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ARCTIC SOVEREIGNTY / SECURITY IN THE NORTH THROUGH THE USE OF ADVANCED TECHNOLOGIES AND SUSTAINED DEVELOPMENT OF NORTHERN COMMUNITIES

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ABSTRACT

Canadian sovereignty over its Arctic region has been a continuous issue every since taking ownership of these lands from the British in 1880. To contend with these early challenges, the Canadian government sent explorers to the region and made attempts to aid the indigenous population in further expanding their occupation throughout the Arctic. Today, Canada is still faced with a small civilian population and a minor military presence in an area representing forty percent of Canada's entire landmass. As the concentration of the country's population resides in the south, it is crucial that methods and technologies are used in the Arctic that can ensure the continuous growth of the far north, as well as ensure the protection of Canada's northern coast.

As harsh conditions in this remote area of the world have made development opportunities difficult and costly, Canada is continually assessing the benefits to improving the region against the threats posed on its security. In the past, where the threat exceeded Canada's ability to respond, it worked with other Arctic partners such as the United States. These cooperative efforts, such as the creation of the Distance Early Warning Line, ensured the protection of Canada while Canadian sovereignty remained intact.

As today's threats bring environmental, economic and social concerns to the Arctic, it is even more important to invest in surveillance, monitoring and enforcement technologies. Further added to this solution is the need for the indigenous people to be the main drivers in a security response. Community investment, infrastructure

improvements and training these inhabitants in the operation and maintenance of the equipment and systems used in the Arctic must be done.

The Canadian government has proposed making a very serious investment in the protection and development of the far north. Canada must now see beyond its internal commitments and work with its Arctic partners to invest in the latest technologies for the stability and protection of this pristine environment.

" . . . Our True North Strong and Free . . . "[1] *O'Canada*

INTRODUCTION

As professed in its national anthem, Canada is a country where its citizens see its northern areas as strong and free from harm. Although this belief is popular, there are continually questions as to the extent Canada maintains its own sovereignty in the region. As the second largest country in the world in area, its population has historically been relatively small, with a military force that appears to be less than capable of meeting the commitment of protecting its borders.[2] This position is particularly evident in having to protect a territory that is surrounded by three oceans. Looking to Canada's north and in particular its Arctic Archipelago, this area is significantly vulnerable. With this reality, the Canadian government must look at innovative ways to protect its borders and maintain sovereignty. For past confrontations, northern development and the use of technology of the period have had an influence in meeting this principal need. For Canada to firmly show that its country is strong and free, it must demonstrate that it is serious in establishing a presence in the north both from a military perspective and in growing its populations by advancing its development. With new concerns over Canada's ability to maintain a sovereign position in the Arctic, this paper will demonstrate that the use of globally available

[1]Canada. Government of Canada, "Government of Canada," http://canada.gc.ca/; Internet; accessed 4 April 2011.

technologically advanced systems, from both a military and the societal prospective, can ensure Canada's presence in this region while minimizing our requirement to increase our CF personnel commitments.

To adequately explore the sovereignty issues and look at successes in maintaining Arctic security it is important to address the historical aspects and the current position of Canada's north. The next chapter will outline the historical significance of the Arctic and the challenges Canada has faced in meeting its northern commitments. To fully comprehend and appreciate the uniqueness of maintaining Arctic sovereignty, it is important to look at Canada's early beginnings. The historical significance of the Arctic will be examined focussing on the ways the Canadian government effectively dealt with infringement on its claims to the north. There is an apparent abundance of natural resources and untapped potential throughout the Arctic that have been protected simply by the north's harsh environment and ice covered ocean. Mining of some of these areas has occurred, but costs in pursuing this type of endeavour have been high thus resulting in only temporary development. In these cases, the Canadian government responded by posting Federal police to various locations to enforce Canadian laws and regulations.

In the not too distant future, as climate change takes effect and the ice continues to regress, more military, industrial and commercial activities will move into this area to exploit the Arctic's riches. Thus more questions on Canada's ability to ensure sovereignty will surface, as Canadians review the government's ability to be the " . . . supreme legitimate authority within this territory." This ultimate control specifically applies to Canada's ability to both meet the challenges and expectations of the people

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[2]Ken S. Coates, and others, *Arctic Front: Defending Canada in the Far North* (Toronto: T. Allen Publishers, 2008), 192.

living in the Arctic as well as being able to independently protect the region from "unwanted intervention by an outside authority."[3] The Canadian government must respond to avoid the sovereignty challenges that will likely ensue.

The outlook and use of various technologies has also played into curtailing other nations occupying or laying claim to this region. Historically we have seen the influx of technology during World War II and into the Cold War. The conclusions reached on Canada's security were greatly influenced by the creation of the DEW line, the positioning of northern bases such as Alert and the use of Coast Guard ice breakers. Although these initiatives only covered small regions of the north, the presence of these and other assets can show that Canada was beginning to realize the importance of using the technology available during that era to enforce its sovereignty claims. Chapter 3 will take a closer look at the technology available and used in the past that helped to secure and protect the Canadian Arctic.

Beyond the militarization of the Arctic, Canada must lay claim in committing resources to the development and technological improvement of its northern communities. Much like Canada's early days and the challenges in developing its southern regions, it is important that the north is not forgotten, as is currently evident with the minimal investment in Inuit and other indigenous communities. Chapter 4 will show how the Canadian government has been negligent in the investment in northern communities. By providing northern residents with the same or similar comforts and advantages that are available to Canadians living in the south, growth and prosperity

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[3]Matthew Carnaghan and Allison Goody, "Canadian Arctic Sovereignty" (Research, Library of Parliament: Parliamentary Information and Research Service, Library of Parliament, Ottawa, 2006), http://www2.parl.gc.ca/content/lop/researchpublications/prb0561-e.htm; Internet; accessed 15 February 2010.

will undoubtedly happen. Given the cost of developing the north to that extent and the huge disparity in population density between communities in the Arctic compared to southern Canada this may seem an unobtainable goal. However, attempts must be made to meet Canada's constitutional commitment of equality throughout Canada. Furthermore, as communities spring up from the excavation of resources, Canada needs to use this opportunity to encourage Canadians to venture north to take advantage of these rich employment opportunities. To further enhance the permanency of these communities, modernization and the installation of advanced technologies need to be a key component. Additionally, the government needs to also look at building educational facilities and research centres, followed by enticing businesses to invest in this region in order to improve the quality of life of current inhabitants and lure other Canadians and immigrants to these austere locations.

Taking a close look at other northern nations, Canada can leverage from their solutions to provide a stable and secure environment from both a community development and technology enhancement perspective. Russia, Norway, Greenland (Denmark), Sweden, Finland and the US have established a significant presence in their Arctic environments. These countries have used both government and non-government initiatives to establish sovereignty in their respective regions. Chapter 5 will explore the challenges they have faced and the methods they employed to ensure their security. Canada can also take advantage of cooperative efforts by all Arctic nations, for the betterment of the entire region. It would appear that issues anywhere in the Arctic will have an impact on all of them, with a strong possibility of having global implications.

Finally, it is incumbent upon Canada to take advantage of technologies available today to support further growth. Canada must provide a setting that will remove doubt as to ownership of its north, without resorting to a significant and permanent military presence. In today's environment where the use and exploitation of the Arctic has become a great debate, Canada must look at innovative ways to address the security challenges it will likely face. From a diplomatic and international perspective, Kenneth Coates and his co-authors in *Arctic Front: Defending Canada in the Far North,* state that under international law Canada's claims are solid. Noting that except for a couple of minor exceptions such as Hans Island and some maritime zone boundaries, Canada's Arctic sovereignty is not in dispute.[4] However, with the opening of the Northwest Passage, the prospect of huge oil and gas deposits and the opportunities to find other resources, international traffic will continue to grow. For Canada to control, regulate and secure its Arctic region, it needs to know and act on unauthorized infringements into the country. Additionally, due to past and future prospects for Arctic development, exploration and exploitation, environmental and ecological issues have been raised. Chapter 6 will cover the proposed investments expected from the Canadian government to meet these situations and Chapter 7 will explore other technology options to enhance security and promote Canadian sovereignty. A key component of this argument is the use of technology that will minimize the requirement for the build-up of military forces to protect Canadian interests. When the question of Canadian sovereignty has come up over the years, the main response in addressing the issue has been to focus on military options. Canadian history, and the history of other nations, has shown however, that by establishing settlements and properly positioning technological assets, which can be

[4]Coates and others, *Arctic Front: Defending Canada in the Far North*, 163.

both military and non-military, these concerns soon abate. With a huge country and a relatively small military, Canada must strive to pursue options that a more akin to our capabilities. Technological improvements and developments in existing communities, the use of technology for surveillance and protection, and bringing forth a more liveable atmosphere in the north will go a long way in solidifying Canada's claim to its Arctic sovereignty.

HISTORICAL SIGNIFICANCE OF THE ARCTIC

" The debate over Canada's Arctic claims and particularly the islands north of the Canadian mainland is by no means new."[5] *Maxwell Cohen, 1970*

The Early Beginnings of Canada's Arctic

Canada's Far North has played many roles in defining the character of the country. Joining the Dominion of Canada in 1867, Canada has struggled to maintain a sovereign presence in the North since Confederation. Throughout its history, there have been many explorers that have ventured into this region of Canada, forcing various attempts by the government to show its dedication to this northern frontier. The main technology Canada used during this timeframe was ships to patrol and explore the Arctic, which was similar to other nations who were staking claim to this region. However, due to the harsh climate of the Arctic and the small and localized presence of its indigenous people, it was difficult for Canada to assert its position as the owner of this huge area. Fortunately, there was international acceptance of Canada's claim and other countries were facing their own difficulties in populating this frigid wasteland. Although Canada had received transfer of ownership from the British, the fact remained that to continue

[5]Maxwell Cohen, "The Arctic and the National Interest," *International Journal* 26, no. 1 (1970-71), 54.

to possess these lands, Canada had to demonstrate its ability to oversee and manage the region.[6]

Canada acknowledged its ownership internationally in 1895 by issuing a public "order in council" that the islands north of 84 degrees latitude were the property of the Dominion of Canada.[7] As stated above, to back up this declaration, Canada dispatched explorers to represent the nation. Starting in 1897, a number of expeditions were conducted where northern settlements were established that would maintain peace and order in various Arctic locations.[8] As Canada was beginning to grow, the technological sophistication it possessed was predominately expressed through shipping. This type of technology tended to be the only form of expressing its sovereignty in its early years of ownership. However, using these expeditions, Canada was able to set up government offices and services thereby showing its willingness to inhabit and control these lands and waters.

Canada's Early 20th Century Commitments

The government over the years has realized its limitations in being able to protect this northern area and has implemented various military and non-military actions to show its intentions to protect the entire country. At the beginning of the 20th century, the limit of Canada's protection of the north was through patrols and voyages. A

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[6]V. Kenneth Johnston, "Canada's Title to the Arctic Island," *Canadian Historical Review* 14 (1933), 28.

[7]*Ibid*., 30

[8]*Ibid*., 31

Canadian military presence was not established in the far north until after the turn of the century as Canada lacked a navy.[9] Hence, the government sponsored expeditions and patrols that were prominent from 1897 until 1911, and the Northwest Mounted Police performed this sovereignty role.[10] A significant point in Canadian Arctic history occurred from 1905-1909, when Captain J.E. Bernier conducted patrols throughout the Arctic, mapping and claiming sectors throughout the region. The culmination of his efforts was the erection of a monument on Melville Island claiming the entire Arctic archipelago for the Dominion of Canada from longitude 60 degrees to 141 degrees west right up to the North Pole.[11]

From a military perspective, it wasn't until the Klondike Gold rush when a flood of foreign prospectors were staking out the Yukon, where Canada responded by sending a military/police force named the "Yukon Field Force".[12] But after this perceived threat to Canadian sovereignty had died down, the force departed and Canada's military did not return until 1923. Upon their return the Royal Canadian Corps of Signals showed the first signs of using technology to reach out to the Arctic through the establishment of a number of Radio stations throughout the Northwest Territories and the Yukon.[13]

Most other attempts to demonstrate its northern sovereignty have been symbolic in nature, and even the use of the RCMP could be seen in this way. Canada's use of

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[9]Kenneth C. Eyre, "Forty Years of Military Activity in the Canadian North, 1947-87," *Arctic* 40, no. 4 (December 1987), 293.

[10]Cohen, *The Arctic and the National Interest*, 57.

[11]*Ibid*., 58

[12]Eyre, *Forty Years of Military Activity in the Canadian North, 1947-87*, 293.

[13]*Ibid*., 293

explorers to send its message of ownership in the Arctic was well respected at that time. Although a number of nations including Britain, Denmark, Norway, US, France and Russia ventured into Canada's Arctic, treaties were in place that recognized the Canadian boundaries. As most of the area was unsettled, it did not guarantee that other nations would not send explorers to make their own claims, and they did. In fact, Canada's need to venture into the Arctic in the earlier 1900s was predicated on Norway staking claim to some of the lands. As Norway did not attempt to occupy or patrol these islands in a manner similar to Canada, it can be viewed that their claims to these lands ceased to exist.[14] Denmark, made similar claims to areas of the Arctic in 1918, and with their occupation of Greenland there was a distinct possibility that their claims would be recognized.[15] Once again, Canada's response to this threat was to send an expedition to Ellesmere Island, the area in dispute.[16] As a one time visit does not realize this claim, a RCMP outpost was established to patrol areas around this immediate region and annual resupply patrols were also conducted.[17] Unfortunately, these disputes did not get resolved quickly and Norway did not recognize Canada's title until 1930. Similarly, with the claims made by the US and Denmark, due to Canada's occupation of the Arctic, their claims against Canadian lands were no longer considered valid.[18]

For the periods in Canada's history where natural resources were discovered and prospectors occupied these areas, Canada would establish small Northwest Police

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[14]Johnston, *Canada's Title to the Arctic Island*, 35.

[15]*Ibid*., 35

[16]*Ibid*., 38

[17]*Ibid*., 38

[18]Coates and others, *Arctic Front: Defending Canada in the Far North*, 50.

outposts. These outposts, once again, tended to only represent Canada's symbolic ownership of these lands. However, despite the fact that much of the Arctic is barren and uninhabited, Canadian ownership had not been disputed. In 1927, Canada was able to establish a stronger governance of the region with the deployment and stationing of six aircraft into the Hudson Strait area.[19] As the second World War approached, further developments occurred including the construction of the Alaska Highway and the Northwest Staging route.[20] These initiatives created opportunities for Canada to advance its claims in the North and allow for further development in the region. Additional advances were realized with the construction of the Canol pipeline in Norman Wells, a refinery in Whitehorse and a series of airbases along the Crimson Route which continue to validate Canada's commitment to Arctic sovereignty and security.[21] Overall, through Canada's efforts to enforce its laws in the Arctic, through occupation, exploration and governance, in the early part of the 20th century, Canada has validated its claims to the north.

Second World War and Cold War Years

It was during the WWII years that the physical development of the north strengthened Canada's sovereignty claims.[22] However, for Canada to afford a strong

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[19]Eyre, *Forty Years of Military Activity in the Canadian North, 1947-87*, 294.

[20]Shelagh D. Grant, *Polar Imperative: A History of Arctic Sovereignty in North America*Douglas & McIntyre, 2010), 249-261.

[21]Eyre, *Forty Years of Military Activity in the Canadian North, 1947-87*, 294.

[22]Coates and others, *Arctic Front: Defending Canada in the Far North*, 64.

surveillance capability in the north, the Canadian government had to work with the US who had the most advanced technologies and could also afford to build them in this very inhospitable region of Canada.[23] This joint cooperation was deemed essential for the protection of both nations from unfriendly incursions. Even though there have been questions regarding Canada's sovereignty under this arrangement, elements of this agreement spelled out the limits of US involvement and control in Canadian territory to ensure Canada's sovereign rights and unilateral security were upheld.[24] It was at this point in time that Canada reacted in a manner that showed grave concern for a potential attack through its north.

Ottawa respected the fact that Inuit communities would be impacted from this northern development, and tried to link the expansion with opportunities for employment and development for these communities. However, some changes were forced upon the inhabitants that, although seen by southern Canadians and government officials as necessary for sovereign occupation of the Arctic, were detrimental to the cultural and instinctive traits of the people who have lived in the Arctic for centuries. Moving Inuit into areas that were barren and undeveloped severely damaged the lives of these indigenous people. The Inuit found the conditions to be inadequate as settlements were underdeveloped and unsupportable. Even with the Inuit's' great knowledge of the environmental conditions they struggled to survive.[25]

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[23]*Ibid*., 64

[24]*Ibid*., 67

[25]Frances Abele and Thierry Rodon, "Inuit Diplomacy in the Global Era: The Strengths of Multilateral Internationalism," *Canadian Foreign Policy* 13, no. 3 (2007), 50.

Other government departments also started to show an interest in Arctic development and in 1943 the Department of Mines and Resources starting gathering information on the resource potential of this area. This department was instrumental in establishing a Territorial Roads program where the construction of a railway up to Pine Point was undertaken. In order to encourage mining but maintain order in the Arctic, Canadian regulations and laws were introduced.[26] The Far North was now being seen as an economic benefit to Canada, and it was essential that Canada showed regional governance.

The Canadian Armed Forces has also been very active in establishing a presence in the north. In the 1950s, Canada knew the Arctic was separating two military superpowers, and hence joined with the United States to construct the Distance Early Warning (DEW) Line that extended along Canada's northern land mass and just below the Arctic archipelago.[27] With the creation of the DEW line other developments to this region also sprang up with airfields, landing sites and navigational aids being built, while more advanced charting of the Arctic was being conducted.[28] In 1948, Canada saw a further need to patrol the Arctic but needed an icebreaking vessel to accomplish this sovereignty mission. This requirement lead to the Canadian navy's commissioning of the *HMCS Labrador* in the 1950s. This vessel was more than capable of meeting the demands of this harsh climate.[29]

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[26]Frances Abele, "Canadian Contradictions: Forty Years of Northern Political Development," *Arctic* 40, no. 4 (December 1987), 312.

