



# MERIDIAN

## IN THIS ISSUE

Polar Bears, Climate Change, and Human Dignity: Disentangling Symbolic Politics and Seeking Integrative Conservation Policies	1
Coastal Byroads and the Trans-Polar Turnpike: The Future of Arctic Shipping?	7
Taking the Pulse of a Population Under Strain: The Inuit Health Survey for the Inuvialuit Settlement Region, Nunavut, and Nunatsiavut	11
Firing the Imagination: Art and Science in the Arctic	15
Book Review: <i>Perdre le Nord?</i>	20
New Books	22
Horizon	22

## POLAR BEARS, CLIMATE CHANGE, AND HUMAN DIGNITY: DISENTANGLING SYMBOLIC POLITICS AND SEEKING INTEGRATIVE CONSERVATION POLICIES

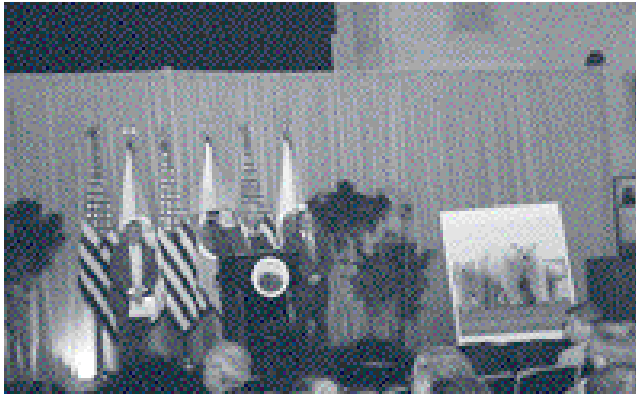
*Douglas Clark, Martina Tyrrell, Martha Dowsley, A. Lee Foote, Milton Freeman and Susan G. Clark*

Polar bears are recognized worldwide as living symbols of the Arctic, and have recently become prominent symbols in international campaigns to combat global climate change. On May 14, 2008 a slightly different symbolic association was presented to the world. Against a backdrop of American flags and large photos of polar bears, the US Secretary of the Interior announced his government's decision to list polar bears worldwide as a threatened species due to declining Arctic sea ice. Explicit in the same announcement was the current US administration's clear determination to prevent this listing under the *Endangered Species Act* (ESA) from being used to regulate greenhouse gas emissions (GHGs) or obstruct energy developments deemed vital to US interests.

While at first glance this listing may seem like a victory in the fight against climate change, the outcomes are likely to be complex and may take some time to become clear. Legal challenges have already begun, from environmental groups seeking to force governmental action on GHGs, the State of Alaska challenging the US government's science, and aggrieved American hunters who can no longer import the polar bear hides

from their guided hunts in Canada. A new US administration might very well decide to take action on GHGs, but the initial decision will at the very least delay development of substantive, practical, and effective polar bear conservation policies which are urgently needed. The primary criterion for appraising any policy decision is whether it is likely to resolve the problem it is intended to address: the "threatened" listing fails this most basic test. Further, that decision ensures that the only costs of listing polar bears are borne by a relatively few US citizens – plus the Canadian Inuit and Inuvialuit communities that, until this spring, derived an important source of seasonal income from those hunts. What, if anything, should be done?

The current discourse on polar bear conservation shows that much has changed since international conservation efforts for the species began almost 40 years ago. Then, regulating hunting was considered the main task in conserving polar bears. The need to protect some habitats, particularly denning areas, was also recognized. Conservation of polar bears internationally is based



US Secretary of the Interior Dirk Kempthorne announces the decision to list polar bears worldwide as a threatened species. Photo: Tami Heilemann.

on the goals and principles of the 1973 *International Agreement for the Conservation of Polar Bears and Their Habitat*, signed by Canada, Denmark, Norway, the USA, and the USSR, and has long been considered a success story of science-based wildlife management. However, a rapidly warming climate and accelerating social changes in the Arctic raise serious questions not only about conserving polar bears, but also about the polar bear management regime's ability to adapt successfully to new challenges. Underlying these pragmatic issues are even larger questions about our society's capacity to make common interest decisions in complex social contexts in the face of rapid environmental change.

OUR WORK :  
SOCIAL SCIENCES ,  
POLICY SCIENCES ,  
AND POLAR BEAR  
CONSERVATION

Regrettably, the new symbolic politics of polar bears in the context of climate change have been divisive and damaging to the ongoing process of reconciling the interests of Arctic indigenous peoples with those of "southern" society. This situation is neither new nor unique; indeed, there is a considerable body of literature on "people versus nature" controversies in conservation efforts, especially in the developing world. In the Arctic, historic trends, accelerating biophys-

ical and social changes, and the evolving international discourse on climate change have led to a series of decisions about polar bears – such as the US listing polar bears as threatened and the 2006 red-listing (as a species at high risk of extinction in the wild) of them by the International Union for Conservation of Nature (IUCN) – that seek biological goals with little regard for human context and human dignity outcomes. This is especially true for Aboriginal peoples in northern Canada, whose voices and perspectives have so far been marginalized in decision-making arenas largely dominated by positivistic western science. Our goal is to mitigate this overall trend and suggest conservation policies that are enduring, cognizant of biophysical and social realities in the North (including ongoing rapid change), and broadly supported, more especially by those impacted by those policies. We take an integrated approach to analysis of this evolving situation, and we bring together different kinds of knowledge that so far have been considered only in isolation, if not in downright opposition to each other.

Our project grew from work begun in 2005, when Milton Freeman and Lee Foote of the University of Alberta assembled a group of social science researchers and northern research partners to examine questions about the social, cultural, economic, and policy dimensions of polar bear hunting. The ESA listing process and other ongoing events meant we needed to develop a

strong problem orientation and to reframe the polar bear conservation "problem" in a truly multi-disciplinary manner, in order to consider human dignity along with the biological objectives. Our group and its goals are still evolving. We are currently working on a new, comprehensive, and more reliable problem definition, and developing options to advance it. From 2005 through 2008 the project received funding from ArcticNet, the Social Sciences and Humanities Research Council of Canada, and other academic, government, and NGO sources, enabling fieldwork across Nunavut and workshops with our northern partners. In early 2009, with support from the Walter and Duncan Gordon Foundation, the next phase of the project begins with a problem-solving workshop in Whitehorse. That workshop will bring northern wildlife co-management institutions together to identify concrete, contextual, and feasible approaches for decision-making about polar bears that integrate biological conservation and human dignity goals at the same time.

POLAR BEARS IN  
THE CANADIAN  
CONTEXT

Two populations of polar bears totalling approximately 3,000–4,000 animals currently live in Alaska and its offshore areas. In Canada an estimated 12,000–15,000 polar bears (roughly 60% of the estimated global population) form 12 discrete populations throughout the ice-covered seas and coastal areas of Nunavut, the NWT, Yukon, Labrador, Quebec, Ontario, and Manitoba. Polar bears are managed by an established network of government agencies, academic researchers, and Aboriginal governments and land claim organizations. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) lists them as a "species of special concern", not in imminent danger of extinction, a categorization that is the subject of increasing debate.

Over the past three decades, co-management regimes have been instituted following settlement of Aboriginal land claims throughout northern Canada, changing the distribution of authority and control in wildlife management systems and introducing Traditional Ecological Knowledge (TEK), along with biological science, as a basis for decision-making. In the case of polar bear management this trend has led to successes as well as controversies. For example, the 1988 *Inuvialuit-Inupiat Polar Bear Management Agreement* has allowed Aboriginal peoples in Alaska and Canada to jointly manage a sustainable harvest from a shared population of polar bears in the south Beaufort Sea. That agreement also served as the template for the *Agreement Between the USA and Russia for the Conservation and Management of the Alaska-Chukotka Polar Bear Population*, ratified in 2007. Other examples of successful co-management occurred in the 1980s and the late 1990s when Inuit hunters in Nunavut expressed their concerns that the polar bears in east Baffin Island and the M'Clintock Channel area respectively were declining. Scientific studies had not yet indicated a problem in the latter case, but subsequent scientific research quantified the hunters' concerns. Hunters and scientists worked together to develop and institute recovery plans in both cases.

Perhaps the most controversial decision in Canada occurred in 2004, when Nunavut's Minister of Renewable Resources announced that harvest quotas for six polar bear populations would be increased, in some cases substantially, based on *Inuit Qaujimagatuqangit* (IQ) – essentially the contextual, traditional knowledge of Inuit. Significantly, one of the populations whose quota was raised (and then later reduced) was the Western Hudson Bay population. That particular quota increase was criticized

heavily by individual non-Inuit biologists and environmental groups in the media, and was followed within months by the IUCN polar bear specialist group's Resolution Number One, "A precautionary approach when setting catch levels in a warming Arctic", which recommended "that polar bear harvests can be increased on the basis of local and traditional knowledge only if supported by scientifically collected information". This provocative position, and the predictably negative response to it in Nunavut in particular, signaled the beginning of a regrettably divisive phase in polar bear conservation efforts, both in Canada and internationally. Polar bear and climate science, as well as TEK, have figured prominently as surrogates for more fundamental political goals in regional, national, and international arenas. On close examination, conflicts in polar bear management appear to be more about the distribution of fundamental values such as power, respect, and well-being than about knowledge.

