 2008a), and its Navy and Air Force continue to patrol the Arctic Ocean (Barents Observer, 2010a). Canada's plan to establish a military training center in Resolute Bay is one of several implementations of the Harper Government's "use it or lose it" strategy (BBC, 2007; Byers, 2009). Despite not having ratified UNCLOS, the U.S. recently conducted submarine exercises north of Prudhoe Bay, meant to "ensure that the United States maintained access to the Arctic" according to U.S. Navy Captain Rhett Jaehn (Shalal-Esa, 2011). Such developments might suggest that states are preparing the Arctic to become a military theater. Are fears of impending conflict legitimate?

A measured approach to the question would begin with acknowledging that northern identity in some countries, particularly Canada and Russia, is intertwined with the recent militarization. Defense of the North through active military and civilian presence has long been a hallmark of Russian policy dating back to Stalinist efforts to assert sovereignty through planned industrialization of the North and Far East (Griffiths, 1991; Hill and Gaddy, 2003). While of no direct political consequence and under no sanction by Moscow, Artur Chilingarov's dramatic flag-planting incident did much to secure post-Cold War Russia's identification with the North, both domestically and internationally. Canada provides one of the clearest examples of northern identity politics through its 'Northern Strategy,' a Harper Government-backed federal plan to establish unambiguous sovereignty over Canadian Arctic lands and waters. The Strategy affirms Canada's right to "patrol and protect [its] territory through enhanced presence on the land, in the sea and over the skies of the Arctic" (Government of Canada, 2009) by increasing human presence in the North, including supporting paramilitary Canadian Rangers in communities throughout the region (Lackenbauer and Farish, 2007; Lackenbauer et al., 2008). Outlining the project's goals, Foreign Affairs Minister Lawrence Cannon called the Arctic "an integral part of [Canada's] national identity" and affirmed that heightened military operations would allow the state to "reinforce [its] presence in the region" (CTV News, 2009). Such sentiments are reflected by Canadians' strong general support for expanding the Canadian Rangers in the High North (82% northern Canada, 71% southern Canada) (EKOS Research Associates, 2011: 42). A vote by the House of Commons to rename the NWP the 'Canadian Northwest Passage' (Hutter, 2009) would appear to highlight, above all, the symbolic significance that defense of Arctic sovereignty has undertaken.

Such rhetoric may represent little beyond symbolism and political posturing, however. In spite of Harper's repeated public calls for increased militarization, cables released by WikiLeaks reveal his belief that an Arctic military clash is highly unlikely, and that a NATO presence in the region could backfire by exacerbating tensions with Russia (The Globe and Mail, 2011). Furthermore, military presence as a projection of national identity is not warmongering, as citizens may support their military without supporting militarism. Recent evidence suggests that while nationalist sentiments persist throughout the North, international approaches to governance also enjoy widespread support. A survey of 9000 residents in the eight Arctic states found pluralities of respondents favoring a "firm line in defending its sections of the Arctic" in Canada (42%), Iceland (36%), and Russia (34%), but greater numbers of respondents from these countries favoring either negotiating compromises with other countries, or designating the Arctic as an international territory (Canada, 52%; Iceland, 53%; Russia, 47%) (EKOS Research Associates, 2011, page numbers²). These attitudes comprised strong majorities of the responses from other states (Denmark, 88%; Finland; 87%; Norway, 84%; Sweden, 83%; United States, 55%).

These results appear to vindicate efforts to develop international governance regimes in the Arctic. International governance has had a place in discussions on Arctic politics since the final years of the Cold War, as Mikhail Gorbachev's famous "Murmansk Initiative" speech in 1987 initiated a move toward thinking of the region as a zone of international cooperation rather than a military theater (Osherenko and Young, 1993; Young, 2009). Perhaps the most significant development in this regard was the 1996 inception of the Arctic Council, which established the first circumpolar intergovernmental body intended to promote shared governance among states and indigenous groups. The Arctic Council has succeeded in fostering dialogue among stakeholders concerning sustainable development, environmental protection, and scientific collaboration, culminating with the release of the Arctic Climate Impact Assessment (ACIA) in 2004. It has raised the geopolitical profile of the Arctic (numerous non-Arctic states have applied for observer status) and is an important forum for the advancement of indigenous interests. Most recently, the landmark May 2011 agreement to coordinate search-and-rescue operations jointly among the eight states marked the first legally binding agreement adopted under the auspices of the Council (Arctic Council, 2011a).

This recent success notwithstanding, many of the most important issues in the region today remain confined to engagement at the national level. The Arctic Council retains little binding regulatory authority over many sensitive issues of national interest, such as border control, security policy and

resource exploration, and remains “essentially an international advisory body providing support to the governments that are seeking consensus-based solutions to common or shared problems” (Heininen, 2004: 214). The 2011 search-and-rescue agreement may pave the way for some binding international regulation of oil and gas development, as Sweden has indicated that it would use its term as Arctic Council chair from 2011-2013 to push for regional coordination on oil spill prevention and response (Arctic Council, 2011b). However, it remains unclear whether the Arctic Council will ever acquire the authority to regulate and/or mediate disputes regarding ownership of oil and gas deposits, given the highly strategic role of these resources in state agendas.

In the near future at least, such a transfer of power appears unlikely. The Ilulissat Declaration issued by Greenland, Canada, Russia and the U.S. in 2008 unequivocally affirmed these states’ commitment to the existing legal framework under UNCLOS. Implying that the terms of Article 76 are sufficient for resolving present and potential future sovereignty disputes, the declaration asserts that there is “no need to develop a new comprehensive international legal regime to govern the Arctic Ocean” (Ilulissat Declaration, 2008). Effectively, this agreement among select governments – indigenous groups and non-littoral Arctic states Finland, Iceland, and Sweden were excluded from the summit – sent a clear message to the international community that matters of sovereignty and resource development belong foremost on national, rather than international, agendas (Dodds, 2010). In this way, the agreement undermined the spirit of international cooperation the Arctic Council was created to promote, made plain by U.S. Secretary of State Hillary Clinton’s rebuke to former Canadian Foreign Minister Lawrence Cannon at the March 2010 meeting of the “Arctic Five” (Woods, 2010). Contrary to regimes of “disaggregated” sovereignty coincident with the rise of globalization, the “necessary fiction” that “there is absolute popular sovereignty vested in a national/territorial political community rigidly marked off from all others” (Agnew, 2009: 98; Chandler, 2003) remains a compelling geopolitical principle in the Arctic.

