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The Northwest Passage: A Prudent Management Strategy

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Abstract

In February 2007, the Intergovernmental Panel on Climate Change released its fourth assessment report on its findings concerning global warming and the impact upon climate change. The report indicates that the impact of climate change within the Arctic has been profound. Arctic temperature has risen at nearly twice the rate as the rest of the world in the past two decades. Global warming will make it possible to access the Northwest Passage more readily as the ice cap continues to recede. How quickly this change will occur and what impact it will have upon northern activity has yet to be determined.

There are two perspectives on the impact of global warming on the Northwest Passage worthy of consideration: alarmist and realist. Both theories recognize that the ice-cap is melting. What is at issue, however, is how quickly the polar ice-cap is receding and what impact this event will have upon the Canadian government's ability to react to increased access to the Northwest Passage.

This paper discusses three principal issues which the Government must address before the Passage becomes a trans-polar shipping route: the legal dispute between Canada and the United States on whether the Passage is an international strait or internal waters of Canada, and the associated impact; what organizational strategy should be adopted by the Government to manage the Northwest Passage; and how to best establish maritime domain awareness and enforcement within the Passage.

Due to the predicted increased activity within the Arctic resulting from global warming, the Government of Canada will require a prudent management strategy for the Northwest Passage sometime in the future.

Global Warming and Its Impact Upon the Arctic and the Northwest Passage

In February 2007, the Intergovernmental Panel on Climate Change released its fourth assessment report on its findings concerning global warming and the impact upon climate change. The report was based on six years of research and built upon previous reports which clearly demonstrated the link between human activity, the use of fossil fuels, and global warming caused by the "greenhouse gas effect." Global warming is not an environmental cycle but rather man-made and cannot be dismissed as a freak aberration. Even if society chooses to reduce emissions substantially, the induced changes to the climate will be slowed down but not stopped.[1]

The impact of climate change within the Arctic has been profound. Arctic temperature has risen at nearly twice the rate as the rest of the world in the past two decades. Satellite imagary of the arctic since 1978 reveals that the average Arctic sea ice extent has shrunk by roughly 3% per decade and will likely disappear almost entirely by the latter part of this century.[2] An obvious question, which is generated by this discussion, is what are the ramifications for the Canadian Arctic?

Global warming will make it possible to access the Northwest Passage more readily as the ice cap continues to recede. How quickly this change will occur and what impact it will have upon northern activity has yet to be determined. Suffice to say that there are two perspectives that need to be explored: alarmist or realist. Rob Huebert, from the University of Calgary, argues that the Arctic will become a viable transpolar

[1] The Arctic Climate Impact Assessment (ACIA) is a plain language synthesis of the key findings of the ACIA. It is designed to make the scientific findings accessible to policymakers and the broader public. IT has involved an international effort by hundreds of scientists over four years and also includes the special knowledge of indigenous people. Susan Joy Hassol, New York, NY 2004, 9.
[2] Climate Change 2007: The Physical Science Basis Intergovernmental Panel on Climate Change (authors various), Geneva Switzerland 5 February 2007, 2-16.

route for international shipping from the Atlantic to Pacific.[3] Conversely, Franklyn Griffiths, from the University of Toronto, argues that as the polar ice cap recedes the arctic current will force multi-year pack ice into the Northwest Passage making it a difficult transit to undertake.[4] Is the Government in a reactive mode or is there time to develop a prudent management strategy for the Arctic? Strategy cannot be discussed in isolation however, and must take into account possible threats which face this region. The threat assessment, coupled with an understanding of the factors which will drive policy development and implementation, will form the basis of the Government's response.

What factors will impede policy development in the Northwest Passage? No discussion of this region can ignore the dispute between Canada and the United States on whether or not the Northwest Passage is an international strait or internal waters of Canada. Canada claims that the Northwest Passage is internal waters and as such Canada has the right to pass unilaterally legislation and regulations to control traffic and activity within the region. The United States and others countries consider the waters to be an international strait, which would hamper the Canadian government's ability to impose unilaterally law to govern shipping within the region.[5] The crux of the matter is should Canada make legal representation to resolve this matter in the International Court or not?

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[3] Dr. Rob Huebert is an Associate Professor in the Department of Political Science and the Associate Director at the Centre for Military and Strategic Studies at the University of Calgary. He has written a series of papers on the impact of global warming on the Arctic. The paper referred to in this footnote is, "The Shipping News Part II: How Canada's Arctic Sovereignty Is Not On This Ice", International Journal, Toronto: Summer 2003 Vol. 58. Iss, 1.

[4] Dr. Franklyn Griffiths is Ignatieff Chair Emeritus of Peace and Conflict Studies at the University of Toronto. Dr Griffiths has also worked for the Secretary of State for External Affairs, been Visiting Professor at Stanford University and Visiting Scholar at the University of Cambridge. He and Dr. Huebert have been engaged in a series of articles in "The Shipping News" discussing the impact of global warming on Canadian sovereignty. "The Shipping News: Canada's Arctic Sovereignty Not On Thin Ice," International Journal Toronto: Spring 2003 Vol 58, Iss 2, 1.

[5] Erik Franckx, *Maritime Claims in the Arctic: Canadian and Russian Perspectives* (Dordrecht: Martinus Nijhoff Publishers, 1993), 65-108.

What are the prudent courses of action which the Government of Canada should explore to address increased access to the Northwest Passage? It might be possible to initiate bilateral policy discussions with the United States through the auspices of existing governmental structures. Additionally, the Government could adopt a collaborative approach to the stewardship of the Northwest Passage. Three distinct processes are involved: regulatory regime, maritime domain awareness, and enforcement. A regulatory regime would attend to environmental standards, traffic management schemes, safety regulations, and ship construction standards for vessels transiting the Northwest Passage. Maritime domain awareness would leverage upon existing and emerging technologies and the fusion of human intelligence to create a common operating picture providing decision makers the ability to respond proactively to emerging situations. Enforcement is the final piece of this puzzle as the Government cannot control the Northwest Passage by "soft power" alone.

This paper discusses the aforementioned factors providing the reader with a sense of the "ground truth" on the impact of global warming on the Passage and the courses of action the Government could develop to address these issues. Discussion of what impact global warming will have upon the Northwest Passage is critical in understanding how much time the Government has to act. *Due to the predicted increasing activity within the Arctic resulting from global warming, the Government of Canada will require a prudent management strategy for the Northwest Passage sometime in the future.*

Impact of Global Warming on the Northwest Passage

In order to comprehend the impact of global warming on the Arctic and in particular the Northwest Passage it is necessary to understand how fast the ice cap is receding. Without a reference to time, it is difficult to understand how fast the Government will need to react to emerging problems within the region. Unfortunately, there is no clear answer to this question. There are two schools of thought that bear examination: alarmist and realist.

The alarmist school of thought focuses on the premise that the rate of decline of the polar ice cap is severe and predicts that, according to the United States National Snow and Ice Data Centre, the Northwest Passage will be open to non-ice strengthened vessels for at least one month each summer within five to ten years.[6] Should this prediction become a reality, the Northwest Passage might become a seasonal transpolar shipping route between the Atlantic and Pacific oceans. Avoiding the Panama Canal or Cape Horn would save between 4,000 to 8,000 nautical miles, significantly reducing costs and shortening transit time.[7] Additionally, large post Panamax ships[8] would not be constrained by the size limitation imposed by the Panama Canal.

The desire to exploit the Northwest Passage as a polar transit route is not new. In 1969, the SS Manhattan, an ice strengthened supertanker, transited the Passage with the

[6] Michael Byres. "Canadian government cannot afford to dither on Arctic sovereignty," *The Time Hills*, *Periodical* 16 Oct 2006 Iss: 859, 20.
[7] Rob Huebert, "The Shipping News Part II: How Canada's Arctic sovereignty is on thinning ice." *International Journa,* Toronto Summer 2003 Vol 58. Iss 3.
[8] A post Panamax ship is a vessel which is too large to fit the Panama Canal lock system.

aid of two American icebreakers.[9] This voyage proved that the transit, although difficult, was now feasible. Given the reduction in multi-year ice caused by global warming, there is now a renewed interest in using the Northwest Passage. The route will only become a transpolar shipping lane, however, if there is a degree of certainty that the passage will be ice-free for a prolonged period of time.

Any encounter with ice has potential for disaster. Who could forget the Titanic and her fatal encounter with an iceberg? It is not prudent to make a high-speed transit in a region where ice could be present. The risk of a marine disaster is just too great. Ice is difficult to detect in rough sea states especially in areas of reduced visibility as the ice tends to blend in with the environment. Only one-tenth of an iceberg's surface is visible above the water; thus, small pieces of seemingly innocuous ice represent a clear danger to shipping. There would need to be a guarantee that the Passage was free from icebergs in order to safely transit. If there was doubt, shipping would be forced to reduce speed when making the transit. Additionally, ship owners would be forced to pay expensive insurance premiums and use expensive ice-strengthened hulls to mitigate risk. The hazard of encountering pack ice would detract from any economic benefits. Any ship can be an icebreaker once; the issue is whether it survives the encounter or not.

On the other hand, Franklyn Griffiths argues that oscillation patterns of the Arctic current and winds are forcing multi-year ice into the Canadian Arctic Archipelago which effectively jams the Northwest Passage. The Passage is becoming clogged with pieces of three to four meter thick multi-year ice making transit of the area hazardous. Multi-year ice, because of its composition, is as hard as concrete and, thus, is a danger to navigation.