[27]Eyre, *Forty Years of Military Activity in the Canadian North, 1947-87*, 294.

[28]*Ibid*., 295

[29]*Ibid*., 295

During the 1970s, there was a refocus on Arctic security. Canada needed to be able to respond to military incursions, whether peaceful or not, by other nations into its territory. These incursions could be in the form of overflights, submarines and/or warships entering Canada without authority. A second issue related to Canada's response to an ecological or social instability within the Arctic. Finally, Canada needed a capability to respond to commercial vessels or unauthorized foreign individuals entering the region.[30] The creation and formation of the Canadian Forces Region Headquarters based in Yellowknife was one response to dealing with these situations.[31] During this period, military funding as a whole was limited. Thus northern development suffered greatly as new equipment for surveillance and monitoring in the region were not being acquired to replace existing equipment that was becoming obsolete.[32]

Although the threats to Canada's security during the Cold War years tended to point towards the USSR, the fact that the environment was being threatened by pollutants was becoming a more prominent concern starting in the 1970s. This issue was front and center on Canada's radar after experiencing the unauthorized voyage of the US cargo ship, the Manhattan, through Canada's Northwest Passage. This intrusion not only raised sovereignty questions, but how Canada could respond to an ecological, maritime or SAR disaster in this most dangerous waterway. Northern residents were particularly sensitive to these threats, and in 1977 founded the Inuit Circumpolar

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[30]Coates and others, *Arctic Front: Defending Canada in the Far North*, 104.

[31]*Ibid*., 106

[32]*Ibid*., 107

Conference (ICC). The ICC was key to bringing together all Inuit communities living in different Arctic nations. The sharing of the Arctic region allowed them to collectively address common issues such as "land rights, human rights and environmental protection".[33] Their common goal of this union was to "foster international cooperation in a strategic war zone, to develop and advocate a pan-Arctic strategy . . ."[34] The indigenous people, numbering some 155,000 from Greenland, Canada, Alaska and Russia, see a collective responsibility to their surroundings and expect to have a voice in the Arctic developmental affairs.[35] For economic development and evolution of technology within the region to be successful, cooperation and support is needed from the inhabitants that are most likely affected by changes to the Arctic.

A fallout from Canada's position of enforcing some control in its northern territorial waters was the adoption of Canada's Arctic Pollution Act. This Act was intended to enforce control over any commercial vessels that entered any waters within the Arctic that are considered internal waters to Canada.[36] Then, in the 1980s, Canada used the UN Convention on the Law of the Sea for reinforcing claims on its sovereign Arctic waters and implementing laws and regulations to protect its northern waters.

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[33]Abele and Rodon, *Inuit Diplomacy in the Global Era: The Strengths of Multilateral Internationalism*, 56.

[34]*Ibid*., 55

[35]*Ibid*., 47

[36]Coates and others, *Arctic Front: Defending Canada in the Far North*, 112.

Post Cold War

By the late 1980s, the Canadian government showed commitment to Arctic security by announcing an upgrade to its northern airfields in order to allow for the CF-18 to be stationed there.[37] However with the security threat diminishing after the end to the Cold War, as well as with a change in government, the necessity to further increase military presence in the north was withdrawn, and concerns now shifted to environmental and domestic concerns.[38]

The Inuit communities have expressed their dissatisfaction with the lack of attention given to the development of their communities as well as the welfare of the environment if the Arctic becomes a plethora of activity with the effects which climate change is having on this region. Besides the development and the security issues facing the Canadian government, " land claims settlements, aboriginal self-government, improvements to regional infrastructure, stabilization of northern communities, long-term economic development, protection of the vulnerable Arctic environment, and scientific research" are all considered areas that must be dealt with to ensure sovereignty and Canada's commitment to the North.[39]

Linked to the Inuit's concerns, in the 1990s and into the 21st century, Canada has seen its Arctic ice receding and its Northern territorial waters opening up to international traffic. A major international debate is now brewing to define the Northwest Passage as either internal waters to Canada or an international strait. This

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[37]*Ibid*., 121

[38]*Ibid*., 126

situation will most likely be resolved diplomatically, but until such time as a decision is made, Canada is reinforcing is position through governance of these waters and initiatives to increase its awareness of the activities in the region.

Prime Minister Harper has recently professed that Canada must “use it or lose it”; signifying the government’s commitment to find ways of exploring different options to keep our entire country intact. However, this statement would appear to be somewhat overstated, as throughout Canada's history, it has "used" the Arctic as best it could. The simple fact that there are Canada citizens living in various locations throughout the Arctic, as sparse as it might be, is a testament to Canada's ability to occupy the North. One must look at the isolation factor and determine what must be done to best improve conditions so that further habitation is possible and desirable in the most remote areas.

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[39] *Ibid*., 214

HISTORICAL EFFECTS OF TECHNOLOGY

There have been plenty of instances in Canada's history where technologies have been introduced within the Arctic region for protection, monitoring and development which ultimately were a reaction to the notion of upholding Canadian Arctic security and sovereignty. Canada has positioned many technical systems in the North, most notably for Air Defence, radar and surveillance, monitoring for and use by submarines, satellites, aircraft/airfields, shipping, railroads/road and civilian facility development including scientific research. As will be presented in this chapter, there have been instances in Canada's history where they have not gone far enough to sustain or improve on the technology they have placed in the Arctic, resulting in stagnated economic development and minimal security coverage for the region.[40] Hence, the long standing question for the Canadian government has been to what level of security is truly required. Since 1968, Canada has been recognized internationally as the legal owner to the Arctic lands that have been claimed in its name.[41] With this being the case, the military and non-military commitments that Canada has made in the Arctic may be enough, validating the past use of technology to support Canada's northern sovereignty obligations.

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[40]Eyre, *Forty Years of Military Activity in the Canadian North, 1947-87*, 298.

[41]Cohen, *The Arctic and the National Interest*, 65.

Air Defence Assets

The most notable of Canada's technological developments in the Arctic has been the creation of Air Defence (AD) and radar stations. With a perceived Russian threat to the security of North America with the detonation of their first atomic bomb in 1949, Canada needed to respond with at least a capability to detect any intrusions to its northern territory.[42] In a joint US / Canada venture, in 1951 the Pinetree Line was created, followed by the Mid-Canada and Distance Early Warning (DEW) lines in 1954 and 1955 respectively.[43] Although Canadians accepted these stations to be in the best interest of Canadian security, many questioned that with the United States paying for a great deal of this project, whether Canadian sovereignty was being jeopardized. On this issue, Canada made sure that concessions were made that secured Canada's sovereignty of the Arctic, by having Canadian firms and indigenous people responsible for its construction.[44] These series of DEW as well as the Mid-Canada and Pinetree sites were also connected with other allied nations radar systems to further detect intrusions and supplement the coverage for Canada's protection.[45] These Air Defence assets brought Canada and the US together to form the North American Air Defence Agreement that recognized the contributions made by both countries for the security of the continent.[46]

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[42]Coates and others, *Arctic Front: Defending Canada in the Far North*, 68.

[43]Peter C. Newman, *True North: Not Strong and Free. Defending the Peaceable Kingdom in the Nuclear Age.* (Toronto: McClelland and Stewart Limited, 1983), 62.

[44] Coates and others, *Arctic Front: Defending Canada in the Far North*, 74.

[45]Newman, *True North: Not Strong and Free. Defending the Peaceable Kingdom in the Nuclear Age.*, 62.

[46]*Ibid*., 31

Canada was very selective in the technology that it wished to introduce to the country, and maintained a firm position to uphold this security through joint agreements such as those through NORAD. Although ballistic missiles were becoming more of a concern to NORAD beginning in the 1950s, Canada's northern defence commitments remained with the monitoring of the northern skies and manning its northern radar sites.[47] These AD lines were not capable of detecting a ballistic missile but the fact that the US systems would be monitoring Russian missiles, which would be aimed at either Canada or the US, allowed for NORAD to be prepared and react.

Thus Canada continued to manage the DEW line by upgrading the capability to more effectively to detect and monitor Russian bomber intrusions coming from the North.[48] The incorporation of these modern advances began in 1962 where the number of DEW stations reduced from 70 to 31 stations, the Mid-Canada line was abandoned and the Pinetree line sites were substantially reduced.[49] As technology progressed, coverage and reliability of these sites improved while at the same time the manpower to run these sites were greatly reduced. Finally, in the government's 1990 budget, there was an end to the DEW line, as the Cold War was now over.[50] The North Warning System has now taken on Canada's air defence role and is located in Canada's northern region. It is a prominent element of the security and protection of sovereignty for

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[47]*Ibid*., 65

[48]*Ibid*., 65

[49]*Ibid*., 64

[50]Coates and others, *Arctic Front: Defending Canada in the Far North*, 125.

Canada.[51] As Canada has seen with the recent Russian incursions into its Arctic regions, as long as an effective AD system is in place to monitor aircraft entering the Canadian Arctic, Canadian sovereignty can be maintained.

Radar and Surveillance Systems

Although the Air Defence Lines constructed in the Arctic were an expensive venture, the Canadian government would not have been able to afford this capability of without joint cooperation with the US. During this period, Canada was reluctant to spend a great deal of money on other surveillance and radar systems, due to competing priorities for the government's limited budget.[52] However, in more recent times Canada has been reviewing its ability to adequately monitor and protect its Arctic region.

As articulated by the Library of Parliament report on Canadian Arctic sovereignty, there is grave concern that Canada is unable to adequately monitor its most northern region. There is yet greater doubt that even if Canada possessed adequate surveillance that they would be able to enforce its sovereignty claims.[53] This belief is brought about by the complexity of dealing with a region with the size and remoteness of the Arctic and the difficulties associated with establishing the necessary infrastructure to deal with the type of surveillance required for the expected traffic predicted for the North.[54] This position can be disputed, as a number of projects have

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[51]Eyre, *Forty Years of Military Activity in the Canadian North, 1947-87*, 298.

[52]Coates and others, *Arctic Front: Defending Canada in the Far North*, 134.

[53]Carnaghan and Goody, *Canadian Arctic Sovereignty*, 1.

[54]*Ibid*.

been enacted by NORAD or are in the process of being completed. The Northern Warning System will monitor Canada's Arctic and Project Polar Epsilon, once completed in 2011, will add to Canada's surveillance ability. Canada's northern region will now have an "all weather, day/night surface observation capability for its northern region".[55] Assisting Project Polar Epsilon's ground stations is RADARSAT-2, a commercially owned remote sensing satellite system that will provide imagery that the Canadian Forces will be able to use to support its military operations.[56] The entire system is expected to be on-line for Arctic monitoring sometime in 2011, where it will provide enhanced satellite coverage for monitoring activity in the Arctic. Polar Epsilon will greatly enhance Canada's surveillance capabilities for the entire country, however, shortfalls of this system do exist in its inability to detect ballistic missiles, or track small vessels or individuals.[57] Canada does have other means to provide surveillance such as long range patrol aircraft, ships and land operations, but limitations on where and when they can be used in the Arctic have an impact on meeting Canada's commitments to protection of its sovereignty.[58]

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[55]Major P. J. Butler, *Project Polar Epsilon: Joint Space-Based Wide Area Surveillance and Support Capability* International Society for Photogrammetry and Remote Sensing,[2010]), http://www.isprs.org/publications/related/ISRSE/html/papers/1000.pdf; Internet; accessed 2 March 2011.

[56]Michael Byers, *Who Owns the Arctic: Understanding Sovereignty Disputes in the North* Douglas & McIntyre, 66.

[57]Army.ca Forum, "Polar Epsilon Project," http://forums.army.ca/forums/index.php?topic=69655.0; Internet; accessed 8 March 2011.

Maritime Technology

Canada has always struggled with providing the systems to monitor and intercept maritime incursions into its Arctic waters. It is well known that the French, British, Russians and Americans have transited through Canada's Arctic without authority through the use of their nuclear submarines, due to the fact that Canada does not possess an underwater surveillance capability to detect them.[59] There have been times in Canada's history where the government toyed with the idea of purchasing their own nuclear powered submarines and/or acquiring fixed sonar-detection systems for the floor bed of its Arctic passages. The proposed purchase of nuclear powered submarines was a very contentious item within the 1987 White Paper,[60] and weighing the cost against the benefit gained by their purchase, resulted in the government rethinking and changing its position.[61] Along with the submarine recommendation, the White Paper also identified the need for modern icebreakers.[62] The Coast Guard is the only current Canadian agency with any icebreaking capability. However, with their limited fleet of only five icebreakers, that are also responsible for patrolling off the Atlantic coast, it has been difficult for them to maintain constant surveillance of the Arctic.[63] The Harper government has plans for the North that includes the purchase of new icebreakers.

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[58]Eyre, *Forty Years of Military Activity in the Canadian North, 1947-87*, 297.

[59]Carnaghan and Goody, *Canadian Arctic Sovereignty*, 8.

[60]Eyre, *Forty Years of Military Activity in the Canadian North, 1947-87*, 298.

[61]Coates and others, *Arctic Front: Defending Canada in the Far North*, 119.

[62]Carnaghan and Goody, *Canadian Arctic Sovereignty*, 7.

[63]*Ibid*.

These plans will not be discussed here, but rather chapter six will elaborate on the government's intentions for this new purchase. Needless to say, there is still a great deal of heavy ice in the Arctic surrounding Canada's archipelago for which its current complement of Coast Guard ice breakers cannot pass through. One assessment made by Kenneth Coates is that "Canada's aging fleet . . . has become a national embarrassment, leaving the country as the only Arctic nation without the capacity to work properly in the region".[64] Even before this assessment was made, similar assessments were being made of Canada's weakness in dealing with Arctic operations. Canada has made a few maritime voyages to show that it could conduct naval surveillance in the Arctic waters, however due to limited Arctic capable resources these vessels could only extend so far into the ice-covered regions.[65] Essentially, the Canadian military is faced with limited operability in its most northern waters.

Arctic Airfields and Surveillance Aircraft for the North

Canada has established small airstrips during the mid-twentieth century and has performed aerial surveillance of the north on numerous occasions. At the time of the Mackenzie pipeline and Alaska Highway construction project, Canada and the US were also cooperating on the construction of various airfields in their northern regions.[66] A

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[64]Coates and others, *Arctic Front: Defending Canada in the Far North*, 174.

[65]Newman, *True North: Not Strong and Free. Defending the Peaceable Kingdom in the Nuclear Age.*, 153.

[66]Abele and Rodon, *Inuit Diplomacy in the Global Era: The Strengths of Multilateral Internationalism*, 50.

number of communities, albeit relatively small with population numbers only has high as a few hundred residents, were established around these developments. Other government initiatives to upgrade Canada's airfields came about in the late 1980s.[67] With the purchase of the CF-18 long-range fighter aircraft during the same timeframe, the need to enhance the airstrips to support CF-18 northern sovereignty flights became necessary and an initiative for improvements to five northern airfields became a defence initiative.[68] The CF-18 provided a greater capability and range than its predecessors the CF 101 and CF 104, by permitting a capability to stretch its sovereignty and security umbrella a great deal farther north.[69] It was during this time in history that fighters became an essential part of Canada's contribution to NORAD security and a vital component to counter Russian bomber intrusions into the Canadian Arctic.[70]

Northern Bases

The Canadian Forces Northern Area (CFNA) Headquarters, based in Yellowknife, NWT, is responsible for ensuring sovereignty operations are conducted within the Arctic environment. These sovereignty operations are conducted by land forces where Canadian Rangers play a pivotal role and air forces where Aurora and

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[67]Coates and others, *Arctic Front: Defending Canada in the Far North*, 121.

[68]*Ibid*., 121

[69]Newman, *True North: Not Strong and Free. Defending the Peaceable Kingdom in the Nuclear Age.*, 67.

[70]*Ibid*., 66

Hercules aircraft, operating out of more southerly Canadian bases, perform surveillance patrols[71]

The contributions that are made however have not received favourable reviews from the media. An October 2007 media report from the *Globe and Mail* assessed our Arctic military capability and presence as meagre. Their report indicated that the only presence the military has on a full time basis is a small base at Resolute, a small camp for Junior Rangers and cadets in Whitehorse and the CFNA HQ in Yellowknife.[72] These minimal military commitments to the North, combined with only a few RCMP stations that are also sparsely manned, are all that is reported to the general public. The fact that Canada has a dedicated and hardworking group of Canadian Rangers in a number of Arctic communities has gone somewhat unnoticed.[73] Additionally, Canadian Forces Station Alert, Canada's most northern military base on the northern tip of Ellesmere Island, has been in existence since 1958.[74]

Railroads/Road and Civilian Facility Development

Canada faced a number of challenges in the late nineteenth century as a new country trying to hold itself together. The Canadian government had to make decisions based on priorities and affordability. When it came to uniting the provinces from east to

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[71] Carnaghan and Goody, *Canadian Arctic Sovereignty*, 8.

[72] Coates and others, *Arctic Front: Defending Canada in the Far North*, 168.

[73]Carnaghan and Goody, *Canadian Arctic Sovereignty*, 8.

[74]Canada. Department of National Defence. CFS Alert, "CFS Alert Website," http://www.jproc.ca/rrp/alert.html; Internet; accessed 8 March 2011.

west, mostly driven by the threat that the US might subsume the Western provinces, the Canadian government approved the construction of a railway system that extended across the country. [75] This development not only allowed a linkage to all provincial regions, but transformed these individual territories into equal partners within the Dominion. With the vast, isolated and ice-covered terrain in the northern territories and the Arctic, combined with the absence of a similar threat to its occupation, a comparable rail and road system to that of Canada's south, has not been constructed.[76] However, one might look to the Mackenzie Valley pipeline and the Alaska Highway, for evidence that developments of this magnitude can be accomplished in these extreme northern regions.[77] The capability does exist but there needs to be a desire and adequate government funding at the national and territorial levels for these developments to occur. With the existence of military infrastructure and the ability to build military settlements in the Arctic, it is strongly believed that civilian infrastructure development can leverage from these successes to build and operate similar facilities for civilian communities.[78]

Somewhat between civilian and military development is the capability for scientific research and associated developments. In the midst of military stations being placed in the Arctic, the 1950s also saw a small number of weather stations and other

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[75]Coates and others, *Arctic Front: Defending Canada in the Far North*, 201.