In spite of this focus on national rather than regional interests, all signs are that the former will be advanced by peaceful means (Young, 2009; Brosnan et al., 2011). UNCLOS offers a peaceful solution to territorial disputes: Arctic oil and gas, like those in any ocean, belong to the state which exercises sovereignty there. Because most known reserves lie within unambiguous state EEZ boundaries, states may pursue development of their own fields within an internationally recognized legal framework. Where boundaries are disputed, Arctic states have shown willingness to find peaceful resolutions: in September 2010, Norway and Russia resolved a four decade-long

disagreement on their Barents Sea maritime boundary (Harding, 2010), and Canada and Russia agreed that the United Nations would be the final arbiter of their overlapping claims in the Arctic Ocean (BBC, 2010). The line of demarcation in the Beaufort Sea between Canada and the U.S. remains un-delineated, but violent conflict between states with such amicable relations and shared interests is practically unimaginable. Unclaimed deposits outside state EEZs may be in play following a successful petition under Article 76, but the recoverability of these deposits is complicated by greater ocean depth, distance to shorelines, and sheer statistical uncertainty of their presence, making development of near-shore deposits a much more attractive prospect in the near and medium term (AMAP, 2007). For example, nearly all offshore explored gas reserves lie in the Russian Barents Sea, mostly in the Shtokman field 600 km off the coast of the Kola peninsula. It is unlikely that any undiscovered deposits in Russia's pending claim represent a prize of equal or greater value (IBRU, 2008; Gautier et al., 2009).

The commitment to the existing UNCLOS framework (and the preservation of national agendas that it affords) may be motivated by a protectionist impulse, but it is a peaceful one nonetheless. As long as the tenets of UNCLOS remain intact, there is little reason for states to pursue aggressive policies to secure oil and gas, as Norway and Russia recently demonstrated with the Barents Sea boundary dispute resolution. The Ilulissat Declaration set a regrettable precedent by excluding indigenous groups and three states from the table. Yet, its unequivocal affirmation of UNCLOS may be the single most significant step toward conflict avoidance in the Arctic.

Arctic Infrastructure: Scarcity and Investment

While the post-Cold War Arctic has sometimes been perceived as geopolitical backwater, the region's recent militarization reflects an elevated nationalist enterprise at work. This Northern nationalism is linked to an imbalance between despotic and infrastructural power currently unfolding in the Arctic. Michael Mann (1984) distinguishes between despotic power, or power over society by state elites; and infrastructural power, or power to penetrate and coordinate the activities of civil society through implementation of infrastructure. While despotic power works by directly imposing a state's will over its people, infrastructural power works by increasing the amount of contact states have with their citizens and the benefits that result from this contact. For this reason, infrastructural power may be viewed as a 'positive' type of power, as it is effectively a legitimacy to govern ultimately derived from the assent of the people. For example, governments that tax their citizens directly at source without

direct consent do so because the authority to tax is given implicitly by the people who receive benefits from government-provided services. Roads, law enforcement, pensions, and medical care are all manifestations of infrastructural power.

Because infrastructural power is often exercised in and around population centers in order to maximize the benefit of services, infrastructural power is highest where territoriality is unambiguous. Borders provide bounded, centrally organized spaces within which taxes may be collected, services rendered, and information gathered. Domestic sovereignty within clearly-defined borders allows states to deliver services to the people who both support and depend on those services, without foreign intrusion (Agnew, 2003). Similarly, social stability flows from a government's capacity to exercise effective infrastructural power, because a population invested in benefits provided or facilitated by the state is unlikely to overthrow the system providing those benefits. Infrastructural power thus becomes "the quintessential indicator of modern statehood" (Agnew, 2009: 117).

It is important to note that a state may exercise *infrastructural power* without actually deploying *infrastructure* itself. The Alaskan Native Land Claims Agreement (1971), Canadian Land Claim Agreements (beginning with the James Bay and Northern Quebec Agreement, 1975), and institution of Home Rule in Greenland (1979) were landmark steps toward devolving governance locally and economically empowering communities (Grant, 2010). These agreements bolstered state legitimacy in the North by allowing native populations to become politically and economically invested in a system created and controlled by the state – a clear and tangible demonstration of sovereignty. Thus, a form of infrastructural power deriving from unique governance systems has been in place in the western Arctic since the 1970s. However, it should be noted that the prospects for similar regimes of native empowerment in Eurasia are dimmer, due to homelands crossing modern political boundaries¹ (Smith, 2011) and extant systems of federal resource control (Stammler and Wilson, 2006; Stammler and Peskov, 2008).

Despite the power afforded by these governance systems, other types of infrastructural power deriving from the presence of physical infrastructure remain lacking in the Arctic relative to southern latitudes. The Arctic has some of the lowest concentrations of built and human infrastructure in the world, due to costs imposed by cold winters and remoteness from large population centers. For example, per-capita transport and communication costs are much higher in the Northwest Territories (+36%) and Nunavut (+160%) compared with Canada as a whole (Statistics Canada, 2009). The penetration of transportation systems in northern countries has often taken the form of

vast projects requiring considerable investment by federal governments, such as the Alaska Highway and the Trans-Siberian and BAM railways. Even with government investment, permanent transportation infrastructure remains sparse. Figure 1 (below) illustrates the scarcity of permanent roads in the North by depicting total road length and density as a function of latitude.

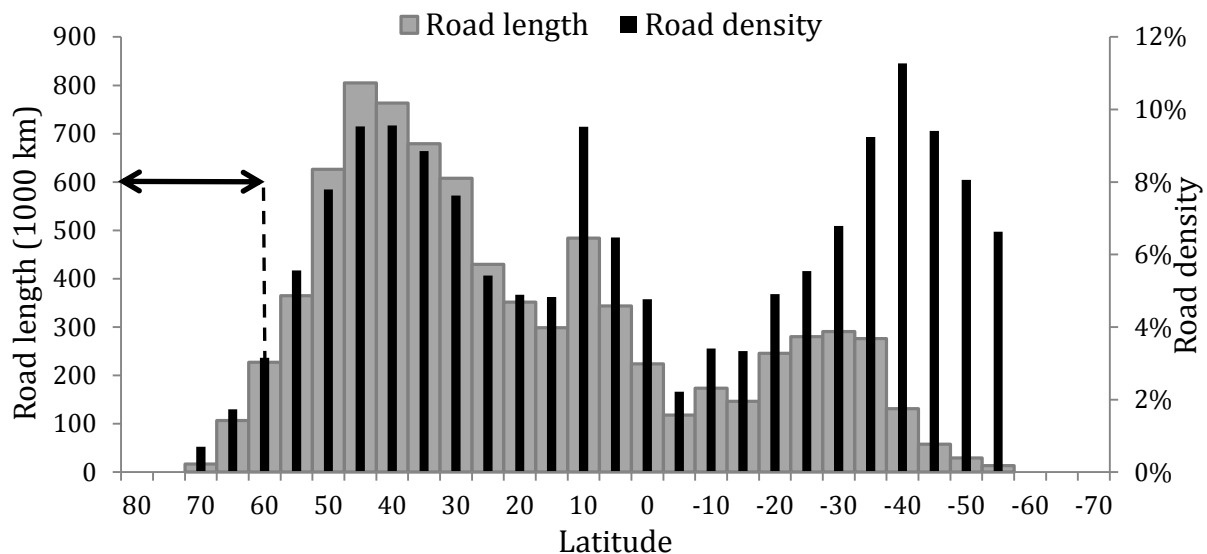


Figure 1: Total permanent road length (gray) and road density (ratio of permanent road length to land area; black). Source: author, from U.S. NIMA data (1997). Arrows show the approximate coverage of the Arctic zone.