[9] Don McRae is a Hyman Soloway Professor and the Faculty of Law at the University of Ottawa and has written numerous articles concerning sovereignty and the Canadian Arctic. "Arctic Sovereignty: Loss by Dereliction," *Northern Perspectives* Vol 22, Number 4, Winter 1994-1995), 4.

Sea-ice conditions are, at best, unpredictable and the likelihood that one season would be representative of the next is questionable. Griffiths does not dispute the fact that sea ice is thinning. He does, however, dispute the impact that thinning sea-ice will have upon the Canadian Arctic Archipelago and its effect on shipping. He asserts that even if the polar ice pack continues to recede as currently predicted, it would take three decades before an eight-week ice-free shipping season would be possible.[10] Given the unpredictable nature of ice flows, there could be no guarantee, however, that the shipping season would be 56 consecutive days. Thus time would make it impracticable for non-ice strengthened ships to use the transit route. If true, as verified by a Cambridge study, the Canadian Arctic for the immediate future is more likely to become a tourist destination vice a shipping route as there is no guarantee of a prolonged period of ice-free access: :

> Not all agree that reduced sea ice, at least in the early part of the 21st century, will necessarily be the boom to shipping that is likely assumed. Recent sea ice changes could, in fact, make the Northwest Passage less predictable for shipping. Studies by the Canadian Ice Services indicate that sea ice conditions in the Canadian Arctic during the past three decades have been characterized by high year-to-year variability: this variability has existed despite the fact that since 1968-1969 the entire region has experienced an overall decrease in sea ice extent during September….. This significant year-to-year variability in sea ice conditions makes planning for regular marine transportation along the Northwest Passage very difficult."[11]

Figure one demonstrates how the recession of the ice edge will impact the Canadian Arctic. Based upon current projections, multi-year ice will continue to clog the passage until at least 2030. Of interest, however, is the reverse impact the recession of the ice pack is having upon the Northern Sea Route (NSR) in Russia.

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[10] Franklyn Griffiths, "Pathetic Fallacy: That Canada's Arctic Sovereignty is on thinning ice", *Canadian Foreign Policy*, Spring 2004 Vol 11, Iss 3, 1-16.
[11] Susan Joy Hassol, Arctic Climate Impact Assessment, 2004, University of Cambridge, United Kingdom, 84.

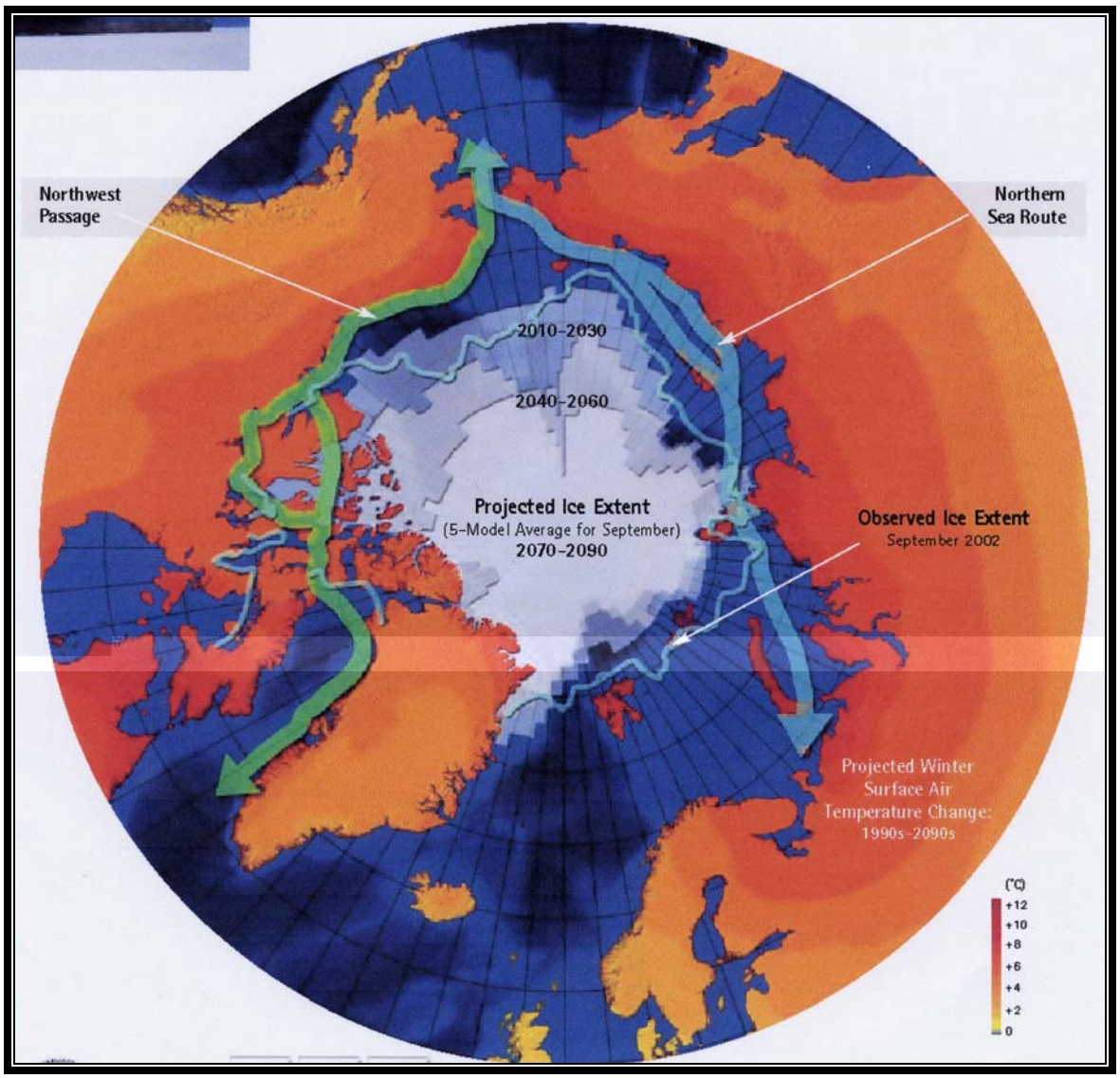

Figure 1. Impact of Global Warming on Ice in the Northwest Passage
Source: Arctic Council, *Impact of a Warming Climate: Arctic Climate Impact Assessment:* Cambridge: Cambridge University, University Press, 2004

The NSR is most likely to be the first ice-free transpolar route open to shipping. In fact, shipping in the NSR is projected to increase from the current 20-30 days per year to 90-100 by 2080. This route is a seasonal route across northern Russia, which is

administered by the Russian Ministry of Transportation and has been in use since 1991.[12]

Based upon the unpredictability of ice conditions within the Passage, the NSR would appear to be the more prudent transpolar navigation route for the foreseeable future. Data from Canadian Ice Services suggests that for the next 20 years, the Passage will continue to be difficult to transit. This hypothesis is further supported by a technical report commissioned by the Department of National Defence (DND) on Northern Security Opportunities: "unless ice-cover in the Canadian North clears more quickly than ice in the North Sea Route, the risks and costs of using the Northwest Passage for commercial shipping will exceed those posed by alternative routes. Not only will this make the Northwest Passage more dangerous to navigate, it will become the last route to become open to navigation."[13] Captain Tony Potts, Commanding Officer of the CCGS Louis St Laurent, during a panel discussion at Dalhousie University on 6 December 2006, echoed these concerns stating that the lack of infrastructure for urgent ship repair coupled with risk caused by multi-year ice pose a serious threat to the Northwest Passage and the Arctic environment.[14]

There appears to be general agreement that navigating in or near an area of ice increases risk from the perspective of liability and due diligence. The level of risk increases with the percentage of ice, weather conditions, hull construction, and

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[12] Impact of Global Warming on Ice in the Northwest Passage, Source: Arctic Council, *Impact of a Warming Climate: Arctic Climate Impact Assessment:* Cambridge: Cambridge University, University Press, 2004.

[13] Artic Maritime Security and Defence: *Canadian Northern Security Opportunities and Challenges, Technical Report TR2005/01* Kyle D. Christensen, February 2005 Ottawa, 16.

[14] On 6 December 2006 Dalhousie University in cooperation with the Company of Masters of Canada ran a four panel discussion on Arctic issues which included: Polar climate change; realities of arctic navigation, commercial shipping and the ice experience and Arctic legal and environmental challenges. The seminar discussion paper which followed the conference included, " Canadian Arctic Issues in an Changing Climate", Dalhousie University and Lloyd's Register, North American 6 Dec 2006 speakers notes pg 7.

experience of the master. Based upon recent studies from Canadian Ice Services, scientific doubt exists as to whether or not the Northwest Passage will be an ice-free transit zone in the near future. There will be no assured transit route during the summer months unless shipping companies use ice strengthened hulls. Non-ice strengthened hulls could be used at the last minute if there was assurance that the Passage was clear but dispatchers would require a five-consecutive-day-ice-free forecast in order to use this route. The forecast would also have to be provided in sufficient time to be of any use.[15] The unpredictable nature of the ice conditions within the Northwest Passage are not always well understood and sometimes misrepresented to the public.