This politicization of values and knowledge is doubly unfortunate; the need for accurate information and understanding about the Arctic has never been greater. Recent global-scale climate assessments have shown a considerable decrease in Arctic sea ice that is projected to continue. Dramatic decreases in sea ice observed in 2005, 2007, and this year indicate those assessments may be too conservative, and some scientists have suggested that we may very well see an ice-free Arctic summer within a decade. Polar bears live throughout the ice-covered Arctic seas and are specialized predators on ice-dependent seals, which form a major part of their diet in most of their range. Reduced sea ice extent or duration caused by a warming Arctic climate may have profound negative impacts on polar bear populations. Biological studies in western Hudson Bay have furnished strong evidence that associates a warming climate with reduced polar bear body condition,

reproductive success, and population size; and two more of the world's 19 polar bear populations may now also be showing similar effects. Nevertheless, ecological complexities and regional geographic differences throughout the Arctic make accurate biological and climate predictions difficult, and decontextualized "one-size-fits-all" policy responses highly problematic. For example, recent projections of polar bear population viability indicate that polar bears, as well as seasonal sea ice, are very likely to persist in the Canadian High Arctic through the 21st century.

Despite such biophysical complexity, polar bears' relationship with sea ice has turned this iconic species into a prominent symbol used in international efforts to combat global climate change. One such effort, the 2005 petition by three environmental organizations to list the polar bear under the US Endangered Species Act, initiated the process that culminated in the US declaring polar bears a threatened species throughout their global range. This sequence of events has caused considerable concern among co-management organizations in Canada because of the perceived threat it poses to the sport hunting of polar bears in Inuit communities by mainly American hunters. That hunt – tightly regulated, sustainable, and producing both ecological and local social and economic incentives to conserve the resource – is considered a form of conservation hunting. As an institution of the social economy in remote Inuit communities, the conservation hunting of polar bears is intimately linked to core values such as well-being, respect, and ultimately identity. Fear of its loss is therefore not a trivial matter.



P O L A R   B E A R  
H U N T I N G   I N   T H E  
C O M M U N I T Y  
C O N T E X T

It is fair to ask how killing bears in a sport hunt can be justified economically, culturally, or ecologically. Indeed, even a cursory view of Canadian and US media coverage about polar bears in recent years reveals that much of the contextual information required to fully understand the situation is often lost through oversimplification and framing of the issue within conventional, over-generalized narratives. To make sense of this apparent paradox, it must be recognized that in Canada Inuit and Inuvialuit can legally harvest an agreed number of polar bears each year under treaty rights conferred by their land claims. The quota for each Inuit and Inuvialuit community varies over time and according to which population is hunted, but the total for Nunavut and the NWT is usually around 600 animals. Such rights cannot be contravened by the US Government or its legislation, though their full expression may be constrained by the indirect effects of such legislation – as is currently happening with the American ban on importation of polar bear sport hunt trophies. Canadian Inuit do seek economic benefit from polar bear hunting by conducting sport hunts (often for visiting American hunters), but deliberately restrain themselves from maximizing sport hunts at the expense of other societal norms and values. Where sport hunting occurs, some portion of a community's set quota of bears is deliberately set aside by the community's Hunters and Trappers Organization for visiting hunters on guided hunts. Significantly, no community in Nunavut allocates its entire quota for sport hunting; instead, the average is a little over 20%. Further, these guided hunts tend to focus on larger male bears and shift the harvest away from females, reducing the hunts' impact on bear population dynamics. Female bears with cubs and bears in

their dens have been strictly protected since 1973, under the international agreement. Biologists conduct demographic and ecological studies on polar bears and their data are used to develop quotas and management plans. Polar bears are probably the most carefully and sustainably hunted species in northern Canada.

One very tangible cultural value to Inuit and Inuvialuit has come from regulations prohibiting the use of motorized transport for sport hunters. Polar bear guides keep working dog teams, sustaining not just a tradition but an economical means of transport in an era of increasing fuel prices. Aboriginal people speak reverently about hunting polar bears, and the relationship between bears and Inuit hunters, for example, even involves its own highly-specialized vocabulary. External pressure is unlikely to alter this view, or the pragmatic benefits of polar bear hunting in remote northern communities.

The opportunity to guide polar bear hunters elevates bears' worth through economic value in addition to the already existing cultural and spiritual values. In 2007, for example, the two outfitters in Arviat, Nunavut received between \$21,000 and \$45,000

(CAD) per hunt depending on whether sport hunters were recruited by southern agents or by the outfitter directly. While a substantial portion of these hunting fees covers guide wages, cabin maintenance, food, and other costs, more still is invested in private or public community programs, while still creating profit for both outfitters. Between the two outfitters, 13 men were hired as guides and assistant guides in 2007. Guides earn \$4,500 per hunt, or \$9,000 for 20 days' work. In the case of both outfitters, assistant guides earned \$3,500 per hunt in 2007, or a total of \$7,000 for 20 days' employment. One outfitter also hires a camp cook, who in 2007 had also worked at one outfitter's fall caribou and winter musk-ox sport hunting camps earlier in the year. In addition to wages, guides, assistants, and coordinators receive substantial tips and gifts from satisfied hunters. Tips received since the advent of the hunt range between \$100 and \$3,000, and average \$1,500. Additional revenues flow to community businesses and craftspeople. While in Arviat, hunters stay in local hotels. At the end of most hunting expeditions, trophy hunters purchase handicrafts, which benefits local artisans. A similar

Photo: Janice Lang, DRDC Ottawa.



range of benefits has been documented across Nunavut and in the NWT.

The substantial amount of money earned through sport hunting leaves Inuit with more time for subsistence hunting, which is by far the most common use of wages. Without exception, guides purchase costly equipment such as skidoos, all-terrain vehicles (ATVs) and boats. In the North these have a short lifetime and often need replacing every other year. New equipment opens up opportunities to engage in subsistence activities with immediate and extended kin. For example, following the previous year's hunt the Arviat hunt coordinator purchased a new shotgun for spring goose hunting. He distributed most of his harvest of around 400 geese, as well as eggs, to community elders.

#### T I M E F O R A N I N T E G R A T I V E A P P R O A C H

There is a very real possibility of unintended and undesirable consequences from rule-making that excludes Aboriginal stakeholders. There has been a long history of imposing external regulation on traditional wildlife harvests in Canada's territorial north. Sanctions, laws, limitations, market disincentives and public pressure have been applied at various times to Aboriginal harvests of bowhead whales, narwhal, beluga whales, ringed and harp seals, walrus, migratory waterfowl, and even peregrine falcons. The Inuit hold knowledge that speaks to appropriate levels of harvest and self-limitation. Restriction from southern sources has been especially contentious since the late 1960s when self-determination, sovereignty, treaty rights, self-government and traditional knowledge came to be seen as cornerstones of indigenous peoples' existence within nation states. The response to externally imposed restrictions is not likely to be as quietly received in, say, today's Nunavut as such measures were in the 1950s. There is reason for concern that fur-

ther restrictions may be ignored or even serve as cause for deliberate defiance. If situations deteriorate that far, the entire institution of wildlife co-management may be damaged, which ultimately would benefit no one.

Values lie at the heart of polar bear management controversies. Defining problems to be overcome, and creating processes to clarify and secure common interests, are the central task. The decision processes in polar bear management do not sufficiently foster identification and securing of common interests among the numerous participants. At present, those participants express multiple competing perspectives in an arena that has been increasingly fragmented and symbolically charged by issues such as listing of polar bears under the US *Endangered Species Act*. We hope to discover possible ways forward, helping define and advance shared goals of stakeholders and other participants.

The polar bear situation exemplifies a narrative common in natural resource management and other human affairs, and is therefore a case we can learn from and apply to similar problematic situations elsewhere. Given the growing pace and extent of climate change impacts on species and ecosystems around the world, plus growing societal concern about those impacts and the often poor fit between globally promoted solutions and local social-ecological contexts for conservation, many similar conflicts are likely to emerge.

Simplistic calls to base conservation decisions on science are no longer sufficient, if indeed they ever were. The lack of reliable contextual knowledge concerning the polar bear's listing under the ESA demonstrates that policy decisions can be based on the best available biological science and still fail to meet the criteria of a good decision. Biological science has clearly been – and will continue to be – critical to polar bear conservation, but it alone will not bring under-

standing of all the relevant factors. Too much is at stake not to make every effort to get polar bear conservation policies right, meaning we must integrate all that is known into an operational picture of the whole.

Who should do this? Elsewhere we have suggested reconstituting the IUCN Polar Bear Specialist Group as a more inclusive body (*i.e.*, include indigenous peoples – people knowledgeable in integrated problem solving) and building explicit feedback loops to the countries that signed the 1973 Agreement, to assess progress towards the environmental objective of that agreement. One concrete way to conduct such integration would be the creation by the parties to the Agreement (Canada, the USA, Russia, Denmark/Greenland and Norway) of a comprehensive conservation action plan such as exists for all other species of bears. Norway has invited the other signatories to the 1973 Agreement to a meeting on international polar bear conservation in 2009. A notably positive development is the Canadian government's recent announcement of a roundtable on polar bear conservation to be held in the near future.

Such arenas would be excellent places for Canada and the other range states to confirm a commitment to an integrative approach to conserving polar bears, the Arctic ecosystem, and human dignity for all participants. Polar bears, northern peoples, and the international community deserve no less.