Warmer winters due to future climate change may make some areas more suitable for road construction, but these benefits must be weighed against the additional cost of maintaining existing built infrastructure over thawing permafrost (Instanes et al., 2005). Furthermore, elevated temperatures threaten the viability of temporary winter road networks (Hinzman et al., 2005; Hayley and Proskin, 2008) and are projected to reduce winter road potential in all Arctic states by midcentury (Stephenson et al., 2011). Comprehensive surveys have found deficiencies in maritime infrastructure such as timely information needed for safe navigation, availability of search and rescue and pollution response assets, port reception facilities for ship-generated waste, and availability of deepwater ports and salvage resources for vessels in distress (AMSA, 2009). Compared to lower latitudes, infrastructure in the Arctic is less developed and more diffuse.

Given this paucity of infrastructure, it follows that the “territorialization of social relations” that results from deployment of infrastructural power (Mann, 1984) would be commensurately lower than at southern latitudes. Infrastructural power has penetrated society less deeply in the Arctic than in other places; here, the state retains full juridical control while lacking in practical control. For example, governments that lack weather stations, coast guard outposts, and trained personnel in their Northern territories may fail to forecast ice conditions, enforce regulations on oil and gas activities, and respond to disasters. Consequently, resident populations may have to cope with the insecurities of uncertain weather, unregulated petroleum extraction, and the specter of an ill-prepared response to oil spills. Policies which address such infrastructural deficits enjoy widespread support among Canadians, particularly those aimed at improving environmental disaster response capacities (92% of Northerners; 90% of Southerners); however, current capacities are rated as “profoundly inadequate” by a majority of Canadians (EKOS Research Associates, 2011).

A relative lack of infrastructural power in the North can impel a state to exercise despotic power in overt ways. Before the North American land claims agreements were settled, policies exerting direct control over indigenous populations – such as Canada’s forced relocation and compulsory boarding schools for Inuit in the 1950s – demonstrated state penetration of daily lives through despotic means. Such policies confer power through coercive control rather than through a set of freedoms and safeguards afforded by state-sponsored infrastructure and social systems. Militarization and appeals to nationalism are other clear examples of this power imbalance. While built and human infrastructure may take decades to implement in the North, military power and nationalist rhetoric can be deployed relatively quickly and cheaply. Post offices and submarine patrols both affirm state sovereignty, albeit in very different ways.

However, as Arctic states become more attuned to their Northern interests, we are seeing an increase in infrastructural power resulting from government-initiated development programs. States that see their economic future in Northern development such as Russia, Norway, and Canada are investing heavily in transportation, communication, and research infrastructure. Norway, already one of the most infrastructurally developed Arctic states, has long been spearheading scientific research in the Svalbard Archipelago by collaborating with research institutions from numerous countries, including the eight Arctic states (Norwegian MJP, 1999). In doing so, Norway is securing its position as a world leader in Arctic research and oil and gas technology. Russia has plans to develop its inland-maritime connectivity by building railways linking ports at Amderma and Indiga with interior

settlements Vorkuta and Sosnogorsk, respectively (Barents Observer, 2010b). These ports are being targeted as potential cargo checkpoints for future shipping along the Northern Sea Route. Together with plans to expand Russia's fleet of nuclear icebreakers (Barents Observer, 2008; 2009), this plan signals Russia's recognition that its 40,000 km-long Arctic coastline, occupying the full extent of the NSR, is one of its most invaluable strategic assets. These investments are effectively transforming what was for centuries a treacherous oceanic frontier into a transcontinental trade corridor. A well-developed northern transit system can only increase the competitiveness of Russia's oil and gas reserves on the global market: larger and more frequent shipments will lead to greater trade volumes, and insurance costs will fall as icebreaker, disaster response, and ice monitoring services are enhanced.

In the Western Arctic, Canada's proposed Arctic Gateway may be one of the most ambitious Northern plans to meet the transportation requirements of a global economy. The Arctic Gateway is the latest in a series of 'Gateway' initiatives already guiding development and trade policy in the Atlantic, Asia-Pacific, and central Ontario/Québec regions (Transport Canada, 2009a; PPM, 2010). The National Policy Framework for Strategic Gateways and Trade Corridors aims to promote long-term economic development through direct government investment in physical infrastructure, such as increasing the number and capacity of deepwater ports (such as at Churchill), and by promoting partnerships with the private sector to pursue projects jointly. Among other things, the Framework will direct the spending of a \$33 billion US allocation to Building Canada, the federal government's long-term plan for infrastructure, committed in the 2006 and 2007 budgets. The Arctic Gateway differs from previous Gateway Frameworks in its effort to fuse state economic development goals with national sovereignty, environmental stewardship, and indigenous empowerment. This is borne out of the recognition that infrastructural investment alone is insufficient to secure livelihoods: economic policies must also recognize the governance needs of local populations in order to promote sustainable development (DiFrancesco, 2000).

The future Arctic infrastructural landscape will look very different from today. The economic potential of the Arctic is being realized on increasingly large scales, necessitating unprecedented imports of equipment and expertise. These infrastructural requirements represent critical opportunities for interstate cooperation, as I argue in the next section.