There is no denying that global warming is having an impact upon the arctic and, in particular, the Northwest Passage. The situation; however, may not be as grave as portrayed by some:

> Globe columnist Margaret Wente wrote on this polar aspect of global warming last week on the op-ed page and concluded, quite rightly, that climate change might come down, for Canada, to the Northwest Passage. The problem is that we don't have much time to act. The U.S. Navy anticipates that the Northwest Passage will be open to conventional shipping "for at least one month each summer" by 2011 -- a mere four years away. The U.S. Arctic Research Commission anticipates that the passage will provide "entirely ice-free summer seasons" by 2050.[16]

Such articles sensationalized global warming and place the Government in a reactive position. Rarely is media sensationalism in the best interests of Canadians as the Government has a tendency to react too quickly. Who can forget the Mulroney Government's proposal that Canada purchase twelve nuclear submarines to defend national interests in the Arctic or, more recently, when the Harper Government proposed

[15] Franklyn Griffiths, " The Shipping News: Canada's Arctic sovereignty not on thinning ice" *International Journal* Spring 2003, 3.
[16] Neil Reynolds, "Report on Business", *Globe and Mail* 7 Feb 2007, B2.

the construction of three armed ice breakers to address sovereignty interests in the North. The decision to procure three armed ice breaker is a bit like "situating the estimate" where a solution is proposed in advance of any detailed problem analysis.

In summary, global warming is having a dramatic impact on the recession of the polar ice cap and access to the Northwest Passage. Analysis of the ice flow patterns suggests that the NRS will gradually become more ice-free while, conversely, the Northwest Passage will become clogged with multi-year ice until at least 2030. This interval provides a sense of time and space in which to act. Global warming will eventually increase access to the Passage but not in the immediate future. As a result, the government has time to react prudently to possible threats which will arise from increased access to the North.

Threats to the Northwest Passage

Why is the Northwest Passage important to Canadians and what threat does increased access to this region represent? Pierre Burton has called the Northwest Passage the "Arctic Grail." Since the mid 1500s, explorers have attempted to transit the Arctic in the hopes of finding a transpolar shipping route. From Martin Frobisher in 1576 to John Franklin in 1845, Europeans have been in search of a northern navigation route. Their efforts however, were hampered by ice which choked the straits. It was not until 1906 that the first transit was completed by Ronald Amundsen.[17] Since then, numerous routes have been charted. Figure 2 highlights the principle navigation routes in the Northwest Passage, none of which can be guaranteed to be completely ice free during the limited navigation season.

[17] Micheal Byers, The Time Hills, Periodical 16 Oct 2006 Iss : 859, 20.

Figure 2. Main routes of the Northwest Passage
Source: Donat Pharand, *Northwest Passage: Arctic Straits*

Canadians consider the Arctic as being fundamental to our sovereignty. Consider the national anthem and the phrase "our truth north strong and free." It is not hard to understand the sense of importance the Arctic holds to Canadians. This view, in part, helps explain why media sensationalism over the Northwest Passage has caused such an emotional response with Canadians. Does increased access to the Northwest Passage present a threat to Canada?

According to an intelligence report commissioned by Transport Canada, the threat in this region can be divided into three topics: organized crime, piracy, and terrorism. There is no doubt that organized crime has been on the increase within certain regions of the Arctic. Diamond production in Yellowknife and the Northwest Territories has

stimulated a variety of criminal organizations to become involved in diamond trafficking.[18] It is possible that a certain number of vessels could use the Northwest Passage to help facilitate these illegal activities but it is unlikely that this type of activity will become endemic. Of note, northern communities where criminal activity is present are hundreds of kilometers from the Northwest Passage.[19] Thus, it is highly unlikely that organized crime will use the Northwest Passage as a transit corridor for illicit criminal activity. There are easier ways to smuggle diamonds out of the Arctic.

Another possible threat to the Passage caused by increased activity is piracy. Although possible, piracy is almost exclusively conducted on the high seas adjacent to areas with major civil disorder, armed conflicts or great poverty. There is little evidence to support any finding that would suggest piracy could become a problem in the Arctic.[20] Piracy is motivated by profit; the Arctic is not a lucrative market and the environment is inhospitable. The Passage is difficult to transit and there are insufficient targets to make it worthwhile. When one thinks of piracy, the Ivory Coast comes to mind not the Northwest Passage. The Royal Canadian Mounted Police (RCMP) 2006 threat assessment on organized crime stated that "in the long run, piracy could become a factor requiring action once the Passage is free of ice. If maritime traffic increases, the lure of profit along with the weak presence of law enforcement will potentially be favourable to piracy."[21] In the short to medium term, piracy is not a realistic threat in the Arctic.

What about terrorism? In general, maritime terrorism targets marine infrastructure and shipping and has been primarily restricted to the Middle East and Southeast Asia.

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[18] Royal Canadian Mounted Police: 2006 Canada-US Organized Crime Assessment
[19] Intelligence Report "The impact of the emergence of vessel traffic through the Northwest Passage" Report No 63A 11 Jan 2006, 4.
[20] Ibid.
[21] Ibid.

Given the climate and extreme navigation challenges in the Northwest Passage, it would be very difficult for terrorists to execute an attack. While a terrorist attack could have serious consequences, the low population density and lack of symbolic targets make this highly unlikely.[22] It is possible, albeit unlikely, that terrorists could use the Arctic as a "backdoor" into North America. The lack of transportation infrastructure, however, makes this possibility improbable; there are no direct roads or railway links to the rest of the country. A terrorist would have to use commercial air to access the rest of North America. There are easier ways to access the North American continent.

If neither organized crime, piracy, nor terrorism pose a realistic threat to the Arctic, then what does? Perhaps the greatest threat to the Arctic and in particular the Northwest Passage is the environmental impact of increased activity within this region as the Passage becomes more accessible. As the demand to feed the global economy continues to increase so will the need for accessible energy. It is estimated that the private sector has committed $420 million in gas and oil exploration within the Arctic over the next seven years in an effort to satisfy this demand. With increased access, the region will likely see a corresponding use of bulk super carriers to transport crude oil to southern markets.[23] The risk of an environmental incident caused by a bulk carrier colliding with multi-year ice is real and the potential environmental impact devastating. The environmental devastation caused by the grounding of the Exxon Valdez, when an estimated 30 million gallons of crude oil was spilled into Prince William Sound, on 24 March 1989 is an obvious example. The damage to the environment would be

[22] Ibid.
[23] In 2005 Defense R&D published a Navy sponsored research paper on the impact of global warming on defense in the maritime environment. Arctic Maritime Security and Defence: *Canadian Northern Security Opportunities and Challenges, Technical Report TR2005/01* Kyle D. Christensen, Feb 2005 Ottawa, 18.

catastrophic should such an event occur in the Northwest Passage. The ice and snow cover of the arctic sea has a high capacity to absorb and retain many pollutants. This absorption contributes to the purification of the world ocean areas. At low temperatures, however, destruction of pollutants is very slow; thus any pollution within the region would have a prolonged impact upon the global environmental ecosystem.[24] An oil spill in the Passage would have disastrous consequences. As shipping activity increases in the Arctic, there is a corresponding increase in the risk of an environmental incident. Of interest is that none of the recent media articles discuss the environmental impact that increased access to the Northwest Passage may pose to the Arctic. The focus has, almost exclusively, been on sovereignty of the North. This biased media coverage is in part due to a lack of understanding of what threat global warming represents to the Arctic.

Sovereignty Dispute

No discussion of the Northwest Passage could be complete without discussing the legal disputes within the region and the possible impact on sovereignty. In order to clarify this issue, it is first necessary to understand what the debate is not about. Arctic sovereignty is not about land or maritime boundaries. Canada's claim to the Arctic land is well recognized and not contested. Canada can rightfully claim all the islands of the Arctic Archipelago. The sole exception would be Hans Island situated between Ellesmere Island and Greenland, which is claimed by both Canada and Denmark, and is subject to an ongoing dispute. The outstanding boundary issues between Canada and the United States in the Beaufort Sea, and between Canada and Denmark in the east, are part of the dispute over the Passage. Finally, there is no dispute over Canada's right to the

[24] James M Broadus and Raphael V Vartanov, *The Oceans and Environmental Security*, Island Press, Washington, 1992, .54.

resources of either water column seabed or subsoil within the Canadian Arctic Archipelago. Canada's right to these resources are secure under customary international law as they are within our economic exclusive zone and protected by the United Nations International Law of the Sea out to 200 nautical miles.[25]

Understanding what this dispute is not about helps to demystify the issue and provide some perspective. What is at issue is whether or not the Northwest Passage constitutes internal waters of Canada or an international strait. The dispute centers on the water, specifically who can use it and under what conditions. Unfortunately, as with most legal discussions, the language used can often cause more confusion than clarity. In an effort to restrict this discussion to the most salient points, some key terminology must be discussed before engaging in the legal debate.

An international strait is a body of water that joins two high seas. In the case of the Northwest Passage, should Canada's legal position on internal waters be successfully challenged, it is highly probable that the Passage could be declared an international strait given that it links the Atlantic and Pacific oceans. If the Passage was declared to be an international strait, the United Nations Convention of Law of the Sea 1982 would limit Canada's ability to control shipping exercising their right of innocent passage.[26]

Innocent passage restricts the activities that a foreign ship can undertake when in the territorial sea of another country. Seven restrictions are placed upon shipping

[25] Donald McRae, "Behind the Headlines Arctic Sovereignty? What is at Stake?" *Canadian Institute of International Affairs* Vol 64 Number 1, 7-9.
[26]The United Nations International Convention on Law of the Sea 1982 is a touchstone convention which represents a monument to international cooperation in the treaty-making process. It provides a comprehensive regime for law of the sea within the international community, 11.

exercising innocent passage. More salient ones concern the launch and recovery of aircraft, the firing of weapons and the deviation from a direct transit path.[27]

The Territorial Sea is the water which extends 12 nautical miles out from the baseline of a state. All ships enjoy the right of innocent passage through the territorial sea of a sovereign state. There is no requirement to seek permission to transit this water but activity must be strictly controlled. Ships can neither engage in fishing nor can military ships exercise or conduct flying or weapons firings.[28] Ships are also subject to the coastal state's domestic maritime safety regulations.

