2011

A Little Essay on Big: Towards a History of Canada's Size

Alan MacEachern
amaceach@uwo.ca

Citation of this paper:
"A Little Essay on Big: Towards a History of Canada's Size." In *Big Country, Big Issues: Canada's Environment, Culture, and History*, eds. Nadine Klopfer and Christof Mauch. Rachel Carson Center Perspectives no.4 (2011): 5–16.

Rachel Carson Center

Perspectives

Big Country, Big Issues:

Canada's Environment, Culture, and History

Edited by
NADINE KLOPFER
CHRISTOF MAUCH

2011 / 4

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Federal Ministry
of Education
and Research

RCC Perspectives

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Contents

About the Authors

Claire Elizabeth Campbell is an associate professor and the coordinator of the Canadian Studies program at Dalhousie University.

Michèle Dagenais is a history professor at the Université de Montréal and an expert in urban history.

Nadine Klopfer is a lecturer in North American history at the Amerika-Institut of LMU Munich.

Alan MacEachern teaches history at the University of Western Ontario and is the director of NiCHE: Network in Canadian History and Environment / Nouvelle initiative canadienne en histoire de l'environnement.

Christof Mauch is director of the Rachel Carson Center for Environment and Society at LMU Munich.

David Neufeld is the Yukon and Western Arctic historian for Parks Canada.

Liza Piper is an associate professor of history at the University of Alberta, Canada.

Andrea E. Ulrich is a researcher at the Natural and Social Science Interface (NSSI) and the Institute for Environmental Decisions at ETH Zurich.

Foreword

Nadine Klopfer and Christof Mauch

Canada, despite its relatively small human population, has one of the most thriving communities of environmental historians worldwide. Where does this interest in environmental history come from? Is it because Canada is so big? Is it because it is the second largest country on the globe in terms of land area? Is it because Canada has so much nature and so little national history? William Lyon Mackenzie King (1874-1950) once remarked "If some countries have too much history, we have too much geography." Mackenzie King knew about Canada as a political latecomer: the Confederation had been formed only seven years before he was born, and Canada gained its independence as late as 1931. But while he was referring to the short history of his country, Mackenzie King was primarily alluding to the vastness of the Canadian landmass, to the enormous sheet of ice in the north, to the great forests, to the seemingly endless tundra, and to the longest shoreline in the world. Writing about Canada often meant writing about nature, which can explain the abundance of Canadian nature writing. And a number of scholars in the fields of Canadian studies, geography, and anthropology were environmental historians before environmental history existed as a term or as an academic discipline. They wrote about the intersection of nature and culture, about the Canadian countryside, about conservation and wildlife, about the arctic North, about native people as hunters, and many other topics.

This volume in the *RCC Perspectives* series combines a number of essays in Canadian environmental history and related disciplines. The essays are united by a focus on cultural perceptions of Canadian environments, by an analysis of the interrelationship between nature and culture over time, and by a discussion of the human impact on natural environments. Taken together, the essays deal with some of the most central questions in Canadian environmental studies: How have the different cultural values of indigenous Canadians versus European Canadians played out in history? What are the roles of National Parks? How can the oppositional goals of recreation and conservation be united? How can we best understand the relationship between modern cities and water? And what are the biggest challenges for a country that has access to the third largest freshwater supply in the world?

Some of the essays are true thought pieces, for instance the one by Alan McEachern, who plays with the novel idea of writing a history of Canada's size. Others, such as the essay by Andrea Ulrich, discuss environmental change both from a scientific and a political advocacy standpoint. All of them are thought-provoking and stimulating.

The idea for this collection was born in the course of the last few months. All of the contributors to this volume visited the Rachel Carson Center for Environment and Society (RCC) at different times during 2010 or 2011. They had been invited by the two editors of this volume as speakers at conferences or as part of a lecture series. The visits to Munich were made possible through a generous grant given by the Canadian Embassy to the Amerika-Institut of Ludwig Maximilian University Munich (LMU) and through RCC funding. Because of the high quality of the lectures and the stimulating discussions which followed them, we decided to put them together in a small volume that we hope will serve as a short introduction to Canadian environmental studies.

A big thank you goes out to the contributors to this volume for agreeing to submit their essays to Perspectives. We are also more than grateful to Astrid Holzamer of the Canadian Embassy in Berlin for her ongoing support of Canada-related activities at LMU Munich, and also to her colleague Nathalie Niedoba. Finally we would like to thank Claudia Whiteus and Katie Ritson of the Rachel Carson Center for their patient and careful editorial work.

