In December 2005 while in Winnipeg, Manitoba, during a federal election campaign, Stephen Harper, leader of the Conservative Party, lambasted Prime Minister Paul Martin for his government’s utter failure to defend Canada’s Arctic sovereignty. According to Harper, Canada had no ability to detect foreigners trespassing in its northern waters and could exercise no control over the under-ice environment. “It is the responsibility of the Canadian military to monitor and patrol our land and waters” the soon-to-be Prime Minister claimed, and “under a Conservative government, this will be done. We simply need to know when the ships of the United States, Russia or any other country are in Canadian waters, and we will require them to ask our consent to traverse our waters.”

This desire to monitor foreign activity in the Northwest Passage revolves around the need to demonstrate a level of situational awareness and control consistent with Canada’s claim that the passage constitutes internal waters. However, the history of Canadian under-ice detection has always gone beyond these concerns for sovereignty and political optics. While much of the material on this subject remains classified, Canada’s Sound Surveillance System (SOSUS) effort can be traced back over five decades. Originally developed as a joint continental defence measure, under-ice detection has never been aimed at detecting or deterring the Americans, it was never designed to force transit requests and it would be a mistake to consider its modern incarnation through such a simplistic, nationalistic lens.

Canada began serious work on an under-ice detection capability in the late 1960s. The project was spearheaded by the Defence Research Board and had as its objective the development of a workable listening system to monitor the Northwest Passage for signs of Soviet intrusion. The project was given a boost in 1969 when the voyage of the US merchant tanker SS Manhattan drew the government’s attention to the North and highlighted the need for a greater degree of control. Canadian defence policy soon shifted in anticipation of increased commercial and military activity in the region and, by 1971, a Defence White Paper was calling for an operational acoustic detection system. Yet, despite the politically charged atmosphere surrounding Canadian-American relations at the time of the Manhattan voyage, the motivation for the SOSUS program was defence rather than sovereignty. Indeed, from the beginning the program was undertaken as a joint Canadian-American effort with little evidence of the political sensitivity so commonly expressed in the public forum trickling down to the operational level.

The system called for in the White Paper was, in fact, already under development in 1969. It was a relatively primitive set of acoustic ‘jezebel’ buoys donated by the US Navy and designed to be air-dropped into Arctic waters. In 1969 and again in 1970 test barriers were deployed in...
Viscount Melville Sound and M’Clure Strait to determine the viability of acoustic detection and to see if the technology, as it existed, might function as a temporary system. The test was a failure and 80% of the buoys were soon destroyed by the hostile environment without having gathered much useful data. By 1973 the Defence Research Board Pacific had moved to larger vertical line arrays – which had also been donated by the United States – sitting at the bottom of Barrow Strait. Again these tests produced little usable information and often suffered damage from the shifting ice. Experiments continued into the mid-1970s although records become increasingly classified by the middle of the decade.

While the available documentation is thin and fragmented, it appears as though work continued on a joint detection grid. Declassified American files suggest that Canada may even have possessed a system of some operational capability by the early 1980s. References to this system can be found in the papers of Waldo K. Lyon, the former head of the US Navy’s Arctic Submarine Laboratory, and in the records of American nuclear submarines which had transited the Arctic archipelago. These records demonstrate that the most common task undertaken by American submarines working in the Canadian North (apart from survey work) was the testing of underwater detection systems. This was the case with USS Flying Fish in 1977, USS Silversides in 1981 and USS L. Mendel Rivers in 1983. USS Silversides’ mission, for instance, was described as providing “a realistic target for the Canadian sensor system in the Canadian Archipelago, which is designed to interdict submarine infiltration from across the polar cap.” This capability was mentioned a number of times in other US Navy documents, though always with a frustrating lack of detail.

How this program developed during the 1980s, if indeed it developed at all, remains unknown. By 1985 the Permanent Joint Board on Defence (PJBD) was discussing a joint Arctic defence strategy, with preliminary plans already drafted and under review. Ultimately, the political fallout from the voyage of the US Coast Guard Cutter Polar Sea appears to have derailed that initiative, although PJBD discussions from the time showed a strong preference within the services for continued cooperation.