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# COASTAL BYROADS AND THE TRANS-POLAR TURNPIKE: THE FUTURE OF ARCTIC SHIPPING?

Ron Macnab

## INTRODUCTION

Melting ice in the Arctic Ocean has given new impetus to the centuries-old quest for a viable shipping route between the Atlantic and Pacific Oceans. Canada's Northwest Passage and Russia's Northern Sea Route are possibilities, but both present technical, political, and environmental problems. Such problems are unlikely to diminish the significance of these routes as prospective arteries for local cargo, for regional natural resource extraction and transport, and for tourism, but they could preclude their early and wholehearted acceptance by the international shipping community.

With their sights set firmly on developing an effective trans-polar passageway for moving cargo between Atlantic and Pacific ports, international shipping interests have been investigating the Trans-Polar

Route as an alternative. The Trans-Polar Route would link the Fram and Bering Straits across the central Arctic Ocean, using a new class of double-acting cargo icebreakers shuttling between trans-shipment ports in Iceland and the Aleutian Islands.

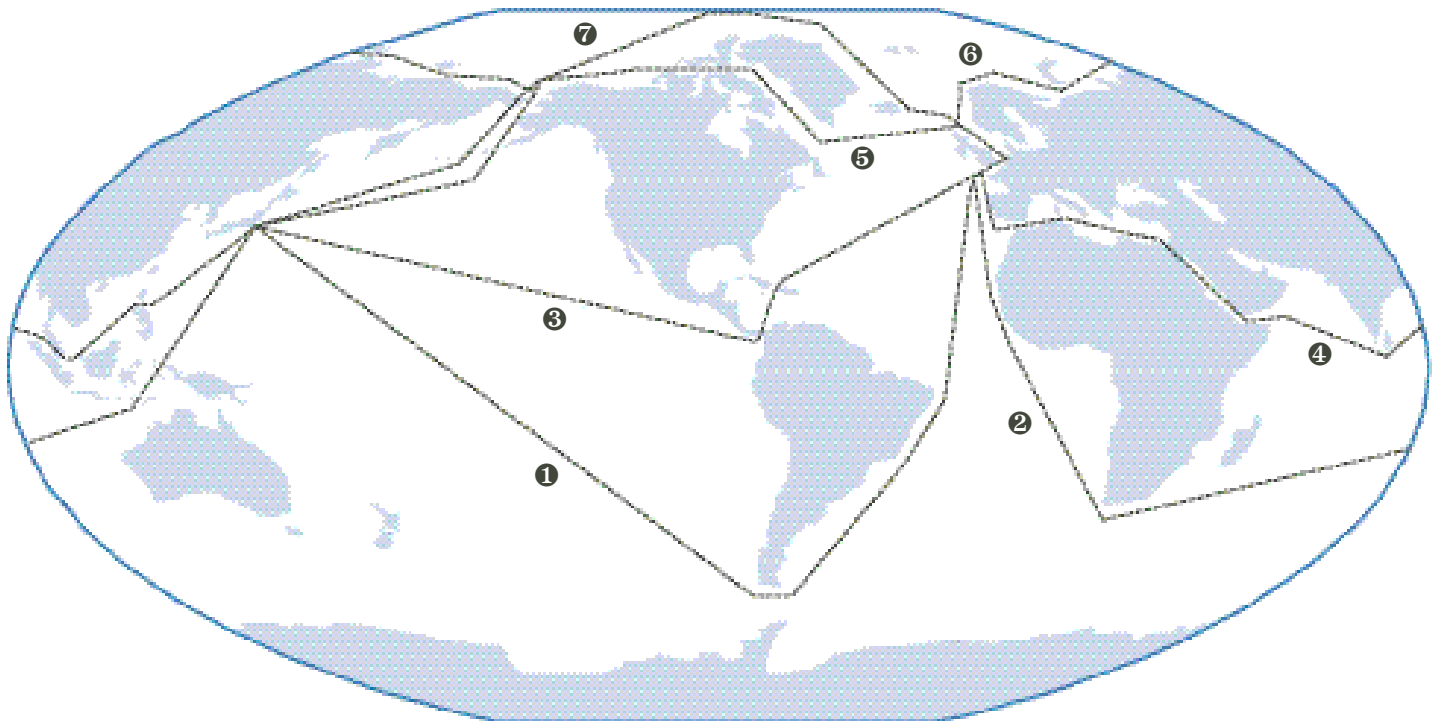
To borrow from the lexicon of highway planners, these developments could establish a two-tier regime for Arctic shipping, one that features a regional turnpike complemented by a network of local byroads servicing remote areas. In due course, the Northwest Passage and the Northern Sea Route could become the slower and more scenic byroads that support local traffic, while a Trans-Polar Route – the high-volume turnpike – would move cargo quickly and directly between Atlantic and Pacific gateways.

## THE QUEST FOR SHIPPING PROFITABILITY

There is little point in running a shipping line if it does not earn a reasonable profit. This economic truism is inspiring efforts to rationalize the global shipping industry to maximize returns while carrying growing tonnage. Ship owners constantly seek ways to realize economies of scale by operating larger vessels and by decreasing their transit times.

A major factor in this equation is the length of current global shipping routes. Figure 1 illustrates seven current and prospective trade routes that link Western Europe and the Far East. The four "traditional" routes (nos. 1 to 4) are considerably longer

Figure 1  
Present and prospective trade routes between Western Europe and the Far East. Lengths are listed in Table 1.



No.	Route	Length (nm)
1	Cape Horn	15,000
2	Cape of Good Hope	15,000
3	Panama Canal	12,600
4	Suez Canal	12,000
5	Northwest Passage	7,900
6	Northern Sea Route	6,200
7	Trans-Polar Route	5,700

**Table 1**  
Approximate lengths of trade routes shown in Figure 1.

than the three Arctic routes (nos. 5 to 7) under consideration. This explains the appeal of an Arctic pathway.

A second factor involves the transiting locks or restricted passages on certain routes that limit vessel size. This has given rise to a classification scheme based on the maximum sizes of vessel able to navigate three major routes (Figure 2): Panamax (Panama Canal), Suezmax (Suez Canal), and Malaccamax (Strait of Malacca). Size limitations on these vessels, particularly those passing through the Panama and Suez

Canals, translate into lower tonnages and higher shipping costs per unit. Prospective Arctic shipping routes offer shorter routes with potentially fewer restraints on vessel size, strengthening their feasibility as global trade pathways.

#### ARCTIC SHIPPING OPTIONS

In recent years, the Northwest Passage appears to have become more navigable during the summer. Experts nonetheless remain cautious about the prospects for year-round traffic in the near future, citing seasonal ice buildup and channel constraints that could still pose significant obstacles – compounded by the current uncertainty over the international status of the Passage.

In the meantime, Russia’s Northern Sea Route, which skirts the coast of Siberia, has for some time linked that country’s northern ports with southern centres. The prospect of winter ice remains a factor in this region, but for international users the region’s evolving regulatory framework represents the major source of uncertainty

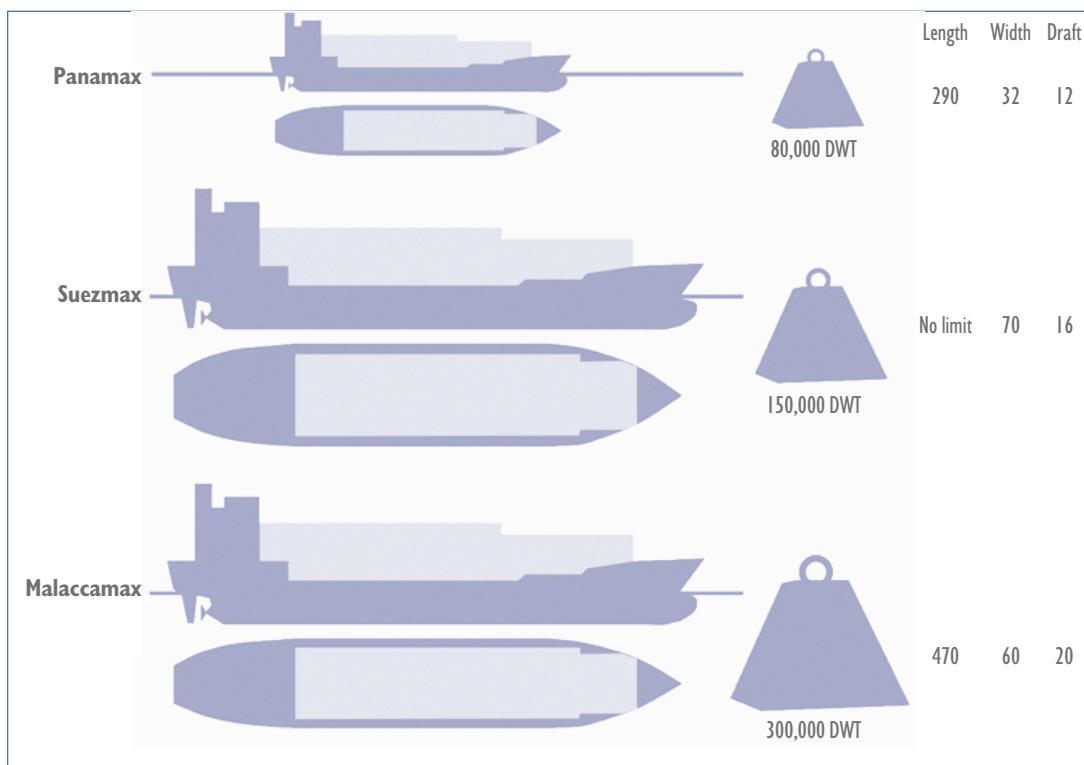
over the prospects for innocent passage.