[76]Eyre, *Forty Years of Military Activity in the Canadian North, 1947-87*, 299.

[77]Coates and others, *Arctic Front: Defending Canada in the Far North*, 109.

[78]Eyre, *Forty Years of Military Activity in the Canadian North, 1947-87*, 299.

scientific research centers established.[79] Continued progress in this area is needed for the North to prosper.

Over the years Canada has positioned and used various technologies to show the Canadian flag and convince its citizens that Canada's sovereignty and security were not in jeopardy. The construction of Air Defence assets in the early 1950s and the continual technological upgrades to this system in support of NORAD showed commitment to its role of monitoring the North American Cold War threat. Air, maritime and space assets have also contributed to Canada's surveillance systems in the North. The development of bases and other military infrastructure has shown that Canada is using the Arctic. Finally, civilian communities have experienced minimal improvements where many of the developments were the results of foreigners setting up communities while they exploited the Arctic's resources. However, in all fairness, the Canadian government has also provided some funding for community developments and improvements to be made.

[79]Abele, *Canadian Contradictions: Forty Years of Northern Political Development*, 312.

TECHNOLOGY TO PROMOTE POPULATION GROWTH

Historically, Canada has done very little to promote expansion of its most northern regions when it comes to development of its cities and towns. Furthermore, the federal government has not put forth the necessary funds to provide its northern population with some of the commercially available technological advantages that are prominent throughout the southern parts of the country. This chapter will explore the initiatives that the government has undertaken in the past and its future plans of enhancing the level of technology for the Arctic peoples. The predominant areas that will be addressed include infrastructure investments, education opportunities, environmental considerations, and economic development. Finally, the creation of the Arctic Council in 1996 has greatly influenced some decisions being made within this region, and has given a voice to the Inuit populations of all nations sharing the Arctic. This cooperative effort will be explored to show the tremendous opportunities that exist that can enable the sharing of technologies and knowledge for the betterment of the entire region, and hence a more stable environment for Canada's Arctic.

Government Investment in Northern Communities

In the early twentieth century, Canada took modest steps in its colonization of the North and the provision of modern technologies to the Inuit communities. The first noted advancement for the North was the placement of a radio system to support the NWT and Yukon, followed by some military communication and infrastructure projects

that contributed to the first Canadian garrison town; Whitehorse.[80] Besides the slow advancement of communities surrounding Whitehorse and Yellowknife, other communities within Canada's northern territories did not see an influx of government investment. The 1970s appeared to hold more promise for Arctic development, with the Canadian government indicating that there would be some major projects for the region that would improve the quality of life for its residents, promote economic prosperity and growth, while ensuring sovereignty and the security of the North.[81] However, as the government's attention was drawn to other issues in the country, and new security and sovereignty threats were not apparent, any significant investments dwindled.[82] Even today, the only significant challenges to Canadian sovereignty lie in the protection from commercial shipping and the unauthorized, yet peaceful, use of the Northwest passage.[83]

When Canadians, particularly from the south, look at improvement necessary for advancement, they look to traditional, western world solutions for economic development. Some of the failures experienced with bringing progress to the Arctic, and the Inuit people, centered around employment opportunities that involved obtaining of a wage. Historically, Inuit people lived off the land and the trade from hunting and fishing was a way of life for them. As the mineral mining and other extraction projects became more prevalent in the Arctic, natives of the north were presented with these

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[80]Eyre, *Forty Years of Military Activity in the Canadian North, 1947-87*, 295.

[81]*Ibid*., 296

[82]Coates and others, *Arctic Front: Defending Canada in the Far North*, 170.

[83]Eyre, *Forty Years of Military Activity in the Canadian North, 1947-87*, 297.

changes in employment and the programs endorsed by the Federal government.[84] Opportunities for northern development also brought about challenges on the political front. As northern residents were not included as one of the two original founding members of Canada, being neither French or English, they did not have a say in the political decisions being made for the Arctic.[85] Although the Arctic is comprised of small communities, it is essential that this element of the north be taken care of. The maintenance of these people can be a great asset in managing the other priorities of this region including climate change, sustainable development, increased maritime and air traffic and the continual interest of other nations in this virtually untapped environment.[86]

As the Federal government addressed the needs of the Arctic, when it came to the needs of the people, there were three main goals that were emphasized. The need for a better standard of living for the Inuit and northern residents, the furtherance of economic development projects and the promotion of a sustainable and growing environment were always at the forefront of both government and local concerns.[87] As seen by the investments made to Pangnirtung harbour, some government initiatives were realized and viewed by Arctic residents as a first step towards further like-projects for other northern communities.[88] The federal government, in its current "Aboriginal

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[84]Abele, *Canadian Contradictions: Forty Years of Northern Political Development*, 314.

[85]Ibid., 318

[86]Franklyn Griffiths, "Towards a Canadian Arctic Strategy," *Canadian International Council* (2009), http://www.canadianinternationalcouncil.org/publication/foreignpol/towardsaca-2; Internet; 9 April 2010.

[87]Coates and others, *Arctic Front: Defending Canada in the Far North*, 106.

[88]Byers, *Who Owns the Arctic: Understanding Sovereignty Disputes in the North* , 117.

Action Plan" went further in defining an approach for healthier communities, through active discussions with northern aboriginal leaders.[89]

As other nations attempt to use Canada's northern islands and waterways, Canada must take a stand to protect its interests and the interests of its northern communities. There have been past incursions into Canada's north and there are expectations that as the region continues to open up with the regression of ice from its currently protected waterways such as the Northwest passage, American, European and Asian ships may take liberties in transiting through the Canadian Arctic.[90] It is unlikely that Canada will take an aggressive stance against these nations as it did during a 1994 fishing controversy between Canada and Spain, where the Canadian Coast Guard seized Spanish ships that did not adhere to Canadian law.[91] Most likely diplomatic measures and international law will address some of the disputes, but in the meantime Canada must maintain a presence in these contested regions which can be addressed through a level of surveillance and enforcement. Other measures for enhancing the capabilities of existing communities can also substantially bolster Canadian claims and its ability to enforces its laws and regulations.

The Canadian government has been contending with how best to respond to northern development for decades. The major issues that have presented themselves are adequate subsidies for managing the territorial government priorities, settling outstanding land claims and thus implementing settlements with the Inuit. The federal

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[89]Coates and others, *Arctic Front: Defending Canada in the Far North*, 131.

[90]*Ibid*., 198

[91]*Ibid*., 158

government must recognize regional aboriginal self-government and give these northern territories, provincial status so that they can have the same entitlements and obligations as the rest of Canada.[92] In order for the Canadian government to see this through, they must show the rest of Canada that the investments being made in the Arctic override certain other priorities that southern Canadians have stressed. Canadians need to "connect with the North", and show a keen interest in the northern affairs and not simply see the north as an area that is susceptible to intrusion by foreign vessels, commercial investment and the military forces of other nations. The Canadian government needs to encourage Canadians to visit our Arctic region, and through tourist visits, student and company personnel exchanges and well articulated media promotions, Canadians can gain an appreciation of the sheer magnitude of investment necessary to meet the challenges of community improvement and economic development in this harsh region of Canada.[93] These initiatives will go far in meeting one of the Canadian government's key objections of "promoting the human security of northerners and the sustainable development of the Arctic."[94]

Back in 1997, the Canadian government published a report on the *Northern Dimension of Canada's Foreign Policy (2000).* In this report, the main objectives were for the Federal government " . . . to enhance the security and prosperity of Canadians, assert and ensure the preservation of Canada's sovereignty in the North, establish the Circumpolar region as a vibrant geopolitical entity and promote the human security of

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[92]*Ibid*., 204

[93]*Ibid*., 209

[94]Carnaghan and Goody, *Canadian Arctic Sovereignty*, 7.

northerners and the sustainable development of the Arctic."[95] These objectives were viewed as part of a domestic and international plan for Arctic security and protection. A follow-on domestic agreement signed in 2007, was another step towards asserting Canadian sovereignty over its proclaimed Arctic waters. The necessary elements needed for this region must now be put in place to deal with increased shipping, search and rescue and environmental cleanup from existing contamination or future emergency response.[96] Evolving from this set of objectives, Franklyn Griffiths cites within his book, *Towards A Canadian Arctic Strategy*, a list of deliverables necessary for success by Federal government departments. Most notably, DFAIT needs to take charge and ensure there is Canadian representation within international forums, that Canadians are aware of the risks and opportunities that exist for the Arctic internationally, and that the Prime Minister is advised on the importance of Canada's place as chairperson of the Arctic Council in 2013.[97] The establishment of the Marine Council will also go far in setting the stage internationally for Arctic research and development.[98]

Finally, Canada has seen other nations, such as Russia, take an active interest in the Arctic. With Russia also seeing the benefits of security, resource exploration, scientific research and other peaceful endeavours, our federal and northern governments

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[95]Canada. Department of Foreign Affairs and International Trade, "The Northern Dimension of Canada's Foreign Policy," http://www.international.gc.ca/polar-polaire/assets/pdfs/ndcfp-en.pdf; Internet accessed 14 March 2011.

[96]P. Whitney Lackenbauer, "Arctic Front, Arctic Homeland: Re-Evaluating Canada's Past Record and Future Prospects in the Circumpolar North," *Foreign Policy for Canada's Tomorrow, Canadian International Council* (July 2008), 8, http://www.canadianinternationalcouncil.org/download/resources/archives/foreignpol/civ_lacken; Internet; accessed 15 April 2011.

[97]Griffiths, *Towards a Canadian Arctic Strategy*, 4.

[98]*Ibid*.

can unite with its Arctic neighbours and benefit from the knowledge of all Arctic people.[99] One just has to look back at history to see that this position of mutual support is not new. As Maxwell Cohen also concluded in 1970, in his book *The Arctic and the National Interest*, "a major Canadian partner can be the Soviet Union, certainly on the scientific side and in due course in several other areas of common developmental and jurisdictional interests."[100]

Infrastructure

A key component of modernization and the development of any region can be greatly affected by infrastructure improvements. The US took the lead on much of the initial development in the Arctic, with the Alaskan highway, roads from Mackenzie Valley down to northern Alberta, the Canol pipeline, and other infrastructure programs dominating their northern vision during the Second World War.[101] Although most of these initiatives were part of the American war effort against the Japanese, the technology that was used also benefitted prospectors who were tapping the northern region for resources.[102] In the early 1950s, there was little known of the Arctic residents, as there were many barriers with communication, technology and geography that minimized contract with southern Canada. Albeit, there was a great deal to be gained

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[99]Peter Jull, "Canada, Arctic Peoples, and International Affairs," *Behind the Headlines* 45, no. 6 (1988), 11.

[100]Cohen, *The Arctic and the National Interest*, 81.

[101]Abele, *Canadian Contradictions: Forty Years of Northern Political Development*, 312.

[102]*Ibid*., 312

economically through resource exploitation that spurred a desire to quickly improve on the infrastructure conditions that were virtually non-existent in the Arctic.[103]

The Arctic, and in particular Inuit communities, saw a very gradual introduction of European and southern infrastructure investment. Western World influences saw the need to put the indigenous population in permanent housing, and provide education and health care seen by other parts of Canada as a right for all its citizens.[104] The creation of housing developments and other social programs, intended to create opportunities for the indigenous populations, saw the Inuit people's lives affected greatly with little local input into these changes.[105]

By 1960, the landscape of the Inuit communities had changed greatly. The Inuit now lived in somewhat developed communities and were expected to attend schools. Infrastructure was poorly designed and built, with roads, facilities and homes not meeting the standards for northern living conditions. Schooling was now a way of life for them, and new technologies for hunting and fishing became a dependency for survival.[106] The communities were split with children being separated from their families to attend schools that were great distances from their homes. Additionally the Inuit were being drawn out of their traditional ways of life and introduced to technologies such as snowmobiles and rifles for hunting, fishing and general living in

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[103]*Ibid*., 313

[104]Abele and Rodon, *Inuit Diplomacy in the Global Era: The Strengths of Multilateral Internationalism*, 50.

[105]Abele, *Canadian Contradictions: Forty Years of Northern Political Development*, 313.

[106]Abele and Rodon, *Inuit Diplomacy in the Global Era: The Strengths of Multilateral Internationalism*, 51.

the north.[107] Although technology was creeping into these Northern communities, the services they were provided were far less than what is expected by the average Canadian living in the south.

By the 1970s other forms of infrastructure were being introduced to the high north. With resource exploration, evolving from the Alaska Oil discoveries in the Mackenzie Valley, a number of transportation construction projects came on line. As future prospects were deemed to be a windfall for the Arctic, expectations were that a flood of inhabitants would venture to the high north.[108] Other modes of transportation to the high north brought promise of roads and rail systems from "Tuktoyuktuk to Siberia". Further developments included airports and harbours throughout the north, that would connect all communities to create growth and economic prosperity while enhancing security and sovereignty in the remote reaches of Canada.[109] These visions were seen to be very obtainable, as military infrastructure was already positioned in the Arctic, from which civilian infrastructure could leverage its development.[110] As well, roads like the Alaskan highway, showed how non-military projects were also achievable with the necessary incentives providing the reasons for their construction.[111] When Canada was growing and needed to connect its eastern and western provinces, transportation

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[107]*Ibid*., 51

[108]Abele, *Canadian Contradictions: Forty Years of Northern Political Development*, 314.

[109]Lackenbauer, *Arctic Front, Arctic Homeland: Re-Evaluating Canada's Past Record and Future Prospects in the Circumpolar North*, 8.Abele and Rodon, *Inuit Diplomacy in the Global Era: The Strengths of Multilateral Internationalism*, 45-64.

[110]Eyre, *Forty Years of Military Activity in the Canadian North, 1947-87*, 299.

[111]Coates and others, *Arctic Front: Defending Canada in the Far North*, 10.

networks and infrastructure developments were established regardless of the cost. [112] The same needs to be done for our northern reaches.

The changes to the Arctic were not necessarily seen as being in the best interests of its inhabitants and many of these improvements were not to the same standard as expected by all Canadians. The government must look to building large northern cities, that possess the same social and economic infrastructure that match other cities within the Arctic region. One can look to Fairbanks Alaska, Alta Norway, or Akureryi Iceland, to see that even Canada's most developed northern cities of Yellowknife or Whitehorse pale by comparison.[113] Our northern cities possess the potential for growth, but need strong, long-term commitments from the Federal government and southern investors in order to become prosperous.

Canada needs to make the Arctic attractive to promote and foster population growth. Luring investors, immigrants and southern Canadians to move north based on receiving a high wage does not encourage population growth. The federal and territorial governments need to seriously address the lacking social and infrastructure standards of the Arctic communities.[114] The fact that housing falls far short of expectations is unsatisfactory. There needs to be a formulated approach to addressing the shortfalls in the use of today's technology for matching the needs of adequate housing. Furthermore, as many of the developments within Arctic communities are done using government funding, there tends to be a lack of attachment and pride that

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[112]Abele, *Canadian Contradictions: Forty Years of Northern Political Development*, 311.

[113]Coates and others, *Arctic Front: Defending Canada in the Far North*, 206.

[114]*Ibid*., 207

comes with ownership in having to work to obtain your property and thus taking care of it.[115] The needs and values of the Canadian Inuit need to be part of the social and economic solutions for Arctic communities.

According to Ken Coates and his co-authors in *Arctic Front: Defending Canada in the Far North*, there are two main issues affecting the growth in the Arctic: capacity building and migration. The infrastructure in the Arctic is in such poor condition that migrants to the area tend to be only temporary residents. Hence governments need to invest in its northern settlements and commercial organizations must be held accountable to provide the services that would be expected in any part of the country.[116] To accomplish this there needs to be leadership demonstrated both within government and commercial circles to ensure systems are put in place that will meet the expectations of their residents. A journal article by Peter Jull, suggests that Canada's Arctic sovereignty issues can be effectively dealt with by instilling the "infrastructure of nationhood within our own territory and extending political institutions to aboriginal Canadians."[117] This logic will allow for governments and the local populations to work at coming together to formulate a permanent solution to the problems of Arctic infrastructure.

Future Arctic infrastructure investment must equate to Prime Minister Harper's recent announcements on his government's Pacific Gateway initiatives for the western provinces.[118] Similar infrastructure projects are warranted for the Arctic. An example

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[115]*Ibid*., 208

[116]*Ibid*., 208

[117]Jull, *Canada, Arctic Peoples, and International Affairs*, 10.

[118]Byers, *Who Owns the Arctic: Understanding Sovereignty Disputes in the North* , 86.

of a simple investment is the construction of facilities to generate wind turbine energy. This initiative could be viewed as both looking to the electricity requirements for the communities while addressing the environment in the region.[119]

A necessary component to any infrastructure commitment is for the residents to provide their input. Premier Handley, Premier of the NWT, has used occasions with the Prime Minister to lobby the concerns of his constituents. Premier Handley views infrastructure development as a cornerstone for growth and security in the North and although the Federal government's intentions are for more military development in the Arctic, community investment must also be seen as a priority for meeting security and sovereignty objectives.[120]

Education

Adequate education on the Arctic and for the Arctic people is severely wanting, particularly at the higher institutional levels. Therefore, the University of the Arctic was created to be an essential element for Northern communities to subscribe to the benefits of higher learner. The university of the Arctic is a "cooperative network of universities, colleges, and other organizations committed to higher education and research in the North".[121] Canada can leverage off other partnerships that subscribe to the University of the Arctic philosophy and build from the research capacity that

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[119]*Ibid*., 118

[120]Coates and others, *Arctic Front: Defending Canada in the Far North*, 180.