By the early 1990s the Canadian government once again began to explore its options with plans for the Arctic Subsurface Surveillance System (ARCSSS). The purpose of the system was to detect, classify by nationality, and to determine the direction of travel, of submarines transiting between the Arctic and Atlantic Oceans. Passive detection arrays were to be established in three choke...
points: Robeson Channel, Jones Sound and Barrow Strait. Again, the Department of National Defence (DND) sought American technical and material assistance, although information outlining the full extent of the partnership remains classified. The project was supposed to begin in 1997 but some preliminary testing was being done in 1993 and 1994 when the Acoustic Data Analysis Centre in Halifax dedicated some 180 man-hours over these two years to listening (unsuccessfully) for contacts.

The ARCSSS system was never completed. After the collapse of the Soviet Union, the Canadian government turned its attention to addressing the budget deficit and collecting a peace dividend. During the 1990s government policy also shifted from the confrontational hard security of Prime Minister Brian Mulroney to a focus on international cooperation and human and environmental security concerns. With the Soviet fleet rusting in Murmansk the need for any sort of detection seemed minimal.

A refocus on the Arctic occurred around 2005 with the release by Prime Minister Paul Martin of Canada’s International Policy Statement. This policy statement tackled the issue of how the Canadian Forces (CF) would operate in a rapidly changing world. The Arctic was a major focus and the policy contained commitments to both the RADARSAT Constellation, a new generation of Synthetic Aperture Radar (SAR) satellites, and Polar Epsilon project, which involved the construction of downlink stations in order to increase the efficiency of information flow. When the Conservative Party was elected in 2006 the new government maintained this focus and added an aggressive policy approach epitomized by Stephen Harper’s ‘use it or lose it’ philosophy. During the election campaign the Conservatives made a variety of promises, including the acquisition of armed icebreakers, the creation of a new naval port near Iqaluit, increased plane and drone patrols, the construction of an Arctic training centre at Cambridge Bay, the expansion of the Canadian Rangers, reconstituting the airborne regiment, and (most importantly for the purposes of this article) the development of an Arctic sensor system to monitor the movement of submarines.

In May 2008 the Northern Watch Technology Demonstration Project (NWTDP), a Defence Research and Development Canada (DRDC) project, was launched as part of a major study to help affirm Arctic sovereignty and security. Ostensibly, the project was about ensuring that Canada had the ability to enforce its sovereignty against both friends and enemies. But, as has always been the case, resurrecting the spectre of trespassing American submarines was largely for public consumption.

Officially, the effectiveness of the Northern Watch equipment was measured by how well it could detect a number of different types of maritime activity including: declared shipping and cruise traffic through the Northwest Passage; undeclared maritime traffic; undeclared pleasure craft; ship-source pollution; and willful, unannounced, incursions by foreign military vessels. The first four types of activity are typically of interest to those tasked with surveillance and will be enforced by the RCMP and Canadian Coast Guard. The last activity, according to DRDC, “represents a severe test of Canada’s ability to assert sovereignty in its northern territory.”

Part of the problem with this project is that DRDC seems to be operating under a rather narrow view of sovereignty...
and a poor understanding of security in that it is focusing only on the role played by the military. The first four activities are about the exercise of Canadian sovereignty and, while the CF do have a broad mandate in the North, both the coast guard and the RCMP have long played a much larger role in enforcing sovereignty than the CF. This is largely because the Canadian navy has traditionally lacked the ability to operate effectively in the ice. The last activity is pure traditional security, as an incursion by a foreign military vessel goes far beyond the issue of sovereignty. Therefore, the Northern Watch project is an example of the government trying to sell security as sovereignty, as the military would be the only user of the underwater detection arrays. Sovereignty and security are certainly linked, but any time there is a confrontation between opposing military forces questions of political sovereignty and the status of waters cease to be of much importance.

The notion that the technologies being tested during the NWTDP are meant to exclude every state from operating in Canadian waters is entirely incorrect. While the government’s pronouncements since first elected in 2006 have repeatedly emphasised its unwavering dedication to ‘stand up for Canadian sovereignty,’ the reality is that Northern Watch will almost certainly fall into the pattern of cooperation which has been developing in this area since the 1960s. The information generated from these surveillance systems will not be for purely Canadian consumption and will not be used to limit or exclude allied vessels.