Because their feasibility hinges on the rate of global warming and the resolution of geopolitical issues, the Northwest Passage and the Northern Sea Route may not become international year-round waterways for some time. Meanwhile, the global shipping community, driven by economics, will consider other options.

#### THE TRANS-POLAR ROUTE

Faced with technical and political issues in the Northwest Passage and the Northern Sea Route, shipping interests are exploring the potential of a Trans-Polar Route over the top of the world directly between the Fram and Bering Straits. One scenario would see trans-shipment ports in Iceland and the Aleutian Islands, where conventional vessels would transfer their loads to and from a new generation of double-acting cargo ice-breakers designed specifically for shuttling between the Arctic’s Atlantic and Pacific gateways (Figure 3).

In open water these innovative vessels look and perform like conventional



**Figure 2**  
Cargo vessels and their size constraints, imposed by choice of route.





Figure 3  
Prospective shipping routes in the Arctic.

ships; but on encountering ice they immediately perform a 180° turn and reverse into the pack (Figure 4). They then pull themselves stern first through the ice using steerable propulsion pods with hardened propeller blades that chop the ice into manageable slabs (Figure 5).

The double-acting concept has been tested and proven with full-sized vessels in the one-year ice of the Baltic Sea. The steady degradation of the polar pack suggests it will just be matter of time before such vessels can operate safely and routinely in the central Arctic Ocean.

**I N F R A S T R U C T U R E  
C O N S I D E R A T I O N S**  
With northern routes promising to become fully entrenched in the global shipping pattern, specific measures for vessel safety and environmental protection in Arctic conditions will be required.

Figure 4  
The double-acting icebreaking tanker *M/V Tempera*, operating in ice.



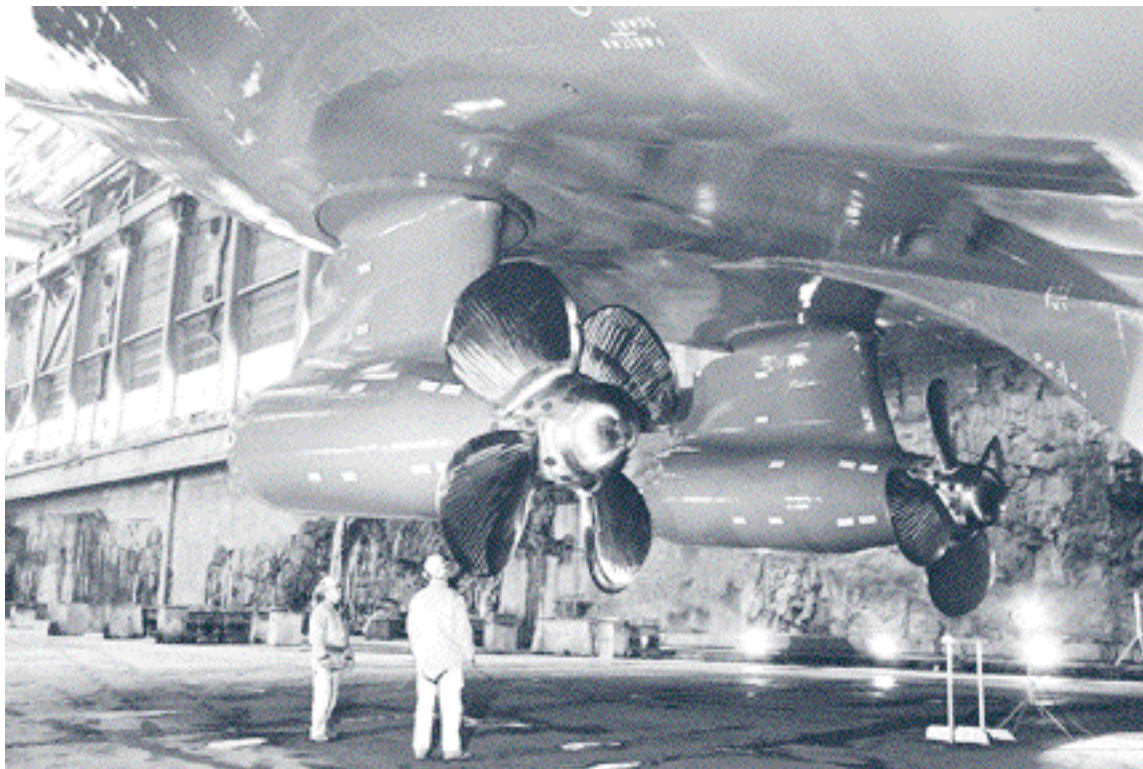


Figure 5  
Steerable propulsion pods on a double-acting cargo icebreaker. In addition to providing motive power, the pods churn through the ice and break it into small pieces that are easily pushed aside.

First and foremost is the need for accurate charts, particularly in the shallower and more constrained waters of the Northwest Passage and the Northern Sea Route. Once the navigability of routes has been established, it will be important to develop traffic management schemes in national and international waters for various purposes, *e.g.*, facilitating search and rescue operations in remote locations; monitoring vessel actions in environmentally sensitive areas; responding to environmental disasters such as oil spills and the accidental release of toxic materials; issuing ice and weather advisories; enforcing regulations; and promoting local and regional security.

As the Arctic opens up, national and international fishing interests will no doubt seek to harvest whatever they can, spawning a need to develop and enforce appropriate conservation measures. At the same time marine scientific research could increase significantly as ocean scientists move in to improve their understanding of an area that has remained largely inaccessible until now.

Given that the Arctic is a semi-enclosed region subject to the jurisdictions of five coastal states, harmonized laws and regulations applying uniformly throughout the Arctic Ocean and its connected waterways would be desirable. This would require significant diplomatic and political activity – not only in developing the regulatory framework, but also in securing its acceptance by the international community.

#### C O N C L U S I O N

Because it bypasses the technical and geopolitical impediments of other global trade routes, a shipping network that combines the proposed Trans-Polar Route with the Northwest Passage and the Northern Sea Route seems to offer an attractive approach for commercial shipping in the Arctic.

However, many significant concerns still need to be addressed. One is the potential for degradation of a marine ecosystem whose remoteness has so far protected it from the fate of other oceanic regions. Another concern is the need to develop a harmonized regulatory regime that will pro-

mote the effective management of shipping throughout the polar region.

It remains to be seen whether and how the necessary political and technical means can be mobilized to meet these challenges in an area that is only now becoming as accessible as the world's other oceans. With clear vision, good will, and an informed concern for the state of the polar sea, northern states have an unprecedented opportunity to safeguard the health of the Arctic Ocean that washes upon their shores.

*Ron Macnab is a geophysicist (Geological Survey of Canada, retired). He has recently reached the end of his first term on the Board of the Canadian Polar Commission.*

#### Acknowledgements

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F A L L / W I N T E R 2 0 0 8

# TAKING THE PULSE OF A POPULATION UNDER STRAIN: THE INUIT HEALTH SURVEY FOR THE INUVIALUIT SETTLEMENT REGION, NUNAVUT, AND NUNATSIAVUT

Stephanie McDonald

Rapid change in the North over the past half-century has had major effects on Inuit health. While the risk of starvation has been eliminated and Inuit are no longer isolated from medical care, they now suffer diseases and conditions that were rare in the past. Increasing rates of obesity, diabetes, cancer, and childhood respiratory disease, as well as suicide and family violence, bear witness to a population under strain.

No one is more interested in understanding and addressing this situation than Inuit themselves. Evaluating Inuit health in a systematic way is the first step toward improving it.

The Inuit Health Survey is the first comprehensive look at the health of Inuit in Nunavut, the Inuvialuit Settlement Region, and Nunatsiavut (Labrador). Inuit have expressed a desire to develop a health project that leaves a legacy for the future. Partners from northern and southern Canada are conducting the survey to provide information about the health and wellness of Inuit adults, children and communities throughout the North.

In February 2006 Dr. Grace Egeland of McGill University brought together in Iqaluit a group representing Nunavut municipal, regional, and territorial governments, as well as Inuit organizations, community groups, elders, and other concerned individuals to discuss the possibility of a territory-wide health survey. International Polar Year (IPY) funding had become available, providing a potential opportunity for extensive health research in the Canadian Arctic. The group endorsed the survey, seeing the need for a study similar to *Qanuip-*

*pitaa?* (How are we?) the 2004 Inuit health survey in Nunavik, and similar surveys of Inuit health underway in Greenland and Alaska. The other two Canadian Inuit regions, the Inuvialuit Settlement Region (ISR) and Nunatsiavut (Labrador), asked to be included.

Once the project obtained IPY funding, the Inuit Health Survey was born and given a name in three Inuit dialects from the

Environment (CINE), in a partnership that brings southern universities together with northern communities, Inuit organizations and government departments. By providing currently unavailable baseline data on the health status of Canadian Inuit, it will bring better understanding of the factors affecting Inuit health – “taking the pulse of a population under the strain of rapid transition”, as Dr. Egeland puts it.