The Economic Exclusive Zone (EEZ) is an area extending 200 nautical miles from the baseline of a state. All ships are free to navigate within this region without seeking the permission of the coastal state. Ships have the right of freedom of navigation; however, they neither have the right to explore nor exploit marine resources nor conduct marine scientific research. [29] The EEZ delineates the limit of sovereign control a nation has over its ocean approaches.

Freedom of Navigation is a concept which was solidified during the Carter Administration. The United States considers it their sovereign right to sail their fleet through international straits in order to exercise their freedom of navigation. This right has also been recognized in the United Nations Convention on the Law of the Sea.[30]

International Navigation is a term used to define a region which has clear access to international shipping. International navigation is relevant if the Northwest Passage

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[27] James C.F. Wang has written a comprehensive "dummies guide" to ocean policy and the law. The handbook incorporates salient positions of UNCLOS 1982 and provides a comprehensive understanding of the legal issues concerning the convention. Handbook on Ocean Politics and Law, 82-83.
[28]Donald McRae, "Behind the Headlines," 7.
[29] United Nations Convention on Law of the Sea 1982 Article 38, 12.
[30] Ibid, 12.

should become accessible to international shipping on a routine basis. If this event occurs, Canada's claim that these waters are internal would be at risk; the greater the volume of traffic, the greater the risk this possibility would occur. The challenge for Canada is to ensure that transits are made with our knowledge and consent.

Transit passage is a concept whereby ships can exercise the freedom of navigation and over flight solely for the purposes of continuous and expeditious transit of a strait between one part of the high sea or an EEZ and another part of the high seas or an EEZ.[31]

Canada's claim over the Canadian Arctic Archipelago as internal waters is based upon historic title of the landmass which includes the waters that surround them. Indigenous people have lived in the region since before the creation of Canada and have used the waterways for hunting and fishing. The Inuit have occupied the land and sea, making no distinction between the frozen land and the frozen sea.[32]

The United States and certain members of the European Union consider that the Canadian Arctic Archipelago is a territorial sea not internal waters. As a territorial sea the Passage will be used for international navigation and foreign flagged vessels have the right of transit passage in these waters.[33] Transit passage has been raised in conjunction with innocent passage. The key difference between the two is that transit passage is less restrictive in nature. All ships enjoy the right of transit passage which means that a ship must proceed without delay, avoid the use of force against the sovereignty of the state, and refrain from any activities other than continuous and expeditious transit. [34]

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[31] Ibid.
[32] Ibid, 7.
[33] Franklyn Griffiths, "Pathetic Fallacy: That Canada's Arctic Sovereignty is on thinning ice", *Canadian Foreign Policy* Vol II, 1-16.
[34] United Nations Conventions of Law of the Sea 1982 Article 38, 12.

Canada's claim has been challenged in the past. The first was in 1970 with the voyage of the SS Manhattan, a transit taken without the consent of the Canadian government. The voyage awakened the Canadian government to the possibility that there could be commercial shipping through the Passage, albeit highly unlikely due to the difficulties encountered with ice. The transit from the North Atlantic to the North Pacific also highlighted the problems a coastal state would face should the Passage be deemed an international strait. The transit of the SS Manhattan came at an inopportune time for the Trudeau Government as negotiations for what was to become the United Nations Law of the Sea were just starting to get under way.

In response to the SS Manhattan incident, the Trudeau Government challenged the transit based upon the right of Canada to protect its environment within these fragile waters. Rather than claiming Canada's sovereign right to determine who could use the Northwest Passage, the Government enacted the Arctic Water Pollution Prevention Act (AWPPA), which essentially achieved the same aim. The government-enacted legislation permitted the establishment of regulations to control pollution within the Arctic which, de facto, limited access to the region. This move was clever as it defended Canadian sovereignty within the Passage without causing a debate over whether or not the region should be considered an international strait. The AWPPA eventually led to the creation of article 234 in United Nation Convention of Law of the Sea (UNCLOS) 1982:

> Article 234 Ice Covered Areas - Coastal States have the right to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction and control of marine pollution from vessels in ice-covered areas within the limits of the exclusive economic zone, where particularly severe climatic conditions and the presence of ice covering such areas for most of the year create obstructions or exceptional hazards to navigations, and pollution of the marine environment could cause major harm to or irreversible disturbance of the ecological balance. Such laws and regulations shall have due regard to navigation and the production and

> preservation of the marine environment based on the best available scientific evidence.[35]

Significantly, Article 234 gives Canada the ability to control access to the Northwest Passage and to establish legislation which will reduce the risk of pollution.

It would appear that Article 234 gave Canada control of the Northwest Passage but there were limitations. Unfortunately, Article 234 does not apply to foreign warships or government ships. Thus, the regulations only went part way in establishing Canadian jurisdiction over the Northwest Passage. This limitation was evident in 1985 when President Ronald Reagan challenged the Canadian claim when the US ice breaker Polar Sea entered the Passage without Canadian consent. This action prompted the Government to adopt the straight baseline approach to the Arctic Archipelago. This approach was endorsed by UNCLOS 1982 article 7 "in localities where the coastline is deeply indented and cut into or, if there is a fringe of island along the coast in its immediate vicinity, the method of straight baselines joining appropriate points may be employed in drawing the baseline from which the breadth of the territorial sea is measured."[36] A baseline denotes the end of a state's territorial claim. When straight lines are drawn, the waters which fall within those boundaries are known as internal waters.[37] Canada must grant the right of innocent passage or transit passage within internal waterways to shipping. This approach has been endorsed by the International Court of Justice between the United Kingdom and Norway where Norway had drawn baselines from headlands to headlands in the area known as the "Skjaergaard."[38] With

[35] United Nation Convention Law of the Sea 1982, 84.
[36] UNCLOS 1982 Article 7, 4.
[37] The Law of the Sea 1982, *United Nations Convention on the Law of the Sea,* New York 1983, 4.
[38] Donald McRae, "Behinds the Headlines Arctic Sovereignty? What is at stake?" *Canadian Institute of International Affairs* Vol 64, 10-11.

promulgation of straight baselines, Canada has done all it can to defend legally the claim that the Canadian Arctic Archipelago constitutes internal waters. This contention prevents these waters from becoming an international strait. As internal waters, all vessels using the passage would be subject to conditions established by Canadian law. In other words, Canada can deny access to high risk vessels such as non ice-strengthened super carriers if the risk was considered too great.

The straight baseline position was bolstered in 1988 with the signing of the agreement between the governments of Canada and the United States on Arctic cooperation. The agreement came at a unique moment in history when Canada and the United States enjoyed a particularly close relationship. In recognition of the close and friendly relationship between the two countries, the United States pledged that no US ice breaker would enter the Passage without the consent of the Canadian government.[39] Thus, it would appear that Canada had taken all legal action it could to ensure the Northwest Passage remained under its sovereign control. Was this action sufficient? Probably not because the agreement is not legally binding and is based upon goodwill and mutual consent.

The real impact of global warming within the region has yet to be realized. As access to the Northwest Passage increases so will the likelihood of several challenges to the Canadian position. Three areas of concern could challenge Canada's position: increased unannounced international access to the passage, submerged submarine transits of the Passage, and international challenges to Article 234.

It is difficult to deny that the Northwest Passage does not meet the definition of an international strait because it joins the waters of the Beaufort and Labrador seas. For the

[39] Canada, United States Treaty on Arctic Cooperation 1988.

Passage to be considered an international strait it must also be accessible to international traffic. The critical issue is how much usage is required before this contention could be successfully challenged in the International Court of Justice. In the case of the Straits of Corfu, the international court ruled in 1949 that the channel had a recorded use of 3,000 ships in one year and that this use satisfied the requirement of an international strait.[40] There have been approximately 100 transits of the Passage in the past 100 years and only two, the SS Manhattan and Polar Sea, have been done without Canadian consent. How much traffic is enough to claim that the Northwest Passage as an international strait? There is no real answer to this question. Suffice to say, as access increases, Canada's ability to defend these waters as internal waterways will decrease. The real "wild card" is the impact of submarine traffic. While submarines are known to have transited on the surface, very little is known or acknowledged of their submerged activity.

It is not correct to assume that the Canadian government knows when and where United States and other foreign vessels have transited the Passage submerged. With the collapse of the Soviet Union and the economic implosion of Russia, it is unlikely that the Russian Navy has recently been deploying their submarines into Canadian waters. The same cannot be said of the Americans. Admittedly, the American nuclear submarine fleet has been reduced over the years but the United States Navy (USN) has continued to modernize its fleet. The introduction of three new Sea Wolf Class submarines and the construction of the new Virginia class attack boats demonstrate that the United States has continued interest in deploying submarines as strategic assets. Dr. Huebert suggests that "the American Navy has also revisited its interest in the operation of surface vessels in Arctic waters. Assuming that climate change will allow for surface vessels to operate

[40] Donald McRae, Behind the Headlines *"Arctic Sovereignty? What is at Stake?"* Vol 64 no. 1, 14.

further north, the USN has begun to consider what that will mean in terms of training and equipment for their vessels' operation in the region in the future." [41] It might be possible, however, to prove that the Northwest Passage has been used for international navigation if there has been frequent, non-consensual submerged submarine traffic using the Passage. Should a transit such as this occur, it would be difficult for Canada to defend its position that the Passage is merely internal waters. Sovereignty implies that Canada has set the conditions to know who is in its waters and has established a regime to control access. Such cannot be the case if nuclear submarines enjoy unfettered access without Canada's knowledge. Obviously, uncontrolled access would adversely affect the Government's ability to defend its current position because without controlled submarine access Canada's internal waterway claim could be challenged. Failure to control access to the Passage strengthens the argument that this region is an international strait.[42] What are the consequences to Canada should the Northwest Passage become an international strait?

