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## Toward a Post-Arctic World

by Barry S. Zellen

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### Introduction

The period between the Cold War's end, and the current period of rapid climate change, was a quiet period in the field of Arctic security studies—inter-state tensions across the Arctic basin dramatically shrunk after the Soviet collapse, and concerns over external Arctic security shifted to the back burner during most of the 90s. During this period, another dimension of Arctic security accelerated to the front burner—the internal dimension—as a tremendous transformation came to fruition, integrating the largely indigenous Arctic into the constitutional and economic framework of the modern state.

Associated with this transformation was the increased recognition of environmental security as a pillar of national security, and the importance of inter-ethnic harmony to internal stability, two issues that had festered beneath the surface in the former Soviet Union and contributed to the rapid implosion of that multi-ethnic state, and which still present a great challenge to Russia. In North America, these two trends in the diversification of our definition of security were fostered by several events, including the 1989 Exxon Valdez oil spill; the 1990 armed stand-off at Oka; and the intensifying ethnic conflict and consequent state collapse in the former Yugoslavia. In the Arctic, the environmental legacy of the Cold War also contributed to the “greening” of northern security, as toxins associated with the DEW Line and the mothballed Soviet fleet raised deep concerns, and a variety of air- and sea-borne pollutants originating thousands of miles to the south entered the Arctic food chain, concentrating in the fatty tissues of marine mammals, and directly affecting the health of the Inuit.

### The Land Claims Journey

In North America, tremendous structural innovations were made to the Arctic's political economy, stretching from the Bering Sea to Baffin Bay, with the completion of a generation-long process of negotiating comprehensive Aboriginal land claims treaties to resolve issues of land ownership, and to foster an enduring partnership between the indigenous peoples and the state through a variety of new institutions, including Aboriginal regional and community corporations, investment corporations, land administration agencies, a variety of tribe-state co-management boards, plus a complex patchwork of local, regional and territorial governments created to give a voice to the Native interest.

The general trend across the North American Arctic has been to first address the land question, and to negotiate and implement land claims accords to bring clarity of title, serving two distinct and important goals: to protect the local tribal interest and provide a resource base for economic development as well as a land base to protect subsistence harvesting of wildlife; and to enable

economic development projects such as oil and gas pipelines to proceed. Once land claims were settled across the region, the next step in the process of northern development has been, generally speaking, the pursuit of new systems of Aboriginal self-governance, taking various forms and employing various structures, whether to establish municipal or borough governments under existing constitutional law; to create tribal councils governed by federal Indian law; or to negotiate new systems—the most ambitious and expansive to date being the still young territory of Nunavut, with a comprehensive land claim settlement linked to the subsequent formation of a new territorial government, creating a complex but very powerful system of self-governance applying a public model to a predominantly indigenous region where 85% of the population is Inuit.

After Nunavut, the evolution toward more properly indigenous self-governing structures has continued, as reflected in the Labrador Inuit Land Claim of 2005 with the very first truly indigenous self-governing structure, articulated in detail in the 2002 Labrador Inuit Constitution. More recently, in November 2008, the far-flung Danish province of Greenland held a referendum on evolving beyond their “home rule” system of autonomy toward more formal sovereignty and independence, which passed decisively.

Regardless of the jurisdiction, whether Alaska or Arctic Canada, indigenous peoples have shown tremendous ingenuity in their effort to build new systems for self-governance, creatively adapting existing institutions or creating new ones when possible, lobbying for and negotiating to further advance the powers of Aboriginal self-governance.

## Breaking the Ice

The Arctic Security Project at the Center for Contemporary Conflict has been examining this continuing social and political transformation of the North, looking at the way history has unfolded across the Arctic, and at how ideas and institutions for reconciling the interests of indigenous northerners and the modern state have evolved, along a west-to-east arc, becoming stronger with each new iteration and reversing many of the negative consequences of the colonial experience, and transforming the domestic balance of power to lean heavily in favor of tribal interests, particularly on social and economic matters, and to a limited degree on security matters. This increasing shift in power has increased the capacity for the indigenous peoples of the North to confront the many social and economic challenges that remain in their communities, providing the tools necessary to face the emergent challenges and opportunities associated with climate change, and a potential Arctic thaw.

Social conditions in Alaska and the Canadian Arctic have been described as a “Fourth World,” with Third World conditions exacerbated by climate, isolation, limited infrastructure including a near absence of roads and rail networks—making seasonal ice roads and summer sea lifts an economic lifeline. Communities are generally quite small, ranging from a few dozen people to several hundred with the larger centers being home to just a few thousand people; their populations are predominantly indigenous, with subsistence hunting, fishing and trapping still essential to their nutritional and cultural survival.

Unemployment remains high, local educational opportunities vary greatly, housing shortages persist, energy costs are high, but with the movement from land claim settlement to the achievement of self-governance, there is hope and opportunity to address and resolve these challenges—though much uncertainty remains, particularly with new challenges from climate change entering the mix. Economic opportunities remain limited, with natural resource development presenting one of the more enduring opportunities, from last century’s Klondike gold rush to the Oil boom of the 1970s, to the Diamond rush of the 1990s, to the new race to demarcate the Arctic’s offshore boundaries. Land claims have helped to ensure that when economic development does take place, local concerns and tribal interests are not overlooked,

with indigenous leaders becoming governing partners in assessing environmental risk, mitigating impacts to traditional subsistence, and ensuring economic participation through jobs, training, and resource royalties.

The settlement of land claims and emergence of new structures of self-government have increased the role of indigenous peoples in the decisions made about the Arctic and its future. One dramatic illustration: in the 1970s, when the Mackenzie Valley Pipeline Inquiry was held by Justice Berger, the struggle was primarily between corporate interests and tribal interests, with the latter excluded from the decision-making of the former. During the current Mackenzie Gas Project, the Aboriginal Pipeline Group sits with the oil companies as an Aboriginally-owned equity partner; and the Joint Review Panel examining the environmental and social impacts of the proposed pipeline is empowered by the settled regional land claims, providing an indigenous perspective to both sides.

## **ANCSA: Starting the Process**

When the Alaska Native Claims Settlement Act of 1971 (or ANCSA) was enacted, it aimed to quickly bring Alaska Natives into the modern economy, and at the same time to clarify the limits of Aboriginal title, making it possible to fully develop the state's natural resources and in particular to build the trans-Alaska pipeline. Because its objectives were largely economic, its corporate model became its defining and most transformative characteristic.

ANCSA formally extinguished Aboriginal rights, title, and claims to traditional lands in the state, while formally transferring fee-simple title to 44 million acres—or some 12% of the state's land base—to Alaska Natives, with \$962.5 million in compensation for the lands ceded to the state, \$500 million of which was to be derived from future oil royalties. It also created 12 regional Native corporations (and later a 13th for non-resident Alaska Natives), and over 200 village corporations to manage these lands and financial resources.

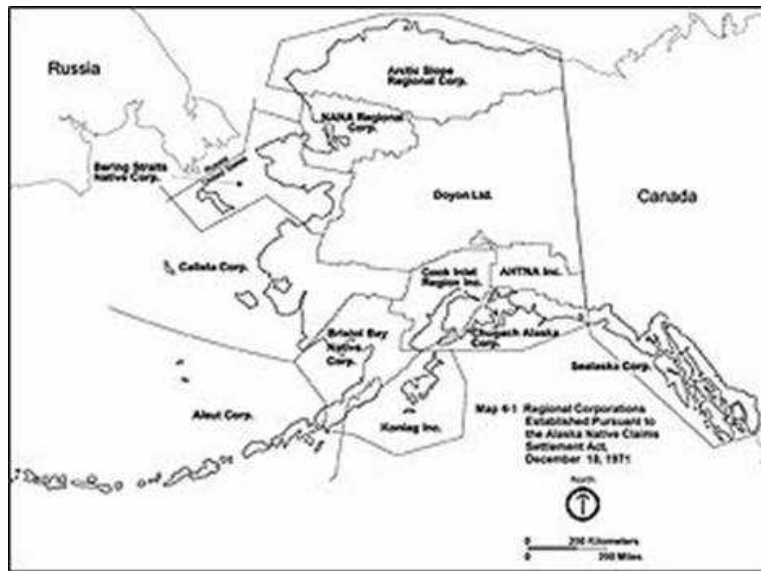
These new corporate structures introduced a brand new language and culture, as well as a new system of managing lands and resources that seemed at variance with the traditional cultures of the region and their traditional subsistence economy. The early years of ANCSA were famously described by Justice Thomas Berger as dragging Alaska Natives “kicking and screaming” into the 20th century.

In addition to the “corporatization” of village Alaska, ANCSA also had some structural flaws that almost proved fatal to the land claims experience, including a 20-year moratorium in transferring shares in Native corporations to non-Natives, which many feared would inevitably result in the dilution of Native ownership, known as the “1991 Time Bomb.” While critics of the land claims process are correct to point out these original structural flaws and the assimilating pressures introduced by new corporate structures, the land claims model has nonetheless proved resilient and adaptive, as Native corporations matured and their boards, managers and shareholders found ways to balance traditional and modern values.

## **The IFA: Evolving the Model**

Across the border, the Inuvialuit of the Western Canadian Arctic had a front row seat to ANCSA, and were impressed by the tangible economic benefits of the corporate structures created, as well as sizeable cash compensation and land quantum transferred to Alaska Natives. But they also noted continuing threat to indigenous culture, and the lack of adequate protections of subsistence rights, traditional culture, and environmental protection, and were determined to do better.

**Figure 1: ANCSA and Alaska's New Corporate Geography**



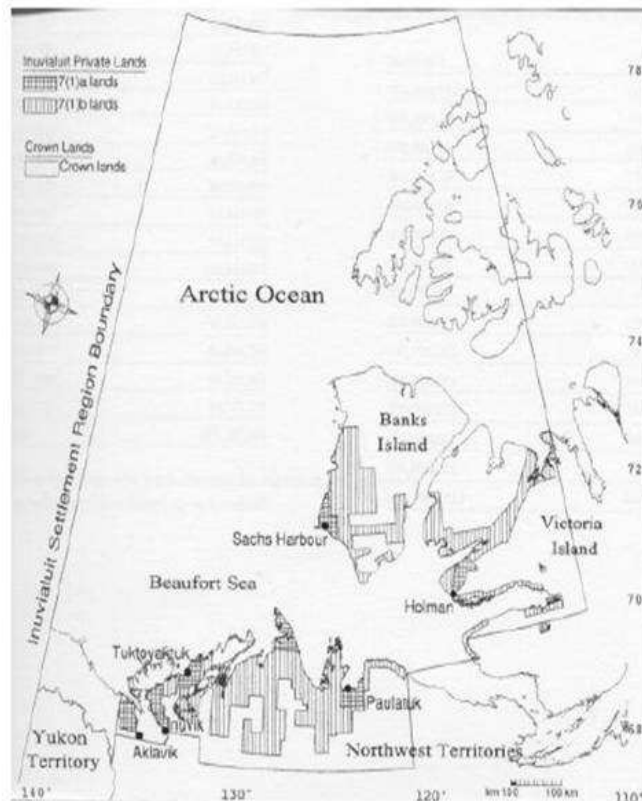
So when land claims crossed from Alaska into the Northwest Territories in 1984 with the passage of the Inuvialuit Final Agreement (IFA), the land claims model became significantly enhanced—in addition to creating new Native corporations, the IFA also made an equal institutional commitment to the preservation of Native culture and traditions, to preserve the land and the wildlife, and to empower not just new corporate interests but also traditional cultural interests as well, by creating new institutions of co-management. The Inuvialuit successfully modified the land claims concept, so that its structure included a natural institutional balancing—not unlike our own balance of powers concept.