Measuring bone density.

study area: *Qanuqitpit* (Inuvialuit), *Qanuippitali* (Nunavut) and *Kanuivvit* (Nunatsiavut), meaning “How about us? How are we?”.

The two-year survey is spearheaded by Dr. Egeland, who is Canada Research Chair and Associate Professor at McGill’s Centre for Indigenous Peoples’ Nutrition and

The survey is broad, encompassing health conditions as diverse as diabetes and mental health. The group Dr. Egeland brought together in Iqaluit “didn’t want only nutrition, they didn’t want only diabetes screening – they wanted a survey that





The *Amundsen's* clinic is well equipped for epidemiological research in northern communities. Here, Anna Bergen prepares to take blood samples from a participant.

would get at health indicators, and the information brought back to empower communities to address high priority areas”.

Currently, community leaders have only anecdotal information when speaking of emerging areas of concern or a health crisis. Inuit Health Survey data will inform northerners of their health status and show leaders the specific areas where funding, intervention and promotion are needed. “We have trouble in a lot of our smaller communities to access health funds,” said Crystal Lennie, Health Policy Coordinator with the Inuvialuit Regional Corporation. “We can say there are a high number of people with diabetes, but until you actually have the data with the backup and proof, you’re not able to access anything. It will be a good snapshot as to the health of our people right now.”

The Inuit Health Survey kicked off in August 2007 in Sanikiluaq, Nunavut’s southernmost community, with the arrival of the research icebreaker CCGS *Amundsen* and a team of nurses, technicians, bilingual interviewers and assistants. Over the following seven weeks, the Coast Guard vessel trav-

elled north to 17 of the territory’s 25 communities. In all, 1,214 people participated in 2007.

Tuktoyaktuk, in the Inuvialuit region, was the starting point for 2008 fieldwork. The ship travelled eastwards from Tuktoyaktuk, stopping at three more Inuvialuit

communities, the five communities of Nunavut’s Kitikmeot region, and then Resolute Bay in the High Arctic. A medical Land Team visited the inland communities of Inuvik and Aklavik in the ISR, and Baker Lake, Nunavut, in September.

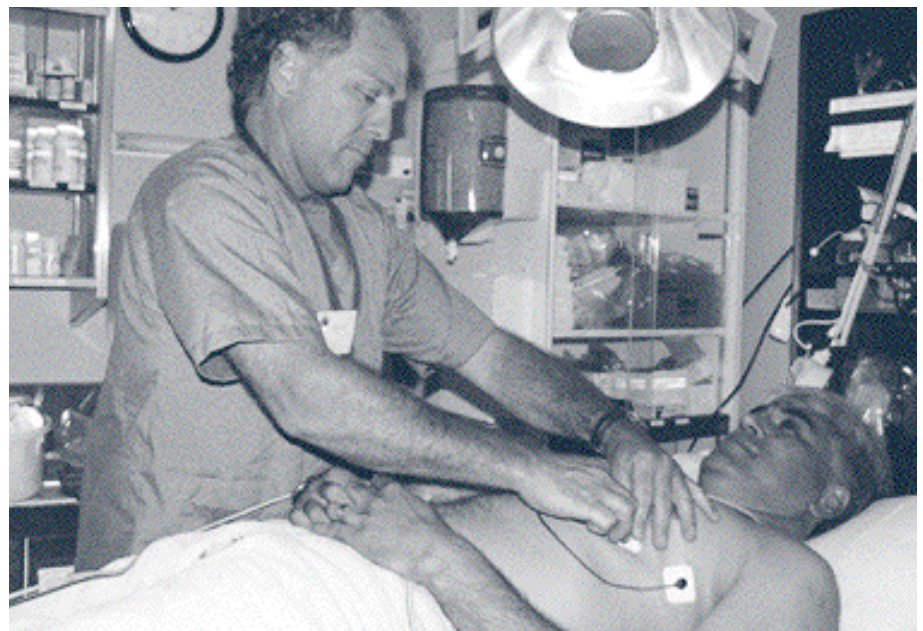
The final leg of the journey took place in October in Nunatsiavut, where the *Amundsen* and the Health Survey team visited five communities. Over 1,000 people are expected to participate in the 2008 portion of the survey across the three regions.

#### L O G I S T I C S

Logistics for such a project present a unique challenge in the Arctic, where most communities are accessible only by air or ship. The *Amundsen* is well suited for health and science research, equipped with state-of-the-art technology such as  $-80^{\circ}\text{C}$  freezers, which ensure the samples will not spoil before they reach southern laboratories for analysis.

Three land teams, comprised of a nurse and a bilingual Inuit worker, travelled ahead of the *Amundsen* to sign up participants in each community. Residents asked to

Michel Poulin puts a heart monitor on Northwest Territories premier Floyd Roland.





be part of the study were randomly selected and chose freely whether or not to participate after watching an introductory video shown by locally hired Community Research Assistants. During the *Amundsen's* visit, locally hired drivers transported participants from their houses to the beach area where a barge ferried twelve at a time to the ship.

**M E T H O D O L O G Y**

The survey draws on methods developed in several other national and international health surveys. A steering committee in each of the three regions, composed of regional and community representatives, oversaw management of the survey, and had the opportunity to review and add questions within the limits of compatibility with the Nunavik, Greenland and Alaska surveys. Each steering committee added its own questionnaire on traditional food consumption frequency, based on local country food.

tious food for all family members at all times.

Once on board the *Amundsen*, each participant gave a blood sample that university labs in the south will analyze for cholesterol and lipid levels and contaminants, as well as diabetes, *H. Pylori*, and other conditions. Nurses measured height, sitting height, weight, body mass index, waist circumference, fat percentage, blood pressure, and hemoglobin levels. A toenail clipping was collected for a selenium test: selenium level is a good indicator of how much country food a person eats.

Those over 40 years of age had additional tests including wearing a heart monitor for two hours and an ultrasound of the



Technicians Jean-Francois Aublet, Renata Rosol and Alyssa Shaw in the lab.

The *Amundsen* at Paulatuk.



The Inuvialuit steering committee included a section on self-reported allergies, asthma and dental health, for which the region currently has no data.

Land team members used a questionnaire to ask heads of household about domestic overcrowding and food insecurity – whether a household experiences food shortages or has difficulty providing nutri-

carotid artery to measure the fat deposit and consequent risk of developing cardiovascular disease such as stroke and heart attack. Women over 40 had their bone mineral density tested to gauge susceptibility to osteoporosis. For some Inuit, the visit to the *Amundsen* was the first time they had ever been checked for these conditions.

Participants were paired with a bilingual interviewer and together they went

through four questionnaires dealing with food frequency, food consumed in the last 24 hours, mental health, and community wellness.

According to Grace Egeland, “the real work begins once data collection is done”, for the process of entering data, sorting, and analyzing it is a multi-year task. The information must also be put into an understandable and usable format and returned without delay to participants, communities and other involved organizations. Adults in the surveys across the circumpolar North have the choice of being contacted in seven years time as part of the international follow-up. Data from the first survey and from the follow-up can be compared to evaluate the determinants of chronic diseases.

## PARTNERSHIPS

To ensure that the Inuit Health Survey respects community wishes, an invitation must first come from a hamlet's council for the *Amundsen* and the survey crew to visit. An agreement between McGill University and each Inuit jurisdiction's steering committee and communities specifies that all results will be returned to participants and communities before being published in journals, made public in presentations, or released to the media.

Names of participants and their community are removed from samples and stored in a locked safe at McGill University. Data is uploaded onto a computer that is password-protected and not connected to the Internet.

A results letter is sent to each participant in the survey within four months of his or her visit to the *Amundsen*. For each clinical test conducted, individuals are given either an indication that no problems were found or a suggestion to seek follow-up at the local health centre.

The Inuit Health Survey has set a precedent in the partnerships it has been able to form, not just between northern and

southern organizations, but also between different levels of government and Inuit organizations. A memorandum of understanding was drawn up between CINE, the University of Toronto and members of each region's Steering Committee which describes data and article ownership, citation and other pertinent issues. Inuit interviewers, as well as participants, have taken ownership over the project and in Grace Ege-land's view, "It's happening because people believe in it".

## LEGACY OF THE SURVEY

Co-principal investigator Dr. Kue Young tells the story of a Nunavut elder who stood up to speak at one of the planning meetings for the Inuit Health Survey. She made mention of diabetes, running rampant in First Nations communities in the Canadian south. "We don't want to repeat what others have gone through. Let's bypass this," she said. Her sentiment represents the motivation for the survey and speaks to the hopes that people have for it.

This largest-ever Inuit health survey conducted in the Canadian Arctic will leave

a legacy on several fronts. Baseline data, when compared to future data, will provide insights into the factors affecting the health of Inuit amidst rapid change in lifestyle and physical environment. The results will be an impetus for change, with communities, health care workers and government being able to develop appropriate Inuit-specific health delivery and promotion plans. Most importantly, Inuit will be provided with the answer to the question "*Qanuqitpit? Qanu-ippitali? Kanuivvit?* – How about us? How are we?"

*Stephanie McDonald is Communications and Research Manager at the Nunavut Association of Municipalities.*

### Communities Visited

Inuvialuit Settlement Region: Tuktoyaktuk, Sachs Harbour, Paulatuk, Ulukhaktok, Aklavik and Inuvik (by air).