Collaborative Infrastructures

Many signs indicate that international cooperation is emerging as a dominant *modus operandi* in Arctic geopolitics. The Norway-Russia boundary resolution is the clearest recent example, ending a 40-year period of dispute over a 175,000 square kilometer area of the Barents Sea. Norway's Storting unanimously ratified the treaty in February 2011, with Russia's ratification coming in a landslide vote one month later. The agreement appears all the more remarkable in light of the considerable oil and gas potential of the formerly disputed region. Seeds of the agreement had been sown years earlier as each of the states recognized the strategic benefits of the resolution. In 2008, Jonas Gahr Støre, Norway's Minister of Foreign Affairs, emphasized cooperation with Russia on the prospect of petroleum extraction:

Most of this activity has taken place in the Norwegian Sea, but the major potential is on the Russian side. There are huge opportunities for cooperation...I have raised the issue of infrastructure in my discussions with my Russian colleagues. Is the infrastructure along the coast able to support the extensive offshore activities that are expected to develop in this area? This is a good opportunity for the two coastal states to discuss what will be needed... (Støre, 2008: 13).

While not mentioning Norway specifically, the 2008 Russian Security Policy noted similar opportunities for cooperation:

Russia develops forward practical cooperation with the Nordic countries, including the implementation of a multilateral framework of joint cooperation projects in the Barents Euro-Arctic Region and the Arctic as a whole, taking into account the interests of indigenous peoples. (Government of Russia, 2008b)

Following the historic agreement, the theme of cooperation was again at the forefront of Minister Støre's January 2011 speech at the 5th Arctic Frontiers Conference:

The agreement is a clear reflection of the new dynamic in the Arctic. What was once a frozen region in more than one sense is warming up to the prospects of reaping mutual benefits through cooperation and agreements (Støre, 2011).

The Barents Sea is believed to contain some 3,700 million tons of oil equivalent (Moe and Rowe, 2008), equal to 33% of Russia's proved oil reserves (BP, 2010). According to the boundary resolution treaty, deposits that straddle the boundary line are to be regarded as an indivisible whole, and may only be explored and developed jointly by the two countries (Socor, 2010). With such a substantial prize at stake, it may seem unlikely that the two states would arrive at a resource-sharing agreement so easily. However, Russia's extraction capabilities lag significantly behind its announced offshore platform needs (Moe and Lowe, 2008). Plans to develop the Prirazlomnoye field in the Pechora Sea

using almost exclusively Russian equipment failed to materialize, and Gazprom's ventures in the Shtokman field stalled due to disagreements on the extent of foreign involvement (Moe and Lowe, 2008). The combination of Russia's offshore ambitions and Norway's relative advantage in equipment and personnel created an attractive partnership opportunity. President Medvedev himself welcomed the collaboration: "We actually want our Norwegian friends to apply all of their best technologies, all of their best designs, to promote the modernization of our oil and gas sector" (Socor, 2010). The Russian Ministry of Natural Resources advocates changing legislation to allow foreign companies to join projects in Russian strategic fields, though it is currently the only Ministry supporting this idea (Socor, 2010). In the short and medium term at least, an arrangement in which Norway supplies equipment and expertise in exchange for a share of Russia's petroleum profits appears mutually beneficial, as it will take years for Russia to develop its own technical abilities sufficiently to carry out its development plans. Furthermore, that Norway and Russia are both party to the Bologna Accord (1999) paves the way for possible longer-term scientific and technological collaborations founded on a common set of educational standards and principles (Bourmistrov and Sørnes, 2007). Upon reflection, it should not come as a surprise that the Barents Sea agreement was reached despite rich resource potential—on the contrary, resource prospects expedited the agreement, rather than impeding it.

Norway and Russia's partnership exemplifies the way in which infrastructural scarcity presents opportunities for cooperative approaches to local and regional problems. These collaborative infrastructures stem from mutual interests in expanding the reach and improving the efficacy of Arctic infrastructure. Norway and Russia's collaboration was founded on the sharing of equipment and expertise. While the 'on-the-ground' work will be carried out by a number of non-state actors including engineers and corporate executives, the fact that the collaborative framework was conceived and endorsed at the highest levels of state government indicates that states themselves are wholly invested in collaborative infrastructures as a means of advancing their respective agendas. By electing to collaborate rather than pursue development independently, the Russian and Norwegian governments relinquished a measure of autonomy while providing for Barents Sea oil and gas projects to proceed according to mutually agreed-upon standards, setting a powerful precedent for interstate cooperation. In this way, collaborative infrastructures are an example of a "sovereignty bargain" by which states trade autonomy for increased control and legitimacy (Alam et al., 2009). As is often the case in such arrangements, infrastructure forms the foundation of the collaboration, with

both physical (facilities, equipment) and human (expertise, legal and business frameworks) infrastructure implemented jointly.

This latter type of infrastructure comprising human practices is central to the collaborative work currently being done in the Arctic. U.S. Interior Secretary Ken Salazar pointed out the need for international oil and gas standards at the May 2011 Arctic Council ministerial meeting: “At a minimum what we can probably do is to aim at getting to a set of best practices that can be used in oil and gas exploration and production in the Arctic region” (Quinn, 2011). Other efforts are currently underway. For example, a pan-Arctic team of shipping experts at the International Maritime Organization (IMO) is working to devise a ‘Polar Code,’ a set of standards intended to harmonize the many national systems of requirements for building polar vessels (Transport Canada, 2009b). The specialized expertise needed to create this regulatory framework represents a type of human infrastructure essential to streamlining and maintaining safety in a rapidly expanding shipping sector. Governments and industry are working together to advance this goal through the Barents 2020 project, which established a dialogue between Russian and Norwegian experts to harmonize industry standards for disaster prevention in the Barents Sea (Det Norske Veritas, 2009). Industry recognizes that cross-border cooperation is an essential element of oil spill prevention and response, particularly in the Arctic where the environmental consequences of an oil spill may be particularly severe (Sæbø, 2011). The success of Barents 2020 led to greater international participation among various companies operating in the Arctic, giving rise to further projects developing new techniques to model, monitor, and respond to oil spills (Mairs, 2011). Thus, collaborative infrastructures may proceed as joint industry projects with potential to respond to regulatory needs faster than government-initiated legislation.

Current infrastructural improvements also hold promise for potential future collaborative infrastructures. Canada recently set aside nearly \$35 million US to improve Arctic weather and navigation systems over the next five years (Environment Canada, 2011). The coverage area includes the western coast of Greenland, an area with rich petroleum reserves and considerable hazard potential due to sea ice import from the central Arctic Ocean into Baffin Bay. The key to Greenland’s full independence from Denmark may lie in its oil reserves (Nuttall, 2008), but Greenland’s infrastructure is among the least developed in the region, and has already opened its offshore fields to foreign interests (Izundu, 2010). Safe development of Greenland’s oil fields will require close monitoring of weather and ice conditions, which Canada will be poised to provide.

Though no agreement has taken place as yet, the potential exists for a revenue sharing accord in exchange for high-tech forecasting and navigational assistance.