If the Northwest Passage is not considered internal waters then the waters become territorial seas. Canada would still retain control over shipping under the AWPPA and article 234 of UNCLOS 1982. Commercial shipping would have controlled access but warships and government shipping would enjoy unrestricted use. Canada could still control access of American warships and government vessels through the 1988 Arctic Cooperation Agreement. The situation with submarines, however, would remain a mystery as it does today. This condition is not necessarily bad, as ignorance of this situation implies that the Canadian government does not have to take any further action.

[41] Rob Huebert, "Northern Interest and Canadian Foreign Policy" University Of Calgary, 9.
[42] Franklyn Griffiths, "Strong and Free", Stoddart Publishing, Toronto 1996, 48.

What if the Passage were to become an international strait? Rules governing vessels transiting an international strait are less restrictive than the rules imposed on vessels transiting territorial seas. The provisions under Article 234, however, would still permit the Canadian government to regulate traffic in an ice-covered area. The only situation where Article 234 would not apply would be for government vessels and warships. What if the ice were to recede to such as extent that the provisions of Article 234 either did not apply or were put into question? An ice-free Northwest Passage in which Article 234 did not apply would place Canada potentially in a precarious position where national safety and regulatory standards could not be used and International Maritime Organization (IMO) standards would apply.

The IMO is responsible for the promulgation of shipping guidance in arctic ice-covered areas. The IMO is an international body, which builds consensus amongst shipping owners for the recommended standards for ship design and construction. The guidance for ships operating in ice-covered areas is not compulsory and is aimed at promoting the safety of navigation and the prevention of pollution. The IMO is considered the lowest common standard and is recognized as insufficient to safeguard Canada's North. If Canada loses its dispute over the Northwest Passage to employ Article 234, the Government will be forced to work with the IMO to create a more rigorous standard for shipping operating in ice-covered waters. Any such protocol should include the establishment of uniform vessel construction and crewing standards for ships operating in ice-covered waters. Additionally, issues such as collaborative approaches to research and development, mutual assistance and pollution should also be considered.[43]

The prospects of producing any significantly binding legislation, however, would be slim because of the requirement for international consensus on ship design, construction, and regulations within the IMO.

In review, the legal dispute over the Northwest Passage is really very simple. Is the Passage internal to Canada or an international strait? The United States and European Union do not support Canada's claim and consider the Passage to be an international strait. Notwithstanding, the United States and European Union position this does not mean they are correct or that they would win in the International Court of Justice. The use of the AWPPA and the consent to transit regime provides further support to the Canadian position. Should the Passage become an international strait this status will have no impact upon Canadian sovereignty of the land or use of the resources but it will greatly restrict the degree of control which can be placed upon vessels using this waterway. The real issue is that there is no guarantee who would win a legal battle.

There are a few courses of action which Canada should adopt in order to address the impact of global warming on the Northwest Passage: be prepared to defend the Northwest Passage as internal waters of Canada in the International Court of Justice; encourage an open dialogue with the United States in an effort to resolve the dispute bilaterally by using existing governmental structures to build an agreement; and increase Arctic domain awareness and enforcement in order to further exert Canadian sovereignty in the Arctic.

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[43] James M. Broadus and Raphael V. Varanov in "The Oceans and Environmental Security" provide a very good assessment on the impact of pollution in Arctic waters. They also introduce the concept of environmental security and an overview of several of the most prominent ocean environmental problems. Washington, Island Press 1992, 177-178.

Legal Defence

The Government should not seek a legal challenge but rather be prepared to respond should the need arise. Indeed, it can be argued that the longer Canada is able to maintain its position that the Northwest Passage is internal waters the stronger our case would be in the International Court of Justice. Any opportunity to gain support from other countries which prop up the Canadian claim should also be exploited. There is no guarantee of a positive outcome should Canada have to resort to litigation. Given discussion in the Oceans and Environmental Law Division of the Department of Foreign Affairs, it is clear that the Government is prepared to do battle should the need arise. The Government's position is clear, namely Canada's sovereignty over the Arctic islands is undisputed with the exception of Hans Island. The waters of the Canadian Artic Archipelago, including the Northwest Passage, are internal waters of Canada. Canadian sovereignty over Arctic water is based on historic title and Canada is amenable to consenting to travel by ships through the Passage so long as conditions related to security and the environment are met.[44] The hope is, of course, that the Government will be able to resolve this matter outside the International Court of Justice. As previously stated, while there is no guarantee that a legal challenge will not be made, the longer Canada's position goes unchallenged the greater the possibility of a positive outcome.

[44] Department of Foreign Affairs, Oceans and Environmental Law Division "A *Primer on Arctic Sovereignty*, Ottawa, Canada, Dec 2006.

Bilateral Approach

Since 9/11, there has been a shift in focus to continental security interests within the United States. This new emphasis might permit the two governments to cooperate more closely to resolve the issue of the Northwest Passage without prejudicing either side's legal position. Perhaps Homeland Security concerns within the United States could be better served by a regime that treats the Northwest Passage not as an international strait, but rather as internal Canadian waters subject to Canadian law and law enforcement.[45] Rob Heubert argues the opposite of this position purporting that Canada should not talk directly with the United States on this issue as it will encourage further debate. He cites the United States' desire to exercise freedom of navigation within the international straits as trumping any security benefits achieved through a Canadianization of the Northwest Passage. [46] He arrives at this conclusion citing historical examples of the United States' desire to exercise their right of Freedom of Navigation.

Conversely, Adam Chapnick, academic advisor at the Canadian Forces College in Toronto, argues that "as the Canadian-American relationship improves, rather than seeing Arctic sovereignty as a potentially provocative defense issue, the new Prime Minister (Harper) might continue to commit Canada to enhancing the security of all of its borders and then use any residual goodwill to explore a bilateral agreement on water resource security."[47] This view was verified by Canada's Ambassador to the United States, Michael Wilson, when he confirmed that relations with the United States are on a solid

[45] Franklyn Griffith "Pathetic Fallacy: That Canada's Arctic Sovereignty is on Thinning Ice," *Canadian Foreign Policy,* Spring 2004, 4-5.
[46] Rob Huebert, "The Shipping News Part II," *International Journal,* 5.
[47] Adam Chapnick, "Caught in between traditions: a minority conservative government and Canadian Foreign Policy," *Canadian Forces College*, Toronto, 15-16.

foundation and the environment is receptive to bilateral negotiations.[48] In November 2006, former United States Ambassador to Canada, Paul Cellucci told a foreign affairs conference in Ottawa that the disputed waters in the North should be recognized as sovereign Canadian territory and that it would be easier for Canada to police. Cellucci cited that the decision should be made in the interest of North American security.[49] In contrast, the current United States Ambassador, Mr. Wilkins, argues that the Northwest Passage is an international strait. This debate would never have occurred pre-9/11 and suggests that there may be room to maneuver. The Government of Canada should take this opportunity to commence dialogue and attempt to bridge the gap.

In *The Shipping News 2003*, Griffiths suggests that the geopolitical economy between Canada and the United States changed fundamentally after 11 September 2001, along with the politics toward the Northwest Passage. The United States faces a conundrum: on the one hand Washington would expect support from Canada in the combat of new and emerging threats, while on the other hand an outright United States violation of Canada's Arctic sovereignty claim would needlessly diminish United States security.[50] Both countries have a shared interest in increased cooperation to fight terrorism. Issues which threaten to separate sharply our two countries, such as the assertion that the Northwest Passage is an international strait, would only serve to divide our two nations. More than ever the Northwest Passage needs to be resolved to the mutual satisfaction of both Canada and the United States. According to Griffiths "… no

[48] On 17 April 2007, during a Field Study exercise to the United States students of NSSP 9 were given the opportunity to discuss Canada, US relations with the Ambassador. During the discussion Mr. Wilson indicated Canada's contribution of Afghanistan and the US desire for a secure North America have enhanced bilateral relations.
[49] Murray Brewster, "U.S. Ambassadors at odds over our Northern Sovereignty", Edmonton Journal, 1 Nov 2006.
[50] Franklyn Griffiths, "The Shipping News: Canada's Arctic sovereignty not on thinning ice," .5

state could accept unilaterally to penetrate the security space of North America by contriving the transit of a ship or ships in a way that puts Canada's sovereignty claim on the line. An attack on Canadian interests now necessarily becomes an attack on the American interests."[51] Regardless of the solution, the United States' desire for unfettered access to the Passage for commercial shipping and freedom of navigation must not jeopardize Canada's sovereignty claim.

Elliot-Meisel suggests: "the United States has an historic commitment to freedom of navigation and today, as a global maritime power national security, economic interest, and worldwide commitments to allies necessitate a national strategy built on deterrence, forward defense and alliance solidarity."[52] Thus any bilateral agreement between the two countries would have to recognize the right of freedom of navigation. This state of affairs is not difficult to achieve. Paul Cellucci's comments have created an opportunity for bilateral negotiation where "Ottawa should offer firm commitments of open access for all U.S. vessels, active support for international shipping, and immediate investments in the necessary equipment and personnel to monitor and police the Northwest Passage year-round."[53]

Both Griffiths and Huebert agree that it might be possible to extend the existing Canada-United States Arctic Cooperation Agreement of 1988 to include commercial shipping and US warships without prejudice to international law. This agreement would permit the United States to move hydrocarbons and exercise freedom of navigation.