Nunavut: Chesterfield Inlet, Kugluktuk, Cambridge Bay, Gjoa Haven, Taloyoak, Kugaaruk and Baker Lake (by air).

Nunatsiavut: Nain, Hopedale, Postville, Makovik and Rigolet.



Returning from the *Amundsen* by barge, Sachs Harbour NWT.



# FIRING THE IMAGINATION: ART AND SCIENCE IN THE ARCTIC

*Martin Rose*



The young participants, including three Canadians, produced an ice sculpture symbolizing climate change, on the site of a rapidly retreating glacier in Svalbard, Norway. Photo: Rebecca Zalatan.

There is a yawning gap between what we know and what we feel. Most of what we “know” we don’t really understand: it is “held by courtesy, through reliance on others, on the basis of authority and trust”. This sort of knowing is a practical necessity in a complex modern world – but it isn’t very inspirational.

For the most part, this is how we “know” about climate change. The fact that our knowledge is “held by courtesy” doesn’t make it any less reliable (in fact most of us would trust the international savants of the Intergovernmental Panel on Climate Change [PCC] far above any ability we have to prove matters to ourselves – and if we don’t, we should). But it means that our ability to feel

passionately about it is muted, filtered through the acceptance of authority. Sometimes we see for ourselves, when hurricanes rip through Stanley Park; or winter snowfall is gigantic or derisory; or Katrina wrecks New Orleans – but with a rich irony, scientists tell us that this kind of event-derived knowledge is actually unreliable, and doesn’t necessarily mean what we scientific and statistical innocents gullibly assume it to mean.

When I came to Canada in 2006 to run the British Council and to design and deliver a climate change program, I was interested by the challenge of bridging this gap between “knowledge held by courtesy” and passion. I was convinced that without passion we are unlikely to make progress on

the scale that addressing climate change demands, and I needed a partner who understood the mechanics of passion – an Engineer of the Imagination.

I came across the work of David Buckland and his wonderful Cape Farewell project, and made contact with him: we soon realized that there was much that we could do together. Cape Farewell is a visionary attempt to change the nature of thinking and communication about climate change; and to break out of a rigidly scientific discourse into something more integrated that



has much wider resonance. The project is founded in the belief that science is only one part of the global conversation: that the change of mindset and culture that is required of us if we are to cope with the warming world, is as much emotional and artistic as it is intellectual and scientific. As David wrote recently,

*Science has led, and continues to lead, our enquiries into climate change. One of the great pleasures for me during the past ten years has been the open dialogue we have with the worldwide climate science community. These are the most rational people I know, and to detect in them a real concern, and at times the palpable fear, that they have for humanity and of irreversible damage being done to our planet, is very worrying.*

In the service of this “open dialogue”, David has led five voyages in the schooner *Noorderlicht* to the Norwegian Arctic in the last seven years. Each voyage has put artists and scientists together in this small boat, with sculptors, choreographers, painters and writers, all helping with oceanographic research while experiencing the extraordinary emotional and aesthetic impact of the Svalbard archipelago and the seas around it. The scientists on board have led multi-year research on currents and temperatures at the top end of the Gulf Stream, while also observing the Greenland Ice Cap and the effect of its melt in the waters on the east coast of Greenland, towards Cape Farewell itself.

For the artists, the impact is enormous. They have included Antony Gormley, Rachel Whiteread, Max Eastley, Brian Jurgen, Siobhan Davies, Vikram Seth and Gretel Ehrlich, among many others. Ian McEwan, another voyager, wrote what he called a “word sculpture”, of which this is part:

*The pressure of our numbers, the abundance of our inventions, the blind forces of our desires and needs are generating*

*heat – the hot breath of our civilization. How can we begin to restrain ourselves? We resemble a successful lichen, a ravaging bloom of algae, a mould enveloping a fruit.*

*We are shaped by our history and biology to frame our plans within the short term, within the scale of a single lifetime. Now we are asked to address the well-being of unborn individuals we will never meet and who, contrary to the usual terms of human interaction, will not be returning the favour...*

*Pessimism is intellectually delicious, even thrilling, but the matter before us is too serious for mere self-pleasuring. On our side we have our rationality, which finds its highest expression and formalization on good science. And we have a talent for working together – when it suits us.*

After McEwan’s return from the Arctic, his whole text was projected onto the walls of Bodley’s Library at Oxford, a text for the times. He captures the cultural, imaginative challenge that faces us – that of an altruistic pact with a distant future. Cape Farewell has assembled a remarkable exhibition of work by artists who have voyaged

on the *Noorderlicht*. It is called *Burning Ice*, and has shown in London, Liverpool, Hamburg, Madrid and Kyoto. We hope to bring it to Canada in the spring of 2009. It encapsulates, in a wide variety of forms, artists’ reactions to, and their reflections on, the Arctic and its awful predicament.

In 2007, the Cape Farewell team took what seems in retrospect like the obvious next step – and it was one that fitted perfectly into the need I was feeling here in Canada for a way into the imagination of the younger generation. The 2007 Svalbard voyage was extended by an extra ten days, and a group of a dozen high school students replaced some of the artists and some of the scientists, for a voyage of their own. Last year the group was made up of seven young English students, two Germans – and three Canadians. With them went art and science teachers, film-makers and researchers.

The three Canadians were all girls (selected on merit – it’s an interesting comment that 75% of Canadian students taking part in our climate change projects have been girls). One was a young Inuit student, Dorianna Sammurtok, from Chesterfield Inlet in Nunavut; and two were from Montréal.

The schooner *Noorderlicht*. Photo: Rebecca Zalatan.





Cape Farewell science teacher and choreographer Suba Subramaniam dances in Svalbard, Norway at the Kongsvagenbreen glacier. Photo: Rebecca Zalatan.

As they have told me since, they didn't know what to expect at all (though whatever it was they were determined to do it), but what they got was a life-changing experience. Recently, at a conference of senior Canadian educationalists, I listened to our two Quebec students speak eloquently and passionately about the impact of their voyage north; and I was extremely moved by the articulate and committed way they spoke about working on real science and real art in that fragile northern environment, experiencing its utter beauty and coming to understand the danger it is in – and that this danger is a harbinger of things to come for all of us, unless their generation acts now. As one of them, Shona Couturier, said:

*What you have got to understand about my generation is that we don't lack commitment – we lack knowledge.*

They have set about making good that knowledge gap by public speaking and writing, and through the art work that has

come out of their own Arctic experience. Shona has produced a dynamic photographic exhibit of glacier melt which is on display at the Ontario Science Centre. Alongside it is a stunning work in stained glass by her shipmate Amélie Tremblay-Martin, portraying the plankton that she hauled up from the sea and put under her microscope; and which stand to be decimated, removing a vital length of the food chain, by oceanic warming.

What is striking, and important to me, is that the knowledge of which they speak with such commitment is not just science: it is a holistic understanding, shaped by science and an artist's imagination and expressed through the mind and the heart together.

All the students on the voyage brought with them an art and a science project of their own, which they fitted into their schedule on the boat alongside the group work in which all participated together. Some of the artwork takes shape on the voyage; more is put together over the months after the students return home, the more ambitious

examples often requiring grants for their completion (which in Canada came through the generosity of ArtSmarts, supported by the McConnell Family Foundation).

What is very clear is that these young people from three countries found no contradiction or discomfort in the emotional quality of their own response to the science and the experience of climate change. Perhaps this was facilitated by the art projects that they also undertook – not just the individual projects which in the case of our young Canadians are now bearing fruit after almost a year's work, but the projects that they did together on the shore at Svalbard.

But there is something missing from the project as I have described it so far. Important and transformative as the voyage was for the twelve children on board *Noorderlicht*, the impact on them alone is not enough to justify the huge logistical efforts and the not inconsiderable cost of putting them there. We had to build in a plan for



multiplying that impact many, many times over; for creating an echo-box that would make of this small event a loud noise. We set about doing this in two main ways.

The first was to amplify the voyage itself. A basic principle was that every voyager represented her or his school: as well as being individuals, they were representatives of a group of interested and active students. To begin with we chose the school, not the student; and only after several months of project-development within the group did we move on to selecting with the help of the teachers (and sometimes the students, too) the one person who was going to travel. This left each of them with a sense of responsibility towards their “Ground Crew” – a ground crew which was busy handling communications between ship and classroom, liaison with the local press, a bit of fund-raising, contact with feeder elementary schools and other tasks. But a ground crew which was, however one softens the blow, not going to the Arctic – which in turn gave the voyagers a strong sense of having to do their schoolmates proud.

At the level of the whole ship’s com-

pany, a control room in London handled a complicated program of blogging by every student, live conversations with their schools and the uploading of film, photography and words to the Cape Farewell website. Two cameramen and a sound recordist worked 24 hours a day (or so it seemed) to capture events, impressions and reactions. A small proportion of this was posted to the web, but most was either canned for TV stations covering the voyage; or put on the shelf to be edited into educational films and classroom materials.