Collaborative infrastructures have also been built into long-term strategic economic plans to promote the Arctic as a cost-effective alternative to trans-Pacific trade with East Asia. Canada and Russia are working toward a significant expansion of the 'Arctic Bridge,' a trans-polar multimodal transportation system connecting North America with China and India by way of Russia. Canada and Russia are already engaging in maritime trade along the Churchill-Murmansk sea route, and both countries have recently made investments in expanding not only trade volume, but also the role and scope of trans-Arctic trade within the global trade network. On the Canadian side, the CentrePort Canada project (Gray, 2010) aims to transform Winnipeg into an "inland port" serving not only as a midpoint for Canadian east-west trade, but also as the west-Arctic termination of the Arctic Bridge air and sea routes (by way of Churchill) (Figure 2, below). By capitalizing on its location in the geographic center of North America, Winnipeg would serve as a distribution center shuttling goods north to Churchill for sea export, as well as a primary hub for air cargo to Russia and China. Russia is investing as much as \$800 million US to upgrade airport facilities in Krasnoyarsk as its Arctic Bridge air gateway (Gray, 2010), and will continue to receive and distribute intercontinental cargo through its largest Arctic seaport at Murmansk.

Unlike the previously cited examples, infrastructural development of the Arctic Bridge is coming primarily from within states rather than as international collaborations. However, the economic benefits Canada and Russia stand to gain from independently developing their trade infrastructures are predicated on continued stable diplomatic relations and a mutual desire to promote the Arctic as a fully integrated arena of global trade. Conceiving CentrePort Canada as an international project would have made little sense without commensurate investments in rail and port upgrades within Russia and between Russia and China, and Russia only stands to gain from the expanded North American market penetration that CentrePort Canada affords. By building their infrastructures toward an intercontinental trade system, Canada and Russia are collaborating on long-term economic strategy, a strong sign of amicable, even harmonious, future Arctic geopolitics.

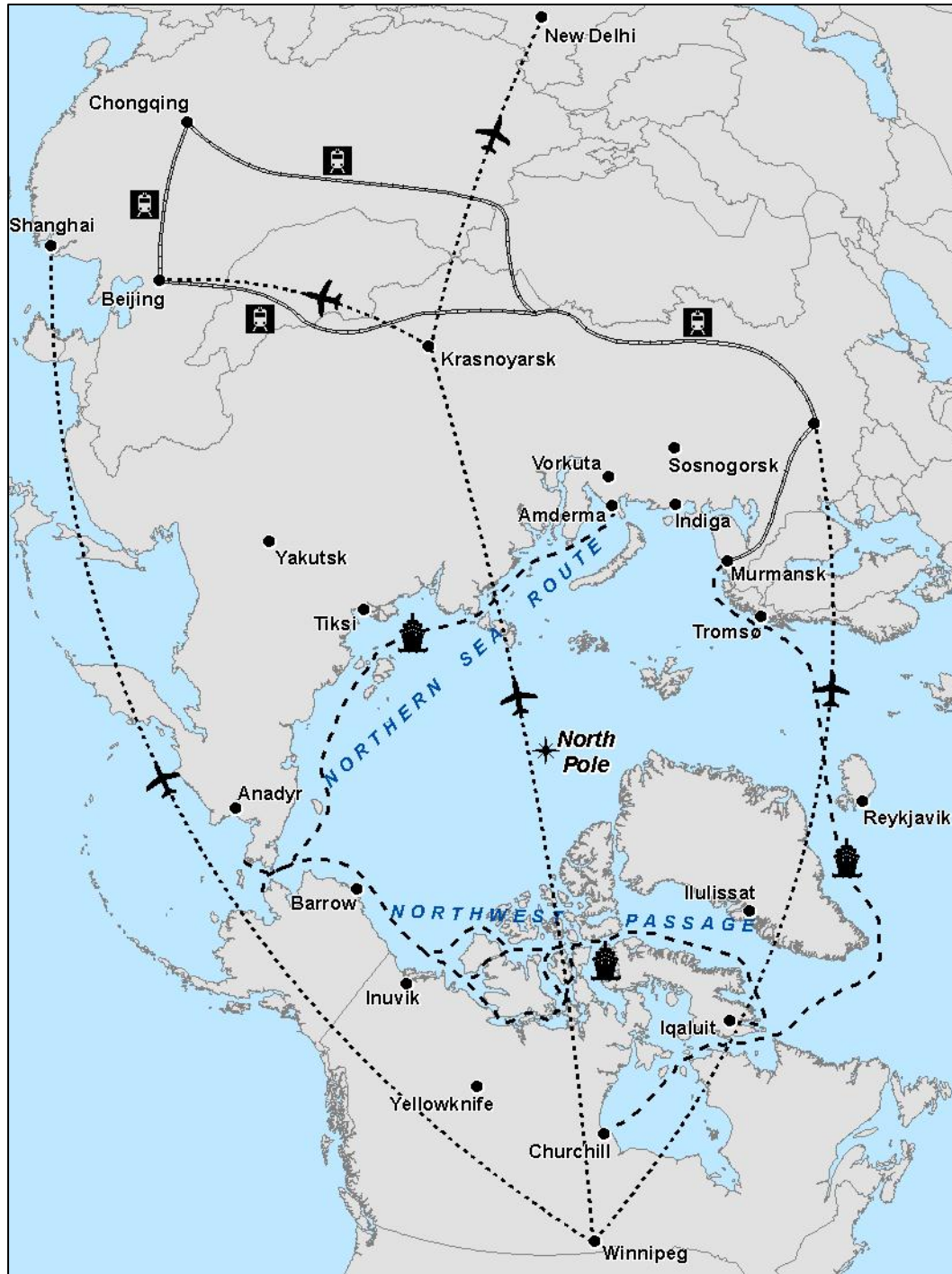


Figure 2: Arctic Bridge proposed air and rail routes (adapted from Gray, 2010)

Conclusion

The Arctic has always been a part of the geopolitical history of northern states. However, recent years have seen the reemergence of the region as a locus of global economic and political activity.

The Arctic is rapidly shedding its post-Cold War status as a geopolitical hinterland to occupy a space near the forefront of state agendas, manifesting in an imbalance between despotic and infrastructural power that has yet to be fully resolved. Likewise, the full potential of collaborative infrastructures in the Arctic has yet to be realized. As states work together to advance northern development, infrastructural power will commensurately rise, building on existing manifestations of infrastructural power such as the North American land claims agreements. These developments will lead to sovereignty being exercised increasingly locally through daily activities rather than as directives from faraway elites. Paradoxically, we may also see a further increase in military presence in absolute terms, as states respond to the defense demands of larger populations, infrastructural investments, and increasingly scarce resources. Regardless, military clashes are not likely to figure in the outcome of a Northern ‘Great Game,’ as the geography of Arctic resources and infrastructure presents critical opportunities for international cooperation. Collaborative infrastructures will lead the way in forging economic and political partnerships between state and private actors. Along with the continued primacy of the UNCLOS legal framework, these opportunities are a compelling incentive for Arctic states to emphasize mutual interests in the continued transformation of the circumpolar North.