A Little Essay on Big: Towards a History of Canada's Size

Alan MacEachern

Beaver and Justin Bieber notwithstanding, Canada is best known for being big. It is the second largest nation on earth, almost ten million square kilometers, stretching across six time zones, eighty-eight degrees of longitude and forty-two degrees of latitude. And yet despite a long national tradition of historical geography and a developing one in environmental history, there is no literature on Canada's size. While there are certainly books that consider how Canadians have thought about and been shaped by the surrounding wilds, the frontier, or, more prevalent still, the North, I can think of not a single historical work that focuses directly on Canada's size. What have Canadians thought about living in a big country? How has that size informed the nation's development?

Perhaps our nation's scholars thought it bad form to draw attention to size. Canada covers 6.7 percent of the Earth's land area, yet is in the possession of just 34 million people, 0.5 percent of humanity. It is this discrepancy that makes Canadians among the wealthiest people in the world. Canada contains a vast array of globally valued resources, from oil to potash, from iron ore to diamonds. Much of Canada may be muskeg and tundra, but its sheer size means that it also has an immense amount of farmland; only fourteen nations have more. Canada's huge freshwater bodies help give its people the best water-poverty ranking on the planet and ten times the per capita water supply of the average human. In 2011, the Organization for Economic Co-Operation and Development ranked Canada second in the world on its Better Life index.[1] Canada's great good fortune was that its borders swelled and were set during centuries that saw the ascension of the nation state, so that it was able to establish legitimacy over this vast territory and yet saw no other nation state fully grasp the value of such holdings or be in a position to appropriate them. It is perhaps not surprising that Canadians have made national slogans of foreigners' inability to gauge our value, such as explorer Jacques Cartier's dismissal of Labrador (and so, in memory, of all

I wish to thank Claire E. Campbell, Colin Coates, and Jeannie Prinsen for their valuable comments on a draft of this essay.

1 See United Nations Development Programme, et al., *World Resources 2008: Routes of Resilience* 15 and 9, http://pdf.wri.org/world_resources_2008_roots_of_resilience_tables.pdf, accessed 25 July 2011; OECD Better Life Initiative, accessed 25 July 2011, http://www.oecdbetterlifeindex.org ; and "Pursuit of Happiness: Canada Scores High on OECD Index," *Globe and Mail*, 24 May 2011.

present-day Canada) as "the land God gave to Cain" or Voltaire's quip that Canada was but "a few acres of snow." There is more than a hint of self-satisfaction in our self-deprecation; living well is the best revenge.

It may be argued that size has, in fact, been a constant theme, if not an outright fixation, of Canadian scholarship and thought. Countless writers have argued that our relationship to the country's vast spaces has been foundational to our national character. Northrop Frye, for example, argued that Canadians developed a "garrison mentality" as a result of being "confronted with a huge, unthinking, menacing, and formidable physical setting."[2] Margaret Atwood identified Canadians' informing symbol as "survival," initially against an alien and inhospitable environment and, now that the wild has been largely tamed, against an existential angst for which the environment remains a potent metaphor.[3] Historian J. M. S. Careless contrasted the American frontier model with a Canadian one that focused on the constant interconnection between the metropolitan and the hinterland.[4] In comparing Canadian society to the wilds beyond, most writers have found in the difference something that paradoxically binds us together. "This alternate penetration of the wilderness and return to civilization," wrote historian W. L. Morton, "is the basic rhythm of Canadian life, and forms the basic elements of Canadian character."[5]

But there are real cracks in such formulations, not least the fact that most Canadians no longer experience wilderness regularly, if they ever did. Nine of our ten national parks north of fifty-five degrees latitude which, because of their obligatory visitor services, are some of the most domesticated places in the northern three quarters of the nation—had a combined attendance of less than four thousand people in 2010-11, for instance.[6] (The point is not so much that most Canadians do not see most of Canada, it is that most of Canada is seen by hardly anyone.) More problematically, the gaze that

2 Northrop Frye, "Conclusion to *A Literary History of Canada," in The Bush Garden: Essays on the Canadian Imagination* (Toronto: House of Anansi, 1971), 225.
3 Margaret Atwood, *Survival: A Thematic Guide to Canadian Literature* (Toronto: House of Anansi, 2004, first published in 1972 by Anansi), esp. 40-2.
4 J. M. S. Careless, "Frontierism, Metropolitanism, and Canadian History," *Canadian Historical Review* 35, no.1 (March 1954): 1-21. This conceptualization has informed the field of urban environmental history, most notably William Cronon's *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton, 1991).
5 W. L. Morton, *The Canadian Identity* (Madison: University of Wisconsin Press, 1961), 5.
6 The tenth, situated near the territorial capital of Whitehorse, had an attendance of almost fifty thousand. See "Attendance 2006-07 to 2010-11: National Parks, Park Reserves, & Marine Conservation Areas," Parks Canada, last modified 19 July 2011, accessed 25 July 2011, http://www.pc.gc.ca/eng/docs/pc/attend/table3.aspx. There are, in fact, a few other northern national parks, but with no attendance listed.