These include a carefully crafted account of doing art and science in the Arctic, split into clips the right sort of size for introducing lessons; a half-hour documentary about the students’ voyage and the follow-up once the English children got home; and films aimed at the classroom in a directly academic sense. These are all attempts to make the experience of the individual young people into an experience that can be shared

**The three Canadian voyagers on the Cape Farewell Youth Expedition 2007. From left to right: Shona Couturier, St. Hubert, Quebec; Amélie Tremblay-Couturier, St. Lambert, Quebec; and Doriana Sammurtoq, Chesterfield Inlet, Nunavut. Photo: Rebecca Zalatan.**

by others. All the films are free to download, all over the world, and will be promoted by the British Council’s 200 or so offices. In Canada this distribution is supported by the Royal Canadian Geographic Society and *Canadian Geographic*.

That’s where we got to after the first voyage. We were pretty pleased with the result, and with the amazing way in which the students who had taken part then took up the cause of climate change when they got back. They are active doers and passionate speakers, who have absorbed the business of climate change into their lives and radiate a commitment and an understanding beyond their years.

But we wanted to do even better. So for 2008, I proposed to David Buckland that we run the Cape Farewell student voyage here in Canada; and that we recruit a student from every province and territory of Canada. And that is what we have done. At the end of 2007 we ran a national competition, asking schools to tell us, not what wonderful students they had for us (we knew that), but what each school would do collectively, both to support and prepare a student representing the school on the voyage; and to incorporate their student’s experience into the collective experience of the school, on her or his return. The response was wonderful, and we quickly chose thirteen schools. They spread right across Canada, from Victoria, British Columbia to Canso, Nova Scotia, and from Repulse Bay, Nunavut to Gatineau, Quebec.

This year the voyage is bigger, longer and more international than last. Twenty-eight students in all will board a larger boat in Reykjavik, Iceland, on September 7, and sail across the North Atlantic, along the east coast of Greenland and around Cape Farewell, over the Davis Strait and up the coast of Baffin Island, before turning round and ending up at Iqaluit on September 20. Sixteen of them will be Canadian – the 13 original schools being supplemented by three



more, two of which were sponsored by the visionary Ontario environmental charity known as “rare Charitable Research Reserve”. With them there will be another 12 students, from Ireland, Britain, Mexico, Brazil, India and Germany – and they are all now working on their international links in preparation for the expedition.

The expedition will land regularly all along its route, visiting scientific sites, settlements and environments chosen for research and teaching work by the expedition’s two scientists (Bruno Tremblay of McGill and Chris Burn of Carleton), and its two artists (Colette Laliberté of the Ontario College of Art and Design, and Geneviève Coté, a well-known book illustrator and winner of a Governor-General’s Award). There will also be four teachers, three cameramen, a photographer, an IT manager and British Council staff on board. The vital link with Cape Farewell will be provided by Suba Subramaniam and Colin Izod, both educators and artists who have voyaged regularly on the *Noorderlicht* and who first conceived the idea of a students’ voyage.

Although the scale and the ambition are larger, the vision remains the same. Everything that we are doing has the objective of using the experience of the Arctic to catalyze interest, innovation and activism. We want to empower this generation of our children, and give them a sense of their own potency in shaping the future. They too will work on science and arts projects; they too will come back with their imaginations fertilized and their commitment sharpened. We hope that they and the experiences that we record on film will help to transform the quality of learning, so that the imagination of Canada’s, and the world’s, youth can be caught by this urgent need. We look forward too, in partnership with Canadian establishments like the Ontario College of Art and

Design, the MaRS Centre, which fosters collaboration among the communities of science, business, and capital the Ontario Science Centre, ArtSmart, the Royal Canadian Geographical Society, and many others, to building a bigger, louder sounding-box.

This year, too, there is a voyage of artists and scientists, as in previous years. It will be working mainly in the Davis Strait between Baffin Island and Greenland, measuring the currents; and along Greenland’s west coast. This year’s artists are mainly musicians, some of them famous names like Feist and Moby and Jarvis Cocker, Vanessa Carlton, and John Paul Jones of Led Zepelin. We shall hope to hear music and songs that can trace their origins to the cold waters of the north Atlantic and the catalytic experience of being cooped up for many days on a small boat with oceanographers, climatologists and marine biologists.

As well as taking students to let the sensations of the Arctic run through their fingers, lungs and minds, we have done something similar with international climate politics. Three brilliant young Canadians went under British Council auspices with the Canadian Youth delegation to the UN Climate Change Convention (COP) in Bali last December, and played a part well beyond their years, coming back to Canada fired up by what they had seen happening – and not happening.

Another parallel scheme called the “International Climate Champions” took three young Canadian women first to London last spring, where they helped draft a youth declaration on climate change which was presented to the Minister for the Environment – and by him to the Prime Minister. They went on to represent Canada in a multinational youth delegation to the G8 environment ministers’ meeting in Kobe, spending a week in meetings and seeing the Japanese approach to action on climate change, before presenting a refined version of the same document, now called the *Kobe*

*Challenge*, to the assembled environment ministers of the G8 – a statement of what the youth of the world expects of its elders.

Behind the three who have gone to Kobe is a larger group of seven, who went with the British Council to Whitehorse for the Canadian Science Writers’ Conference. They met again in August near San Diego, with their American counterparts for a week-long climate camp at which shared their experiences, and planned together how they can carry out joint international work on climate change and the international processes that try to regulate it. I believe that in the next few years, the voices of young men and women, whose world is the stake in this high-stakes game, will become more and more important. And I think that our Arctic voyagers, our Kobe and Whitehorse ambassadors, and our COPpers will be at the forefront.

So there you have it. Climate change is an existential threat to life on earth, and it needs to be addressed now. The task is huge, but not impossible. It is of course a highly technological challenge which will tax the brains of engineers and scientists, statesmen, diplomats and businessmen. Some of these young scientist-artists will fill those roles: among them are already visible some very remarkable young leaders.

But it is also, and supremely, a task of the imagination, which demands that we all see the world a little differently. I recently heard a remark reportedly made by a First Nations woman to a white Canadian researcher on the west coast, which seems to me to sum up beautifully our dilemma. She said: “When are you white folks going to start living as though you planned on staying here?” What she saw only too clearly is that the demands made on the earth by our



## BOOK REVIEW

François Trudel

**Perdre le Nord?** by Dominique Forget, afterword by Bernard Voyer. Montreal, Éditions du Boréal and Névé éditions, 2007. Paperback, 262 pp. ISBN: 13 978-2-7646-0536-3.

Written by a science journalist with contributions from many experts and scientists, this book takes on the burning question, currently very popular with the media, of the North's current and future status. The book concentrates on the North's complexity and the rapid changes it is undergoing, including climate change, the potential opening of the Northwest Passage to navigation, increased access to resource exploitation in the Arctic Archipelago, eventual negative impacts on future environmental and social threats, and not least, questions regarding Canadian claims over the marine portion of our northern territory and the need to affirm our sovereignty.

The book includes seven chapters, a list of the many collaborators, experts, and scientists consulted (including biographies of six), three appendices (on the conquest of the Arctic, the main conclusions of the fourth report of the Intergovernmental Panel on Climate Change, and a brief account of the four International Polar Years), twelve pages of references, and a list of illustrations and tables (including several plates of colour photographs of arctic scenes).

Beginning with a backdrop of "Northern Passion" that serves as an introduction (chapter 1), the book starts with an essay on climate change in the Arctic. The most worrying aspect of this is the rapidly climbing "hockey stick" pattern of temperature increase displayed by an average temperature graph covering the past 1,000 years (chapter 2). Evidence indicates that the effects of climate change will be many, and that some

profligate energy-use, and our apparently limitless consumerism, are depleting natural resources fast and inexorably; and our effluents and emissions are sorely testing the resilience of the environment. It would be absurdly romantic to suggest that all pre-industrial societies lived somehow in balance with nature: Jared Diamond has documented, in his chilling book *Collapse*, how societies as widely spread as the Norse Greenland settlements, the Mayans and the Easter Islanders all chiselled the ecological foundations out from under themselves. But we are doing it faster, and on a grander scale, than has ever before been attempted.

Something will have to give. If we are nimble and can imagine our way out of the cul-de-sac in which we now find ourselves, it is just possible that what gives will be our carbon-gluttony and our consumerism. But this will demand what David Buckland calls "a cultural shift as great as was witnessed in the Enlightenment, a wind of change that embraces all, and in doing so secures our and our children's future". This cultural shift, this willingness to imagine radical change, to negotiate the non-negotiable and to address what Ian McEwan described as "the well-being of unborn individuals we will never meet and who, contrary to the usual terms of human interaction, will not be returning the favour" – this is the challenge that our children face. It requires a systematic reshaping of our human appetites, a very different philosophy of life that looks for its satisfactions in different places and different activities; that accepts and explores the reality of direct causal connections between how we live and the shape of our common future. A cultural paradigm-shift of huge significance.

Canada is at the fulcrum of this para-

dig shift. A nation in whose self-image and artistic imagination, if not in whose actual individual experience, the Arctic plays such a central part, is in the front-line. As Sheila Watt-Cloutier has written "The Arctic is the barometer of the world's health", and the mercury is falling fast. The Canadian Arctic is an unmissable signal of rapid, lethal global warming; and a standing reproach to inaction. Here in Canada we have the evidence, rational and emotional, scientific and imaginative, in front of our noses, and we must not ignore it. The consequences of doing so will be devastating.