[121]University of the Arctic, "University of the Arctic Website," http://www.uarctic.org/compactArticles.aspx?m=73; Internet; accessed 2 March, 2011.

already exists. Additionally, Canada needs to have a University located at one of its major Arctic communities. The focus of the northern university can be to sponsor graduate level programs on the relevant issues pertaining the conditions of the Arctic.[122] The investment in higher education can have very positive effects within communities, as graduates tend to be able to get better jobs and the community benefits from a greater social environment for its residents.[123] However, as already expressed with the cooperation amongst circumpolar nations, education can be a collaborative effort by taking advantage of the already existent programs of the University of the Arctic.[124] Within Canada, the University of Northern British Columbia and the University of Alberta are already making attempts to introduce programs that relate to the Arctic and in particular to issues affecting climate change.[125] These commitments need to be looked at as a starting point for Arctic education and not Canada's sole investment in Arctic University studies.

The University of the Arctic has taken steps to conduct further study in scientific research and socio-economic development in the Arctic.[126] These investments will further explore technologies that are beneficial to northern communities and protective of the environment.[127] Other research and studies are also focused around the mapping of the Arctic Continental Shelf. Canada's commitment to this program is substantial but

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[122] Coates and others, *Arctic Front: Defending Canada in the Far North*, 208.

[123]Byers, *Who Owns the Arctic: Understanding Sovereignty Disputes in the North* , 113.

[124]Coates and others, *Arctic Front: Defending Canada in the Far North*, 130.

[125]*Ibid*., 209

[126]Lackenbauer, *Arctic Front, Arctic Homeland: Re-Evaluating Canada's Past Record and Future Prospects in the Circumpolar North*, 8.

if Canada worked cooperatively with other Arctic nations, it could go much farther in advancing their comprehension. Canada would see benefits with both their natural and human science knowledge of the Arctic. These advantages can only be better achieved through collaborative efforts from governments, the research sector and other key parties within the private sector.[128]

Environmental

For environmental plans to be successful in the Arctic there needs to be a global plan that will offset the challenges that will be faced by resource exploration and economic developments.[129] For centuries, the Inuit have lived within these "unspoiled" regions of the world, which once industrialized, will see a tremendous change to their way of life. Hence, it is incumbent for the Canadian government to take a position to protect its northern citizens as per its constitution, respect the well-being of its Inuit communities and conserve this natural environment.[130] As the Arctic ice recedes there will be a greater number of shipping vessels that will want to transit through the Canadian Arctic. The effects of marine pollution and the negative impact to the Inuit communities must be minimized through control measures to be taken by the Canadian government.[131] Ultimately, the environmental concerns in the Arctic are global in

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[127]*Ibid*., 9

[128]Coates and others, *Arctic Front: Defending Canada in the Far North*, 208.

[129]Byers, *Who Owns the Arctic: Understanding Sovereignty Disputes in the North* , 128.

[130]Jull, *Canada, Arctic Peoples, and International Affairs*, 6.

[131]*Ibid*., 7

nature, but at the same time any security concerns for Canada must be linked to the environmental and human impact to the region.[132]

Economic/Social

For most of the twentieth century the Arctic posed significant challenges to anyone expecting to reveal its riches, with a harsh climate, technological inefficiencies, and the high cost of establishing bases for resource development leading a formidable opposition to such exploration.[133] However when resources were found, there was a sudden rush to the region, and the extremes associated with economic development and social unrest would present themselves.[134] With this influx of a mostly male population, there were grave concerns as to the impact upon the indigenous societies; with expectations that the Inuit would take on the burden of providing the workforce, and be the guides to many of the civilian, military and law enforcement personnel that would occupy their lands.[135]

One of the most unpleasant times in Canada's Arctic history relates to the relocation of some Inuit peoples to less populated areas of the Arctic in reaction to the Canadian government's sovereignty concerns. As the federal government had not conducted studies on the effects of such relocations, this poorly planned venture

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[132]Rob Heubert, "Canadian Arctic Security Issues: Transformation in the Post-Cold War Era," *International Journal* 54, no. 2 (1999), 226.

[133]Coates and others, *Arctic Front: Defending Canada in the Far North*, 151.

[134]*Ibid*., 152

[135]Abele and Rodon, *Inuit Diplomacy in the Global Era: The Strengths of Multilateral Internationalism*, 50.

resulted in many hardships and social dilemmas for the Inuit.[136] As southern views crept northward for the improvement of economic and social conditions for the Inuit, such initiatives as structured schooling were introduced. The difficulty with these initiatives were that Inuit children were taken away from their communities and grouped with other children from different regions of the Arctic so that could be dealt with in large numbers. By the 1970s, as these youth became adults, they began to rebel against the historical and traditional beliefs of the Inuit. Their defiance against community values, and dependency on federal government handouts created a great many social problems within the communities.[137] One avenue to counteract these social concerns was for the governments to invest in infrastructure programs to economically and socially improve the climate within these communities.[138] Although social conditions are still poor, government departments have been more involved with improving the living conditions for the Inuit with support from both within and outside Inuit communities. As history has shown, both military and civil authorities can play a role in establishing a more stable and socially acceptable environment for these northern communities.[139]

Arctic communities have historically been deprived of political benefits and the extent of services provided to all Canadians primary because of the cost associated with meeting the needs of a small isolated population.[140] Investments must be made so that

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[136]*Ibid*., 50

[137]*Ibid*., 51

[138]Byers, *Who Owns the Arctic: Understanding Sovereignty Disputes in the North* , 116.

[139]Coates and others, *Arctic Front: Defending Canada in the Far North*, 103.

[140]Jull, *Canada, Arctic Peoples, and International Affairs*, 3.

all Canadians can receive the services, employment opportunities and political attention, that all citizens expect. In order to properly address the necessary balance of services for this region, local leaders and its citizens need to be the planners and voice for the Arctic. With the most remote locations now being exploited and in many ways affecting the lives of its northern inhabitants, it is only sensible that local inhabitants make the decisions for their region with assistance of the federal government.[141]

Canada is not the only northern nation that is dealing with socio-economic issues in the Arctic. For issues that other circumpolar countries have in common with Canada, such as economic development, wildlife management, social problems (such as alcohol and family abuse) and the problems associated with managing small isolated communities, all nations can join together to overcome their difficulties and prosper by coming up with common solutions.[142] The Canadian government must step back on many of these issues and allow local organizations and the territorial governments to take charge of their own needs and economies.[143] The federal government needs to be supportive, as it is with the provincial governments and provide the necessary support for the benefit of both the territory and the nation.

Over the past few decades, a number of resource development initiatives have presented themselves. With these opportunities, there have also been major disputes between non-native businesses and indigenous peoples within the effected regions of the high north. The primary interests of these parties have been over the control and

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[141]*Ibid*., 5

[142]*Ibid*., 8

[143]*Ibid*., 10

level of economic and political development that should be occurring in the Arctic.[144] These issues are now becoming more prevalent due to the local populace having a greater say in the affairs of the north, which is strikingly different than how the federal government handled issues in the north less than half a century ago.[145] With the federal government allowing the local leaders to represent their populace and make important decisions for the Arctic, it greatly improves the societal aspects within their communities. People are now empowered to control their own lives and make decisions for their communities thus allowing their futures to be controlled in a manner that they can call their own instead of one that is dictated to them.[146]

Canada has gone far by signing the Nunavut Land claims agreement[147] in 1993, followed in 1999 by recognizing Nunavut as a separate territory with the right to Inuit self-government.[148] With a population of just over 45,000 in the entire Canadian Arctic, the Inuit have to look outside of their small communities if they wish to grow and become "self-supporting people."[149] As has been proven just a few years after recognizing Nunavut, the territorial government has taken the necessary steps to becoming a coherent political entity, ready to work towards realizing both domestic and international goals that will involve the Inuit people at the forefront of the decision-

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[144]Abele, *Canadian Contradictions: Forty Years of Northern Political Development*, 318.

[145]*Ibid*., 318

[146]Abele and Rodon, *Inuit Diplomacy in the Global Era: The Strengths of Multilateral Internationalism*, 49.

[147]Lackenbauer, *Arctic Front, Arctic Homeland: Re-Evaluating Canada's Past Record and Future Prospects in the Circumpolar North*, 8.

[148]Abele and Rodon, *Inuit Diplomacy in the Global Era: The Strengths of Multilateral Internationalism*, 52.

[149]*Ibid*., 53

making.[150] The Inuit people are not only concerned with the benefits associated with economic development but also with the social impact that must be anticipated and planned for in order to avoid the negative affects that could surface within their region.[151] Circumstances in the Arctic have rapidly and dramatically affected the local population with the Inuit taking on a leadership role to deal with their concerns. The image the Inuit now cast is much different than how the outside world saw them in the past.[152] Outsiders to these northern communities saw a very secluded people without the knowledge of the outside world. But with the challenges facing the Arctic, the Inuit have shown through their attitudes and actions that they are capable of meeting these demands head on.[153] From the onset, the positions and intentions of the Arctic people have always been to address their welfare and environment, which they have taken an active stance to protect and enhance.[154]

The Canadian government continues to show its commitment of allowing the Inuit communities to benefit from the resources within their territory in order to deal directly with their issues and implement programs that they deem appropriate. As the federal government's 2007 throne speech professed, the government is cognizant of the socio-economic and environmental issues within the Arctic and a long term, not short term,

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[150]*Ibid*., 55

[151]*Ibid*., 57

[152]*Ibid*., 59

[153]*Ibid*., 59

[154]Heubert, *Canadian Arctic Security Issues: Transformation in the Post-Cold War Era*, 226.

plan will be required to adequately address future intentions in the region.[155] The three territorial leaders understand the challenges and look to claim and use the revenue generated through resource development to deal with the social concerns prevalent in many communities throughout their respective territories.[156] Other areas where both federal and territorial governments are engaged include involvement with the University of the Arctic, investment in research and development technologies for northern communities and a "circumpolar Inuit Health Action Plan" that will work towards local solutions to meeting the needs of Inuit health care and support.[157] Franklyn Griffiths, in his article *Towards a Canadian Arctic Strategy*, states that Canada's Arctic responsibilities must include plans for "sustainable development, environmental protection, respect and care for indigenous life ways, safe and efficient marine transportation and scientific cooperation."[158] In all these cases, the best situation is for the Inuit people and the territorial governments to take the lead and strive to achieve the successes for both domestic sovereignty concerns and circumpolar stabilization in the region.[159]

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[155]Lackenbauer, *Arctic Front, Arctic Homeland: Re-Evaluating Canada's Past Record and Future Prospects in the Circumpolar North*, 8.

[156]*Ibid*., 9

[157]*Ibid*., 10

[158]Griffiths, *Towards a Canadian Arctic Strategy*, 2.

[159]*Ibid*.

Arctic Council

In the 1970s the conditions within the Arctic began to change. As the prospects for oil and natural gas in the North began to surface, the federal government was faced with questions on national sovereignty, environmental protection and economic benefits. In order to deal with these complex issues, the government proposed plans for improvements to northern settlements and assimilating the natives of these regions into Canadian society thereby hoping to alleviate many of the social hardships that the Inuit had faced in the past.[160] Fortunately, the native communities themselves supported the initiatives and planned to work together with the federal government for enhancement of their communities and protection of the Arctic frontier.[161]

During the same decade, the Inuit Circumpolar Conference (ICC) was formed that would address the social, land claim and environmental rights for the Arctic region as a whole.[162] This approach was very new to all Inuit people that lived in different nations throughout the Arctic. Indigenous peoples were more accustomed to sharing the North with one another without the need for boundaries.[163] The need to express the concerns of the Canadian Inuit presented itself during the inquiry into the construction of the Canol pipeline, where the sovereign rights of the Inuit people needed to be taken into account.[164]

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[160]Abele, *Canadian Contradictions: Forty Years of Northern Political Development*, 314.

[161]*Ibid*., 315

[162]Abele and Rodon, *Inuit Diplomacy in the Global Era: The Strengths of Multilateral Internationalism*, 46.

[163]*Ibid*., 47

In the 1990s the Arctic Council was formed with its main focus being "human development in northern communities and the need to balance resource development and environment protection."[165] The Arctic Council was a true representation of the cooperative efforts of all Arctic nations, with inclusion of indigenous populations being at the centre of addressing the economic and environmental concerns within this region.[166] Canada has stepped up to support a number of the initiatives for the North besides support for the Arctic Council, but Canada is still far behind with their commitments to the North compared to other Arctic nations.[167] Further measures need to be taken by the Canadian government in regards to monitoring the global and climatic effects of Canada's Arctic including significant scientific investments in the region.[168] A step in the right direction has been Canada's support in the creation of the Arctic Security Working Group in 1999. This group will be of great benefit in finding ways of bringing the Arctic Council's agenda into the twenty-first century.[169]

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[164]*Ibid*., 56

[165]Coates and others, *Arctic Front: Defending Canada in the Far North*, 129.

[166]*Ibid*., 135

[167]*Ibid*., 169

[168]Lackenbauer, *Arctic Front, Arctic Homeland: Re-Evaluating Canada's Past Record and Future Prospects in the Circumpolar North*, 7.

[169]Griffiths, *Towards a Canadian Arctic Strategy*, 3.

TECHNOLOGICAL SUCCESSES IN OTHER ARCTIC NATIONS

As stated earlier, Canada shares the Arctic with a number of other nations: Russia, US, Norway and Denmark, and also sits on the Arctic council with Sweden, Finland and Iceland.[170] Hence, through the sharing of experiences with these other nations, Canada can gleam ideas that can be incorporated into the development of its own Arctic area. Arctic nations such as Russia, Sweden, Finland, Denmark and Norway have long traditions and a solid history of development in their northern regions. The United States and Greenland, have also shown advancement in their relatively shorter histories in the Arctic and Far North. Canada, on the other hand, has historically done very little in comparison and thus when looking to its path towards development of its Arctic territories and archipelago, it can gain great benefit from its Arctic neighbours.

The Inuit can look back at their history and reflect on how borders never seemed to exist for them, however in today's world, nations have drawn these boundaries for both the land and sea.[171] With a great deal of resources laying under the seabed of the Arctic Ocean, nations are scrambling to determine the limits of their continental shelves.[172] It is through scientific research and the backing of the International community, under the United Nations Convention on the Law of the Sea (UNCLOS), that all Arctic nations expect to resolve the situation. As money as well as a nations' commitments to any region are necessary for development, it is wise to look at how

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[170]President of Russian Federation, "Fundamentals of Public Policy of the Russian Federation in the Arctic Up to 2020 and Beyond" 2008).

[171]Coates and others, *Arctic Front: Defending Canada in the Far North*, 159.

[172]*Ibid*., 162

other polar nations have achieved success in the areas that have been of concern for Canada, such as their investment in infrastructure, transportation systems, education, research and tourism.[173] Canada has fostered support in a number of these areas, but from the perspective of short term and minimal cost solutions. There must be long term investment in the Arctic for the programs to be as successful as those of other nations. One area that has been explored by many of these Northern nations, has been its success in integrating their respective northern area with the rest of their nation, economically, politically and socially.[174]

With a population of around 155,000 Inuit living throughout the Arctic, it is crucial that they have a strong voice to direct the affairs within the region.[175] Collectively they formed the ICC in 1977 and participated in the formation of the Arctic Council in 1996, where their prime agenda was the economic and environmental well-being of the Arctic.[176] It is through these collective and cooperative forums that Canada, with its circumpolar neighbours, enjoy the benefits of what the north has to offer.

Russia

Russia's climate is very close to Canada's; however, where the two countries are most different is with the human population within their respective Arctic regions.

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[173]*Ibid*., 186

[174]*Ibid*., 200

[175]Abele and Rodon, *Inuit Diplomacy in the Global Era: The Strengths of Multilateral Internationalism*, 47.

[176]*Ibid*., 57

Russia has a very large northern presence, with Siberia's population of over 35 million people being equal to the population of all of Canada.[177] Siberia's growth began back in 1861, when after the sale of Alaska to the US, there were millions of people who emigrated to Siberia. This growth to the Russian northern frontier also prompted several economic and social programs in order to unite Russia's huge empire.[178] In the early and mid twentieth century, Russia resorted to forcing the development of its northern territories, with labour camps and military bases populating their Arctic areas; a more repressive action for population growth. Today, Siberia is known to have very large urban areas and industrial centres to which Canada cannot make the same claims.[179] In the early 1990s, Russia suffered a significant drop in its northern population due to the collapse of their command economy. As a result, many Siberian citizens within these industrialized communities relocated to areas in southern Russian where they could find work.[180]

Similar to Canada, Russia's sovereign right over its Arctic region are recognized by the international community. With this entitlement, they have taken advantage of extracting some of the vast resources found in the Arctic to pursue economic and social development of the communities most affected by their economic crisis of the 1990s.[181] The interests of the Russian government have been to work with their civilian

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[177]Coates and others, *Arctic Front: Defending Canada in the Far North*, 199.

[178]Otis Hays Jr., *The Alaska-Siberia Connection. the World War II Air Route.* (College Station: Texas A&M University Press, 1996), 8.

[179]Coates and others, *Arctic Front: Defending Canada in the Far North*, 200.

[180]*Ibid*., 201

[181]President of Russian Federation, *Fundamentals of Public Policy of the Russian Federation in the Arctic Up to 2020 and Beyond*, 1.

community, while adhering to both international and domestic rules, to create prosperous and supportable Arctic cities and communities.[182]

In 2008, President Medvedev provided direction to his people on what Russia's public policy would be for the Arctic up until 2020. He stated that his main objectives were the promotion of socio-economic development, military security, environmental security, investment in information technology and international cooperation.[183] With this plan, he also detailed his country's strategic priorities for achieving success. The following list details the Russian government's priorities to meet its stated objectives[184]:

1. Address issues of international legal justification for the external border of the Arctic zone of the Russian Federation;
2. Creating a unified system of search and rescue;
3. Participating as a member of the Arctic Council;
4. Enhancing the participation of Russian public institutions and civil society organizations in international forums dealing with Arctic issues;
5. Maritime Delimitation in the Arctic Ocean and to ensure mutually beneficial presence of Russia in the archipelago of Svalbard;
6. Improvements in governance and social and economic development in the Arctic zone of the Russian Federation, including through the expansion of basic and applied research in the Arctic;
7. Improving the quality of life of indigenous people and social conditions of economic activity in the Arctic;
8. Development of the resource base of the Arctic zone of the Russian Federation through the use of advanced technologies; and
9. Modernization and infrastructure development of Arctic transportation system and the fisheries complex in the Arctic Zone of the Russian Federation.