identifies Canada's vast spaces as alien while simultaneously assigning them to us is profoundly colonial: not just we but the spaces also become defined as naturally and necessarily Canadian in the process. And because the gaze looks outward to the wild, it lets us define Canada without taking into consideration the land that we actually live on, the ground beneath our feet. Perhaps that is why so much writing about the relationship between nature and national identity in Canada has focused on the North, a relative term that ultimately just means anywhere north of where we are.[7]

A map of the nation's ecumene, or inhabited space, serves as a useful palate cleanser when considering Canada's size. This suggestion may seem counterintuitive, since the ecumene solidifies the distinction between well-populated and less-populated regions, but it does so in a way that moves their relationship beyond simple abstraction. The federal agency Statistics Canada on its maps typically ignores areas with a population of less than 0.4 persons per square kilometer—much lower than the national density of 3.5 persons per square kilometer, itself one of the lowest densities in the world—so as not to visually skew the significance of sparsely settled areas. The resulting "ungeneralized population ecumene" (Figure 1) presents a populated Canada that largely hugs the American border, with only a northern rise into the prairie provinces and a few pockets of "northern"—or, more accurately, south-central to central—British Columbia, Quebec, and Ontario. The map confirms Canadians' connections to the wilderness or to the North only to the degree that it suggests these places begin in our backyard and continue to the Pole. The map's obvious reminder is that the Canada of people is much, much smaller than the Canada of land: the long, thin ecumene is the shape of Chile and, at just over one million square kilometers, about the size of Colombia.[8] A history of Canada's size would contemplate how this small, relatively localized population came to have possession of a much larger land area, and how they came to think it natural that they had done so.

What might a history of Canada's size look like? Mine would begin before European contact, utilizing the archaeological record to help discern the "aboriginal ecumene:"

7 See, for example, Sherrill Grace, *Canada and the Idea of North* (Montreal: McGill-Queen's University Press, 2001) and Renée Hulan, *Northern Experience and the Myths of Canadian Culture* (Montreal: McGill-Queen's University Press, 2002). If I can get autobiographical for a moment, an old girlfriend from Timmins (latitude: 48°) heaped considerable scorn on Neil Young for singing "There is a town in north Ontario" about Omemee (latitude: 44°).

8 Although Colombia has its own, smaller ecumene, of course.

Figure 1:
"Canadian ungeneralized population ecumene," adapted from Statistics Canada publication *The Population Ecumene of Canada: Exploring the Past and Present,* Catalogue 92F0138MIE, Issue 2008003, Census Year 2006, No. 3, page 24, http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=92F0138MIE&lang=eng.

that is, which parts of present-day Canada were populated extensively by the First Nations, which parts occasionally, and which parts not at all? The point would be to open up honest discussion of past land use and conceptions of territoriality, not in any way to question or undermine present-day native claims. After all, a standard estimate puts the population of northern North America in 1500 at one million of a global population of 450 million, or just over 0.2 percent, whereas five centuries on, it is 34 million of a global population of 7,000 million, or just under 0.5 percent. While this shows an increased occupation of Canada since European contact, the rise is hardly extravagant—and it begs the question, of course, as to what population level is required to make sovereignty legitimate. Since Canada's population is still so small in global terms, one could argue that we still have not reached that point today.

My history would then turn to early European conceptions of Canada. It would consider early maps such as Juan de la Cosa's of circa 1500 or James Beare's of 1578, which saw this newfound land as either just a protuberance of China or a manageable obstruction on the way to it. It would treat the growing recognition by European explorers, missionaries, settlers, and soldiers of the place's size and what that meant to the colonial project. In their *Relations*, seventeenth-century Jesuits, for example, had to somehow convey to their French readers what a 1,200 kilometer canoe trip from Quebec to Huronia entailed. Likewise, in the early 1700s, fur trader and explorer Sieur de la Vérendrye had to overcome not only the physical reality of the continent when searching out a "great Western Sea" beyond Lake Superior, and the skepticism within the French court that his westward trek could possibly be so long that it required all the men and supplies he requested—he also had to adjust to the entirely foreign sense of space of the aboriginals he met, such as those who chose not to trade with him because they were content to go to the English fort "only" twenty days' journey away.