It is a mammoth task. As the great German novelist W.G. Sebald put it,

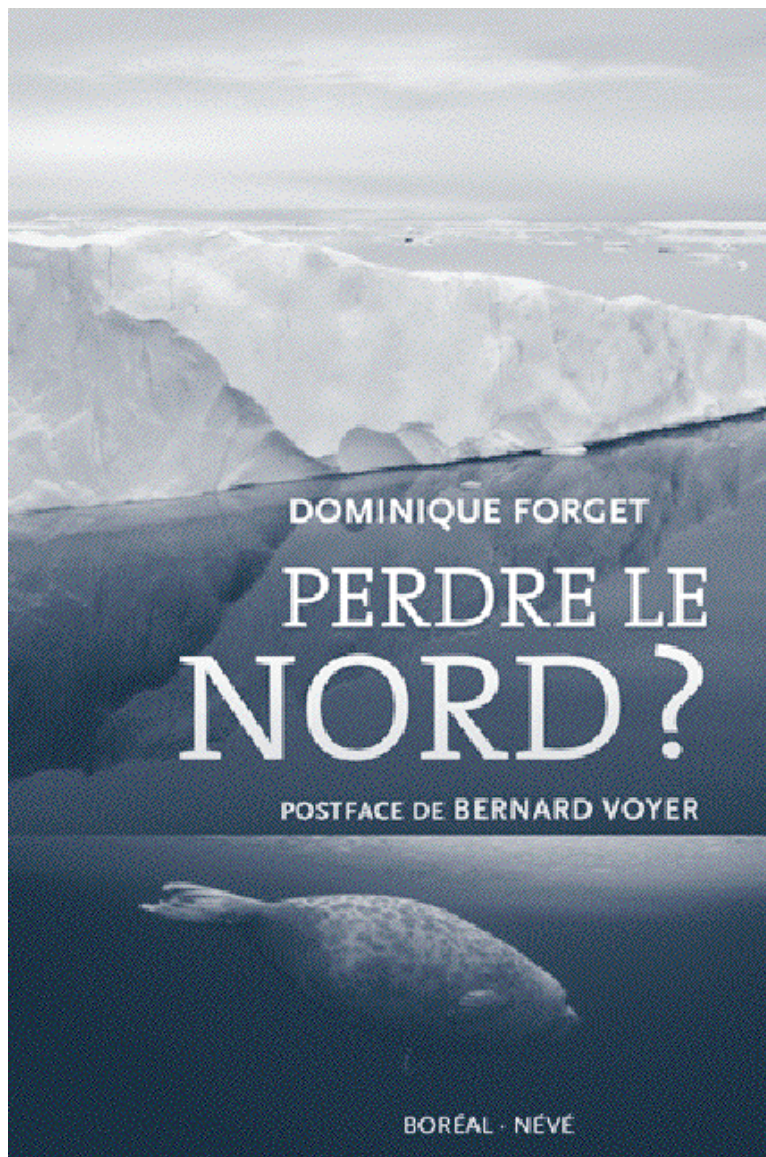
*our spread over the earth was fuelled by reducing the higher species of vegetation to charcoal, by incessantly burning whatever would burn. From the first smouldering taper to the elegant lanterns whose light reverberated around eighteenth century courtyards, and from the mild radiance of these lanterns to the unearthly glow of sodium lamps that line the Belgian motorways, it has all been combustion...*

Cape Farewell and its voyages are an attempt to equip our children's generation to call time on combustion, and to imagine doing so as a triumph, not a defeat, for our civilization.

*Martin Rose is Director of the Canadian office of the British Council. He wrote this article before the 2008 Cape Farewell expeditions took place. For more information on these successful voyages, please visit the Cape Farewell website at [capefarewell.com](http://capefarewell.com).*

are already visible in Canada: on biodiversity (chapter 3), on Inuit (chapter 4), on navigation in northern waters, and on resource accessibility in the Arctic Archipelago (chapter 5). What is more, they raise geopolitical questions regarding ownership of the Canadian North, particularly the maritime zones (chapter 6). We all face a significant environmental challenge that Canada postpones dealing with, unlike Europe, which is facing the challenge head on (chapter 7).

This book has several qualities. Content is presented simply, making it accessible to a wide audience. It clearly summarizes a number of reports and other environmental science publications which the media occasionally mention briefly and in passing (including the Report of the Intergovernmental Panel on Climate Change). It presents the opinions of several scientists and other experts working in the Canadian Arctic (including Louis Fortier, Dominique Berteaux, Suzanne Lalonde) on climate changes and their consequences in many areas. It describes several recent projects, those of the research group ArcticNet among others. It presents some Inuit voices (Mary Simon and Sheila Watt-Cloutier), who emphasize the risk to the future of Inuit posed by the current environmental and geopolitical situations. I should also add that the book's very effective use of maps and figures greatly facilitates the reader's understanding of these issues.



In a more critical vein, I felt like I was reading a lengthy article in *L'actualité* or *Macleans*' because of the many quotations from experts (with photos of those most often quoted) scattered throughout. Also, in the Canadian Arctic there are territorial governments (Yukon, Northwest Territories, Nunavut), whose many responsibilities are constantly expanding. Why was greater effort not made to understand and communicate their positions on the central issues and their roles in the drama now unfolding in their jurisdictions? The author seems to have developed useful contacts with many specialists working closely or peripherally with natural sciences in the Arctic and within ArcticNet – the source, incidentally, of

many of the book's beautiful photos – but social science contributions were less evident and I searched the references in vain for publications like the *Arctic Human Development Report*, which would have been a useful resource. A demanding reader might have looked for some parallels between climatic warming in the Arctic and the Antarctic, and some circumpolar perspectives – but perhaps that would be too expansive a subject for this book.

The book's title, the French expression *perdre le nord* (to lose north), can have several meanings. Losing sense of direction and losing reason are two. Have we lost our bearings – have we lost our heads regarding the North? Whoever gives this book a careful reading, including the short afterword by Bernard Voyer entitled simply "sos", will not be

able to help asking similar questions about the Arctic's future – and also, even more crucially, the future of the planet and of humanity.

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## NEW BOOKS

***Power Struggles: Hydro Development and First Nations in Manitoba and Quebec***, Thibault Martin and Steven M. Hoffman, eds. Winnipeg, University of Manitoba Press, 2008. ISBN 10: 0-88755-705-8, ISBN 13: 978-0-88755-705-7. [umanitoba.ca/uofmpress](http://umanitoba.ca/uofmpress).

This book examines the evolution of new agreements between First Nations and Inuit and the hydro corporations in Quebec and Manitoba, including the Wuskwatim Dam Project, Paix des Braves, and the Great Whale Project. In the 1970s both provinces signed so-called "modern treaties" with First Nations for the development of large hydro projects in Aboriginal territories. In recent times, however, the two provinces have diverged in their implementation, and public opinion of these agreements has ranged from celebratory to outrage. *Power Struggles* brings together perspectives on these issues from both scholars and activists.

***Bei Inuit und Walfängern auf Baffin-Land (1883/1884). Das arktische Tagebuch des Wilhelm Weike*** (Among Inuit and Whalers on Baffin Land, 1883–1884: Wilhelm Weike's Arctic Diary), Ludger Müller-Wille and Bernd Giesecking, eds., with an introduction and extensive

commentary by the editors. Minden, 2008 (Mindener Beiträge 30). ISBN: 978-3-929894-31-8. [info@mindener-geschichtsverein.de](mailto:info@mindener-geschichtsverein.de).

Wilhelm Weike (1859–1917) was the servant of anthropologist Franz Boas (1858–1942) during his 12-month excursion among the Inuit on southern Baffin Island in 1883–1884 after the International Polar Year of 1882–1883. This book, written in German, presents the diary Weike kept during the expedition and several letters he wrote. Extensive footnotes explain Weike's use of terms in his German vernacular, Inuktitut, and English, his descriptions of life among the Inuit and the American and Scottish whalers, and his perceptions of the arctic environment.

***The Life and Art of an Inuit Elder***, by Jobie Weetaluktuk and Robyn Bryant. Quebec City, Éditions MultiMondes and Institut culturel Avataq, 2008. Published in Inuktitut, French and English. ISBN: 978-2-89544-099-4. \$34.95.

Through the travels, hopes, experiences, art, and observations of Tivi Etok, the internationally known artist and elder from Kangiqsualujjuaq, Quebec, this book presents an account of a way of life in danger of disappearing. It includes reproductions of about 30 of Etok's works as well as photographs of areas in Nunavik and Nunatsiavut mentioned in the book.

## HORIZON

### Workshop:

#### **Approaching Arctic Frontier Areas for Petroleum Exploration**

November 12–13, 2008

University of Tromsø, Tromsø, Norway

<http://www.ig.uit.no/Forskingskolen/index.htm>

### IPY Legacy workshop:

#### **Sustaining Project Contributions to WMO Global Cryosphere Watch and the Group on Earth Observations System of Systems**

December 3–5, 2008

Geneva, Switzerland

<http://clic.npolar.no/gcw/gcw.php>

### ArcticNet

#### **annual scientific meeting 2008 "Arctic Change 2008"**

December 9–12, 2008

Quebec City, Quebec

<http://www.arctic-change2008.com/index.php?url=11010>

### **The Second Northern Watch Conference and Exposition on Arctic C4ISR**

17–19 February, 2009

Dalhousie University, Halifax, Nova Scotia

<http://centreforforeignpolicystudies.dal.ca/conf09/>

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