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[51] Franklyn Griffiths, "Pathetic Fallacy: That Canada's Arctic Sovereignty is on thinning ice." *Canadian Foreign Policy,* .5.
[52] Elizabeth B. Elliot-Meisel, "Still unresolved after fifty years: the Northwest Passage in Canadian-American relations, 1956-1998," The American Review of Canadian Studies (Fall 1999 Vol 29), 412.
[53] Byers, 5.

> Shipping could surge in the Canadian archipelago under Canadian law. The central portion of the Northwest Passage from Bering to Davis would become an open Canadian waterway managed at Canadian expense and with full regard for local environmental and socio-economic effects. … Whatever the solution, the two governments are in a position to handle an American need to make use of the Northwest Passage… What is at stake for Canada is not the statue of the Passage in international law, but the expenses and risks associated primarily with safe and efficient management of any foreign shipping that does appear.[54]

The Canada-United States agreement was significant as it recognized both nations' positions regarding the Northwest Passage without focusing on the legal concerns shrouding the Passage. There appears to be both the will and a mechanism to negotiate an acceptable compromise which could lead to consensus.

Numerous examples demonstrate where Canada and the United States have been able to negotiate agreements even when there have been significant differences of opinion. Hugh Segal, in *A Grand Strategy for a Small Country* suggests:

> During the 1953-1993 period, we negotiated the Autopact, the Columbia River Treaty, the St. Laurence Seaway, NORAD, the Free Trade Agreement, the North American Free Trade Agreement, plus a huge critical mass of agreements that deepened economic integration, and a host of protocols from joint training and operations. That period of time also saw disagreements on Cuba, the Bomarc Missile, Central America, South Africa, and Viet Nam. And yet, the relationship deepened and flourished.[55]

More recently, the Smart Borders initiative and the Integrated Border Enforcement Teams (IBETs) show the Canadian government's willingness to cooperate. The Smart Borders initiative is designed to promote the security and prosperity of North America. IBETs is comprised of members from the RCMP, Canadian Border Service Agency, United States Customs and United States Immigration and is mandated to investigate jointly and interdict organized crime and threats to North American security. Another

[54] Franklyn Griffiths, The Shipping News (Spring 2003), .5.
[55] Hugh Segal, "A Grand Strategy for a Small Country," *Canadian Military Journal 4*, no. 3 (Autumn 2003), 5.

clear example of the lasting desire to work together is the Independent Joint Commission, established by the Boundaries Water Treaty of 1909, mandated to help prevent and resolve disputes relating to the use and quality of boundary waters in the Great Lakes. This independent organization is comprised of Canadian and American co-chairs and four commissioners and has successfully operated for close to a century. Equally as important to the bilateral management of the Great Lakes is the St. Lawrence Seaway Authority founded in 1951. This joint Canadian/American organization sets and regulates the safety and pilotage regime within the Great Lakes. The "Authority" has been able to manage successfully the seamless bilateral transfer of shipping jurisdiction between Canada and the United States.[56] The Seaway Authority agreement is significant as it demonstrates the ability of the two nations to work in an integrated, bilateral fashion to the mutual benefit of both countries.

Perhaps the best example of the ability of the two nations to cooperate in the interest of mutual security is the North American Air Defense Organization (NORAD). Formed on 1 August 1957, NORAD is mandated to provide a joint air defense framework to protect North America against the intercontinental ballistic missile threat. More recently, NORAD has been used in Operation Noble Eagle to defend North American skies against the threat of terrorism. NORAD's mandate post 9/11 has been broadened to include maritime warning; however, a great deal of work needs to be done in the area of coordination and response. An interdepartmental approach to maritime domain awareness is required within Canada because of the numerous federal and provincial

[56] St Lawrence Seaway Authority, Home Page http://www.greatlakes-seaway.com/en/home.html accessed 14 April 2007.

agencies responsible for maritime security. Who exactly should lead this development and implementation process?

Existing Framework and Legislation

The Interdepartmental Marine Security Working Group (IMSWG) was formed post 9/11 in order to provide a framework for cooperation between the various government departments responsible for marine security. The Charter of the IMSWG empowers the group to "act within the scope of the marine security responsibilities and programs of its member departments and agencies, is a form for identifying and coordinating federal government actions in support of Canada's national and international obligations and objectives concerning domestic public security, continental security and anti-terrorism in the maritime realm, as well as its international marine security obligations."[57] The IMSWG is responsible to coordinate Canada's response within the maritime domain including the Arctic. The working group is comprised of twelve departments or agencies with Transport Canada as the Chair. Seven sub-committees report to the IMSWG: Strategic Planning, Domain Awareness, Intelligence, Security and Prosperity Partnership, Legal, Regulatory Affairs, and Safeguarding and Response. Domain Awareness, Intelligence, Legal, and Safeguarding and Response are particularly germane to any discussion concerning the Northwest Passage.

Domain Awareness is responsible for providing advice on the state of maritime domain awareness and developing recommendations to improve the exchange of information. The Intelligence Committee is responsible for providing advice on maritime intelligence matters, supporting the IMSWG for threat assessments on the maritime

[57] Department of Transportation Canada, Interdepartmental Marine Security Working Group - Charter, Ottawa, 24 April 2006.

transportation system, developing better technologies in data collection and the sharing of intelligence. The Legal Committee is mandated to provide legal advice on IMSWG matters and often receives the most attention because of legal impediments to the sharing of information. Finally, Safeguarding and Response coordinates the development of coherent approaches to waterside and on the water security and response. [58]

Canada has worked constructively with the United States through groups such as the IMSWG to secure its southern border, Great Lakes regions, and approaches to the Atlantic and Pacific oceans. Canada has not, however, worked effectively to control its northern frontier because, until recently, it was simply not a priority. Increased access to the Northwest Passage caused by global warming has stimulated new interest within this region. As a matter of principle, Canada should have the ability to monitor who is transiting all its maritime approaches. Given the increased interest in the northern approaches due to the receding ice pack, the time has come for the Government to act. The issue is what action should the Government take?

The Government should adopt a collaborative approach to the stewardship of the Northwest Passage. Three distinct processes are involved: regulatory regime, maritime domain awareness, and response. Such an approach would ensure that environmental and security concerns in the Northwest Passage would be addressed concurrently. What would be an appropriate regulatory regime for this region?

There are two regulatory regimes which apply to the Arctic, one international and the other domestic. As previously mentioned, the IMO sets recommended standards for operating in Arctic ice-covered waters. Canada must continue to work within the international community to ensure that the objectives of the IMO mirror Canadian

[58] Ibid.

domestic objectives. This approach is precautionary. Should the circumstances change both legally and climatically so that the Northwest Passage has to be regulated in accordance with international standards, those standards must satisfy national needs.[59] Domestically, the Government has introduced a series of regulations governing Arctic waters such as the AWPPA of 1972 revised in 1985, the Canada Shipping Act of 2001, the Marine Transportation Security Act of 2004 which includes Northern Regulations (NORDREGS), the Navigable Waters Protection Act of 1985, and the Marine Liability Act revised in 2005.

The touchstone legislation for Arctic pollution prevention is the AWPPA of 1972. The Act is designed to prevent pollution of the Canadian Arctic waters. The Act was created in response to the transit of the SS Manhattan in 1970. This act was also the impetus for creation of UNCLOS Article 234 for ships operating in ice-covered waters. The convention permits the state to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction, and control of marine pollution from vessels in ice-covered waters.[60] The AWPPA includes two key regulations, namely the Arctic Shipping Pollution Prevention Regulations (ASPP) and the Arctic Water Pollution Prevention Regulations (AWPP). The ASPP regulations deal with the details of ship construction requirements and how they relate to navigation zones. The greater the navigation risk the more stringent the ship design requirements. For ice navigation issues, all tankers must have a qualified ice navigator embarked. Pollution prevention certificates dictate that every vessel must have a valid pollution prevention certificate onboard. Within the ASPP regulations a Zone Date System (ZDS) is detailed which

[59] Donald McRae, 21.
[60] UNCLOS 1982, 84.

divides the Canadian Arctic into 16 Safety Control Zones (SCZ) of increasing ice severity. The zones have opening and closing dates based upon the class of ship. The system is based upon 35 years of ice experience and provides mariners with an accurate assessment of prevailing ice conditions. In 1996, a new regulatory system called the Arctic Ice Regime Shipping System (AIRSS) was designed to minimize the risk of pollution in the Arctic due to the damage of vessels caused by ice. Emphasis is placed upon the master to decide whether or not to proceed.[61] The other subset of the AWPPA is the ASPP regulations which deal with the protection and the health and well-being of crew, safety promotion in marine transportation, protection of the marine environment from damage due to navigation and shipping, development of a regulatory scheme, and the promotion of an efficient marine transportation system.[62] The AWPPA is clearly a watershed document in that it permits Canada to control who will use our Arctic waters. Additionally, the Act has sufficient clarity and detail to protect the Arctic environment. The Act, however, falls short in the area of enforcement. As access to the Northwest Passage increases, the Government will require a means of enforcing the AWPPA.