Their land claim entitled the Inuvialuit to 35,000 square miles of land; co-management of land and water use, wildlife, and environmental assessment; wildlife harvesting rights; financial compensation of \$45 million in 1978 dollars, inflation-adjusted to \$162 million, for lands ceded to Canada; and a share of government royalties for oil, gas, and mineral development on federal land, and a commitment to meaningful economic participation.

But one issue that was not yet on the table in the late 1970s and early 1980s when the Inuvialuit chose to pursue their own regional land claim—and thereby gain some control over the intense oil boom in their homeland—was the establishment of new institutions of Aboriginal self-government, something that the Inuit of the central and eastern Arctic—the future Nunavut territory—decided to wait for.

**Figure 2: The Inuvialuit Land Claims: Transforming the Model**

## Map of the Inuvialuit Settlement Region



## Nunavut : Augmenting Land Claims with Political Power

In the years separating the signing of the Inuvialuit land claim in 1984, and the signing of the Nunavut land claim in 1993, much progress was made on the political question, and an increasing respect for Aboriginal rights in Ottawa, enabling the establishment of a new concept: reshaping political boundaries to correspond to a land-claims settlement area, and establishing a new government to administer this region.

In 1993, with their signing of their historic accord, the Inuit of Nunavut were awarded \$1.148 billion to be distributed over 14 years, and an additional \$13 million Training Trust Fund to prepare for hundreds of new government jobs, plus title to 135,000 square miles of land including 13,600 with subsurface rights, on top of various co-management boards and clearly defined rights protecting subsistence and ensuring royalty sharing from resource development activities.

But the most striking innovation of the Nunavut claim was the way it was linked to the division of the Northwest Territories and the formation of a brand new territory, resulting in the 1999 birth of Nunavut. Nunavut is now up and running, gaining valuable experience in self-governance. While facing many social and economic challenges—and some unexpected friction with Ottawa over implementation—there is still much reason for hope for the future.

Nunavut has a population of around 30,000 in 28 communities spread out across over 770,000 square miles, or one fifth of Canada's land mass, including the High Arctic islands and the central-arctic coastal mainland. While its population is tiny, its jurisdiction is vast and its resource base potentially tremendous. And since its population is predominantly Inuit, a public government

can govern in an indigenous style, as the principles of the Nunavut land claim and the governing power of the new territorial government mutually reinforce one another.

**Figure 3: Nunavut is Born: Augmenting Land Claims with Political Power**



In Alaska, many decades earlier, the Inupiat of the North Slope worked within the structural limits of the Alaska State Constitution to create their own municipal borough government, similarly leveraging existing constitutional law to create a public government that could nonetheless govern in a uniquely indigenous fashion, funded by the continuous stream of property taxes levied on the Alaska Pipeline, whose northern terminus was within its jurisdiction. But Nunavut went even further, standing up not just a municipal-level structure; its formation, by secession from the Northwest Territories, created a new and uniquely powerful territorial government. (The Inupiat have, in the years since creating their own borough government, considered their own secession from the state of Alaska—a notion that alarmed the Governor's office in the early 1990s when fears of "Balkanization" gripped much of the world, and Juneau became concerned that if the Inupiat acted upon their threat to secede from the state, they could take most of the state's revenues along with them.)

### **After Nunavut: Nunatsiavut and the Re-Emergence of Inuit Governance**

Half a decade later, the final Inuit land claim along the North American Arctic and Subarctic littoral—the Labrador Inuit (Nunatsiavut) Land Claims Agreement—was settled. It was decisively

ratified on December 6, 2004 with a 76% yes vote, and came into effect nearly a year later on December 1, 2005, presenting a new stage in the evolution of Inuit governance, and redefining the limits of self-government within a land settlement area—transcending the public model applied by the Inuit of Nunavut and the Inupiat of the North Slope by forming truly indigenous structures for self-governance.

This completed a journey that began in Alaska a generation earlier, and which resulted in the emergence of the first truly indigenous government serving an Inuit jurisdiction, and corresponding to a land settlement area. In contrast to Nunavut and the earlier North Slope Borough, Nunatsiavut is an explicitly ethnic government, serving the coastal communities of the rugged Labrador coast with their predominantly Inuit populations. The agreement created the 28,000 square mile Labrador Inuit Settlement Area (LISA) with an adjoining 18,800 square mile ocean zone extending as far as Canada's territorial waters. The LISA includes Labrador Inuit Lands (LILs), five predominantly Inuit communities, and 3,700 square miles set aside for the Torngat Mountains National Park Reserve (following a tradition established by prior Inuit land claims that created vast national parks in which subsistence was protected)—with the Inuit retaining special rights in each of these areas.

Within the LISA, Inuit own 6,100 square miles of LILs, on which Inuit have the most rights and benefits, including exclusive right to carving stone and ownership of 1,525 square miles of quarry materials. The Government of Canada will pay the Labrador Inuit \$140 million in 1997 dollars, according to a 15-year payment schedule, from which the Inuit will repay their negotiation loans totaling some \$50 million over the same period (also following a tradition established by the earlier settlement areas). The Nunatsiavut Government is entitled to receive 25 per cent of provincial government revenues from subsurface resources in the LILs; in the LISA outside the LILs, the Nunatsiavut Government will receive 50 per cent of the first \$2 million and five per cent of any additional provincial revenues from subsurface resources, much like the other settlement areas. (Revenues received from subsurface resources in the Settlement Area outside the LILs will be capped at an amount that, if distributed equally among all Labrador Inuit, would result in an average per capita income for Labrador Inuit that equals the Canadian average per capita income.) Further, the Nunatsiavut Government will receive five per cent of provincial revenues from subsurface resources in the Voisey's Bay area.

As in other land settlement areas, Inuit impacts and benefits agreements (IBAs) must be negotiated between the Nunatsiavut Government and developers before major economic development projects may proceed on LILs, in the broader LISA outside of LILs, and in the offshore coastal marine zone. Labrador Inuit have the right to harvest wildlife and plants for Inuit food, social and ceremonial purposes throughout the LISA, and if conservation requires that harvesting by Labrador Inuit be limited, the limits will be set by the provincial or federal minister, based on a recommendation of the Nunatsiavut Government. (A co-management board appointed by the Government of Newfoundland and Labrador, the Government of Canada and the Nunatsiavut Government was established as the primary body for making recommendations to governments on conservation and game management in the LISA, while the provincial and federal governments will retain overall responsibility. Provisions have been made for non-Inuit with existing cabins in LILs to harvest in areas they traditionally and currently use. In addition, non-Inuit Labradorians harvesting in tidal waters for non-commercial purposes may establish temporary camps and cut firewood along the shoreline of LILs. The Nunatsiavut Government will control Inuit harvesting for food, social and ceremonial purposes throughout the LISA.)

As described in section 17.2, the Labrador Inuit Land Claims Agreement “exhaustively sets out the law-making authorities and self-government rights of Inuit,” with the newly created Nunatsiavut Government being “responsible for intergovernmental affairs and relations between Inuit Government, and Canada or the Province, or both,” and to be governed by the “fundamental law of Inuit” as enunciated by the 2002 Labrador Inuit Constitution, and which pledged to respect



“principles of democracy,” remain “financially accountable to Inuit,” and to implement “rules respecting conflict of interest.”

**Figure 4: Nunatsiavut: Toward Truly Inuit Self-Governance**



The constitution also provides for the “establishment of municipal governments in Labrador Inuit Lands by the Nunatsiavut Government,” as well as community corporations for Inuit residing outside the Settlement Area, and it defined “the relationships among the Nunatsiavut Government and Inuit Community Governments, municipal governments in Labrador Inuit Lands, and the Inuit Community Corporations,” binding the administrative mechanisms created by the land claim to the new structures of Inuit self-governance. The constitution also included an Inuit charter of human rights, recognized Inuit customary law and its application to “any matter within the jurisdiction and authority of the Nunatsiavut Government,” and embraced laws to protect Inuit culture and the Inuktitut language within its jurisdiction, including “laws to preserve, promote and develop Inuit spiritual beliefs, Inuit sacred knowledge and Inuit sacred sites,” “laws to preserve, promote and develop Inuit cultural heritage,” and “laws to preserve, promote and develop Inuit traditional knowledge.”

The detailed articulation of Inuit constitutional precepts in the January 2002 Labrador Inuit Constitution filled 159 pages, creating a blueprint of Inuit values and a pathway to the rapid standing up of a truly Inuit system of government in a region that was predominantly Inuit (including mixed-blood Métis and Kablunangajuit residents) and both part of, and adjacent to, Canada’s Maritime Provinces, along coastal waters of emergent strategic significance as the Arctic basin opens up to naval and commercial maritime traffic, and with active commercial and subsistence fisheries, known strategic mineral deposits such as the Voisey’s Bay project, and prospects of much future resource potential.

## **Greenland and the Road to Sovereign Independence**

Elsewhere in the world, the land claims model, and its subsequent modifications and augmentations, has become an inspiration, proof positive of what can be gained through a determined, forward-looking effort to rebalance and modernize the relationship between the indigenous people of the North and the modern state. As with any land reform effort, changes in land tenure can have a profound impact on the domestic balance of power, shifting not just title to land, but the wealth created from that land, resulting in concentrations of economic power in the hands of a small indigenous population numbering in the thousands or tens of thousands. In Alaska and the Canadian Arctic, the Inuit have become owners of vast tracts of land, making

them a landed elite with control over numerous economic, and increasingly, political levers. While not formally sovereign, they are poised to become increasingly influential stakeholders, partners in the consolidation of state sovereignty, and in the economic development of the northern frontier. A comparable situation exists in the post-Ottoman Middle East, with extended tribal families and clans sitting at a powerful and lucrative nexus of land ownership, natural resource wealth, and political power. While northern Natives in Arctic North America are not in command of the ultimate levers of sovereign state power, such as military forces or national treasuries, they do have in their possession or within reach many tools of regional power, making them dominant regional elites. As the climate warms and the Arctic basin yields more natural resource wealth, the economic resources in their possession will also increase, and with that political influence.