Acknowledgments

Sincere thanks to J. Shadian (University of Lapland), H. Nicol (Trent University), and J. Agnew, L. Smith, L. Alvarez, B. Crow, O.T. Ford, T. Le, and T. Narins (UCLA) for thoughtful commentary on an earlier version of this manuscript. This work was supported by the National Science Foundation Graduate Research Fellowship Program (DGE-0707424).

Notes

1. The ancestral homeland of the Saami, for example, extends throughout northern Fennoscandia across Norway, Sweden, Finland and Russia.

References

- Agnew, J. (2009). *Globalization and Sovereignty*. Lanham: Rowman & Littlefield.
- Agnew, J. (2003). A World of Territorial States. In J. Agnew (Ed.), *Geopolitics: Re-visioning World Politics, 2nd Edition* (51-66). New York: Routledge.
- Alam, U., Dione, O., Jeffrey, P. (2009). The benefit-sharing principle: implementing sovereignty bargains on water. *Political Geography*, 28(2), 90-100.

- AMSA (Arctic Marine Shipping Assessment). (2009). *Arctic Marine Shipping Assessment 2009 Report*. Arctic Council, 188p. Retrieved (10.1.12), from <http://www.pame.is/amsa/amsa-2009-report>.
- Arctic Council. (2011a). *Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic*. Retrieved (10.1.12), from <http://www.arctic-council.org/index.php/en/oceans/search-and-rescue>.
- Arctic Council. (2011b). *Arctic Council Members Sign Agreement in Nuuk*. Retrieved (10.1.12), from http://www.arctic-council.org/article/2011/5/arctic_council_ministers_sign_agreement.
- AMAP (Arctic Monitoring and Assessment Programme). (2007). *Arctic Oil and Gas 2007*. Retrieved (10.2.12), from <http://www.amap.no/oga/>.
- Barents Observer. (2008, October 17). Russia to build new icebreakers. Retrieved (1.10.12), from <http://www.barentsobserver.com/russia-to-build-new-icebreakers.4519572.html>.
- Barents Observer. (2009, June 25). Construction of new icebreaker starts in 2010. Retrieved (10.1.12), from <http://www.barentsobserver.com/construction-of-new-icebreaker-starts-in-2010.4610548-16334.html>.
- Barents Observer. (2010a, October 4). Russia increases combat capabilities in Arctic. Retrieved (10.1.12), from <http://www.barentsobserver.com/index.php?id=4826505>.
- Barents Observer. (2010b, December 17). Future bases for the Northern Sea Route pointed out. Retrieved (10.1.12), from <http://www.barentsobserver.com/future-bases-for-the-northern-sea-route-pointed-out.4863371-16288.html>.
- BBC. (2007, August 10). Canada to strengthen Arctic claim. Retrieved (10.1.12), from <http://news.bbc.co.uk/2/hi/americas/6941426.stm>.
- BBC. (2010, September 16). Russia and Canada Seek UN Ruling on Lomonosov Ridge. Retrieved (10.1.12). <http://www.bbc.co.uk/news/world-europe-11331904>.
- Bennett, M. (2011). Germany and Russia in Arctic News. Foreign Policy Association. Retrieved (15.10.12) from: <http://foreignpolicyblogs.com/2011/03/17/arctic-news-roundup-2/>
- Bird, K.J., et al. (2008). *Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle*. (U.S. Geological Survey Fact Sheet 2008-3049). Retrieved (10.1.12), from <http://pubs.usgs.gov/fs/2008/3049/>.
- Borgerson, S.G. (2008). Arctic Meltdown: the Economic and Security Implications of Global Warming. *Foreign Affairs*, March/April, 63-77.
- Borgerson, S.G. (2009). The Great Game Moves North: As the Arctic Melts, Countries Vie for Control. *Foreign Affairs*, Web, March 25, 2009. Retrieved (10.10.12), from <http://www.foreignaffairs.com/articles/64905/scott-g-borgerson/the-great-game-moves-north>.
- Bourmistrov, A., & Sørnes, J.O. (2007). High North Cooperation Between Russia and Norway – the North Western University Alliance. In G. Austin, & M.A. Schellekens-Gaiffe (Eds.), *Energy and Conflict Prevention*, EastWest Institute, New York: Anna Lindh Program on Conflict Prevention, (222-253).
- Brigham, L.W. (2010). Think Again: the Arctic. *Foreign Policy*, September/October. Retrieved (10.1.2012), from http://www.foreignpolicy.com/articles/2010/08/16/think_again_the_arctic.
- BP. (2010, June). BP Statistical Review of World Energy. Retrieved (10.1.2012), from <http://bp.com/statisticalreview>.
- Brosnan, I.G., Leschine, & T.M., Miles E.L. (2011). Cooperation or Conflict in a Changing Arctic? *Ocean Development & International Law*, 42(1-11), 173-210.