The Canada Shipping Act (CSA) is Canada's principal legislation and is among the oldest pieces of legislation still in effect. The CSA was originally based on the British Merchant Shipping Act of 1854 and contains some 70 regulations, many of which deal with Arctic navigation issues.[63] The CSA takes precedence over the AWPPA and is applied to Canada's economic exclusive zone of 200 nautical miles.

The Navigable Waters Protection Act (NWPA) of 1985 ensures navigation is not impeded. The act pertains to all Canadian waterways including the Arctic. The purpose

[61] Department of Justice Canada, Arctic Waters Pollution Prevention Act A-12 revised 1985.
[62] Ibid.
[63] Department of Justice Canada, Canada Shipping Act 2001, c.26.

of the act is to ensure that navigable waters are not obstructed by man-made obstacles such as drilling rigs or artificial islands.

The Marine Liability Act (MLA) places the responsibility on the owners and operators of vessels sailing within the Arctic. This Act is increasingly being applied to cruise vessels touring the Arctic. Of note, over two thirds of the MLA deals exclusively with liability and compensation for pollution.

The Marine Transportation Security Act (MTSA) of July 2004 was introduced in response to the increased terrorist threat posed to commercial shipping. The MTS act imposes strict vessel security requirements, which mandates ship owners to make significant changes to how they operate. The Act introduces several requirements: company security officers, vessel security officers, security drills and exercises, security plan access control in dockyards and onboard vessels, and security clearances for ships' crew and dockside workers. The MTSA also mandates a 96-hour reporting regime, whereby vessels over 100 gross tons must report entry into Canadian waters in advance of their arrival. This requirement provides for sufficient time to perform a security risk evaluation of the vessel before it enters port. Based upon the assessment, the act empowers Transportation Canada to take appropriate measures to address the threat which includes boarding a vessel or redirecting the vessel to another location. [64] MTSA has also introduced the concept of Marine Security Levels (MARSEC). Three MARSEC levels exist within the Act. Each level is designed to provide the government with a graduated response to an emerging security threat. MARSEC adopts an all-encompassing governmental approach to security and recognizes the need for a lead department to coordinate and control an incident. The Minister of Transportation is

[64] Department of Justice Canada, Marine Transportation Security Act July 2004.

responsible for recommending to government when and what MARSEC level should be imposed. The key to success of the MSTA is time and space; a lack of time will severely limit the Government's ability to respond proactively to an incident.

Supplementing the MSTA is the voluntary traffic report system for the North known as the Vessel Traffic Reporting Arctic Canada Traffic Zone (NORDREG). NORDREG is designed to enhance the safe and efficient movement of marine traffic in Arctic waters. It is a voluntary reporting system, which has enjoyed great success. There has been almost 100 percent compliance with NORDREG. The overall aim of the regulation is to prevent pollution of Arctic waters by establishing a method of screening vessels in Arctic waters to ensure their compliance with the AWPPA.[65] Ultimately, NORDREG helps to strengthen Canada's sovereignty claim of the Canadian Arctic Archipelago. The regulation has worked well because shipping relies upon the information received through NORDREG and the government benefits from commercial participation. Will the honour system continue to function as access to the North increases or will the Passage be viewed as an access point for opportunists? Canada's current lack of ability to detect, localize, track and patrol the Arctic severely hampers absolute enforcement. Knowing who is in Canadian waters is fundamental to the protection of the environment and the security of the North. Sharing this information with the United States also serves to improve the continental security framework. A significant degree of legislation and inter-departmental policy is already in place to address increased access to the Northwest Passage. Two areas where the government lacks sufficient depth, however, are domain awareness and enforcement.

[65] Department of Fisheries and Oceans, Canada, Vessel Traffic Reporting Arctic Canada Traffic Zone (NORDREG).

Domain Awareness

Maritime Domain Awareness (MDA) is the effective understanding of activities within the maritime domain that could impact the security, safety, environmental or economic interests of Canada. Currently, there is only limited MDA within the Arctic most of which comes from sporadic long-range air patrol flights, Canadian Coast Guard and Navy patrols, and human intelligence (HUMINT) from local Rangers. Rangers are indigenous persons serving in the Canadian Forces exclusively in Canada's North. The use of Rangers and sporadic long range air patrol, however, are not sufficient to develop a persistent level of MDA in the Arctic. The Government does not know, with any level of certainty, if vessels are penetrating northern territorial waters without Canadian consent. Devoid of a sense of awareness, the Government's ability to make sound decisions and to coordinate action is non-existent. MDA will become increasingly more important in the Arctic as access to this region increases. Awareness also involves collaboration with Canadian and international intelligence organizations to integrate, develop and disseminate intelligence data related to marine security. Thus, MDA requires the collection, collation, fusion, analysis and dissemination of information to decision makers. Within the maritime domain, this process is applied to ships, people, and cargo within the economic exclusive zone.

In 2002, the IMSWG conducted an initial gap analysis that focused on the Atlantic and Pacific maritime approaches. Subsequently, in 2004, the IMSWG conducted a gap analysis that focused on the ports and Great Lakes. In January 2006, Arctic security was identified as an IMSWG priority.[66] The Arctic gap analysis focused current

[66] Department of Transportation Canada, Marine Security - Transportation Security Action Plan, November 2006.

capabilities within the region with a view to developing a strategic plan for Canadian Arctic security initiatives. The analysis was led by the Department of Transportation with key partners including the Canadian Coast Guard (CCG), DND, Foreign Affairs, RCMP, Canada Border Services Agency (CBSA), and the Department of Justice.[67] No single department has responsibility for domain awareness due inCanaddiar (C83Tf0.0720.0002 T differpar

Canadian government has a "clean canvass" upon which to build a MDA framework for the Arctic region. The use of a MDA matrix to aid decision makers will greatly assist in the maintenance of the aim.

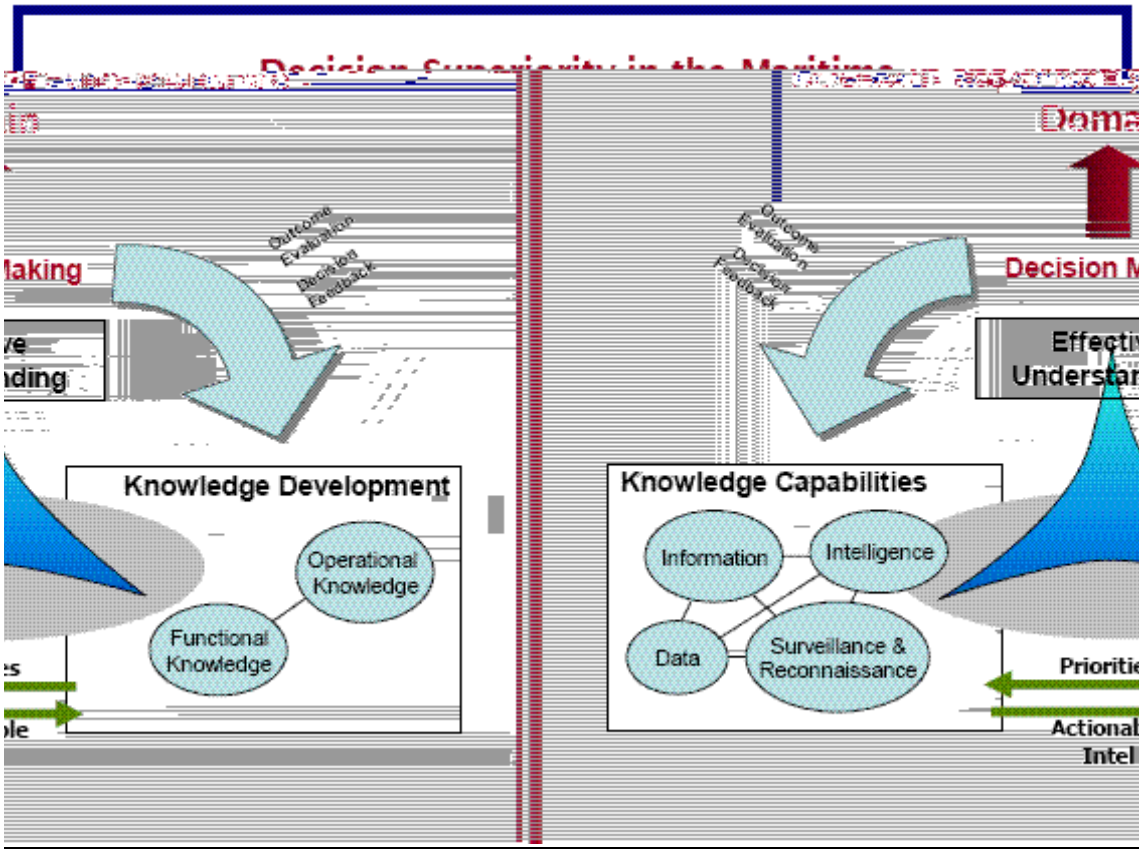

Figure 3. National Plan to Achieve Maritime Domain Awareness Oct 2005
Source: *The United States National Plan for Maritime Domain Awareness,* Washington 2005.

The decision matrix for domain awareness is divided into four areas: knowledge capabilities, knowledge understanding, effective understanding, and decision making. Knowledge capabilities are concerned with understanding maritime domain resulting from the employment of traditional intelligence processes in order to develop actionable intelligence. Knowledge capabilities are sub-divided into four parts: information, intelligence, data, and surveillance. Information represents facts, data or instructions. Intelligence is the product which results from the collection, processing, integration,

analysis, evaluation and interpretation of available information concerning a specific contact of interest. Data is a representation of facts without analysis. Surveillance is the ability to gather information on a vessel of interest.[68] Effective MDA also uses human intelligence (HUMINT) to provide clarity in the integration process. The harvesting of HUMINT within the Canadian North is problematic due to the lack of infrastructure and communication networks. As previously mentioned, the HUMINT function is currently conducted in an ad hoc fashion by the Rangers. Unfortunately, without a reliable and rapid means of passing this information into the MDA network the information cannot be acted upon. This issue will have to be addressed in order for Canada to have an effective northern MDA structure.