Perhaps the best example of this cooperative framework is the Automatic Dependent Surveillance – Broadcast (ADS-B) system, which is air surveillance technology to track aircraft, incorporated into Northern Watch. Data collected from these sensors will be integrated
into the North American Aerospace Defence Command (NORAD) system and will likely be instrumental in developing a comprehensive picture of aviation in the North. Given that NORAD has added a maritime warning component, the under-ice detection element of Northern Watch is also likely to be incorporated into the continental defence framework – as was the case in previous iterations of these systems.

A closer look at the development of the modern underwater arrays demonstrates a similar cooperative approach to that taken during past decades. The detection array deployed during the project was developed by Omnitech Electronics Inc., and became known as the Northern Watch Array. The array is part of a group known as Rapidly Deployable Systems (RDS), developed by MacDonald Dettwiler & Associates for DRDC as a $7.5 million Technology Demonstration Project. Omnitech licensed the technology from DRDC and proceeded to build several arrays for various purposes. These systems were not built solely for Canadian purposes and often fulfilled obligations to various allies. The Starfish Array, an extremely comprehensive system developed by DRDC with the assistance of Omnitech, is an example of this. Work on the Starfish Array often involved the participation of other states under the auspices of various organizations. One such project involved an exchange of scientists with the US Naval Research Laboratory, work within the Maritime Systems Group Technical Panel 9 (MAR TP-9) Underwater Networking Initiative with the United States, and the NATO Next Generation Autonomous Sensor Joint Research Project.

While the Northern Watch Array may be a separate project from the Starfish system, it was developed by the same section of government and the same private company. It would be naïve to believe that the technical assistance and suggestions provided by allies would not be integrated into Northern Watch. Therefore, despite claims of the project being solely Canadian, the reality is that the technologies involved in the array have been developed in cooperation with allies. This cooperative technical approach was how Canada developed its initial systems from the 1960s into the 1990s. ‘Canadian’ sonar buoys and arrays were
developed with the active assistance of the American military and its defence labs, and often meant borrowing American equipment and technology. When they were tested it was against American submarines during joint exercises. In the event of war it was expected that the system would be fully integrated into the continental defence grid.

Much of the rhetoric surrounding Northern Watch has emphasized the need to strengthen Canada's sovereignty over the region. The irony of this position is of course that the main challenger to Canada’s sovereignty has always been its closest partner on northern defence. For decades Canadian governments have loudly proclaimed their unwavering dedication to defending Arctic sovereignty while quietly working with the United States to ensure that practical defence requirements were always met. In 1970 Prime Minister Pierre Trudeau took radical (and by most definitions of international law, quite illegal) steps to respond to the voyage of Manhattan. Yet, as the Prime Minister emphasized Canada’s control over the Northwest Passage, the Department of National Defence was working behind the scenes with the Americans to develop a workable system of sonar buoys. In 1985 Prime Minister Mulroney was likewise forced by the voyage of Polar Sea to draw straight baselines around the Arctic archipelago, risking an international challenge from Washington and perhaps a trip to the International Court of Justice. Yet, this confrontational attitude would have been largely for public consumption since the two countries had been working closely on Arctic defence issues in the years running up to 1985, even operating American submarines in the Northwest Passage to test Canadian sensors.

In the 21st century, this pattern appears to have changed little. Northern Watch has been dubbed a tool to defend Canadian sovereignty with the implication that it will assist Canada in keeping out foreign intruders – a term which normally refers to American submarines. Yet in practice it will most likely be incorporated into the existing framework of continental defence to meet more practical security objectives. The pattern of under-ice research and system development has remained relatively consistent over the past half century. It has been one of consistent cooperation to meet real security threats, not to defend Canada’s maritime claims against its closest ally. As is the case with every Arctic defence project, it has been tied to the sovereignty issue but, if the past is any guide, the rhetoric is unlikely to match the reality.

Notes
8. See for instance, Allan Lawrence to Prime Minister Brian Mulroney, 13 December 1985, DHHC, 82/196.

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