In Greenland, where the effects of global warming promise to be as profound as in Arctic Canada and Alaska, perhaps more so with its massive ice cap poised to retreat, just two weeks ago there was a non-binding referendum on increasing the island's autonomy, and restoring sovereign independence, which was approved by a decisive 75% vote (nearly identical to the level of support enjoyed by the Labrador Inuit four years earlier.)

Denmark has shown an openness to the possibility of Greenland becoming formally independent, and if this happens, it will mark perhaps the final stage in the process that began with ANCSA nearly forty years ago, achieved prominence (and set new limits of territorial control) in Nunavut, and which quietly crossed the threshold from adaptation of public structures of regional and local governance to the innovation and implementation of new, explicitly Aboriginal structures and systems that more tightly integrated the levers of economic and political power with cultural preservation efforts, as seen in Labrador. The land claims journey has been, and remains, a tremendous, albeit challenging, journey, demonstrating the staying power of the land claim concept, and its ability to evolve, adapt and transform—enabling the indigenous people of the Arctic to better balance modernity and tradition with each step along the way.

**Figure 5: Greenland: On the Road to Sovereign Independence**



### **A Warming Earth and the New Sea**

But just as the end of this long journey is in sight, with the institutional transformation of the Arctic nearing completion, a new challenge, and a potential strategic opportunity, emerges: that of rapid

climate change. The visible evidence is overwhelming, as illustrated by the record ice melts (coming decades ahead of scientists' predictions), the greening of the tundra as southern flora migrate north, and the melting of permafrost (affecting northern infrastructure and releasing methane trapped below, which could accelerate the warming trend.) The geophysical landscape of the Arctic is in a rapid transition. While this presents new economic opportunities for the least developed part of North America, and promises to alleviate endemic poverty with new jobs, and new sources of revenue for the emergent Inuit governments, there is still much uncertainty and risk—particularly to subsistence hunting that depends on predictable wildlife migration patterns, and on stable winter ice and summer ground conditions. At risk are the indigenous cultures that have evolved along with the unique Arctic ecosystem and all its interconnected components.

All of the efforts, discussed above, to modernize the Arctic's political economy over these past forty years have empowered the indigenous people of the region to directly address these new challenges, and to leverage the emerging economic opportunities—with a wide assortment of new tools, and increasing levels of power. While that may not be sufficient to stop or even slow the warming, it will at least enable the peoples of the Arctic to continue to create new solutions, as they rise to the new challenges of this era.

## Historical Context: North Meets South

When considering the many dimensions of an Arctic thaw, it's helpful to consider both the recent geophysical changes as well as the broader historical context, and in particular the long-term efforts to integrate the Arctic into the global system of states, a process under way since at least the 17th century, driven by both economic and strategic-military considerations. (See [Fig 6](#), [Fig 7](#) and [Table 1](#)) As the Arctic thaws, many believe the region will at last fulfill its long-dreamed economic and strategic potential. But other observers fear a catastrophe could unfold, as climate change unleashes a series of destructive positive feedback cycles. Further, it remains to be seen whether the thawing Arctic contributes to a more peaceful world, or stimulates greater strategic competition and conflict; the potential is there for both conflict and cooperation.

Over the centuries, interest in the Arctic and the commercial and strategic potential of its sea lanes and resources has been persistent, but climatic conditions prevented the region's full potential from being achieved before now—holding back its development, and limiting its contribution to the world economy. This now looks to be changing—as a result of the rapid warming of the earth's climate and accelerated ice melts, decades earlier than most had imagined could be possible.

This puts the region in play strategically, as the historic promise of unlocking its full potential renews interest in the region among numerous stakeholders. How should we think of these changes taking place? What are the strategic implications of these changes? And what tools can help us navigate the choppy waters ahead?

## Navigating the Arctic Transformation: Some Metaphors and Scenarios

During the Cold War, with the threat of nuclear apocalypse hanging over all our heads, some strategic theorists sought to “think about the unthinkable,” and prepare for all potential scenarios that might unfold. Herman Kahn, a former RAND Corporation analyst and founder of the Hudson Institute, was amongst this era's most colorful and controversial thinkers, inspiring the character of “Dr. Strangelove” in Kubrick's popular dark comedy. One of Kahn's books was called *On Escalation: Metaphors and Scenarios*, and it sought to describe the various potentialities which might be faced in the event deterrence failed, in order to help his readers comprehend the full range of strategic outcomes that might unfold.

With the stakes of climate change so potentially high, in the Arctic and around the world; and with the clash between the optimists and pessimists every bit as intense as that witnessed during the Cold War's doctrinal debates, a look at some metaphors and scenarios for our age makes considerable sense:

## 1. The “End of the Arctic”—Strategic Challenges and Apocalyptic Fears

Some have postulated that what we think of as the Arctic is actually coming to an end, and that we now stand at what might very be the threshold of a “post-Arctic” world. The Arctic Ocean and its increasingly active basin will of course still be there—more obviously so as the ice retreats. But its currently dominant characteristics are changing rapidly—in particular the massive, permanent, continent-sized barrier of multi-year ice that sits atop the pole, which could in time disappear. As the ice pack retreats, the polar barrier that marked the very “ends of the earth,” or what was long ago called “ultima thulé” has the potential to become a trans-polar crossroads, and already shipping experts are considering potential routes across the top of the world between Asia and Europe. What Rob Huebert and Brooks Yeager call a “New Sea” in their January 2008 World Wildlife Fund Report will soon emerge, and what was once the “ends of the earth” now has the potential to become its center, a profound transformation from “terra incognita” to a true “mediterranean.”

The concept of a post-Arctic world is not a new one. One of the first to articulate this concept was Canadian journalist Ed Struzik, who authored a 1993 *Equinox Magazine* article titled, appropriately, “The End of the Arctic?” More recently, of course, is Al Gore's “Inconvenient Truth” thesis which echoes Struzik's earlier argument that we are witnessing the end of a unique part of the earth's heritage. Gore goes further, suggesting a potential global catastrophe that threatens to end most life on our planet. Even if such an Apocalyptic end does not result from climate change, Arctic peoples and their governments will have to contend with the impacts of shifting wildlife migration patterns, coastal erosion and permafrost thaws that jeopardize much northern infrastructure. And even new opportunities such as increased trans-polar shipping will bring new risks and challenges, especially as multi-year ice breaks up and drifts south into the emergent sea lanes, requiring much investment and infrastructure development to ensure adequate safety, search and rescue, environmental cleanup, and marine service capabilities are in place.

## 2. The “Age of the Arctic”—Strategic Opportunities and Hegelian Synthesis

There are also many optimists who see us standing at the start of a new era, much like Francis Fukuyama viewed the end of the Cold War as a Hegelian “End of History,” and the dawn of a new era of hope. This more optimistic viewpoint believes we're now entering the dawn of the “Age of the Arctic,” the title of the well known book and 1986 *Foreign Policy* article by Oran Young or as described by the phrase made famous in 1973 by former Alaska Governor Walter Hickel, that we're approaching the “Day of the Arctic.”

One can look even further back, all the way to William H. Seward's 1853 “Destiny of America” speech that predicted the expansion of America to include “new equal States, alike free, independent and united” whose borders “shall be extended so that it shall greet the sun when he touches the Tropic, and when he sends his glancing rays towards the Polar circle.” (Seward helped fulfill his prediction when he negotiated the purchase of Alaska from Russia in 1867—though at the time he was much criticized for “Seward's Ice Box,” or “Seward's Folly.”)

## 3. The “New Sea”: A Modern Mediterranean?

Whether we stand at a precipice before the tragic “End of the Arctic,” or at the gateway to the promising “Age of the Arctic,” depends ultimately on whether we approach the climate issue with hope or fear, and whether we anticipate great opportunity, or severe danger. There is an

intriguing metaphor, one that is neither optimistic nor pessimistic but nonetheless transformative, that of the “New Sea.”

A glance at a Cold War-era polar-centric map would show the two superpowers standing face-to-face across their common polar frontier, with the North Pole at the very center of the world. This would make the Arctic Ocean appear to be the modern-day equivalent of the Mediterranean of ancient times. But before an Arctic thaw seemed plausible, a comparison of the contemporary Arctic to the ancient Mediterranean would seem to overstate the case dramatically.

Climatic conditions limited the potential for Arctic integration and development. In actual fact the region served more as a barrier between these two worlds—a military frontier augmented by its geophysical impenetrability. The DEW Line in the 1950s was thus able to establish a stable Arctic “Maginot Line,” or more properly a continental “trip-wire,” keeping watch over this northern frontier that separated the two superpowers. (See [Fig 8](#), [Fig 9](#))

But with the prospect of an Arctic thaw, the “New Sea” metaphor has the potential to redefine Arctic geopolitics, as the Arctic emerges as a true strategic crossroads, a literal “medi-terranean” or “middle of the world.” When thinking about the “Age of the Arctic,” and the promise of the Arctic’s future, another map comes to mind—that of a Medieval wheel map with Jerusalem as the spiritual, political, and strategic center of the world. Metaphorically, maps of the Arctic—during the Cold War, as well as today—resonate with the same sense of geostrategic centrality to the emerging world. But only now, with a thaw conceivable, is the region’s full potential achievable. (See [Fig 10](#))

#### **4. Geopolitical and Perceptual Asymmetries of a Thawing Arctic**

Some basic conceptual building blocks of geopolitics are helpful to assess the implications of an Arctic thaw. The famed geopolitical theorist Sir Halford John Mackinder articulated a taxonomy for geopolitics that is still in use today—such as Heartland, Rimland, Inner- and Outer crescents, and his more recent Midland Ocean concept that united the Atlantic alliance. He also introduced the lesser-known “Lenaland” concept, which is especially important to Arctic geopolitics, named for Siberia’s Lena river valley, cut off from the world by climate and isolation. (See [Fig 11](#))

For most of human history, the Arctic has been mostly a “Lenaland,” cut off economically and strategically from the world. The Arctic has always presented us with a geopolitical riddle shrouded in ambiguity: part sea, part desert, making it at once a strategic buffer, but potentially a strategic crossroads. To the Russians, the Arctic is perceived to be an extension of their Heartland; Moscow’s assertive claims to the Arctic basin and its creative polar diplomacy in the summer of 2007—when it planted a flag at the polar sea bottom, setting off all sorts of alarms—were a powerful reminder that the Arctic is considered strategically vital to Russia. As for U.S.-Canada Arctic relations, we should also keep in mind that the Arctic composes some 40% of Canada’s land mass and is central to Canadian identity, from the spiritual connection to an “Arctic sublime” within the Canadian national identity, or a strategic recognition of the Arctic’s resources to Canada’s economic future, a view reflected in the “use it or lose it strategy” of Prime Minister Harper’s government.