No one system, however, can satisfy the knowledge capabilities requirement. The Government should adopt a layered approach to MDA which relies on technology, HUMINT, and data fusion. Particular attention will also need to be on non-cooperative targets. As previously stated, Canada enjoys almost 100 percent compliance with NORDREG. It is possible, however, that as access to the Northwest Passage increases so too will the opportunity for rogue non-cooperative shipping to use the Passage without asking permission. Thus, a solely passive compliant system will be inappropriate for the Arctic region. Technology will be able to assist in this matter. Two examples where technology will have a direct impact upon MDA in the Arctic are the space-based Automatic Identification System (AIS) and the radar satellite II (Polar Epsilon).

[68] The National to Achieve Maritime Domain Awareness, came into effect on October 2005. This document is a touchstone policy for US domain awareness which focuses on effective decision making in the complex maritime environment. Canadian policy makers should consider this document before creating an Arctic maritime domain awareness strategy. 9-11.

AIS is a system which is designed to provide details on a ship to other ships and shore authorities. The system uses a ship-board transponder to transmit explicit details about the vessel, name, last port of call, speed, cargo, destination, position etc. The fitting of AIS became mandatory in 2004 for all ships of 300 gross tonnage and upward engaged in international voyages and passenger ships regardless of their size. AIS is currently limited to a radar horizon range (generally not greater than 50 nautical miles). In 2007, the United States Coast Guard plans to launch the first in a series of space-based AIS satellites which will provide global coverage.[69] The launching of satellite-based AIS is a significant step forward in domain awareness for cooperative vessels. AIS does nothing to address uncooperative vessels; AIS can be disabled or spoofed should a less-than-reputable shipping company not want to have their ship's position known. A passive system, such as AIS, needs to be augmented with an active system such as satellite radar or aerial surveillance.

Polar Epsilon is an all weather day/night sun-synchronous, near polar orbit satellite system scheduled for launch in summer 2007. Polar Epsilon will provide near real time detection of ships (10 minute latent period) of the Arctic and Canada's Atlantic and Pacific oceans out to 1,000 nautical miles. By February 2010, information provided by this system will be transmitted to the two Navy-run Interdepartmental Marine Security Operations Centers in Halifax and Esquimalt. The information will then be compiled, fused and forwarded into the North American domain awareness network. Polar Epsilon is designed to detect, classify, identify and track non-cooperative targets not showing AIS information. In addition to the obvious security enhancements, Polar Epsilon will also be capable of conducting environmental sensing of the ocean (April 2009). Environmental

[69] Space News "Orbcomm Plan to Launch Seven Satellites in 2007, 27 Nov 2006, 4.

sensing will be achieved through a system of colour differentiation which will provide real time environmental situational awareness.[70] Undoubtedly, both space-based AIS and Polar Epsilon will greatly improve Canada's domain awareness and knowledge base within the Arctic.

Knowledge capability alone is not sufficient to ensure effective decision making. Information and intelligence is transformed into actionable information when decision makers are equipped with knowledge and are positioned to take appropriate action. Developing the ability to understand intent of vessel will permit immediate or deliberate action to be taken at the time and place of choosing, requiring a dedicated and sustained effort to develop a dynamic knowledge base.[71] Knowledge development is a combination of functional knowledge and operational knowledge. Functional or expert knowledge is gained through academic study while operational knowledge is based on situational experience. Knowledge is developed through a continuous feedback mechanism.[72] To put this in context, a decision maker must be able to transform information into actionable intelligence. In order for this process to work, MDA relies on the inter-departmental sharing of information. Sharing has proven to be a challenge in Canada. The United States has mandated the sharing of information; Canada has legal obstacles which inhibit such action from occurring. Canada does not have similar legislation to United States Executive Order 13356, "Strengthening and Sharing of Terrorism Information to Protect Americans" and the "Intelligence Reform Act of 2004" which establish legal authorities and policies to allow the processing and sharing of

[70] Department of National Defense Statement of Operational Requirement Version 2.0 Polar Epsilon1, 15 Dec 2002.
[71] Ibid. 10.
[72] Ibid. 10.

information.[73] Departments such as the RCMP, DND, Canadian Security Intelligence Services, Canada Border Service Agency and Transport Canada are restricted in the information they can share amongst their organizations. The Charter of Human Rights, Access to Information, and departmental legislation are likewise three more impediments to sharing of information. The principal concern is over the right of the individual to protect their personal information and to limit who has access to it. For example, knowing the name and address of a person is acceptable; however, when this information is combined with a social insurance number and other pieces of information, the cumulative effective restricts access to this data. The Government should take a measured approach in addressing this issue in the interest of security. In the short term, the Legal Sub-committee of the IMSWG, under the lead of the Department of Justice, should work to amend departmental legislation. The DND has a huge role to play in this process because the National Defence Act (NDA) is perhaps the best vehicle to facilitate this process. Specifically, the NDA permits the department to support other government departments through an Order in Council or a ministerial request to provide public support or aid to law enforcement. While it is easy to understand how this process could be used in a crisis, it remains uncertain how information can be shared on a daily basis in the management of MDA. In the long term, departments will need to refine their mandates to facilitate the sharing of information. The traditional funneling of information does not work in a dynamic environment. Leaders must have actionable intelligence which facilitates a timely response to an incident.

Enforcement

[73] National Plan to Achieve Maritime Domain Awareness, Oct 2005, 14.

Knowing who is in the maritime domain is not enough as there must also be a means of response and enforcement. Prime Minister Harper stated: "you don't defend national sovereignty with flags, cheap election rhetoric, and advertising campaigns. You need forces on the ground, ships in the sea, and proper surveillance. And that will be the Conservative approach."[74] Is building armed "icebreaking" ships, however, the right capability to address Canadian security and environmental concerns in the Arctic? There is no simple answer to this question as it depends on which department has the legal jurisdiction to act. Response to a maritime incident greatly depends on which department is the lead department for any given incident. For example, the RCMP would be designated as the lead department for a law enforcement issue within Canadian territorial waters. It is possible that the RCMP could ask for the assistance of the DND, in a supporting role, to transport a boarding team to the incident. In contrast, if the incident involved pollution, then Environment Canada would be the lead department. The inter-departmental combinations and permutations for lead and supporting roles are almost endless. Unfortunately, there is no "one solution fits all" when dealing with enforcement of Canadian legislation. In the short term, the IMSWG should undertake a capability gap analysis of the Arctic region to determine what capabilities already exist, and what else is required. Based on the findings of the gap analysis, the government should then develop a prudent response to increased activity within the Northwest Passage. Existing capabilities from DND, RCMP, CBSA, Immigration, and the CCG should be used to fill the gap while a long term strategy is developed and implemented. Based upon the current assessment of ice break-up within the Northwest Passage, there is sufficient time to take a measured approach to this problem. Additionally, an inter-departmental coordination

[74] Conservative Party Platform, December 2005.

mechanism will be required to direct efforts within the Arctic to ensure efficiency in the response and enforcement regime. This step would be interim until MDA was fully operational within the region.

Conclusion

Global warming is having a profound impact upon the recession of the polar ice cap. As the ice recedes, multi-year ice is being forced into the Northwest Passage, effectively clogging this region and making it hazardous to access it as a transpolar shipping lane. As a result, the Passage will not be used as a transpolar shipping lane for the immediate future, but rather as a tourist destination. Thus, the Government of Canada has sufficient time to develop and implement a prudent management strategy for the Arctic and, in particular, the Northwest Passage. This strategy must address both environmental concerns and the Canada-United States dispute over this region.

From a legal perspective, the Government must be prepared to defend the claim that these waters are internal to Canada. Notwithstanding, the Government should not seek a legal battle but rather attempt to resolve this issue outside of the International Courts. The only assured outcome from a court battle is that there will be a winner and a loser. There is no guarantee who would win. Any such contest would only serve to strain relations between Canada and the United States. Canada should, therefore, attempt to resolve this issue bilaterally using the IMSWG to facilitate negotiations. The post 9/11 climate is ripe for discussions involving the securing of the northern frontier which addresses the security concerns of the United States and permits Canada to safeguard the environmental stewardship of the Arctic.

Environmentally, a significant amount of legislation already exists and is being voluntarily enforced. Two significant areas of weakness which have not yet been addressed are domain awareness and enforcement. The advent of space-based AIS and Polar Epsilon will greatly enhance domain awareness in the Arctic. There is no regional architecture, however, to coordinate inter-departmental action and no means to enforce the legislation.

Enforcement is the greatest challenge confronting the Arctic due to lack of capability. In response to this deficiency, the IMSWG should conduct a gap analysis on which capabilities are required to enforce legislation within the Northwest Passage and then develop a long term procurement strategy. For the immediate future, existing capabilities within the RCMP, CCG, DND, etc., should be used to fill the void. The Government has time to develop and implement a prudent management strategy for the Northwest Passage. Sufficient time does not mean, however, that Canada should wait for the situation to deteriorate. The prediction regarding ice flow patterns is just that, a prediction. Prudence means taking action in advance not in arrears.

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