Russia is now dealing with climate change in its Arctic region and with these changes they are facing increased maritime traffic and quests to harvest the resources in their region. To meet these changing times, Russia is introducing new techniques and

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[182]*Ibid*., 2.

[183]*Ibid*., 2.

technologies for extracting the mineral deposits and other resources in their seabed. The new economic benefits to the region have the Russian government investing in new aircraft, shipping vessels and improvements to their Arctic communities. As much of the area has been developed in the past, Russia's main focus is to provide the necessary support to rebuild infrastructure that will reenergize the local economies.[185] With increased maritime and air traffic occurring and expected to continue to grow as the Arctic ice recedes, Russia has monitoring and security systems in place for the protection of their region and the safety of the traffic within it.[186]

Most of the Russian government's economic and social plans for their northern communities mirror the Canada government's priorities for its north. The Russian federation is planning to fund economic and social programs for the region. Their plan is to modernise their educational institutions, housing, energy and transportation infrastructure, health care services, and tourism.[187] With government support, communities will stay together and the benefits afforded to their indigenous people will allow all members of the population to be productive participants in the development of the Arctic.

On the military front, as one of the Superpowers of the later part of the twentieth century, and still a formidable force, Russia has a significant presence in the Arctic. To add to its military plans, emphasis will be placed on border security with the reconstruction of vital infrastructure and the provision of more sophisticated equipment

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[184]*Ibid*., 2.

[185]*Ibid*., 3.

[186]*Ibid*., 3.

[187]*Ibid*., 4.

for their border agencies. For monitoring the maritime environment there will be upgrades to their current systems to ensure complete security.[188]

Russia's information technology and communication systems are continually undergoing modernization. They now have more reliable navigation, meteorological and telecommunication systems situated in their most northern regions. Their ground monitoring stations are also supported with a global navigation system, GLONASS, that supports environmental, military and economic programs for the Arctic.[189] Russia continues to strive to accurately place the most advanced ground, maritime and space systems for ensuring protection and surveillance in their most northern reaches.

Russia is extremely active in science and research programs, and through their Arctic experiments have made significant improvements to infrastructure durability in the Arctic. With the use and development of other modern technologies, they are able to conduct studies and make predictions on climate change and the effects on the global and local environments.[190]

Russia has taken advantage of expertise from the state, local governments, businesses and non-profit organizations to form alliances to improve the social, economic, cultural and environmental conditions in the Arctic.[191] Many of the programs being developed by these groups have had a positive effect towards the creation of coordinated plans for their most northern areas with emphasis being placed on the

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[188]*Ibid*., 4.

[189]*Ibid*., 5.

[190]*Ibid*., 5.

[191]*Ibid*., 6.

development of socio-economic programs.[192] Siberia also boasts having high-tech manufacturing sectors and national climate research centers. These organizations are part of a public-private relationship that greatly contribute to the stabilization of the Russian economy.[193]

Since the collapse of the Russian economy in the early 1990s, Russia has not been as focussed on issues that concern the sovereignty of their northern regions, but rather they have been concentrating their efforts on the Arctic ecosystem. As their northern waterways have been experiencing significant exploitation of their natural resources, as well as witnessing increased maritime traffic, Russia has focused its attention on regulating these economic events. The expectations of climate change opening up the Arctic to even more activity is a significant threat to Russia; however their government cannot deal with the situation on their own and have joined together with civilian and business organizations, nationally and internationally, to come up with solutions.[194] As every Arctic nation looks to take advantage of developments and resource exploration as the ice continues to recede, Russia is understanding the negative effects upon the environment and looking for a balance to this economic windfall. Russia, along with its Arctic partners, are using technologies in this region that would be best suited to keeping the environment healthy.[195] The Russian President is outspoken on gaining the most of what the Arctic can produce but is well aware that the extraction of resources and the use of the Arctic must be balanced with the dangers that can come to the

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[192]*Ibid*., 7.

[193]President of Russia, "Climate Doctrine of the Russian Federation", 2009, 1.

[194]*Ibid*., 2.

[195]*Ibid*., 3.

region.[196] If renewable and alternative energy sources are not used, or if the region is overpopulated and fosters pollution, the resultant costs to the planet may be overly significant. Obviously, the measures taken must be affordable - thus the reasons for cooperative practices on a global scale for any activity in the Arctic. Current technologies exist that allow for commercial operations to be conducted, while having the ability to protect or react to any negative consequences affecting the north.[197]

Even though there is a relatively large population in Russia's northern territories compared to other Arctic nations, the Russian Arctic still has a relatively low population density compared to its southern states. As with Canada, Russia must take into consideration higher infrastructure and transportation costs and that the colder climate requires greater heating needs.[198]

With population growth and a shift in demographics due to climate change, technology is needed and planned by Russian federation to be more efficient and kinder to the environment. Russia is very cognizant of international climate change programmes and hence links its Arctic security to the conduct of its Arctic affairs in accordance with international legislation.[199] The steps that Russia has taken include using technology that is energy efficient whose emissions do not add greenhouse gases to the environment.[200]

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[196]*Ibid*., 4.

[197]*Ibid*., 4.

[198]*Ibid*., 6.

[199]*Ibid*., 7.

[200]*Ibid*., 7.

The issues that are presenting themselves in the Arctic are entirely new to all Arctic nations, and Russia is not alone.[201] Canada and Russia have very similar issues in the Arctic, particularly when it comes to scientific research. The development opportunities that are presenting themselves in a rapidly changing environment means that both countries must work cooperatively to implement the most effective solutions for the benefit of the entire Arctic region.[202]

Russia possesses a great deal of military might and with its complement of nuclear powered submarines can patrol the Arctic undetected from any of Canada's current surveillance systems. Russia's surface and icebreaker fleets are also a great deal more capable than any ships Canada possesses.[203] With these and other assets Russia is mapping its Continental shelf to determine, from a legally and internationally acceptable position, how far its territory stretches. Canada should work with Russia to be able to reach a mutually agreeable position on the boundaries of both their claims.[204]

United States

Alaska has grown at a steady pace under the ownership of the United States with a population today nearing 700,000 people.[205] However, prior to becoming an inaugurated

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[201]Cohen, *The Arctic and the National Interest*, 52.

[202]*Ibid*., 81

[203]Coates and others, *Arctic Front: Defending Canada in the Far North*, 162.

[204]*Ibid*., 160

[205]*Ibid*., 198

state, it had its difficulties in making improvements within their region. The early pioneers suffered similar struggles as Canada did in the late nineteen century of convincing governments and investors to develop Alaska. Projects such as the construction of railroads and telegraph stations were cancelled due to the high costs and lack of dedication to rapid advancement in these regions.[206] It was not until the gold rush of the late nineteenth/early twentieth century when thousands of miners and settlers came to Alaska. With many southerners expecting to become rich, the region steadily grew with many communities springing up throughout this territory.[207]

The US Department of Defense (DoD) made pleas to the US Congress for Alaskan military development in the 1930s. The Chief of the Army Air Forces saw a need to position bomber and other army aviation assets in this northern region. At the time, he found it difficult to convince Congress to make the financial commitments due to a lack of any perceived threat. Civil aviation, on the other hand sought to take advantage of an untapped market for investment and built a number of landing strips, weather stations and navigation stations; beginning the opening of commercial air traffic through Alaskan airspace.[208] It was not until 1939, when the US felt threatened by Japanese aggression close to their Alaskan borders, that DoD was able to make any significant inroads for development. The US awoke to the need for military investment in the region with the immediate construction of the Fairbanks airbase.[209] As a result of

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[206]Hays Jr., *The Alaska-Siberia Connection. the World War II Air Route.*, 8.

[207]Fairbanks Alaska, "Gold Rush History," Fairbanks Convention and Visitors Bureau, http://www.explorefairbanks.com/go/explore/gold-rush-history/36; Internet; accessed 15 April 2011.

[208]Hays Jr., *The Alaska-Siberia Connection. the World War II Air Route.*, 12.

[209]*Ibid*., 12

the war with Japan, the US now has several major air bases and numerous smaller stations positioned throughout the Alaskan state. These installations where constructed to protect the sovereign rights of this state and contribute to the economic stability of their cities and smaller communities.[210] With the Japanese plans to invade a number of Aleutian Islands, the United States' move to construct bases and position troops in its northern region proved accurate. Additional army bases and the stationing of submarines in Alaska were to become commonplace during the war.[211]

The discovery of oil in the 1960s and the construction of the Trans-Alaskan pipeline brought further economic growth and prosperity to the state. The exploitation of these resources afforded Alaska the wealth for modernization of its cities and state infrastructure. From these resource discoveries other military and commercial activities evolved in the state. Major employment opportunities for their northern residents were prominent in the fields of natural resource extraction, shipping and transportation, and military and government offices.[212]

Due to Canada's close proximity and history of cooperation with the US for trade, security and international relations, many Canadian citizens have felt threatened by the US infringing on Canadian sovereignty, particularly when it comes to US presence in Canada's Arctic. The reality of the situation is that the US has concerns with their security and sovereignty as well when it comes to protection of its Arctic property; as any threats to Canada will have an impact on the US. There have been, however, no

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[210]Coates and others, *Arctic Front: Defending Canada in the Far North*, 199.

[211]Galen Roger Perras, *Stepping Stones to Nowhere. the Aleutian Islands, Alaska, and the American Military Strategy, 1867 - 1945* (Annapolis Maryland: Naval Institute Press, 2003), 52.

[212]Thomas Berger, *Northern Frontier, Northern Homeland: The Report of the Mackenzie Valley Pipeline Inquiry* Ottawa : Minister of Supply and Services Canada, c1977-.

direct claims by the US to take control or ownership of Canadian territory. The only US - Canada disputes relate to Arctic maritime claims over the Beaufort Sea boundary and the status of the Northwest Passage as an international strait or internal waters to Canada.[213]

One important distinction between Nunavut/NWT and Alaskan development relate to their geography and climate. The southern half of Alaska is much more favourable for development than many regions of Canada's Arctic. For Alaska's northern areas, where the conditions are very similar to Nunavut and the remote areas of the NWT, the US government has established military bases to assist the economic development of communities within these zones.[214]

Alaska has various modes of transportation venues that connect most of its communities. By far, the railway lines contributed the most to the development of the state during the twentieth century. Before the construction of any major roads, the railroad linked the Pacific harbours with many of the communities inland.[215] Most of the roads are located in the southern part of the state, only linking the major city centers with the Alaskan highway. There is no central road network connecting all the smaller communities. Maritime vessels are another major source of travel but beneficial only to the coastal communities. The only real year long avenue to reach most of the Alaskan

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[213]Coates and others, *Arctic Front: Defending Canada in the Far North*, 297.

[214]*Ibid*., 298

[215]Murray Lundberg, "Rails to Riches. Historic Railways of Alaska and the Yukon Territory," Railsnorth.com, http://www.railsnorth.com/rails_to_riches.html; Internet; accessed 15 April 2011.

communities is by air, for which Alaska boast a number of airfields in both major and remote locations.[216]

From a socio-economic perspective, smaller and more isolated communities do suffer with the same problems that are being experienced in Canada's Arctic communities. Although law enforcement and social programs are more readily available in the larger Alaskan cities, the lack of the necessary systems to deal with problems in more rural areas is still a concern.[217] Canada can take a lesson from the US when it comes to educational opportunities in the far north. Alaska has more than a dozen universities and almost 50% of its university age population attends these institutions.[218]

Nordic Nations

The Nordic nations of Norway, Denmark, Sweden, Iceland and Finland have traditionally relied upon a unified understanding of joint protection to uphold its sovereign rights. With this cooperative approach, these nations can concentrate more on economic development and using their technologies towards community. An early example of Norwegian community development was demonstrated in 1789. In a small

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[216]Airport-Data.com, "Airports in Alaska," http://www.airport-data.com/usa-airports/state/Alaska.html; Internet; accessed 15 April 2011.

[217]ICC Alaska Staff, "Circumpolar Inuit Leaders Call for Responsible Resource Development," *DRUM - ICC Alaska's Newsletter* 4, no. 1 (1 March 2011, 2011), 1,4, http://www.iccalaska.org/servlet/content/newsletter__drum_.html; Internet; accessed 15 March 2011.

[218]Alaska Professional Resource Center, "Alaska Colleges and Universities," http://www.alaska.edu/parapro/akcolleges.htm; Internet; accessed 15 April 2011, and Wikipedia, "Alaska," http://en.wikipedia.org/wiki/Alaska; Internet; accessed 18 March 2011.

outpost called Hammerfest, the Norwegians constructed a liquefied natural gas processing centre, that drew thousands of people to the area. Norwegian investment also went further in promoting commercial technologies and are best known for having the first electric street car lighting in Europe.[219]

During the Cold War years Sweden had the desire for a collective agreement with all the Nordic countries forming a Scandinavian Defence Union. Norway and Denmark did not possess a significant military force and unfortunately Sweden did not have the military strength to protect the entire Nordic region. Thus in 1949, Norway and Sweden, along with Iceland became part of the North Atlantic Treaty Organization instead of signing on to Sweden's protection plans.[220] Sweden, however, did see the need for a security policy that supported protection for all Nordic countries, and formed its own military defence. Sweden is most renowned for having the second largest air force in Western Europe.[221] Sweden's military and economic developments were intertwined where their use of technology focussed on deterring any force from invading the country. Their aim was to instil the notion that an invading force would suffer much greater losses compared to any gains they would make in taking the territory.[222]

The Nordic countries formulated a policy of "assurance and reassurance" where the security policies represented what was referred to as the "Nordic Balance". Their

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[219]Coates and others, *Arctic Front: Defending Canada in the Far North*, 153.

[220]Clive Archer, "Deterrence and Reassurance in Northern Europe" Aberdeen :Centre for Defence Studies), 5.

[221] *Ibid*., 6.

[222]*Ibid*., 8.

intent was to be part of the collective European security structure while maintaining a balance in their relationship with the two Super Powers,.[223] As part of the NATO alliance, Denmark and Norway would participate in Allied exercises, but would restrict any significant allied naval or air force presence from basing their units in their respective countries.[224] The Nordic countries needed to be cautious that they did not create a situation where Russia would feel threatened by their actions.

During the Cold War there was an escalation in the number of nuclear weapons being built; however the Nordic countries stood firm on establishing a "Nordic Nuclear Free Zone" within their countries. The US had offered to position nuclear weapons on their soil, where this technology was intended to provide a quick strike deterrence for NATO. In hopes of establishing trust with Russia, the Nordic countries refused, although they did have concerns with Russia positioning submarines off their coast that could easily be considered a threat to their security.[225] The Nordic countries felt somewhat secure with their collective union, but needed the technology provided through a NATO alliance if they had any hopes of deterring a superpower such as Russia.[226] As part of the NATO alliance, the Nordic countries also had the benefit of satellite and other surveillance systems for monitoring their territory and coastal waters. However, it did give both the US and Russia, who were the principal providers of this technology, a special relationship with the Nordic countries when it came to their

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[223]*Ibid*.,15.

[224]*Ibid*.,10.

[225]Ibid.42 and Richard A. Bitzinger, "Denmark, Norway and NATO: Constraints and Challenges" RAND Corporation), v.

[226]Archer, *Deterrence and Reassurance in Northern Europe*, 43.

security. This status could be considered as an infringement on the sovereign rights of these Nordic nations - a similar status that many Canadians feel they must endure with the US influence on Canadian Arctic security and sovereignty.[227] As the Nordic countries had very little impact in staying off either of the two Superpowers on their own, it necessitated walking a very fine line in the technologies they introduced to their countries. Collective defence, domestic and Nordic defence, and a campaign showing Moscow that their countries would not be a staging area for aggression against Russia were keys to Nordic sovereignty.[228]

Throughout the latter part of the twentieth century, the Russian threat to the region diminished.[229] International recognition of the boundaries of the Nordic countries through the governing and use of their lands were not in dispute. Hence the Nordic countries could justify their sovereign rights to their territories with the knowledge that an attempt by any nations to take their lands would be looked upon unfavourably by the UN and international community. To reinforce their commitment to the international community and solidify the perception of international protection, the Nordic nations became involved in UN peacekeeping operations. Although not a technological advancement for ensuring their direct security, participation in international peacekeeping missions was crucial to ensuring international assistance against any threat to these Nordic countries.[230] Furthermore, by having the support of the

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[227]*Ibid*., 53 and Bitzinger, *Denmark, Norway and NATO: Constraints and Challenges*, 1.

[228]*Ibid*., 11.

[229]*Ibid*., 28.

[230]Eli Stamnes, ed., *Peace Support Operations. Nordic Perspectives* (London and New York: Routledge Taylor and Francis Group, 2008), 47.

international community as a means of protecting its borders, these nations could then turn their intentions towards uniting their people with a focus on energy resources and scientific research.[231]

Today, all Arctic nations are making some investments for monitoring, patrolling, securing or investigating their Arctic regions. Denmark, like Russia, is using various technologies to determine and map the extensions to its continental shelves, in the hopes of gaining significant revenue from any resources that may lay within their claims. Denmark has already advanced further in their scientific collection efforts than Canada, due to the technology that they possess and the cooperation the Danes are receiving from their government.[232] Norway has invested a great deal in Arctic vessels that will be able to navigate through the thick ice in all parts of the Arctic.[233] There are some definite climatic advantages in the Nordic communities with milder conditions and greater prospects for economic development, thus allowing for more technological advancements to be introduced that are more successful and cost-effective than what Canada has invested in its Arctic.[234] Of all the Arctic nations, Greenland, which is currently under Danish sovereignty but has self-government and is contemplating independence, is the closest match to the challenges that face Canada in developing and securing its Arctic. Similarities between these two nations reside in its climate, geography and subsidies for economic development and security. Greenland, however,

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[231]Jull, *Canada, Arctic Peoples, and International Affairs*, 11.