Yet only a fraction of America’s territory is Arctic, mostly neglected—and even during the battle for the Aleutians, America never felt truly threatened by the military occupation by our mortal enemy of isolated Subarctic territory and waited a year to retake Attu and Kiska. Canada, meanwhile, has had several diplomatic clashes with its Arctic neighbors, from the Danes over tiny Hans Island midway between Canada and Greenland, to various disputes with us over the sovereignty of the Northwest Passage. This summer, our coast guards conducted a joint mission in Arctic waters, recognizing that an assertive Russia is a greater threat to regional security, and helping to foster a more collaborative partnership on Arctic security.

If the Arctic states have fundamentally different geopolitical perspectives on the Arctic, it could lead to misperceptions, escalation of conflict, perhaps even war in the worst case. With the advent of an Arctic thaw, the question we must ponder is how each Arctic state perceives the transforming Arctic geopolitics—and to be sensitive to these differences in the conduct of our diplomacy and military policies. Doing so will help prepare us for the road ahead, and to be ready for inevitable conflicts while strengthening partnerships whenever possible, prioritizing threats and crafting lasting friendships and alliances.

## 5. New Challenges of a Rapid Ice Retreat

The Arctic ice has been melting further and faster than predicted, and the prospect of a navigable, ice-free Arctic Ocean is no longer the stuff of imagination, and in 2007, a new record ice minimum was set, and while this past summer the ice did not retreat as far—something else did happen that has much metaphorical significance, and which hints at economic and strategic significance: the Northwest and Northeast Passages both became ice free at the same time. (See [Fig 12](#)) Huebert and Yeager, in their “A New Sea” report, noted the earth:

is at the threshold of historically unprecedented ecological change. . . . The question is whether the arctic nations are willing and able to strengthen their existing cooperative arrangements to manage this transformation, conserve the critical resources of the arctic marine environment, while ensuring that northern peoples can benefit from the new opportunities and at the same time protect their traditional way of life. This is a daunting task that needs to be tackled sooner rather than later.

Recent diplomatic efforts, including the Ilulissat Conference of Arctic rim states held this past May, suggest there is much hope for a cooperative approach to border disputes and resource competition. At Ilulissat, the Arctic rim states pledged their commitment to resolving Arctic disputes through existing international law, and to utilize the Law of the Sea Convention as the primary mechanism to resolve disputes over territorial boundaries. This bodes well for the future. So does this summer’s joint icebreaker mission between the Healy and the Louis St. Laurent, demonstrating the benefits of a cooperative approach between Arctic neighbors.

But at the same time, there has been a remilitarization of the region, and increased diplomatic tensions between some Arctic states, especially as Russia continues to re-assert its role as an Arctic power. There is a risk that inter-state conflict, rather than cooperation, could intensify.

As Michael Klare, an expert on resource conflict, has cautioned, “global warming will affect resource competition and conflict profoundly”—and while “global warming’s effects cannot be predicted with certainty . . . state collapse is a likely result along with an accompanying epidemic of warlordism, ethnic violence, and civil disorder.” When Russia planted its titanium flag on the polar sea floor, laying symbolic claim to the Pole on behalf of mother Russia last year—it quickly precipitated a round of reciprocal diplomatic and military moves between Ottawa and Moscow—including the announcement of Ottawa’s new “use it or lose it” strategy for Arctic sovereignty by Prime Minister Harper, and his plan to develop a new High Arctic naval base, to build a new fleet of offshore patrol vessels to guard the entrances to the passage, and later on, to add to its heavy icebreaker fleet. (See [Fig 13](#))

## 6. Arctic Terror Risk

There has been some discussion of the risk of terror, framed largely by the global nature of the GWOT, and there are currently some valuable targets—including the Alaska Pipeline, pumping stations on the North Slope, the oil storage terminal at Valdez, the steady stream of full oil-tankers traversing the narrow waters of the Inside Passage along with vulnerable cruise ships all

summer long, as well as a variety of soft targets associated with the summer tourist trade like the Alaska Railroad.

But there are much easier, more accessible, and more plentiful targets to strike far to the south. In contrast to the northern region, there is a deep crisis along America's southern frontier, with some 5,000 fatalities on the Mexican side from the recent round of drug wars, with drug-related violence seeping across the border to U.S. territory; with a rich concentration of hard and soft targets within sight of the Mexican border, the terror threat along our northern frontier might be much less salient than along our chaotic southern frontier, even as Arctic maritime activity increases.

When assessing the increased risk of terror as the Arctic ice thaws, one must consider the relative isolation, low population density, and shortage of high-value targets offered by the region for terrorists. However, borders in the Arctic are especially porous, with almost no border security along the Alaska-Yukon boundary, so an attack is feasible, increasingly so as the climate opens the Arctic basin to greater maritime activity. Even after 9/11 you could hike off-season over the Chilkoot, without any border controls, and in mid-summer, bypassing the one border station was never very difficult and required a short hiking detour.

There may be a greater risk of some sort of home-grown terror; Canada has faced numerous armed Native blockades, the most noteworthy being the 1990 Oka crisis, but as recently as the summer of 2007, Highway 401 was shut down as was the CN Rail corridor connecting Toronto to Montreal. But in southern Canada the Native population is under intense pressure with much of its historic land base gone, while in the Arctic the opposite trend has been unfolding—with Native land claims restoring title to much of the land base, with additional powers beyond those lands—increasing domestic security. And with programs like the Northern Rangers further solidifying the relationship between tribe and state much like the Territorial Guard did during Alaska's World War II and Cold War experience, it is more likely in my estimation that the indigenous people of the region will contribute to regional security rather than undermine it.

## 7. New Thinking: An Age of Transformation

As we think about the Arctic transformation, we should remember that this is a new chapter of history, with the potential for new ideas and innovation. The post-war division of Europe after World War II is long past, communism as a competing ideology is defeated, and as a result, the future Arctic need not be divided, nor become the stage for a new cold war to play out. There are and always will be border disputes, genuine conflicts of an economic, diplomatic and military nature. But there is also a chance to start fresh and forge new relations in the Arctic.

Soviet Premier Gorbachev had such a vision for the Arctic at the Cold War's end, expressed in October 1987 in his Murmansk Initiative, which called for the Arctic to become a "Zone of Peace," and to lead the way forward to an end of the Cold War. But events quickly sped beyond his control, with the fall of the Berlin Wall more speedily integrating East and West than his Arctic diplomatic efforts. But the idea was a good one, and perhaps worth revisiting. At Ilulissat this past May, a similar vision of an Arctic united and governed by international law was asserted; it remains to be seen if this vision ultimately triumphs. It is possible that the Arctic basin will become a new arena for cooperation between Russia and the West, much as Gorbachev foresaw at Murmansk.

But if Russia is going through something of a Weimar transition, with a neo-nationalist and imperial backlash to follow, we should be prepared for things to go the other way. But on the chance Russia remains committed to democracy, a pro-actively cooperative Arctic relationship could help to reassure Moscow that a collaborative path is possible and mutually beneficial. Just as the U.S. and Canadian coast guards joined forces this past summer in the Arctic to map the

sea floor, inviting Russia to collaboratively participate in more scientific, search and rescue, and commercial activities, could help to transform the relationship and bury the hatchet once and for all. The opening of the maritime “ Arctic Bridge” linking Russia’s Murmansk Port to Canada’s Port of Churchill in 2007 was thus an important milestone, illustrating the potential for collaboration over competition. (See [Fig 14](#))

But much depends on the evolution of political attitudes in all of the Arctic states, and whether the political climate warms along with the geophysical climate. It is notable that at Ilulissat, only the top foreign affairs officials of the Arctic rim states were present, suggesting that even as they pledge to collaborate in their efforts to resolve future Arctic disputes, they have yet to fully integrate the input of the region’s inhabitants, and in particular its indigenous peoples. But on the other hand, the meeting took place in Greenland, and not a southern capital like Copenhagen or Washington or Ottawa; and further, it pledged to walk the path of cooperation, not conflict. Both are important steps forward. The next step should be to broaden the circle of stakeholders, so that the dynamic and creative efforts of the indigenous peoples of the region, and their many interests and perspectives, can help to shape the world’s response to the changes taking place. With the new regional governing structures across the Arctic now fully integrating the Inuit, and settled land claims empowering indigenous peoples with huge tracts of lands and substantial economic resources, their participation is not only enabled: it is essential, as the internal and external dimensions of Arctic security have come together at the top of our world.

### **America’s New Arctic Policy: A Sea Change**

Such a shift—toward greater collaboration with and participation of the numerous tribal, national, and international actors on the circumpolar stage—was evident in the first comprehensive re-articulation of U.S. national policy on the Arctic region since 1994.

Indeed, it is noteworthy that among the six policy objectives identified in Section III, part A of *National Security Presidential Directive 66/Homeland Security Presidential Directive 25* (NSPD-66/HSPD-25)—issued by President Bush in the closing days of his administration on January 9th—were to “Strengthen institutions for cooperation among the eight Arctic nations” (objective number four) and to “Involve the Arctic’s indigenous communities in decisions that affect them” (objective number five.) This is historically significant, and demonstrates both an increased awareness of, and respect for, the growing political and economic participation of the Arctic peoples in governing their own affairs, as well as a continued commitment to a collaborative, multilateral approach to solving the region’s challenges.

Also of significance: while the very first policy objective listed Section III, A is to “Meet national security and homeland security needs relevant to the Arctic region,” a point that has dominated news coverage and commentaries on the new Arctic policy, the second objective listed is to “Protect the Arctic environment and conserve its biological resources,” while the third to “Ensure that natural resource management and economic development in the region are environmentally sustainable,” which will directly benefit the foundational pillars upon which the indigenous Arctic cultures depend for their cultural, nutritional, and economic survival. That the sixth policy objective listed is to “Enhance scientific monitoring and research into local, regional, and global environmental issues” further reinforces America’s renewed commitment to multilateralism at the top of the world, and increasing environmental knowledge at all levels, from the local to the global, during this time of Arctic transformation.

These important dimensions to the new U.S. Arctic policy were largely overlooked by many observers, in particular by the op-ed pages of several newspapers north of the border that emphasized the national security and unilateral dimensions of America’s new Arctic policy. For instance, as *The Chronicle Herald* opined in its January 15th editorial (“Arctic Sovereignty: No More Northern Lite”):



Just a week before the White House changes hands, it has released a new policy directive on the Arctic that calls for a more assertive American role. The bedrock of the policy is the same—that the U.S. considers the Northwest Passage international waters, not Canadian domestic waters. But the document also calls for a stronger U.S. presence in the Arctic for economic and security reasons and for a resolution of Arctic border disputes so the region's natural resources can be better exploited.

*The Herald* also published an article on January 13th by *Canwest News Service* reporters *Mike Blanchfield* and *Randy Boswell*, titled "*Bush Asserts Power Over Arctic*," which was linked to, and cited by Andrew C. Revkin on January 13th, in his widely read *Dot Earth* blog in *The New York Times*.