- Byers, M. (2009). *Who Owns the Arctic? Understanding Sovereignty Disputes in the North*. Vancouver: Douglas & McIntyre.
- Chandler, D. (2003). New Rights for Old? Cosmopolitan Citizenship and the Critique of State Sovereignty. *Political Studies*, 51, 332-349.
- Cohen, A. (2007, August 6). Russia's race for the Arctic. *The Heritage Foundation WebMemo*, N° 1582. Retrieved (10.1.2012), from <http://www.heritage.org/research/reports/2007/08/russias-race-for-the-arctic>.
- CTV News. (2009, July 26). Ottawa energizes strategy for Arctic sovereignty. Retrieved (10.1.2012). from http://www.ctv.ca/servlet/ArticleNews/story/CTVNews/20090726/arctic_conflict_090726/20090726?hub=TopStories.
- Det Norske Veritas. (2009). Barents 2020: Assessment of International Standards for Safe Exploration, Production and Transportation of Oil and Gas in the Barents Sea (Report No. 2009-1626). Retrieved (10.1.2012), from http://www.dnv.com/binaries/barents_2020_report_%20phase_3_tcm4-519577.pdf.
- DiFrancesco, R.J. (2000). A Diamond in the Rough?: An Examination of the Issues Surrounding the Development of the Northwest Territories. *The Canadian Geographer*, 44(2). 114-134.
- Dodds, K. (2010). Flag planting and finger pointing: The Law of the Sea, the Arctic and the political geographies of the outer continental shelf. *Political Geography*, 29, 63-73.
- EKOS Research Associates. (2011). Rethinking the Top of the World: Arctic Security Public Opinion Survey (Final Report). Toronto: Munk School of Global Affairs, University of Toronto. Retrieved (10.1.12), from <http://gordonfoundation.ca/publication/300>.
- Environment Canada. (2011, February 22). Government of Canada improves weather and marine services in the Arctic. Retrieved (10.1.12), from <http://www.ec.gc.ca/default.asp?lang=En&n=714D9AAE-1&news=A108FFBE-38E0-4AA6-9569-1B3C0667CE3F>.
- Gautier, D.L., et al. (2009). Assessment of undiscovered oil and gas in the Arctic. *Science*, 324(5931), 1175-1179.
- Globe and Mail (The). (2011, May 12). Harper's tough talk on the Arctic less stern in private. Retrieved (10.1.12), from <http://www.theglobeandmail.com/news/politics/harpers-tough-talk-on-the-arctic-less-stern-in-private/article2020615/>.
- Government of Canada. (2009). Canada's Northern Strategy: Our North, Our Heritage, Our Future. Retrieved, from <http://www.northernstrategy.gc.ca/cns/cns-eng.asp>.
- Government of Russia. (2008a). The Foundations of the Russian Federation's State Policy in the Arctic until 2020 and Beyond (in Russian). Retrieved, from <http://www.rg.ru/2009/03/30/arktika-osnovy-dok.html>.
- Government of Russia. (2008b). Foreign Policy of the Russian Federation (in Russian). Retrieved, from <http://kremlin.ru/acts/785>.
- Graff, J. (2007, October 1). Arctic: Fight for the Top of the World. *Time*. Retrieved (10.1.12), from <http://www.time.com/time/magazine/article/0,9171,1663848,00.html>.
- Grant, S. D. (2010). *Polar Imperative: A History of Arctic Sovereignty in North America*. Vancouver: Douglas & McIntyre.
- Gray, D. (2010). Building CentrePort Canada: Opportunities through the Arctic Bridge. Presented at the Arctic Gateway Summit, Winnipeg, Manitoba, November 8-10. <http://www.uwinnipeg.ca/index/cms-filesystem-action/pdfs/conferences/2010/arctic-gateway/building-centreport-canada.pdf>.
- Griffiths, F. (1991). The Arctic in Russian Identity. In L.W. Brigham (Ed.), *The Soviet Maritime Arctic* (pp. 83-107). London: Belhaven Press.

- Harding, L. (2010, September 15). Russia and Norway resolve Arctic border dispute. *The Guardian*. Retrieved, from <http://www.guardian.co.uk/world/2010/sep/15/russia-norway-arctic-border-dispute>.
- Hayley, D., & Proskin, S. (2008). Managing the safety of ice covers used for transportation in an environment of climate warming. Paper presented at the 4th Canadian Conference on Geohazards, Université Laval, Québec City.
- Heininen, L. (2004). Circumpolar International Relations and Geopolitics. In *Arctic Human Development Report* (Regional Report). Retrieved from <http://hdr.undp.org/en/reports/regionalreports/other/name,3262,en.html>.
- Hill, F. & Gaddy, C. (2003). *The Siberian Curse*. Washington, DC: Brookings Institution Press.
- Hinzman, L.D., Bettez N.D., Bolton R., et al. (2005). Evidence and Implications of Recent Climate Change in Northern Alaska and other Arctic Regions. *Climatic Change*, 72, 251-298.
- Hirst, P. (2005). *Space and Power*. Cambridge: Polity Press.
- Huebert, R. (2009, June). In *the Grip of Climate Change: the Circumpolar Dimension*. Session Paper N° 1. Paper presented at 2030 NORTH National Planning Conference, Ottawa, Canada. Retrieved (2.10.12) from, <http://2030north.carc.org/docs/Session%201%20-%20Climate%20Change%20Paper%20-%20Huebert.pdf>.
- Hutter K. (2009, November 24). Canada an “energy superpower” in Arctic. Cannon Says. *The Globe and Mail*. Retrieved (2.10.12), from <http://www.theglobeandmail.com/news/politics/canada-an-energy-superpower-in-arctic-cannon-says/article1205053/>.
- Instones, A. et al. (2004). Infrastructure: buildings, support systems, and industrial facilities. In ACIA. *Impacts of a Warming Arctic: Arctic Climate Impact Assessment*. Cambridge: Cambridge University Press.
- IBRU (International Boundaries Research Unit). (2008). Maritime jurisdiction and boundaries in the Arctic region [jurisdiction map]. Durham University. Retrieved (10.2.12), from <http://www.dur.ac.uk/ibru/resources/arctic/>.
- Ilulissat Declaration (The). (2008). Arctic Ocean Conference. Retrieved (10.2.12), from http://www.oceanlaw.org/downloads/arctic/Ilulissat_Declaration.pdf.
- Izundu, U. (2010, September 25). The race is on for Greenland’s Arctic oilfields. *The Telegraph*. Retrieved (10.2.12) from, <http://www.telegraph.co.uk/finance/newsbysector/energy/oilandgas/8025096/The-race-is-on-for-Greenlands-Arctic-oilfields.html>
- Jones, M. & Watts, S. (2011, May 12). Wikileaks cables show race to carve up the Arctic. *BBC Newsnight*. Retrieved (10.2.12) from, <http://news.bbc.co.uk/2/hi/programmes/newsnight/9483790.stm>.
- Krauss, C. et al. (2005, 10 October). As polar ice turns to water, dreams of treasure abound. *New York Times*. Retrieved (10.2.12) from, <http://www.nytimes.com/2005/10/10/science/10arctic.html>.
- Lackenbauer, P.W., & Farish, M. (2007). The Cold War on Canadian Soil: Militarizing a Northern Environment. *Environmental History*. 12(4), 920-950.
- Lackenbauer, P.W., Coates, K., Morrison, B., & Poelzer, G. (2008). *Arctic Front: Defending Canada in the Far North*. Toronto: Thomas Allen & Son.
- Lasserre, F. (2010). China and the Arctic: Threat or Cooperation Potential for Canada? *China Papers N° 11 of the Canadian International Council*. Retrieved (10.2.12) from, <http://www.opencanada.org/wp-content/uploads/2011/05/China-and-the-Arctic-Frederic-Lasserre.pdf>.