[232]Coates and others, *Arctic Front: Defending Canada in the Far North*, 161.

[233]*Ibid*., 174

[234]*Ibid*., 199

has a much more diverse economy and has paid a great deal more attention to the educational and cultural needs of its population. Canada still is paying far less than any other Arctic nation when it comes to investing in community development. When it comes to education for example, Canada, lacking a university, is spending a meagre twenty-five cents per resident towards the University of the Arctic whereas Norway in comparison is contributing $1.58 per resident and has six universities.[235] For Canada to express its desire for advancing community needs, it must commit more funds toward the Arctic Council initiatives and show stronger support for the University of the Arctic.

Canada can learn a great deal from the Nordic countries with the way that they meet the developmental needs of their communities. The Nordic countries have shown through their development programs that they are addressing the needs of their northern residents. Canada's understanding of the culture of Inuit people, however is somewhat misunderstood, as many of the programs and support that the government has endorsed are not accompanied by the necessary "legal, social, environmental and material support."[236] As has been expressed throughout this paper, many government solutions for the north have been based upon southern Canada's views of how to assist the Arctic communities instead of funding initiatives most desired by the indigenous people.

Nordic countries realized that they cannot compare in military technology to what Russia and the US possess. Thus they found ways to mutually appease both Superpowers through their programs of reassurance and necessary alliances.[237]

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[235]*Ibid*., 205

[236]Jull, *Canada, Arctic Peoples, and International Affairs*, 3.

[237]Archer, *Deterrence and Reassurance in Northern Europe*, 2.

Collectively they developed their own military to ensure that their combined defences are of sufficient size, strength and technologically capable to ensure a pre-emptive attack cannot be launched against them.[238] In the case of an attack being launched, the Nordic nations had enough military technology to combat any invading forces until such time as NATO reinforcements could arrive.[239] As Iceland did not possess a military, their security was dependent on the US and their technology, and they permitted an Allied base to be established in Keflavik. Greenland similarly allowed for NATO bases within their territory to ensure protection.[240] Sweden and Denmark (European lands), although part of NATO, would not submit to the creation of Allied bases on their soil to ensure friendly relations with Russia.[241] All Nordic nations, through the insistence of their people, did not allow nuclear, biological or chemical weapons in their country. This denial of technology was felt to be an important step in limiting the likelihood of Russian aggression towards their country. The governments of the Nordic nations instead saw surveillance and other intelligence gathering technologies as a vital component of their security and sovereign protection program, strategically locating stations within their northern regions.[242]

Nordic governments are very cognizant of their strategic location in the world amongst very powerful nations that possess an abundance of sophisticated systems. These Nordic countries therefore base their sovereign position on ensuring a mutual

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[238]Bitzinger, *Denmark, Norway and NATO: Constraints and Challenges*, 11.

[239]*Ibid*., 13.

[240]Archer, *Deterrence and Reassurance in Northern Europe*, 8.

[241]Bitzinger, *Denmark, Norway and NATO: Constraints and Challenges*, 15.

[242]*Ibid*., 16.

understanding of a common goal of mutual defence with respect to military advancements. However, as the security threats to this region continue to diminish, the governments of the Nordic region are re-evaluating their need for military technologies and moving towards more economic, social and environmental technologies to meet the sovereign and security needs of their countries.[243]

The advancements in military and socio-economic technologies have been a mainstay in the development of the Arctic by other Arctic nations sharing the region with Canada. As Canada continues to grow its Arctic region, it must leverage the experiences of Russia, the United States and the Nordic nations to ensure a strong response to the threats that actually exist in this most northern of regions.[244] The other Arctic nations have had the benefit of a long history of development and occupation, and in the case of the US, a rich economy to be able to invest in Alaska. The investment in either military, civilian or commercial developments will come with a cost if Canada wishes to end the debates of its security and sovereignty being in jeopardy.[245] The Arctic is not a new realm for any Arctic nation including Canada. It is only due to the fact that with the environment becoming more accessible that Canada once again has to look at how it is meeting the needs of the North and the rest of Canada.

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[243]*Ibid*., 30,35,41.

[244]Coates and others, *Arctic Front: Defending Canada in the Far North*, 191.

[245]Griffiths, *Towards a Canadian Arctic Strategy*, 3.

THE CANADIAN GOVERNMENT'S CURRENT PLANS FOR THE ARCTIC

Canada's Arctic is central to our national identity as a northern nation. It is part of our history. And it represents the tremendous potential of our future."[246]

Prime Minister Stephen Harper, 2007

The Government of Canada is professing major changes for development in the Arctic. Significant investment is being proposed for an increased military presence in the region including the purchase of modern icebreakers, underwater and aerial surveillance systems, and construction of a deep-water port.[247] These promises will go a long way in improving the socio-economic climate in the Arctic if all government departments take advantage of the opportunities it presents for their programs in the north. This chapter will highlight the Government of Canada's challenges to introducing greater technologies into its northern region. The government's intent is to provide greater protection of its most northern reaches and prevent unwelcomed intrusions into Canadian sovereign territory. These initiatives must take into account the benefits that can be afforded to the local inhabitants of the Arctic. It must also ensure that the Inuit and other northerners who call the Arctic home are given a chance to voice their concerns and suggestions for Arctic developments. In light of Prime Minister Harper's announcement that Resolute Bay will be the future home of an Arctic

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[246]Lackenbauer, *Arctic Front, Arctic Homeland: Re-Evaluating Canada's Past Record and Future Prospects in the Circumpolar North*, 1. Note: quoted in Max Delany, "Gas and Glory Fuel Race for the Pole," Moscow Times, 27 July 2007.

[247]Coates and others, *Arctic Front: Defending Canada in the Far North*, 172.

training facility, one must be aware of the benefits and pitfalls this opportunity brings to the Arctic.[248] The requisite technologies that can adequately respond to the threats in the Arctic must be provided so that the plans being made are not just another symbolic gesture to the perceived challenges to Arctic sovereignty.[249] On the issue of threats, Canadian lands are not in jeopardy and therefore there is little need for an influx of military assets. The main concerns are now coming from commercial intrusions into the Canadian Arctic and in particular the Northwest Passage. This increased traffic is bringing with it concerns related to environmental protection, law enforcement of federal and territory legislation, search and rescue concerns and a multitude of commercial and community related problems that may not necessitate a completely military solution. With this in mind, a whole of government approach that also brings in territorial governments, industry and the local populace must be pursued.

Department of National Defence (DND)

The *Canada First Defence Strategy* is the key document to the department's plans for involvement in the Arctic, and a main pillar of within this strategy is to conduct domestic operations in the Arctic.[250] Given this direction, DND is pursuing a number of major equipment acquisitions, including the purchase of ice capable vessels and

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[248]*Ibid*., 180

[249]Lackenbauer, *Arctic Front, Arctic Homeland: Re-Evaluating Canada's Past Record and Future Prospects in the Circumpolar North*, 2.

[250]Canada. National Defence and the Canadian Forces, "Canada First Defence Strategy. Six Core Missions," http://www.forces.gc.ca/site/pri/first-premier/missions-eng.asp; Internet; accessed 2 March 2011.

modern heavy transport aircraft. Additionally, there will be investment for the revitalization of existing communities and constructing new, modern infrastructure.

Canada's position on what type of maritime vessels would be best suited for their Arctic mission has come under some controversy. Canada has been able to operate in the North with an icebreaker capability possessed by the Canadian Coast Guard. As these assets are in desperate need of replacement, the government's view was to outfit the military with six to eight Arctic Offshore Patrol ships[251]that would be capable of working in "first-year ice".[252] Norway in comparison is investing in the next generation of icebreakers, with the ability to operate in thick ice areas of the Arctic. Russia, is taking a similar position to Norway, with the intent of also acquiring these assets to be able to operate anywhere in the Arctic Ocean.[253] Supporters of the government's plan to purchase these midsized ice-capable vessels as "a reasonable response to the challenges and opportunities facing the country" claim that the true threats to the Arctic region are commercially driven. These advocates assess there being a greater need for capabilities to monitor resource development, northern tourism and environmental abuse.[254] Furthermore, as a major icebreaker would cost considerably more money it would be more financially prudent to invest in technologies and assets to improve the CF's overall capabilities. Those parties in opposition to the AOPS cite that without an "ice-

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[251]Canada. National Defence and the Canadian Forces, "Equipment Procurement. Arctic/Offshore Patrol Ships," National Defence and the Canadian Forces, http://www.forces.gc.ca/site/pri/2/pro-pro/Artic-eng.asp; Internet; accessed 2 March 2011.

[252]Canada. National Defence, "Canada First Defence Strategy" (Guidance Document, Ottawa, 2010), http://www.forces.gc.ca/site/pri/first-premier/June18_0910_CFDS_english_low-res.pdf; Internet; accessed 15 April 2011.

[253]Coates and others, *Arctic Front: Defending Canada in the Far North*, 174.

[254]*Ibid*., 194.

strengthen" fleet of ships, Canada would not have the same capabilities as other countries to operate in their most northern regions. Thus Canada would lose the ability to secure these areas thereby allowing other nations to enter Canada territory unopposed.[255] Others argue that Canada is short sighted and must come up with solutions that are more conducive to protecting the environment and meeting the needs of the indigenous communities within it. Peter Wilson, a former member of the Nunavut Planning Commission, views Canada's plan as a high cost, monitoring exercise. In his view, money would be better spent by investing in equipping the local residents with the assets and knowledge to carry out the government's plan at a significantly lower cost, "using soft power".[256]

Besides the AOPS project, as part of the *Canada First Defence Strategy*, DND has already acquired a number of assets such as the C130J Tactical Transport aircraft and C17 Strategic Airlift aircraft. These aircraft have proven capable of operating in the north and are being used for the replenishment of remote communities and search and rescue operations throughout the Arctic. Furthermore, DND has plans to acquire fixed wing SAR aircraft, a new generation of fighter aircraft and replacement maritime patrol aircraft. These proposed new assets would all be capable of performing various functions such as search and rescue, sovereignty patrols and Arctic surveillance.[257]

In addressing the ways the Canadian Forces must respond to the need to protect the Arctic, one must realize its role in domestic affairs. For any domestic operation

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[255]*Ibid*., 276.

[256]*Ibid*., 177.

[257]Canada. National Defence, *Canada First Defence Strategy*, 12.

anywhere in Canada, with the exception of SAR operations, the CF only supports other departments such as the RCMP and Coast Guard. The unfortunate truth with these two supported agencies is that they possess a limited capability to operate in the north and in many cases need greater assistance from the CF. Therefore, unless the government sees a definitive requirement to either defend itself or intimidate other circumpolar nations that possess a much stronger force than Canada from entering Canadian territory, investment is better suited for the law enforcement agencies that are responsible for domestic operations.[258] The Canadian military then becomes a supporting force that assists the domestic agencies in protecting the Arctic environment. If the government perceives DND's mission to be the same as any other service its provides anywhere in Canada, then the investments the government is proposing in the form of AOPS, new fixed wing SAR aircraft and the creation of a training facility would suffice as it mirrors the capabilities seen in other parts of the country.[259]

The security threats to the North are now expected to come in the form of more commercial traffic than an invasion by an opposing military. In reaction to this situation, the government has put a great deal of emphasis on building up the military capabilities in the Arctic. Canada's military however is relatively small with only a few assets available to operate in the Arctic. Additionally, these vessels only operate in the Arctic on a sporadic basis. The new equipment purchases will be used for some surveillance and interdiction; however, there will be times when Canada may not be aware of the unforecasted activity in the Arctic. For that reason, there have been

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[258]Lackenbauer, *Arctic Front, Arctic Homeland: Re-Evaluating Canada's Past Record and Future Prospects in the Circumpolar North*, 3.

[259]*Ibid*., 4.

proposals to create a "Combined Arctic Command" where Canada and the US will jointly monitor the activities in the North.[260] In many respects this alliance already exists with NORAD, and thus security of Canada's Arctic should be secure. Canada can then use funds that could become available for investment in other environmental, cultural or economical developments for various Arctic locations.[261]

Fisheries and Oceans Canada

An important element for economic development and environmental management in the Arctic is for the Canadian Coast Guard (CG) to be provided with capable equipment. Currently, the CG is expected to perform surveillance, scientific exploration, shipping assistance, support and resupply to communities, and SAR activities in the Arctic but is only located in this region from June to November every year.[262] The need for modern assets, as the CG vessels are aging, cannot be overstated. The government's announcement of its intention to purchase new heavy ice breakers for the Arctic must be done, if Canada is to be able to complete its domestic responsibilities in the far north and enforce Canadian regulations and laws. The new CG assets would provide the necessary capability to meet all the CG's Arctic missions with the added benefit of operating in the Arctic for a longer period during the year.[263] The purchase of

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[260]*Ibid*., 4.

[261]*Ibid*., 6.

[262]Canada. Fisheries and Oceans Canada, "Canadian Coast Guard - Icebreaking," http://www.ccg-gcc.gc.ca/eng/CCG/Icebreaking; Internet; accessed 2 March, 2011.

[263]Coates and others, *Arctic Front: Defending Canada in the Far North*, 195.

a heavy ice breaker, that is also expected to possess a helicopter capability, will also provide Canada with modern ISR functions for meeting the Arctic security mandate directed by the Federal government.

Department of Foreign Affairs and International Trade (DFAIT)

Canada must realize that to be able to control the activities in the Arctic region it needs to work together with all the Arctic nations. Canada has been exposed to a number of issues in the Arctic that are best resolved through diplomatic negotiations. Thus, the Department of Foreign Affairs and International Trade plays a critical part in determining the appropriate resources that should be positioned in the Arctic, through cooperative discussions with Canada's Arctic neighbours and local inhabitants. All Arctic nations are faced with the prospect of there being an abundance of resources, which through their exploitation, will have both positive and negative effects in the region. Nations must work together to monitor activity in the Arctic and ensure that the environment is protected. For Canada to be able to protect the Arctic and regions such as the Northwest passage, they must have the appropriate level of technology to monitor the region and enforce Canadian legislation. As development in the Arctic is extremely expensive, it is in Canada's best interest to work cooperatively and make concessions that will secure Canada's interests.[264]

Climate change, the search for resources and the effects on the environment are the security concerns of the twenty-first century. To meet these challenges, Canada

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[264]Heubert, *Canadian Arctic Security Issues: Transformation in the Post-Cold War Era*, 229.

must ensure its Arctic strategy incorporates these concerns. Developments such as the Mackenzie Valley pipeline will bring economic prosperity to the NWT. As viewed by Ken Coates, this initiative is crucial for the federal and territorial governments, as it will prove the wealth of resources that are available in the Arctic. Furthermore, these developments and the technology of the 21st century will see the establishment of "fly-in, fly-out resource camps, Internet based commerce, and global competition" that will have an unprecedented effect on the northern economy.[265] DFAIT has to be the lead agency to deal with issues, such as US claims to portions of the Beaufort sea, that will impact the exploitation of resources in the contested region.

In addressing the relevant issues in the Arctic, DFAIT commissioned a report in 1998, to explore circumpolar cooperation. This report focused on the impacts to the Arctic region with the end of the Cold War, and came up with a number of key recommendations, with particular emphasis on environmental security.[266] Of prime importance, there was a shift away from the militarization of the Far North, and a greater focus on cleaning up the north, which would include assisting other nations, such as Russia, in cleaning their regions.[267] The issues pertaining to re-establishing sovereign claims to the Arctic islands included the recommendation to acquire surface and sub-surface surveillance systems; however this solution is cost prohibitive for Canada alone. The options of demilitarizing and making the Arctic a nuclear free zone will need both US and Russian cooperation in order for this initiative to materialize.

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[265]Coates and others, *Arctic Front: Defending Canada in the Far North*, 211.

[266]Heubert, *Canadian Arctic Security Issues: Transformation in the Post-Cold War Era*, 224.

[267]*Ibid*., 225.

Finally, in order to afford the clean up of the abandoned military installations in the Canadian Arctic, Canada needs to work with the US.[268] The suggestions to work collectively on Arctic issues must also be addressed with Canadians Arctic inhabitants who have the biggest stake in the outcome of developments for the Arctic. Solutions for sustainable human and socio-economic development can also be explored.[269]

History has provided the opportunity for Arctic organizations such as the ICC and Arctic Council to be created. DFAIT must now leverage these organizations to ensure that the technologies and developments being introduced to the Arctic meet the objectives defined for the Circumpolar North as a whole. Canada must acknowledge its support for these collaborative organizations and invest financially in their programs for advancement and protection of the Arctic.[270]

Environment Canada

Climate change in the Arctic is causing a rapid change in the accessibility and exploitation of the Arctic. With the eventual regression of Arctic ice, sea passages will open up that will be traversed by vessels from all over the world. Environmental considerations will be front page news as the effects of climate change in the Arctic have an impact on the rest of the planet. Therefore, Environment Canada must turn its attention towards injecting scientific research and constructing weather stations to

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[268]*Ibid*., 226.

[269]*Ibid*., 226.

[270]*Ibid*., 223.

monitor the effects of the changing Arctic conditions.[271] The Canadian government is taking steps where a "world-class Arctic research station" will be constructed in the Arctic to meet the research and environmental monitoring needs for Canada and its Arctic neighbours.[272] Further recommendations for preserving the North have environmentalists suggesting the designation of sensitive land and marine areas as parks and protection zones, to avoid extensive traffic and overt pollution.[273]

Indian and Northern Affairs Canada (INAC)

As the face of the federal government for Arctic community and Inuit affairs, INAC must ensure that the people of the Arctic know that the best interests of their region will be respected and protected. The mandate of this department is best described in the INAC website, where it lays out the key responsibilities of the Government of Canada. The three main tenets of INAC are: (1) the creation and preservation of economic and educational programs, and other related services to meet community needs of northern residents; (2) the honouring of conditions relating to the creation of Nunavut, such as self-government and land claim recognition; and (3) working with all levels of government and the Arctic peoples for betterment of the Canada's Arctic region.[274] Hence through these relationships with government, industry,

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[271]Coates and others, *Arctic Front: Defending Canada in the Far North*, 215.