And, in a national news story in *The Globe and Mail* newspaper on January 14th ("Northwest Passage: Harper plays down threat to Arctic sovereignty"), Katherine O'Neill reported that Northwest Territories (NWT) Premier Floyd Roland believes the "increased U.S. interest in the region is of deep concern and the federal government should respond with more than rhetoric," as "too much is at stake in the Far North."

O'Neill cited Premier Roland, who told her: "Let's not lose it for the sake of being nice. Canada can no longer afford to maintain a passive approach to our northern interests." O'Neill reported the new U.S. policy directive "reasserts the Americans' long-held claim that the fabled Northwest Passage is an international waterway, open to all. Canada argues that the route is an internal waterway." She added the new policy "also states that the United States should develop a greater presence in the Arctic for security reasons, as well as resolve outstanding border disputes, including one with Canada in the Beaufort Sea, so it can tap into the region's vast natural resources."

She also cited from the directive the following passage: "The United States has broad and fundamental national security interests in the Arctic region and is prepared to operate either independently or in conjunction with other states to safeguard these interests." And she quoted Canada's well known and deservedly influential Arctic security expert, Professor Rob Huebert from the University of Calgary, who "said Mr. Bush's directive has effectively 'thrown a grenade into Canada-U.S. relations' and that it will be interesting to see what the new president does with it. 'This is a very blunt statement ... they didn't play any political niceties here.'"

Somehow, the unprecedented level of collaboration that the White House has embraced—with its top-level commitment to indigenous as well as global participation, and its refreshingly holistic approach to the region's environmental and ecological health as well as to continued scientific research in the interest of protecting this fragile domain—was not emphasized in the first round of commentary, analysis and opinion that greeted the release of the directive.

Clarifying its policy, on January 13th the U.S. State Department provided a statement in response to a question at its daily press briefing in which it explained: "The new directive is the culmination of an extensive interagency review process undertaken in response to rapid changes taking place in the Arctic, the principal drivers of which are climate change, increasing human presence in the region, and the growing demand for Arctic energy deposits and other natural resources," and noted the "directive focuses on seven broad areas of Arctic policy," including:

1. National security and homeland security,
2. International governance,
3. Extended continental shelf and boundary issues,
4. Promotion of international scientific cooperation,
5. Maritime transportation,
6. Economic issues, including energy resources, and
7. Environmental protection and conservation of natural resources.

The State Department also reiterated its commitment to Arctic cooperation, noting that “States safeguard their national security interests in numerous ways, some on their own, and some in cooperation with others. The United States wants to cooperate with other governments in the Arctic. The best way to address both the challenges and opportunities of the Arctic is through cooperation. Any U.S. action would respect international law.”

It is true that Sec. III, B of the directive addresses U.S. national and homeland security issues, and observes that “human activity in the Arctic region is increasing and is projected to increase further in coming years,” requiring the United States “to assert a more active and influential national presence to protect its Arctic interests and to project sea power throughout the region.” And, consequently, the directive does describe America’s Arctic national interests to “include such matters as missile defense and early warning; deployment of sea and air systems for strategic sealift, strategic deterrence, maritime presence, and maritime security operations; and ensuring freedom of navigation and overflight.” And, to be fair, the directive does re-assert America’s long-held view of the Northwest Passage as an international strait.

But to take away from directive only these policy issues, and not the many others that demonstrate a deep commitment to multilateralism and an historically unprecedented sensitivity to the needs, interests, and perspectives of the indigenous peoples of the Arctic, does something of a disservice, and suggests an incomplete reading of the directive.

For instance, Sec. III, C specifically addresses issues of international governance, noting U.S. participation in “a variety of fora, international organizations, and bilateral contacts that promote United States interests in the Arctic,” including the Arctic Council, which “has produced positive results for the United States,” and which also “provides a beneficial venue for interaction with indigenous groups.” Further, the directive urges the U.S. Senate to “act favorably on U.S. accession to the U.N. Convention on the Law of the Sea promptly, to protect and advance U.S. interests, including with respect to the Arctic,” and doing so “will give the United States a seat at the table when the rights that are vital to our interests are debated and interpreted.”

The directive calls upon American officials to “continue to cooperate with other countries on Arctic issues through the United Nations (U.N.) and its specialized agencies, as well as through treaties such as the U.N. Framework Convention on Climate Change, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the Convention on Long Range Transboundary Air Pollution and its protocols, and the Montreal Protocol on Substances that Deplete the Ozone Layer,” and to “consider, as appropriate, new or enhanced international arrangements for the Arctic to address issues likely to arise from expected increases in human activity in that region, including shipping, local development and subsistence, exploitation of living marine resources, development of energy and other resources, and tourism.”

Additionally, Sec. III, E commits the United States to continued promotion of international scientific cooperation, including “the sharing of Arctic research platforms with other countries in support of collaborative research that advances fundamental understanding of the Arctic region in general and potential Arctic change in particular,” and the “active involvement of all Arctic nations in these efforts in order to advance scientific understanding that could provide the basis for assessing future impacts and proposed response strategies.” Even Sec. III, F on maritime transportation in the Arctic, takes a collaborative approach, across not only the various levels of domestic governance but well as across national boundaries, as “effective search and rescue in the Arctic will require local, State, Federal, tribal, commercial, volunteer, scientific, and multinational cooperation,” as “safe, secure, and environmentally sound maritime commerce in the Arctic region depends on infrastructure to support shipping activity, search and rescue capabilities, short- and long-range aids to navigation, high-risk area vessel-traffic management, iceberg warnings and other sea ice information, effective shipping standards, and measures to protect the marine environment.”

And Sec. III, G on economic and energy issues, directs U.S. officials to “seek to increase efforts,

including those in the Arctic Council, to study changing climate conditions, with a view to preserving and enhancing economic opportunity in the Arctic region,” and that “such efforts shall include inventories and assessments of villages, indigenous communities, subsistence opportunities, public facilities, infrastructure, oil and gas development projects, alternative energy development opportunities, forestry, cultural and other sites, living marine resources, and other elements of the Arctic’s socioeconomic composition.” It also calls upon U.S. officials to “work with other Arctic nations to ensure that hydrocarbon and other development in the Arctic region is carried out in accordance with accepted best practices and internationally recognized standards,” and to “consult with other Arctic nations to discuss issues related to exploration, production, environmental and socioeconomic impacts.”

Lastly, Sec. III, H on environmental protection and the conservation of natural resources, notes with concern that “the Arctic environment is unique and changing,” and that “increased human activity is expected to bring additional stressors to the Arctic environment, with potentially serious consequences for Arctic communities and ecosystems.” As with the earlier sections of the directive, it calls for “cooperation with other nations,” so as to “respond effectively to increased pollutants and other environmental challenges,” and to “continue to identify ways to conserve, protect, and sustainably manage Arctic species and ensure adequate enforcement presence to safeguard living marine resources, taking account of the changing ranges or distribution of some species in the Arctic.” And for those species “whose range includes areas both within and beyond United States jurisdiction,” it calls upon the United States to “continue to collaborate with other governments to ensure effective conservation and management.” It also calls upon officials to “seek to develop ways to address changing and expanding commercial fisheries in the Arctic, including through consideration of international agreements or organizations to govern future Arctic fisheries; pursue marine ecosystem-based management in the Arctic; and intensify efforts to develop scientific information on the adverse effects of pollutants on human health and the environment and work with other nations to reduce the introduction of key pollutants into the Arctic.”

None of these issues suggest a go-it-alone attitude by the United States. Quite the contrary, it reflects an awakening to the increased participatory role of indigenous peoples, circumpolar neighbors, and international organizations in the management of the Arctic, and the continued need for a multilateral approach to managing the Arctic’s unique challenges in the years ahead.

While the new policy does not reflect a change of perspective on the legal status of the Northwest Passage, or a softening in America’s commitment to freedom of the seas, it does suggest a sea change is underway in its perception of, and sensitivity to, the numerous challenges mounting at the top of the world as the ice continues its retreat, and the prospect of a post-Arctic world enters the realm of the possible. Most importantly, it shows a far greater sensitivity to the interests and perspectives of the indigenous peoples as well as America’s Arctic neighbors, and a willingness to work together in a joint effort to address and resolve the many challenges likely to confront the Arctic in the years ahead.

### **Afterword: Arctic Doom... or Bloom?**

Within our lifetimes, and quite possibly before mid-century, we may witness the opening up of Arctic sea lanes that are fully navigable year-round. Already, seasonally ice-free sea lanes are a reality across much of the Arctic, a situation that just a few decades ago would have been unimaginable. Climate change pessimists worry about increased resource competition, coastal flooding, infrastructure damage from melting permafrost, changes in wildlife migration patterns, and stresses on some species—especially polar bears, which have evolved to thrive in the specific ecosystem of landfast and stable pack ice that is now melting quickly—as well as on the indigenous cultures of the region.

But climate change optimists imagine a world where international shipping can take a direct northern route linking Asian, North American and European markets, cutting the consumption of fuel and reducing carbon emissions by using substantially shorter shipping routes; they foresee tremendous potential for maritime commerce to stimulate the economic development of Arctic ports, from the Port of Churchill on Hudson Bay to the depressed coastal communities of the High Arctic. Secure sea lanes across the top will enable shipping of strategic commodities—whether North Slope and North Sea oil, strategic minerals from Nunavut and the NWT, and a slew of Russian exports from the Kola peninsula to the Lena River basin—without the risks associated with current sea lanes and their vulnerable chokepoints, from the Strait of Malacca to the Panama Canal to the Red Sea.

In terms popularized by Sir Halford John Mackinder, the famed theorist of geopolitics, the long isolated “Lenaland” along the Arctic basin will transform into a highly productive and strategically important “Rimland”—transforming the Arctic into tomorrow’s equivalent of the Mediterranean, a true strategic, economic and military crossroads of the world. As envisioned by Oran Young two decades ago, we will finally witness the arrival of the “Age of the Arctic.” But not an Arctic defined by cold and ice. Indeed, the Arctic as we have known it since classical times, is coming to an end. In the December 1992 edition of *Equinox Magazine*, naturalist Ed Struzik penned a prescient article titled “The End of the Arctic,” noting that with the warming of the Earth’s climate will come the end of the Arctic as we know it. In many ways, his prediction is now coming true. While we can mourn the passage of an era, and the loss of a unique ecosystem, we can also celebrate the coming transformation. With the end of all things comes the start of something new, and in this case that something new may prove to be extraordinary.