- Mahan, A.T. (1890). *The Influence of Seapower Upon History 1660-1783*. Boston: Little Brown & Company.
- Mairs, H. (2011, March). *Health, Safety and the Environment: Common Regimes and Common Challenges*. Paper presented at Arctic Dialogue 2011: Improving Communication and Understanding Among Key Stakeholders. Bodø, Norway.
- Mann, M. (1984). The Autonomous Power of the State: Its Origins, Mechanisms and Results. *European Journal of Sociology* 25(2), 185-213.
- MJP (Ministry of Justice and Public Security, Norway). (1999). *Report No. 9 to the Storting*. Retrieved (10.2.12) from, <http://www.regjeringen.no/en/dep/jd/documents-and-publications/reports-to-the-storting-white-papers/reports-to-the-storting/19992000/report-no-9-to-the-storting-.html?id=456868> .
- Moe, A., & Rowe L. (2008). *Petroleum Activity in the Russian Barents Sea: Constraints and Options for Norwegian Offshore and Shipping Companies* (FNI-Report 7). Lysaker: Fridtjof Nansen Institute.
- (NSIDC) National Snow and Ice Data Center .(2007). Arctic sea ice shatters all previous record lows. Retrieved (10.2.12) from, http://nsidc.org/news/press/2007_seaiceminimum/20071001_pressrelease.html.
- MJP (Ministry of Justice and Public Security, Norway). (1999). *Report No. 9 to the Storting*. Retrieved (10.2.12) from, <http://www.regjeringen.no/en/dep/jd/documents-and-publications/reports-to-the-storting-white-papers/reports-to-the-storting/19992000/report-no-9-to-the-storting-.html?id=456868> .
- Nuttall, M. (2008). Self-rule in Greenland: Towards the World's First Independent Inuit State? *Indigenous Affairs*, 3-4, 64-70.
- Osherenko G., & Young, O.R. (1993). The Formation of International Regimes: Hypotheses and Cases. In Osherenko, G. & Young, O.R. (Eds). *Polar Politics: Creating International Environmental Regimes*. Ithaca: Cornell University Press.
- PPM Public Policy Management Ltd. (2010, November). *Canada's Arctic Gateway*. Paper prepared for the Arctic Gateway Summit, Winnipeg, Manitoba.
- Quinn, A. (2011, May 12). Arctic nations step up cooperation on safety, oil. *Reuters*. Retrieved (10.2.12) from, <http://uk.reuters.com/article/2011/05/12/us-arctic-idUKTRE7490UD20110512>.
- Sæbø, E. (2011, March). *Pan Arctic Standards*. Paper presented at Arctic Dialogue 2011: Improving Communication and Understanding Among Key Stakeholders. Bodø, Norway.
- Schepp, M., Traufetter G. (2009, January 29). Russia unveils aggressive Arctic plans. *Der Spiegel*. Retrieved (10.2.12) from, <http://www.spiegel.de/international/world/0,1518,604338,00.html>.
- Shadian, J. (2010). From states to polities: Re-conceptualizing sovereignty through Inuit governance. *European Journal of International Relations*. 16(3), 485–510.
- Shalal-Esa, A. (2011, March 24). U.S. submarines show force amid race for Arctic riches. *Reuters*. Retrieved (10.2.12) from, <http://www.reuters.com/article/2011/03/24/us-arctic-submarines-idUSTRE72N7TS20110324>.
- Smith, L.C. (2011). Agents of Change in the New North. *Eurasian Geography and Economics*. 52(1), 30-55.
- Smith, L.C. (2010). *The World in 2050: Four Forces Shaping Civilization's Northern Future*. London: Dutton.
- Socor, V. (2010, September 17). Russo-Norwegian treaty paves way for joint energy projects in the Arctic. *Eurasia Daily Monitor*. 7(167). Retrieved (10.2.12) from,

- [http://www.jamestown.org/programs/edm/single/?tx_ttnews\[tt_news\]=36877&tx_ttnews\[backPid\]=484&no_cache=1](http://www.jamestown.org/programs/edm/single/?tx_ttnews[tt_news]=36877&tx_ttnews[backPid]=484&no_cache=1).
- Solozobov, Y. (2009, August 28). Escalating tensions over hunt for oil and gas in the Arctic. *Russia Now*. Retrieved (10.2.12) from, <http://www.telegraph.co.uk/sponsored/russianow/6098600/Escalating-tensions-over-hunt-for-oil-and-gas-in-the-Arctic-Russia-Now.html>.
- Stammler, F., & Wilson, E. (2006). Dialogue for development: an exploration of relations between oil and gas companies, communities and the state. In Wilson, E., Stammler, F., (Eds.), *Special issue on the oil and gas industry local communities and the state*. *Sibirica*, 5(2), 1-42.
- Stammler, F. and Peskov, V. (2008). Building a “culture of dialogue” among stakeholders in North-West Russian oil extraction. *Europe-Asia Studies*, 60: 831-849.
- Statistics Canada. (2009). *Table 385-0003 - Local government revenue and expenditures for fiscal year ending closest to December 31*. CANSIM (database).
- Stephenson, S., Smith, L.C., & Agnew, J.A. (2011). Divergent long-term trajectories of human access to the Arctic. *Nature Climate Change*. 1, 156-160.
- Støre, J. S. (2011, January). *State of the Arctic – Challenges Ahead*. Keynote speech at 5th Arctic Frontiers Conference, Tromsø, Norway.
- Støre, J. S. (2008). Perspectives on current and future challenges in the High North. In Gottemoeller, R. & Tamnes, R., (Eds.), *High North, High Stakes: Security, Energy, Transport, Environment*. Bergen: Fagbokforlaget Vigmostad & Bjørke AS.
- Transport Canada. (2009a). *Canada’s Gateways: National Policy Framework for Strategic Gateways and Trade Corridors* (Report T22-136/2009E). Ottawa, Canada.
- Transport Canada. (2009b). *IACS Unified Requirements for Polar Class Ships - Application in Canadian Arctic Waters* (RDIMS No.: 3908731), Ottawa, Canada.
- UNCLOS (United Nations Convention on the Law of the Sea). (1982). Retrieved (10.2.12) from, <http://www.un.org/Depts/los/index.htm>.
- U.S. National Imagery and Mapping Agency. (1997). Vector Map 0: Digital Chart of the World. Online dataset.
- Woods A. (2010, March 29). Canada gets cold shoulder at Arctic meeting. *The Toronto Star*. Retrieved (10.2.12) from, <http://www.thestar.com/news/canada/article/787178--canada-gets-cold-shoulder-at-arctic-meeting>.
- Young, O.R. (2009). Whither the Arctic? Conflict or cooperation in the circumpolar north. *Polar Record*. 45(232), 73-82.