[272]*Ibid*., 181.

[273]*Ibid*., 175.

[274]Canada. Indian and Northern Affairs Canada., "About INAC. Vision," http://www.ainc-inac.gc.ca/ai/index-eng.asp; Internet; accessed 15 March 2011.

Inuit organizations and other Arctic nations, life for the Inuit and other northern residents will need to improve. As part of the future development plans for the north, the Federal government has created the *National First Nations Infrastructure Investment Plan 2010-2011* intended to identify the key infrastructure programs for the Arctic and the funding required to meet these initiatives. An important part of this document is the acknowledgement that conditions must improve in these Arctic settlements, and that a sustainable plan must be in place.[275] This action plan will enhance living conditions with the provision of modern infrastructure, educational facilities, roads, water/sewage systems, power generation/distribution and other essential services that are commonplace in communities throughout southern parts of Canada.[276] The fact that this plan also accounts for lifecycle management of the developments needs to be followed or worsening of conditions, as has been seen in the past, will surface.[277] This is a good start for the continued development of the existing Arctic communities; however the government must go farther with the development of other Arctic regions where resource discoveries will cause the creation of settlements. INAC needs to work with other departments and the commercial investors to bring technological advancements to their regions and ensure the adequate development of communities with the necessary conveniences of power, water, housing, transportation systems and other expected services.

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[275]Canada. Indian and Northern Affairs Canada., *National and First Nations Infrastructure Investment Plan 2010-2011*,[2010]), http://www.ainc-inac.gc.ca/ih/ci/nfn-eng.pdf; Internet; accessed 2 March 2011.

[276]*Ibid*.

[277]*Ibid*.

Canadian Space Agency (CSA)

Canada, through the CSA, has access to a number of space-based satellites that it uses for various monitoring missions. In the Arctic, earth-observation satellites are used to "monitor and protect our environment, manage our resources, and ensure the safety and security of Canadians".[278] Canada owns three major satellites, where one of its many functions is to provide a surveillance capability for Canada and most notably the Arctic region. One of these satellite systems, RADARSAT-1, is a sophisticated system that provides information to assess environmental conditions and the location of potential mineral resources.[279] RADARSAT-2 is the next generation of satellites, "offering powerful technical advancements that will enhance marine surveillance, ice monitoring, disaster management, environmental monitoring, resource management and mapping in Canada and around the world."[280] The third Canadian satellite, SCISAT has the primary purpose of monitoring the depletion of the ozone layer, with a specific focus on the changes that are occurring in the Arctic.[281] Satellite imagery and the ability to capture almost real time activity in any region of the world is being used by Canada. The fact that Canada also has the capability to monitor the air, land and maritime surface regions in the Arctic will assist Canada in its sovereign claims.

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[278]Canada. Canadian Space Agency, "Earth Observation Express," http://www.asc-csa.gc.ca/eng/newsletters/eo_express/2009/0903.asp; Internet; accessed 2 March 2011.

[279]Canada. Canadian Space Agency, "RADARSAT-1," http://www.asc-csa.gc.ca/eng/satellites/radarsat1/default.asp; Internet; accessed 2 March 2011.

[280]Canada. Canadian Space Agency, "RADARSAT-2," http://www.asc-csa.gc.ca/eng/satellites/radarsat2/default.asp; Internet; accessed 2 March 2011.

FUTURE TECHNOLOGY FOR CANADA'S NORTH

When addressing the future challenges to Canadian sovereignty of the Arctic, it is important to specify the nature of current and future threats. A military presence will secure the rights of the territory that they occupy. Nevertheless as international law has recognized the Arctic lands that Canada claims as its own, with the exception of Hans Island, there does not appear to be a great need for this level of security. Canada's greatest threats to its northern-most regions relate to the security of its internal waters, the increased traffic (air/maritime/land), and the commercialization and exploitation of natural resources. These threats pose concerns of an environmental, social, cultural and economic nature vice the attempts at a military invasion by another nation where Canada must respond with its own military action.[282] Furthermore, the positioning of military forces, most of which are migratory to the region, does not adequately address the issue of a permanent and indigenous ability to meet security and sovereignty issues. With this in mind, current developments and technologies must be enhanced and new systems introduced that allow for the northern residents to take claim to their territory. This would include infrastructure and other community improvements, transportation systems that allow for better access to these remote regions, and training for the indigenous population to operate the equipment and other assets so that they can provide a security response for the Arctic. The security assets must allow for surveillance throughout the region, a response capability to meet SAR and any natural

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[281]Canada. Canadian Space Agency, "SCISAT - from Dawn Til Twilight," http://www.asc-csa.gc.ca/eng/satellites/scisat/default.asp; Internet; accessed 2 March 2011.

[282]Heubert, *Canadian Arctic Security Issues: Transformation in the Post-Cold War Era*, 215.

disasters, while also having the ability to interdict any unauthorized vehicles entering Canadian territory. Canada's northern residents must also have a voice for speaking on circumpolar affairs, and given the ability to cooperatively work with all Arctic nations.[283] The fact that issues involving all Arctic nations can be brought forward with input from their indigenous populations will allow for a more unified and committed response to threats in the Arctic.

With concern over the long term health of the Arctic environment and the indigenous population being most affected, emphasis must be placed on promoting security in this region for the benefit of its inhabitants.[284] As the ice continues to recede, analysts such as Scott Bergenson of the United States Coast Guard Academy, see the potential of the Northwest Passage having the same level of maritime traffic as the Suez and Panama Canals, particularly if this northern route is completely clear of ice in the very near future.[285] Although a contentious issue, speculation does exist in some circles that with the advent of futuristic technologies for development in the region and the potential gain from the exploitation of resources, that changes will necessitate a reaction to increased traffic.[286] Therefore it incumbent for the Canadian government to pursue technologies that will aid in the advancement of existing communities, and allow for its northern inhabitants to operate and control these developments in a manner that is beneficial to their environment.

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[283]Griffiths, *Towards a Canadian Arctic Strategy*, 1.

[284]Coates and others, *Arctic Front: Defending Canada in the Far North*, 127.

[285]*Ibid*., 148

[286]Jull, *Canada, Arctic Peoples, and International Affairs*, 2.

Canada has historically neglected any significant development and military defence in the Arctic. Compared to other nations of relative size such as Australia, its ability to protect its remote regions within its territory is inadequate.[287] Contained within *Canada's International Policy Statement - Defence*, the threats associated with protecting Canada's sovereignty have changed. The Arctic is opening up to a number of commercial venues, including increased mining and air/maritime traffic.[288] With climate change having a tremendous impact on the region and populations springing up to exploit the Arctic resources, environmental and social security issues are catching the governments' and Inuit organization's attention. With the expected growth in the region, the government will also need to deal with issues relating to organized crime, people and drug trafficking, and the potential for terrorists to gain entry to the country. There needs to be a whole of government approach to meet the security conditions of the North and not a focus on a military build-up of assets and facilities as the only solution for protection. The Canadian Forces will continue to perform surveillance, SAR and interdiction missions but for the most part they should be supporting Canada's domestic agencies for the control in the region.

As professed in the last chapter, Canada is pursuing avenues to monitor and secure areas within the Arctic with particular attention being paid to activity in the Northwest Passage. The initiatives proposed by the government are heavily dependent on having military personnel deployed to these Arctic waters and surrounding regions.

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[287]Coates and others, *Arctic Front: Defending Canada in the Far North*, 168.

[288]Canada. Department of Foreign Affairs and International Trade, *Canada's International Policy Statement: A Role of Pride and Influence in the World: Defence* (Ottawa: Dept. of Foreign Affairs and International Trade, 2005), 19, http://www.dfait-maeci.gc.ca/cip-pic/ips/ips-en.asp.

However, there are other technologies available that can be more effective in meeting the surveillance needs. As well, other government departments along with the indigenous population can be employed to patrol and enforce Canadian laws in this region. Peter Wilson, who had formerly worked for the Nunavut Planning Commission, suggested the following solution:

> For a tiny fraction of what taxpayers will spend on Mr. Harper's patrol vessels, the federal government could operate a northern-based Arctic aerial monitoring program. Inuit and other northern residents could be trained to fly Canadian-built planes from community bases across the Arctic, from Labrador to the Yukon. These small northern-based teams could provide regular, low cost, sovereignty patrols, general environmental monitoring, ice patrols, land-use permit inspections and enforcement, search and rescue, aerial photography and wildlife surveys.[289]

These local solutions to maintaining sovereignty through community and Coast Guard involvement are the most effective and affordable.

With the increase in mining and other resource development initiatives in the Arctic, a concrete plan is needed. In many camps, minimal investment has gone into infrastructure or other services for community growth and sustainment. The government must establish legislation and agreements with commercial companies planning to exploit the Arctic's resources, to invest more in community development. The government must work with them to provide proper infrastructure, roads, and other essential services that meet acceptable Canadian standards to sustain the community. The government must also sustain the community through improvements such as transportation infrastructure for year round traffic in and out of the communities. Railways, roads, airports and seaports need to be in place that link the northern and Arctic communities so that they can replenish their resources more frequently and

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[289]Coates and others, *Arctic Front: Defending Canada in the Far North*, 177.

ensure the sustainment of the commercial, social and economic affairs. Tax breaks and incentives for other industries to operate in these Northern areas can also bring more prosperity to the region, but must meet the conditions for these companies to be profitable with minimal disruptions due to climatic effects. For this to be possible, technologies present in the community must at least approach the standards in the South. To minimize some of the cost for operating in the North such advancements as wind turbine energy developments can be brought to the region.[290] Finally, if these investments can be made to these communities, it will be an incentive for new immigrants. Improvements to these northern communities may also lure southern Canadians looking for a fresh start in a potentially prosperous environment. If these initiatives are successful, the question of Canadian Northern sovereignty through occupation can be promoted.

Canada is faced with a daunting task of monitoring, surveillance and patrolling in the North. The federal government's initiatives for the development of the region, plus the inclusion of RADSAT-2 will give Canada a personal capability that will aid in meeting its sovereign commitments, but a more cooperative position with other Arctic nations will ultimately meet the challenges facing the region. Combined with the high cost of development and the joint impact to all nations with the potential for increased activity in the Arctic, it makes the most sense for Canada to seek collective technologies to strengthen security for all northern nations.[291] Canada's principal ally and NORAD partner, the US, has many surveillance and patrolling assets that secure its northern

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[290]Byers, *Who Owns the Arctic: Understanding Sovereignty Disputes in the North* , 118.

[291]Griffiths, *Towards a Canadian Arctic Strategy*, 1.

territory. The sharing of technology and resources has been used in the past for the benefit and protection of both countries. Albeit Canadians in general have been sceptical of US assistance, agreements can be made to secure Canada's interests. Nuclear submarines[292] and Airborne Warning and Control System (AWACS) aircraft[293]are significant Arctic surveillance assets that Canada does not possess. However, if Canada had use of these capabilities security in the Arctic would be greatly increased. Furthermore, as these assets are extremely expensive for Canada to independently own and operate, the ideal solution would be to invest in a joint effort with the US and make the necessary arrangements for Canada to be in the control of operations using these assets within its boundaries. Additionally, as there is also a negative feeling within Canada as to the ownership of nuclear submarines, the sharing of this type of underwater surveillance capability may be deemed more acceptable.[294] However, if the Canadian government finds it necessary for Canada to conduct its own underwater monitoring, the installation of an Air-Independent Propulsion (AIP) system for its diesel submarines may meet this requirement. As there have been significant developments in AIP technology, there is the potential for diesel submarines to operate underwater for up to a month compared to only days when operating under battery power.[295] Although this option does not approach the nuclear submarines capabilities

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[292]Carnaghan and Goody, *Canadian Arctic Sovereignty*, 9.

[293]Newman, *True North: Not Strong and Free. Defending the Peaceable Kingdom in the Nuclear Age.*, 69.

[294]Jull, *Canada, Arctic Peoples, and International Affairs*, 7.

[295]Edward C. Whitman, "Air-Independent Propulsion. AIP Technology Creates a New Undersea Threat," *Undersea Warfare,* Fall 2001, 2001, , http://www.navy.mil/navydata/cno/n87/usw/issue_13/contents.html; Internet; accessed 15 April 2011.

for operating in the Arctic, it is a significantly more affordable venture for Canada. Reasonable surface surveillance technologies, in the form of Unmanned Aerial Vehicles (UAV), can also be extremely useful. A study conducted by the US Defense Science Board sees these assets as very capable and inexpensive relative to manned aircraft.[296] As mentioned earlier, the northern population should receive the training for launching and maintaining these vehicles; where significant benefits would be realized is with the ability to monitor and operate the UAVs from anywhere in Canada.

From a patrolling perspective, the US government through its Defence Science Board and National Research Council, is exploring the need to improve its Coast Guard fleet of ice breakers and other technologies.[297] The Canadian government would be wise to work cooperatively on the joint purchase of the necessary assets for both countries. The purchase of the same assets would allow for interoperability between the two nations, similar to its NORAD agreements, and likely reduce the costs to purchase these expensive assets.

The sharing of intelligence and monitoring capabilities can be further extended at an international level with the creation of an "International Satellite Monitoring Agency".[298] A disaster in the Arctic can cause a change reaction worldwide, thus Canada would be wise to join other Arctic nations, and particularly the US, in various

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[296]United States of America Department of Defense. Defense Science Board, *Study on Unmanned Aerial Vehicles and Uninhabited Combat Aerial Vehicles* Office of the Under Secretary of Defense for Acquisition, Technology and Logistics,[2004]), http://www.iwar.org.uk/rma/resources/dsb/uav.pdf; Internet; accessed 2 March 2011.

[297]Polar Research Board, "Polar Icebreaker Roles and the US Future Needs: A Preliminary Assessment," The National Academies Press, http://books.nap.edu/openbook.php?record_id=11525&page=1; Internet; accessed 2 March 2011.

[298]Newman, *True North: Not Strong and Free. Defending the Peaceable Kingdom in the Nuclear Age.*, 172.

research areas to monitor Arctic activity. The Canadian Defence Research and Development agency is pursuing an initiative entitled the "Northern Watch Technology Demonstration Project" where . . .

> . . . the project will provide the Department of National Defence with potential cost effective-effective technological options for improved situational awareness and an ability to respond to contentious events and emergencies in the Arctic on the water, on land and in the air.[299]

With departments within Canada and the US essentially performing the same tasks, it makes the most sense for the sharing of information for the betterment of the environment, development, and economic prosperity for the Arctic.

The technology is available and the desire to improve monitoring, patrolling and development of the Canadian Arctic apparent. An important question for Canada is whether it can go it alone and afford to protect its most northern region exclusively.

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[299]Defence Research and Development Canada, "Northern Watch Technology Demonstration. Background, Project Overview and Trials." http://www.ottawa.drdc-rddc.gc.ca/html/nw_2009-eng.html; Internet; accessed 27 March 2011.

CONCLUSION

Canada is a strong northern nation with a great deal of pride in its unity and prosperity. As a relatively young country in comparison to most of its Arctic neighbours, Canada has struggled with the perception that its federal government has not been proactive in ensuring sovereignty and protection of the Arctic archipelago and its northern waters. From Canada's humble beginnings, it has used the technology of the day to enforce its claims and has been successful in these undertakings. Upon possession of these lands in the late nineteenth century, Canada has dispatched explorers and through RCMP settlements ensured regulatory control of various regions. Into the twentieth century, Canada continued to react to claims made on some of its Arctic lands by having maritime patrols travel throughout the region, where symbolic monuments were erected to profess Canadian ownership. These expeditions proved beneficial with Canada's claims becoming internationally recognized.

The Cold War brought a great deal more attention to the security of the Arctic and Canada reacted with the positioning of radar and surveillance sites, most notably the DEW and Pinetree lines, which emphasized the use of technology to reinforce its sovereignty claims. As the cost of establishing technology in these most northern region is costly, Canada worked with the US to make certain that it could meet security concerns within this area as well as ensure the protection of the entire country.

The Inuit settlements that exist in the Arctic have also played a critical role in maintaining a sovereign presence. The Canadian government has attempted to develop these communities and bring new technology to these people through the construction

of housing, roads and other improvements. However, the federal government has fallen short in maintaining any momentum in ensuring an acceptable level of social, economic and infrastructure development that meets the needs of these indigenous people. In fact, programs and initiatives in the mid to late twentieth century have negatively impacted these communities. Therefore the government must look to revitalizing these regions, and trust in the local governments to play a significant role in changing their current conditions by focusing on the technology that communities need and want.

Looking at other Arctic nations, Canada can learn a great deal, as many of them have faced similar struggles in developing their regions and maintaining a sovereign and secure presence. For these other nations, military developments have played a role in the development of the north, but there have also been non-military activities. Furthermore, with Canada's participation in the Arctic Council, it can work cooperatively with these Arctic nations to meet the current security problems facing the north. With environmental concerns, increased maritime traffic, the increased prospect of economic development and the higher probability of a manmade disaster being potential Arctic security issues, Canada cannot operate alone. The governments, at all levels, must provide greater investment in the Arctic, if this region is to meet the challenges of the twenty-first century.

The Canadian population is once again professing that its most northerly region is in jeopardy with the claims that the country is not doing enough to maintain security and sovereignty. As a reaction to this, the federal government has endorsed a position of building up the Arctic. Their platform of initiatives include a multitude of advancements, with the improvements to surveillance, scientific research and SAR

capabilities, the addition of deep water ports, and the expansion of a military presence. The governments are also embarking on plans for community development and infrastructure revitalization in order to improve the quality of life for its northern residents. The investment will be costly in dollars but is intended to bring this region of Canada up to the nation's standards.[300] In the October 2007 Throne Speech, the attention required in the North was paid particular attention with the government's promise to ". . . bring forward an integrated northern strategy focusing on strengthening Canada's sovereignty, protecting our environment heritage, promoting economic and social development, and improving and devolving governance, so that northerners have greater control over their destinies."[301] The solutions brought forward also emphasized a need for a whole of government approach instead of a strictly military reaction of development. The advent of a 3D approach (diplomacy, defence and development) will allow for the parties concerned with the affairs of the Arctic to work as a team. In particular it will allow for northerners to voice their positions so that a more enduring strategy can be put in place for the Arctic.[302]

Over the last two decades, the government has made announcements to fund initiatives, in the order of several hundred million dollars, that would be used for scientific research, research funding for the International Polar Year, upgrades to the Port of Churchill, and improvements to the Hudson Bay Rail Line.[303] Prime Minister

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[300]Coates and others, *Arctic Front: Defending Canada in the Far North*, 216.