While at the top of our world sits the polar sea, at its bottom lies the ice-covered continent of Antarctica. As its ice cover melts, this long-isolated continent will rise from the shadows, like Atlantis transmigrating from imagination to reality, with all its long-hidden treasures revealed, its resources becoming accessible, its land mass in time becoming suitable for human habitation. As the human population continues to grow, and with it its appetite for natural resources, the emergence of this continent, and its integration into the world’s political economy, may prove every bit as transformative as the melting of the Arctic sea ice. So while pessimists fear the changes that are under foot, and their many uncertainties, a more optimistic, and ultimately more prudent, approach would be to prepare to make the most of these new, emergent realms.

With both poles locked in an Ice Age that never ended, the onset of an Arctic and Antarctic thaw promises to reunite our planet’s seas and continents, and for history to, in many ways, begin. Just as Fukuyama described the end of the Cold War as the “End of History” as we knew it, we once again find ourselves standing at the threshold of new era. Whether we think of this era as the “End of the Arctic,” or the “Age of the Arctic,” we can be sure that a brand new chapter of history will be written, and that it promises to be a fascinating chapter. Indeed, the possibilities range from the apocalyptic to the millennial. The riddle posed, but still unanswered, is whether we will witness an Arctic doom, or a potential Arctic bloom?

Permafrost expert Sergey Zimov, director of the Northeast Science Station in Cherskii, Siberia, is deeply concerned about the potentially calamitous effects of an Arctic thaw, particularly on the permafrost. With climate change, he explains, eventually “the permafrost will melt to all depths,” though he does not expect this to take place any time soon. But when the permafrost does melt, “methane and methane-hydrates stored under the permafrost will be released.” But this release of methane trapped beneath the permafrost is not Zimov’s sole, or even his primary, concern. His top concern is that the “permafrost is the biggest terrestrial organic carbon storage,” approximately 1,000 gigatons in total, and “in the case of melting, it will get decomposed by microbes very quickly”—released in the form of CO<sub>2</sub> if aerated, and as methane if in an anaerobic condition such as found under a lake.

Zimov noted that “methane emission is happening all the time, mostly because of thermokarst lakes movement.” In our current climate, he explained, “lakes on permafrost migrate at the average rate of one meter per year, melting the permafrost under them. And there starts methane production.” But in the case of global warming, permafrost melting will result in lakes migrating ten times faster, consequently increasing their methane production, and this “process will probably become self-accelerating. The more permafrost melts, the more greenhouse gases released, the warmer the climate, the more permafrost melts.”

So ultimately, “all the permafrost might melt. If the total carbon storage is 1,000 gigatons, and the permafrost melts in one hundred years, releasing five percent of all carbon in the form of methane, that gives us a one gigaton methane emission into the atmosphere” every year, for a total methane dump of one fifty gigatons. Zimov notes that by comparison, “the current global methane emission is 0.5 gigatons per year.” And while the consequences of such a release of methane are hard to predict, Zimov believes it will without a doubt “be one of the biggest accelerators for global warming.”

A secondary methane-related risk associated with climate change has to do with methane gas hydrates underneath the oceans. “Under some temperatures and pressure conditions,” Zimov explained, “methane combined with water produces a solid form. In case of a temperature rise, this not very stable condition can be shifted, and methane can be released.” And if this happens, the “impacts are probably the same as with organic carbon decomposition,” effectively delivering the second part of a one-two knockout blow. These alarming results of climate change may not happen right away, but they do cast a long shadow over mankind’s future. But Zimov believes that in the near-term, the “biggest risk for the Arctic region in case of a permafrost melt is landscape erosion. Permafrost contains frozen water in it, in the form of ice wedges. When permafrost melts, the ice melts as well, and just washes away—leaving huge depressions, and a polygonal net of ravines.” Already, permafrost erosion has had localized impacts on infrastructure throughout the Arctic.

Zimov was profiled by *Reuters* in September 2007: “For millennia, layers of animal waste and other organic matter left behind by the creatures that used to roam the Arctic tundra have been sealed inside the frozen permafrost. Now climate change is thawing the permafrost and lifting this prehistoric ooze from suspended animation.” *Reuters* cites Zimov, who is concerned that this “will lead to a type of global warming which will be impossible to stop,” as these “deposits of organic matter in these soils are so gigantic that they dwarf global oil reserves.”

Professor Howard E. Epstein, an Associate Professor in the Department of Environmental Sciences at University of Virginia whose expertise is in the Arctic tundra, explained that permafrost melts concern scientists for two reasons, one quite practical but not apocalyptic, the other more theoretical and quite worrisome. On the more practical considerations, Epstein explained that engineers worry about permafrost melts for “structural reasons,” and the impact on northern infrastructure. Infrastructure-related impacts of a permafrost thaw have been illustrated in numerous dramatic photos, Epstein commented: “Well, you know, you do see these things, but it’s very, very difficult to know whether climate change is the proximate cause. If you see an individual home, sunk into the ground, it’s hard for me to say that’s a climate change effect.”

His second concern mirrors that of Zimov, with the “release of methane that might be trapped in the ice,” and “the exposure of dead organic material that’s trapped in the permafrost. It’s not decomposing at this point, but if it were to get released from the ice, it would decompose and it might decompose pretty rapidly—and this is a positive feedback for carbon dioxide in the atmosphere. The warmer it gets, the more permafrost melts, and the more carbon dioxide released into the atmosphere.” Epstein added, “It’s likely that some of this organic matter will become free from the ice and some of it will decompose back to carbon dioxide.” The amount of carbon dioxide that could be released into the atmosphere is potentially quite large. “‘Lots’ is an understatement—huge quantities. We don’t even have a good estimate. But it’s huge on a scale

of hugeness!” As for the methane trapped beneath the frozen surface, Epstein explained, “We know methane is a greenhouse gas, and more potent than carbon dioxide—but the question is how much of this methane will get released, and how much of it will make it to the atmosphere before it gets consumed by some other process?” He said current research suggests that only “a small percentage of that methane is going to go directly into the atmosphere,” but that on the whole, “the methane issue is still an open question.”

What if the geophysical transformation unfolding in the Arctic, even if profound, does not end apocalyptically? What if, instead of becoming a lifeless void, the Arctic enjoys a renaissance of life as the climate warms, and the ice melts, the region greens? Epstein’s research expertise includes the dynamics of tundra vegetation in response to climate change, and interactions among tundra vegetation, nitrogen cycling and freeze-thaw disturbances. He explained that “what we know from the within the scientific literature right now is that there is a general greening of at least the Arctic tundra,” and that the “tundra portion of the Arctic, the treeless portion, is generally greening,” as illustrated by data “gathered from remote sensing data. Also, there have been repeat photographic analyses showing that shrubs in the tundra have increased their extent and potentially their abundance as well. Experiments done on the ground of changing environmental conditions—greenhouse experiments, warming experiments, fertilization experiments—show that the tundra greens in response to those. This is seen largely in an increase in deciduous shrubs and a decline in the non-vascular plants like the mosses and the lichens.”

Epstein observed that when it comes to climate-induced change on plant life in the Arctic, “a lot of what we are seeing is in the tundra. But in the sub-Arctic boreal forest, the situation is less clear. Papers published indicate there is a browning of the boreal forest even though the area is warming, and you might expect an increased in forest vegetation. One hypothesis is that warming is increasing the drought stress on boreal forest trees, and that is leading to a decline in the productivity in the boreal forest, an opposite trend to what we are seeing in the tundra. The tundra picture seems to be a little bit clearer than the boreal forest picture.” Looking to the future, Epstein notes “it is pretty unclear what is going to happen in the long term—a few studies out there that have shown some changes in the latitudinal treeline, somewhat of a northward migration of forests, of tree species. Simulation modeling information would also show a northward migration of tree species. But the big question is how long something like this might take? Simulation modeling is only providing best guesses at this point on how long this will take—anything can get anywhere right away—seeds are already available wherever they need to be.” But while the dispersal of seeds is evident, Epstein pointed out that we must also “take into account the lag associated with seeds produced, and dispersed to new areas, and then to have new tree species coming in, and to see real changes in composition of new species coming in. We’re probably talking on the order of a century or more. There’s probably not going to be very rapid northward migration of the treeline. But if vegetation already exists like the shrub case in the tundra, we will probably see a more rapid spread.” And in time, these changes “could very well be very huge. But the information that we have, the studies that we’ve done, have not been incredibly widespread in terms of the shrub changes. There’s some repeat photography in northern Alaska and that showed a lot of changes in shrubs—in riparian areas, river areas and flood plains and on gravel beds in rivers—and it could very well be much more widespread than we’ve actually been able to see.”

Responding to the observations of the sort made by the experienced Arctic pilot Woodhead in *The Globe and Mail*, Epstein noted, “Someone who is a pilot might have some of the best views of it. And there is a lot of satellite data out there, but I’m not sure if anyone has analyzed all of that to a certain extent. But also, the satellite data don’t also give you the fine-scale view of things. It might have a much coarser resolution than clearly a pilot would have—so the extent of shrub changes might be much more dramatic than has been published in the literature right now.” While explaining the causes of this proliferation of shrubs in the tundra, and the gradual northward movement of the treeline, Epstein explained that the “soil is not becoming more fertile,” as “soil fertility does not change very rapidly. It changes over centuries as vegetation changes, and more

dead vegetation is added to the soil and organic matter.” So the greening of the tundra is “not necessarily [from] an increase in fertility of the soil.” Rather, “what’s probably happening is soil microorganisms are becoming more active and decomposing more of the organic matter that is there, and in that process are releasing nutrients, in particular nitrogen, that is now becoming available for the plants.” As more nitrogen is becoming available, Epstein explained, “more nutrients are becoming available for plants while it might not have in the past—not the total amount of nutrients—just that they are potentially switching from a form unavailable to plants to a form that is more available, and the plants that are responding—it could be all plants are responding—but the ones we are likely to see are the ones that have the capacity to grow in an erect growth form rather than the ones that hug the ground.” And in time, Epstein observed:

the shrubs that grow erect will continue to out-compete these more prostrate growth forms that don’t necessarily own the system right now—but probably share it, potentially could share it with vegetation that has a more erect growth form. Warming the climate could shift the balance to these more erect growth forms. Mosses—which dominate tundra—have no root system, and lichens are also very dominant in the tundra, though technically not plants. They’re an algae-fungus symbiotic relationship. They also don’t have root systems and can’t grow very tall than shrubs that do grow very erect. They have a very prostrate growth form and they really do hug the ground—and they will potentially be out-competed. Similarly, other herbaceous grasses, grasses, herbs, don’t have the potential to grow very tall. All these plants would benefit from a warmer summer, from a longer growing season, and from more nitrogen available in the soil. The question is, which one has the capacity to take advantage of that the most? Since the shrubs are probably likely more limited now by the length of the growing season, they are likely to respond more to the additional warmth and the addition of days on either end of the growing season. They also have extensive root systems and have a greater capacity to take up nutrients that become available. Also, as they grow they will start to out-compete other growth forms, particularly for light. If shrubs, mosses, and lichens are growing, all might respond positively, but eventually the shrubs have the capacity to grow taller. They have wood, giving them structure. The mosses, though they might be responding, don’t have the capacity to respond as much as the taller species, so the ones with more extensive root systems will benefit. Thus, there is a difference in the short term and the long term response.

Arctic agriculture has been increasingly discussed in the northern press, with widespread articles on northern gardening programs and policy discussions relating to northern agriculture. Epstein reflected on the future of Arctic agriculture: “My guess is that there will be changes in the potential to use agriculture, and these changes are likely to occur kind of at the border of where it’s currently being used now. So where crops are currently growing now, the likelihood is that will push somewhat further north. We’re probably not going to find agriculture throughout the High Arctic, but at least the extent of the area that can grow crops will probably increase and push further north.” With global warming, Epstein explained:

The Arctic is where the greatest warming is concentrated; the models have it projected around the entire circumpolar Arctic. Probably over the next century we’re likely to see increases of, the models are projecting, up to ten degrees Celsius in areas of the Arctic—that is unbelievably huge! So yes, the temperatures are going to get warmer, the snow-free season will get longer, and in the lower parts of the Arctic, lower meaning further south, the soils are somewhat fertile—they are actually very fertile, there is plenty of organic matter to grow crops. The other issue is permafrost: how deep do you need your crop roots to grow? Most crops are pretty shallowly rooted.

But the case for Arctic silviculture, or tree farming, is different. “Trees would require deeper soil or they would require a pretty substantial melting of the permafrost, which is going to occur much more slowly than the earth’s temperatures will rise.” However, there is “potential very far down the road” for silviculture. But while there are ancient, petrified forests in the High Arctic, there is “no projection of anything like that happening—certainly over millions of years, tens or hundreds of millions of years, things like that can happen. But not over thousands or even tens of thousands

of years.” So before we’ll see the reappearance of a forested High Arctic, “we may be talking about millions of years.”

In Antarctica, in marked contrast to the Arctic, Epstein explained that “the changes are going to play out completely different,” and this will happen for several reasons:

One is continent that is covered by ice surrounded by ocean, while the other is an ocean covered by ice and surrounded by land. So regionally the climates are very different because radiation, mainly incoming solar radiation, does different things when it hits ice, land, or water so that regional climates are completely different. The other issue that will affect the climates differentially, if you look at the hemisphere in general, the northern is land dominated and the southern is ocean dominated. Most land on the planet is in the northern hemisphere. Also, if you look at the latitudes that receive seasonal snow, the northern hemisphere has land at those latitudes and the southern hemisphere has water at those latitudes, so the northern hemisphere is where we see all our seasonal snow accumulation on land.

He further elaborated, “the northern hemisphere and southern hemisphere are completely different from a climate perspective, different ways of influencing incoming solar radiation, different regional circulation of air masses and ocean waters, lots of general circulation similarities, but when you get into more regional aspects, they are completely different so it’s not surprising that one pole would be different than the other pole from the response to the increasing greenhouse gas concentrations.” And so, the way Antarctica will respond to climate change will be “completely different. So what the climate models are projecting are very, very strong increases of temperatures in the Arctic in the northern hemisphere,” the “projected increases in Antarctica are substantially less than the increases in the Arctic, so you will get much more rapid melting of the Arctic sea ice and also possibly the Greenland ice sheet than you will the Antarctic ice sheet.” Indeed, there are “definitely areas in Antarctica that are accumulating ice, and some losing ice—it’s unclear what will happen to the Antarctic ice sheet,” and “suggesting the whole thing is about to melt would be unfounded at this point.”

Another concern climate scientists have with climate change has to do with changes to ocean circulation patterns and currents, including the possible shift in the Gulf Stream that might result in a deep freeze in Europe as the warm current changes course. Other concerns involve a decline in the capacity of the ocean to absorb carbon, and a potential rise in its acidity which in turn would harm the marine food chain. As Epstein explained: “As oceans warm they will hold less carbon dioxide. Colder water can hold more carbon dioxide gas than warmer water.” To illustrate this, he said to consider a “cup of seltzer—if you warm it, it will continue to degas, so the capacity of the ocean to be a sink for CO<sub>2</sub> declines as it gets warmer. That is one issue.” Indeed, the repercussions of the resulting increased ocean acidification could be catastrophic to sea life, and in turn, all life dependent upon the sea. As noted in a June 2008 *BBC News* report from Paul Eccleston, “Traditional marine communities containing creatures such as sea urchins and snails are being destroyed as CO<sub>2</sub> emissions make their environment more acidic,” and algae “vital for the well-being of coral reefs is also retreating.” Eccleston cites Dr. Jason Hall-Spencer of the University of Plymouth, who is concerned “marine food webs will be severely disrupted and major ecological tipping points are likely if human CO<sub>2</sub> emissions continue unabated.”

On changes to the oceans induced by climate changes, Epstein also observed that “the other issue is the circulation pattern, particularly the Atlantic pattern—people call it the conveyor belt, the Thermohaline circulation belt.” As he explained:

Temperature and salinity levels lead to this circulation pattern, and warm waters from south near the equator move along the surface of the Atlantic up to the north, up to the Arctic ocean, which is why Europe is so much warmer relative to North America at the same latitude—for instance, England has a temperate climate where, if it was in North America, it would be a much colder place. The issue—the melting of the sea ice and the Greenland ice sheet would lead to an



increase in the amount of fresh water that would go into the Arctic ocean and the increase in fresh water could alter these global ocean circulation patterns, or at least regional circulation patterns which would have rather dramatic climate effects, particularly for northern Europe. Last I heard, and this was from one scientist giving a talk—the projection is that there is enough fresh water melt to cause the circulation patterns to change, so that's another issue to consider. The outcome is that these warm surface waters would no longer move from the south to the north, so northern Europe would get colder.

Epstein also discussed the Greenland ice cap: "If there were a complete erosion of the ice, it's going to take quite some time—I don't know that it's going to be a very rapid process, but who knows. I don't know. We're certainly going to see the Arctic sea ice going pretty quickly—it turned quite rapid last year. We'll see what happens this year. Greenland looks like it is losing more ice than it is accumulating, and if there are enough feedbacks, then the melting of the Greenland ice sheet could accelerate. But at this point, there is a lot of ice there, and it would take some time for it to disappear." Epstein noted, with regard to volumes of ice: "The Antarctic volume is four to five times greater than the Greenland volume," but he added that he's "not sure about Arctic sea ice" in comparison. But, when it comes to "melting and sea levels, if you're concerned about the sea level rise, it's Greenland and Antarctica. If the Greenland ice sheet melts, global sea levels will rise by six meter. If the Antarctic ice sheet melts, it would be an additional twenty-eight meters. We would lose a lot of land, a good chunk of land, with those kinds of sea level rises. But those are the extremes though." As for how long for the ice to melt, for the "Greenland ice sheet, it could be centuries. It could be a century, to centuries." As for the "Antarctic, who knows if it's even melting." Because of the structural asymmetry between the northern and southern hemisphere, the rapid ice melt in the Arctic may well not occur in the Antarctic, and if a net melt happens, it will be much slower. And when the ice cap melts, what might be revealed? "For Greenland, and Antarctica, it's rock—and anything that was organic underneath is probably rock now." So that means a long time before we see productive soil forming: "We are talking millions, tens of millions, of years, maybe even hundreds of millions. Tens of millions maybe" more likely "before we're talking primary succession, before any ecosystem would develop from scratch."

As for the potential for human habitation in the thawing polar regions, Epstein commented: "Humans can live anywhere they want, we can live in Antarctica if we want. You have to bring a lot of food and resources from elsewhere," but it's nonetheless possible. But there is potential that "lots of subsistence peoples, reindeer herders, subsistence hunters of caribou, whales, and sea life," could adapt to a newly emergent post-ice cap Greenland or Antarctica. "So, there are different options for subsistence in the Arctic. But why don't you see that in the Antarctic? It's a different environment, and I think it's a geographic issue. Another part of it, there is no land—well, there are really no land plants or herbivores to speak of, really only marine life there, so it would have to be Eskimo-like people, people who live on ocean life. But it's definitely a harsher environment out there, and it was also less accessible." So among the first permanent residents of a newly uncovered interior of Greenland or Antarctica would "probably have to be fishing cultures to start off. There won't be much else there."

But even if this happens, it won't happen any time soon: "The only thing is a lot of the things you are talking about are either not going to happen or we're talking about some very long time scales. The things we are concerned with are the sea ice melting, which is going pretty rapidly, vegetation changes in the Arctic, some reduction of permafrost, and rapidly changing temperatures in the Arctic." As for the changes that will happen along "longer time scales," or the more "questionable changes" that are occasionally speculated about, these would first come to pass "in Greenland, with the ice sheet" and then with "changes in ocean circulation patterns." And finally, ages from now, "even further out, there are changes in the Antarctic."

Just as the Greenland ice cap may eventually disappear, allowing that giant island to fulfill the promise of its name, much of the Arctic will one day open up to human habitation and development, eventually sustaining agriculture, and later silviculture—though not for many

generations, perhaps even centuries or millennia. But as this transformation takes place, the carrying capacity of the Arctic will expand, so that more and more people can call it home. This will create a new immigration opportunity for the Arctic states, which are now sparsely populated along their northern edge. People from poorer nations to the south may find compelling economic or political reasons to emigrate, and help the Arctic achieve its development potential as its ice cap thaws. This will no doubt create tensions with its original inhabitants, testing their hard won protections enshrined in their land claims and self-government accords, and pitting their interests against those of the newcomers to their land, much as happened in the Yukon at the end of the nineteenth century during the Klondike Gold Rush, and in Alaska during World War II and the early Cold War, and in the Northwest Territories during the diamond rush of the 1990s.

While Nunavut and much of Greenland have yet to experience their own demographic invasions, they are enjoying surges in exploration activities, onshore and offshore. As the climate continues to warm and the Arctic continues to thaw, such a movement of peoples from the south to the north seems inevitable. Many new political structures are now in place to intermedicate these pending conflicts, as a result of the hard work of land claims negotiators from Alaska to Nunavut, giving the Inuit and other northern Native peoples tools that were not available during earlier episodes of north-south contact, such as during the Yukon gold rush, or the earlier Russian colonization of Alaska or British colonization of Rupert's Land. These new structures will help to buffer the changes that are forthcoming, and to mitigate the many risks and uncertainties faced by the peoples of the North as the prospect of a post-Arctic world becomes more plausible.