[301]Lackenbauer, *Arctic Front, Arctic Homeland: Re-Evaluating Canada's Past Record and Future Prospects in the Circumpolar North*, 2.

[302]*Ibid*., 3.

[303]Coates and others, *Arctic Front: Defending Canada in the Far North*, 180.

Harper's political message that Canada must "use it or lose it" was clearly being addressed with the move to commence these Arctic and northern improvements.[304] Canada's approach to this circumpolar region will rely on the partnerships of all the affected parties of the Arctic working to resolve the issues of monitoring, law enforcement, bi-lateral and multilateral agreements, and addressing the local needs of the communities.[305]

The Canada government has made a strong stance in promoting a number of initiatives for protecting Canada's far north. Much of these promises include using a myriad of advanced technologies. However, further development is needed to advance population growth and economic security of the north. For this, Canada must learn from its use of technology in the past. With new concerns over Canada's ability to maintain a sovereign position in the Arctic, Canada must invest in globally available technologically advanced systems, equipment and establishments, from both a military and societal prospective, to ensure a sovereign presence in its Arctic lands and sea. Canada therefore does not need to increase its troop presence in the Arctic, but rather invest in the indigenous communities, promote expansion of existing settlements and use technology to the maximum extent possible for socio-economic development, environmental monitoring and protection, and traffic control for the region.

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[304]Lackenbauer, *Arctic Front, Arctic Homeland: Re-Evaluating Canada's Past Record and Future Prospects in the Circumpolar North*, 2.

[305]*Ibid*., 9.

Bibliography

Abele, Frances. "Canadian Contradictions: Forty Years of Northern Political Development." *Arctic* 40, no. 4 (December 1987): 310-320.

Abele, Frances and Thierry Rodon. "Inuit Diplomacy in the Global Era: The Strengths of Multilateral Internationalism." *Canadian Foreign Policy* 13, no. 3 (2007): 45-64.

Airport-Data.com. "Airports in Alaska." http://www.airport-data.com/usa-airports/state/Alaska.html; Internet; accessed 15 April 2011.

Alaska Professional Resource Center. "Alaska Colleges and Universities." http://www.alaska.edu/parapro/akcolleges.htm; Internet; accessed 15 April 2011.

Archer, Clive. "Deterrence and Reassurance in Northern Europe."Aberdeen :Centre for Defence Studies, 1983.

Army.ca Forum. "Polar Epsilon Project." http://forums.army.ca/forums/index.php?topic=69655.0; Internet; accessed 8 March 2011.

Bankes, Nigel D. "Forty Years of Canadian Sovereignty Assertion in the Arctic, 1947-87." *Arctic* 40, no. 4 (December 1987): 292-299.

Bercuson, David. "Continental Defense and Arctic Sovereignty, 1945-50." Chap. 6, In *The Cold War and Defense*, edited by Keith Neilson and Ronald Graham Haycock, 153-170. New York: Praeger, 1990.

Berger, Thomas. *The Arctic: Choices for Peace and Security: Proceedings of a Public Inquiry* West Vancouver, Canada ; Gordon Soules Book Publishers, c1989.,.

———. *Northern Frontier, Northern Homeland: The Report of the Mackenzie Valley Pipeline Inquiry* Ottawa : Minister of Supply and Services Canada, c1977-,.

Berger, Thomas, Alexei Rodionov, Douglas Roche, and 21 Other Speakers. *The Arctic. Choices for Peace and Security. Proceedings of a Public Inquiry*. West Vancouver, Canada: Gordon Soules Book Publishers Ltd, 1989.

Bethune, Brian. "Interview with Shelagh Grant on the Coming Struggle Over the Canadian Arctic and Why we may Soon Lose our Sovereignty in the North." *Maclean's* 123, no. 19 (24 May 2010, 2010): 18-19, http://web.ebscohost.com/ehost/delivery?hid=111&sid=5aeb0710-5afd-4fd6-b7d7-76b462; Internet; accessed 10 March 2011.

Bethune, Brian. "Historian Shelagh Grant on the Coming Struggle Over the Canadian Arctic, and Why we may Soon Lose our Sovereignty in the North." *Maclean's* 123, no. 19 (05/24, 2010): 18-19.

Bitzinger, Richard A. "Denmark, Norway and NATO: Constraints and Challenges."RAND Corporation, 1989.

Blunden, Margaret. "The New Problem of Arctic Stability." *Survival* 51, no. 5 (2009): 121-142.

Butler, Major P. J. *Project Polar Epsilon: Joint Space-Based Wide Area Surveillance and Support Capability*: International Society for Photogrammetry and Remote Sensing, 2010, http://www.isprs.org/publications/related/ISRSE/html/papers/1000.pdf; Internet; accessed 2 March 2011.

Byers, Michael. *Who Owns the Arctic: Understanding Sovereignty Disputes in the North* Douglas & McIntyre,.

Canada. Canadian Space Agency. "Earth Observation Express." http://www.asc-csa.gc.ca/eng/newsletters/eo_express/2009/0903.asp; Internet; accessed 2 March 2011.

———. "RADARSAT-1." http://www.asc-csa.gc.ca/eng/satellites/radarsat1/default.asp; Internet; accessed 2 March 2011.

———. "RADARSAT-2." http://www.asc-csa.gc.ca/eng/satellites/radarsat2/default.asp; Internet; accessed 2 March 2011.

———. "SCISAT - from Dawn Til Twilight." http://www.asc-csa.gc.ca/eng/satellites/scisat/default.asp; Internet; accessed 2 March 2011.

Canada. Department of Foreign Affairs and International Trade. *Canada's International Policy Statement: A Role of Pride and Influence in the World: Defence*. Ottawa: Dept. of Foreign Affairs and International Trade, 2005.

———. "The Northern Dimension of Canada's Foreign Policy." http://www.international.gc.ca/polar-polaire/assets/pdfs/ndcfp-en.pdf; Internet; accessed 14 March 2011.

———. "Statement on Canada's Arctic Foreign Policy. Exercising Sovereignty and Promoting Canada's Northern Strategy Abroad." Policy Document, , http://www.international.gc.ca/polar-polaire/assets/pdfs/CAFP_booklet-PECA_livret-eng.pdf; Internet; accessed 15 March 2011.

Canada. Department of National Defence. CFS Alert. "CFS Alert Website." http://www.jproc.ca/rrp/alert.html; Internet; accessed 8 March 2011.

Canada. Environment Canada. "Climate Change Science and Research." http://www.ec.gc.ca/sc-cs/Default.asp?lang=En&n=56010B41-1; Internet; accessed 2 March 2011.

Canada. Fisheries and Oceans Canada. "Canadian Coast Guard - Icebreaking." http://www.ccg-gcc.gc.ca/eng/CCG/Icebreaking; Internet; accessed 2 March 2011.

———. "Search and Rescue (SAR)." http://www.ccg-gcc.gc.ca/eng/CCG/Search_Rescue; Internet; accessed 2 March 2011.

Canada. Government of Canada. "Government of Canada." http://canada.gc.ca/; Internet; accessed 4 April 2011.

Canada. Indian and Northern Affairs Canada. "About INAC. Vision." http://www.ainc-inac.gc.ca/ai/index-eng.asp; Internet; accessed 15 March 2011.

———. "Community Infrastructure." http://www.ainc-inac.gc.ca/ih/ci/index-eng.asp; Internet; accessed 2 March 2011.

———. . *National and First Nations Infrastructure Investment Plan 2010-2011*, 2010, http://www.ainc-inac.gc.ca/ih/ci/nfn-eng.pdf; Internet; accessed 2 March 2011.

Canada. National Defence. "Canada First Defence Strategy." Guidance Document, Ottawa, http://www.forces.gc.ca/site/pri/first-premier/June18_0910_CFDS_english_low-res.pdf; Internet; accessed 15 April 2011.

Canada. National Defence and the Canadian Forces. "Canada Command Backgrounder. the Canadian Forces in the North." Canada Command. http://www.canadacom.forces.gc.ca/nr-sp/bg-do/09-002a-eng.asp; Internet; accessed 2 March 2011.

———. "Canada First Defence Strategy. Canadian Industry." http://www.forces.gc.ca/site/pri/first-premier/indust-eng.asp; Internet; accessed 2 March 2011.

———. "Canada First Defence Strategy. Six Core Missions." http://www.forces.gc.ca/site/pri/first-premier/missions-eng.asp; Internet; accessed 2 March 2011.

———. "Equipment Procurement. Arctic/Offshore Patrol Ships." National Defence and the Canadian Forces. http://www.forces.gc.ca/site/pri/2/pro-pro/Artic-eng.asp; Internet; accessed 2 March 2011.

Canadian Northern Economic Development Agency. "Infrastructure Programs." http://www.cannor.gc.ca/pr/ip-eng.asp; Internet; accessed 4 April 2011.

Carnaghan, Matthew and Allison Goody. "Canadian Arctic Sovereignty." Research, Library of Parliament, Ottawa, http://www2.parl.gc.ca/content/lop/researchpublications/prb0561-e.htm; Internet; accessed 15 February 2010.

CCCP. "Arctic Research. Advances and Prospects. Part 1." Leningrad, December 1988, 1990.

———. "Arctic Research. Advances and Prospects. Part 2." Leningrad, December 1988, 1990.

Coates, K. S. and W. R. Morrison. *The Alaska Highway in World War II. the U.S. Army Occupation in Canada's Northwest*. Toronto: University of Toronto Press, 1992.

Coates, Ken S., P. Whitney Lackenbauer, W. R. Morrison, and Greg Poelzer. *Arctic Front: Defending Canada in the Far North*. Toronto: T. Allen Publishers, 2008.

Cohen, Maxwell. "The Arctic and the National Interest." *International Journal* 26, no. 1 (1970-71): 52-81.

Defence Research and Development Canada. "Northern Watch Technology Demonstration. Background, Project Overview and Trials." http://www.ottawa.drdc-rddc.gc.ca/html/nw_2009-eng.html; Internet; accessed 27 March 2011.

Defense Science Board. "Defense Science Board History and Website." http://www.acq.osd.mil/dsb/history.htm; Internet; accessed 2 March 2011.

Eyre, Kenneth C. "Forty Years of Military Activity in the Canadian North, 1947-87." *Arctic* 40, no. 4 (December 1987): 292-299.

Fairbanks Alaska. "Gold Rush History." Fairbanks Convention and Vistors Bureau. http://www.explorefairbanks.com/go/explore/gold-rush-history/36; Internet; accessed 15 April 2011.

Government of Canada. "Canada's North." http://canada.gc.ca/aboutcanada-ausujetcanada/enviro/north-nord-eng.html; Internet; accessed 2 March 2011.

Grant, Shelagh D. *Polar Imperative: A History of Arctic Sovereignty in North America* Douglas & McIntyre, 2010.

———. *Sovereignty Or Security?: Government Policy in the Canadian North, 1936-1950* . Vancouver: University of British Columbia Press, 1988.

———. "Weather Stations, Airfields and Research in the High Arctic, 1941-1959: An American Perspective." Victoria, B.C., Trent University, 27 May 1990, 1990.

Griffiths, Franklyn, ed. *Arctic Alternatives. Civility Or Militarism in the Circumpolar North*, edited by Canadian Papers in Peace Studies. Toronto: Science for Peace / Samuel Stevens, 1992.

———. "Towards a Canadian Arctic Strategy." *Canadian International Council* (June 2009, 2009): 9 April 2010, http://www.canadianinternationalcouncil.org/publication/foreignpol/towardsaca-2.

Hays Jr., Otis. *The Alaska-Siberia Connection. the World War II Air Route.* College Station: Texas A&M University Press, 1996.

Heubert, Rob. "Canadian Arctic Maritime Security: Understanding and Responding to the Coming Storm." *Canadian International Council* (July 2008, 2008): April 21, 2010, http://www.canadianinternationalcouncil.org/resource/archive/foreignpol.

———. "Canadian Arctic Security Issues: Transformation in the Post-Cold War Era." *International Journal* 54, no. 2 (1999): 203-229.

———. "The Shipping News Part II: How Canada's Arctic Sovereignty is on Thinning Ice." *International Journal* (Summer 2003): 295-308.

ICC Alaska Staff. "Circumpolar Inuit Leaders Call for Responsible Resource Development." *DRUM - ICC Alaska's Newsletter* 4, no. 1 (1 March 2011, 2011): 1-8, http://www.iccalaska.org/servlet/content/newsletter__drum_.html; Internet; accessed 15 March 2011.

Ikenberry, G. J. "Book Review on Who Owns the Arctic? Understanding Sovereignty Disputes in the North by Michael Byers." *Foreign Affairs* 89, no. 2 (March/April 2010, 2010): 154-155, http://web.ebscohost.com/ehost/delivery?hid=111&sid=7bc53db2-15c7-4c81-a77d2a91dc; Internet; accessed 3 March 2011.

———. "Who Owns the Arctic? Understanding Sovereignty Disputes in the North." *Foreign Affairs* 89, no. 2 (Mar, 2010): 154-155.

Johnston, V. Kenneth. "Canada's Title to the Arctic Island." *Canadian Historical Review* 14, (1933): 24-41.

Jull, Peter. "Canada, Arctic Peoples, and International Affairs." *Behind the Headlines* 45, no. 6 (1988).

Kirkey, Christopher John. "The Northern Frontier. an Analysis of the Changing Strategic Context of the Canadian North with Specific Reference to Areas of Canadian-American Cooperation and Conflict." Master of Arts Political Studies, Queen's University, 1986.

Krummel, Eva. "Circumpolar Voices. the Circumpolar Inuit Health Summit: A Summary." *International Journal of Circumpolar Health* 68, no. 5 (8 September 2009, 2009): 31 March 2011, http://ijch.fi/issues/685/68_5_krummel.pdf; Internet; accessed 31 March 2011.

Lackenbauer, P. Whitney. "Arctic Front, Arctic Homeland: Re-Evaluating Canada's Past Record and Future Prospects in the Circumpolar North." *Foreign Policy for Canada's Tomorrow, Canadian International Council* (July 2008): 1-10.

———. "The Canadian Rangers: A Postmodern Militia that Works." *Canadian Military Journal* 6, no. 4 (Winter 2005-6): 49-60.

Lundberg, Murray. "Rails to Riches. Historic Railways of Alaska and the Yukon Territory." Railsnorth.com. http://www.railsnorth.com/rails_to_riches.html; Internet; accessed 15 April 2011.

Meyeda, Andrew. "Exclusive: Aboriginal Consultations Delay Tender on Key Arctic Radar Chain." Postmedia News.

http://www.canada.com/technology/Somnia/4105238/story.html; Internet; accessed 14 January 2011.

National Aboriginal Health Organization (NAHO). "Aboriginal Health News." http://www.naho.ca/blog/category/aboriginal-health-news/; Internet; accessed 15 March 2011.

Neilson, Keith, Ronald Graham Haycock, Michael Hogan, Michael L. Dockrill, Bruce R. Kuniholm, Peter Dennis, and B. J. C. McKercher. *The Cold War and Defense*, edited by Keith Neilson, Ronald Graham Haycock. New York: Praeger Publishers, 1990.

Newman, Peter C. *True North: Not Strong and Free. Defending the Peaceable Kingdom in the Nuclear Age.* Toronto: McClelland and Stewart Limited, 1983.

Nielson, Jonathan M. *Armed Forces on a Northern Frontier: The Military in Alaska's History, 1867-1987* . New York: Greenwood Press, 1988.

Perras, Galen Roger. *Stepping Stones to Nowhere. the Aleutian Islands, Alaska, and the American Military Strategy, 1867 - 1945*. Annapolis Maryland: Naval Institute Press, 2003.

Polar Research Board. "Polar Icebreaker Roles and the US Future Needs: A Preliminary Assessment." The National Academies Press. http://books.nap.edu/openbook.php?record_id=11525&page=1; Internet; accessed 2 March 2011.

President of Russia. "Climate Doctrine of the Russian Federation.".

President of Russian Federation. "Fundamentals of Public Policy of the Russian Federation in the Arctic Up to 2020 and Beyond.".

Proc, Jerry and 62 other contributors. "CFS Alert." http://www.jproc.ca/rrp/alert.html; Internet; accessed 2 March 2011.

Stamnes, Eli, ed. *Peace Support Operations. Nordic Perspectives*. London and New York: Routledge Taylor and Francis Group, 2008.

The Changing Role of the United States in the Circumpolar North. "Arctic Perspectives : Proceedings : New Perspectives on the Arctic. the Changing Role of the United States in the Circumpolar North. A Conference on U.S. Arctic Policy." University of Alaska Fairbanks, August 12-14, 1992, 1992.

United States of America Department of Defense. Defense Science Board. *Study on Unmanned Aerial Vehicles and Uninhabited Combat Aerial Vehicles*: Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2004, http://www.iwar.org.uk/rma/resources/dsb/uav.pdf; Internet; accessed 2 March 2011.

University of the Arctic. "University of the Arctic Website." http://www.uarctic.org/compactArticles.aspx?m=73; Internet; accessed 2 March 2011.

Whitman, Edward C. Air-Independent Propulsion. AIP Technology Creates a New Undersea Threat. *Undersea Warfare,* Fall 2001, 2001. , http://www.navy.mil/navydata/cno/n87/usw/issue_13/contents.html; Internet; accessed 15 April 2011.

Wikipedia. "Alaska." http://en.wikipedia.org/wiki/Alaska; Internet; accessed 18 March 2011.