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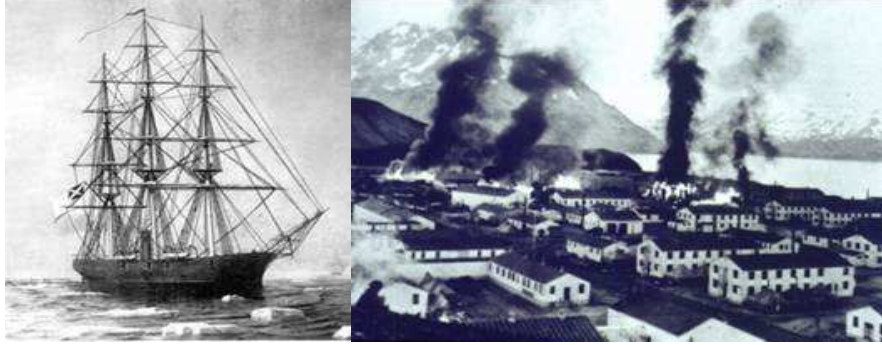
## Maps and Figures

**Figure 6: Early Colonization of the Arctic and Subarctic**



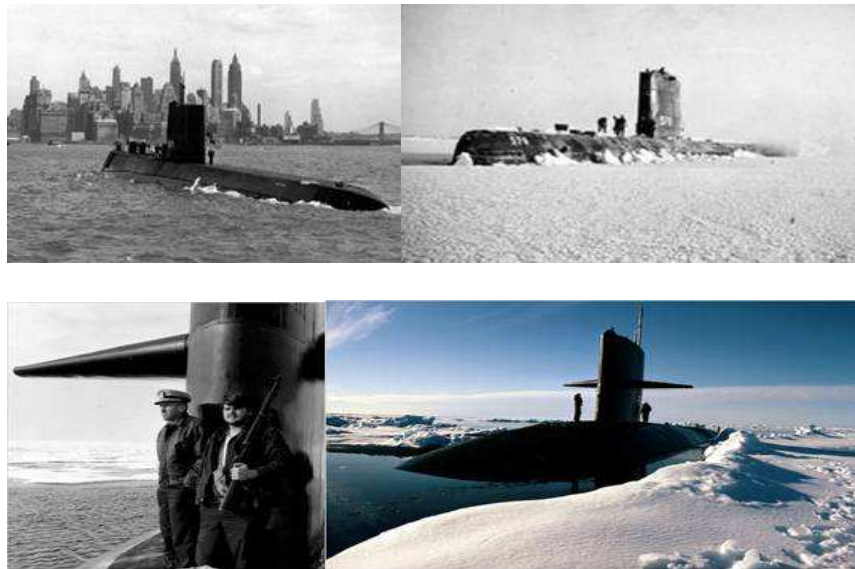
Left: Rupert's Land was granted to the Hudson's Bay Company in 1670. It was sold to Canada, becoming part of the NWT, in 1867. Right: Russian explorers first viewed Alaska in 1732, with landfall being made in 1741 during Vitus Bering's expedition, and its first colony was established in 1784 on Kodiak Island.

**Figure 7: Modern War Makes its Way North**



Left: The Shenandoah in pursuit of Yankee whalers in Bering Sea in June 1865, destroying much of the fleet—even as the war came to an end. Right: The Japanese bombed Dutch Harbor in June 3, 1942, and seized the islands of Attu and Kiska a few days later.

**Figure 8: Cold War ASW Activities Heat Up the Arctic Theater**



Above: In August 1958, the Nautilus transited the Arctic basin and in March 1959, the Skate surfaced at the pole. Bottom: On its August 1970 surveillance mission, the Queenfish explored thousands of miles of the Siberian Arctic.



Above: The route of the Queenfish, bringing us into the era of Arctic submarine and ASW operations.

Figure 9: The DEW Line served as an Arctic “Maginot Line” against a trans-polar strategic attack.

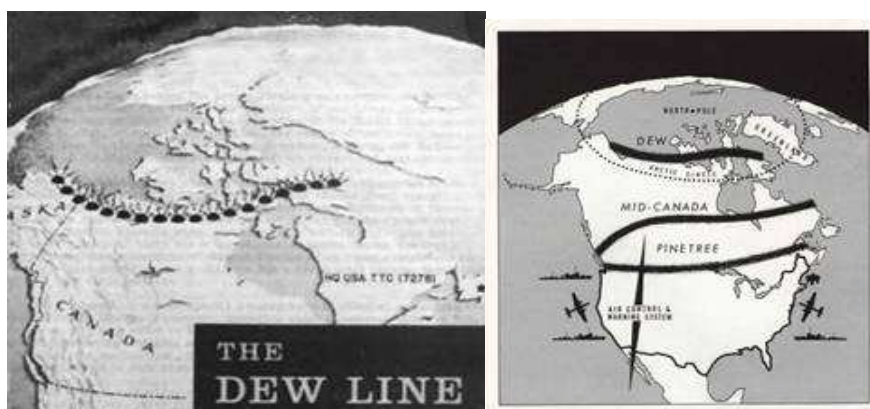


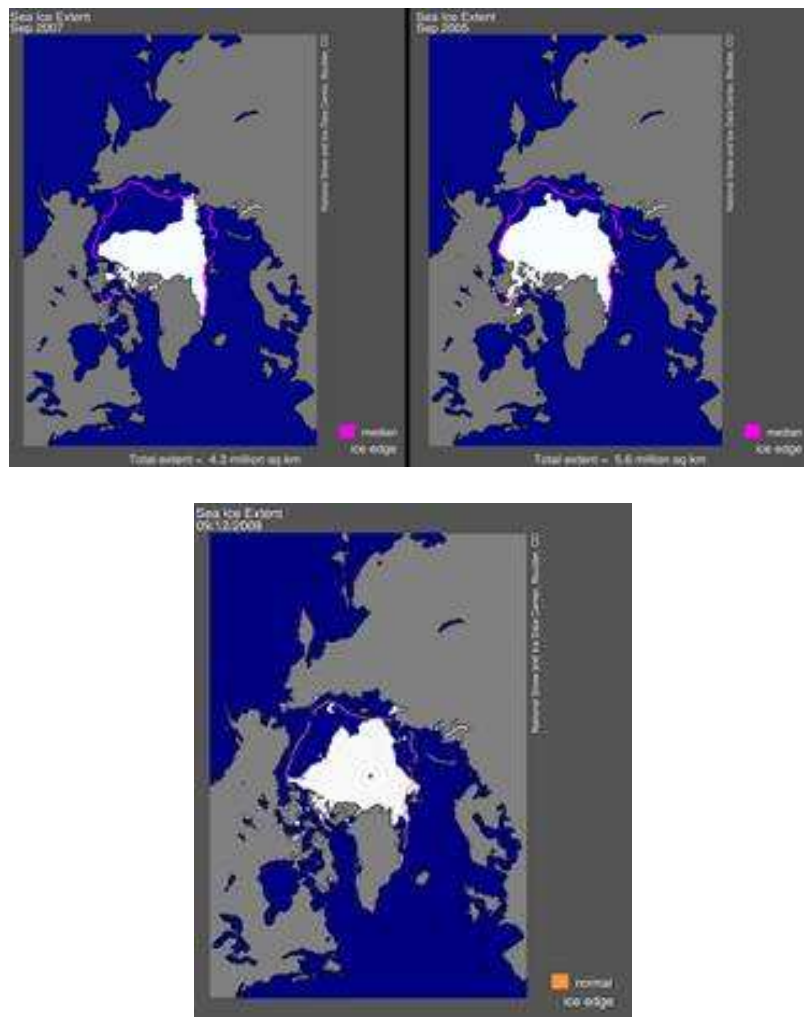
Figure 10: Maps, Metaphors, and an Arctic Mediterranean



Figure 11: Arctic Geopolitics: From “Lenaland” to ...?



Figure 12: Record Ice Melts Turn Dream of the Northwest Passage into Reality



Top: 2007 Ice Melt. Bottom: 2008 Near-Record Ice Melt.

Figure 13: A Thawing Arctic Precipitates a Resource Rush, with Diplomatic and Military Repercussions



Figure 14: Arctic Bridge Opens for Business, Linking Russia to Churchill by Sea

Churchill Gateway Development Corporation

Oct 17, 2007 11:50 ET

### Port of Churchill Welcomes First-Ever Ship From Russia

CHURCHILL, MANITOBA--(Marketwire - Oct. 17, 2007) - The Churchill Gateway Development Corporation (CGDC) is pleased to announce that the first-ever ocean shipment from Russia has arrived at the Port of Churchill.

A Murmansk Shipping Company vessel, the Kapitan Sviridov, will unload a shipment of fertilizer imported by Farmers of North America, a farm membership-based organization. Upon discharge of the fertilizer, the Russian vessel will be loaded with 20 000 tonnes of wheat destined for Italy - part of the Canadian Wheat Board's largest wheat shipping program through Churchill since 1977.

"This is an historic event," said Lloyd Axworthy, chair of the Churchill Gateway Development Corp. "This vessel represents the first shipment under the Arctic Bridge concept linking Russian and Canadian Prairie markets. It is an important step forward."

## Table 1: Clash of Civilizations: Colonial Expansion, War and Conflict in the Arctic

The ongoing integration of the Arctic into world politics has been taking place over several centuries, and includes several historically significant events:

<b>15th to 21st Century:</b>	The long quest for the elusive Northwest Passage, imagined as far back as the 15th century, and which gained momentum in the 18th and 19th centuries, and which was of intense interest to the British Navy, particularly during interwar periods; in recent years, the Passage has become ice-free in summer with increased commercial usage.
<b>17th to 19th Century:</b>	The colonization in Russian-America (1741-1867) and Rupert's Land (1670-1869), a result of both the commercial expansion of European powers and their strategic military and economic competition.
<b>19th to 20th Century:</b>	The rise of commercial whaling, which brought Nantucket and New Bedford whalers into the Beaufort and Bering Seas in the 19th century, followed briefly during the dying days of the Civil War by the Shenandoah—as the Confederacy sought to destroy the Yankee whaling fleet in the final days of the war. (This was the Arctic's first oil boom, and one of its first resource wars.)
<b>World War II:</b>	The 1942 Japanese invasion of the Aleutians, bringing the Pacific War to American territory, and demonstrating the strategic significance of Alaska to the modern world.
<b>Cold War:</b>	The bipolar division of the polar region during the Cold War, and the region's emergence as an important theater for submarine and ASW operations, and for strategic early-warning along the DEW Line.
<b>Post-Cold War:</b>	The post-Cold War geopolitical and climatic thaw brings us to the current era of renewed economic activity in the Arctic basin, with increasing military and diplomatic tensions between the Arctic states in response to a resurgent Russia.
<b>Ongoing:</b>	There has been an ongoing process of increasing political and economic integration of the Arctic's indigenous peoples, culminating in the 1999 formation of the Nunavut Territory, with some aspiration for even greater political autonomy approaching formal independence occasionally articulated—as demonstrated during the November 26, 2008 non-binding referendum on Greenland's autonomy, approved decisively with a 76% yes vote after a very high turnout of 70%. In response to these domestic pressures, most of the Arctic rim states have modified their assertions of sovereignty—engaging with the region's indigenous peoples and building new, inclusive systems of economic and political management.