The key series of moments in this history would be the periodic territorial expansions that have occurred over the past two-and-a-half centuries, making Canada's boundaries what they are today. Was there only a dawning general realization of expansion's great value, even when there were no immediate plans for the land, or were there always a few forward-looking folks who took quiet delight as the boundaries of this political jurisdiction grew larger and larger? My history students are invariably insulted to learn that Britain, having taken Quebec in 1759, considered giving it back to France in the ensuing peace, so as to retain Guadeloupe. But why not? New France had become a twenty-million-livre per year drain on the French economy, whereas the sugar islands accounted for half of all French imports. Size was not everything at a time when a land's resources were valuable only to the degree that they could be transported efficiently, which tended to mean by water. (Even as great an explorer as Samuel Hearne, who in 1792 reached the Coppermine River and followed it to the Arctic Ocean, ended his report by shrugging: "Though my discoveries are not likely to prove of any material advantage to the Nation at large, or indeed to the Hudson's Bay Company, yet I have the pleasure to think that I have fully complied with the orders of my Masters.")[9] Still, tracing a history of Canada's size would mean keeping an eye out

9 Samuel Hearne, *A Journey from Prince of Wales's Fort in Hudson's Bay to the Northern Ocean* (Toronto: The Champlain Society, 1911, first published in 1795 by A. Strathan & T. Cadell), 295.

for visionaries, those who in judging its value weighed the possibilities of riches that might become known or more accessible in the future.

"The age of guessing is passed away," declared surveyor David Thompson early in the nineteenth century, his statement simultaneously recognizing the need for a more comprehensive geographical understanding of northern North America and indicating that such an understanding was well underway.[10] The Hudson's Bay Company, in particular, was fanning through the North and West, mapping and measuring it and in 1822 taking the first comprehensive survey of the First Nations who lived there. Canada's great size—and all the barriers it imposed, all the opportunities it offered—was becoming more firmly known. When Alexander Mackenzie became the first person to reach the Pacific Ocean from the Atlantic, he practically rubbed his hands in glee, proclaiming that besides the prospect of controlling the fur trade of the entire continent, "to this might be added the fishing in both seas and the markets of the four quarters of the globe."[11]

With greater understanding and appreciation of the size of northern North America came an associated insistence that its distant corners should be clearly joined to British North America and, as of 1867, to Canada. The 1840s to the 1870s saw the rapid consolidation and articulation of a globally unprecedented amount of land under the control of a single nation state; that it was a new nation with a population of just 3.5 million at Confederation makes the occurrence all the more phenomenal. These three key decades saw the resolution of the international boundary with the United States in 1846, the 1858 creation of British Columbia as a colony on the Pacific coast, the creation of Canada out of four older, eastern colonies in 1867, the 1868 purchase of Rupert's Land and the North-Western Territory (at over 7.7 million square kilometers, an area slightly larger than Australia and a spectacular acquisition for a one-year-old nation), the integration of Manitoba, British Columbia, and Prince Edward Island as new provinces in Canada's first few years, and Canada's acceptance of Britain's Arctic possessions in 1878 (as it would turn out, another one million square kilometers—another 1 percent of the globe), which were officially transferred two years later.

10 David Thompson quoted in *David Thompson's Narrative* 1784-1812, ed. Richard Glover (Toronto: The Champlain Society, 1962), 213.

11 Alexander Mackenzie, *Voyages from Montreal through the Continent of North America to the Frozen and Pacific Oceans in 1789 and 1793*, Vol. 2 (Toronto: Morang, 1901), 358.

Three things about what motivated Canadian consolidation of territory in this period stand out. First, there was a strong sense that size would be Canada's quickest and likeliest path to international prominence, so there was virtue in accumulation for the sake of accumulation. As an Ontario politician said in 1857, it would be the taking and developing of the northwest that would determine "whether this country shall ultimately become a Petty State, or one of the Great Powers of the earth."[12] (This was rather high-handed, considering "this country" was not yet a country.) Second, Canadians had only a vague idea as to what these vast real estate holdings contained or of what benefit they might possibly be. And third, the land should nevertheless become Canadian if only so that it would stay out of American hands. All three features are evident, for example, in the 1878 parliamentary discussion of whether to ask Britain to formally turn over her Arctic lands once and for all. When an independent member spoke against the transfer on the grounds that it would force Canada to assume responsibility for a huge territory, the government majority offered precious little in the way of positive reasons why Canada might want the land. Instead, Prime Minister John A. Macdonald focused on the fact that Canada would look "faint-hearted" if it did not take it: "It would be unworthy of us … were we to throw away this charge." Most critically for Macdonald, "an American was said to have boasted on the natural limits of the United States, that it was bound by Cape Horn, and the Aurora Borealis; we must cut them out of that, we must extend our territory to that bright luminary."[13] The motion passed. In 1885, author Charles Tuttle would look back on the previous decades and conclude, "the narrow, little, rugged country on the margins of the St. Lawrence has extended its borders from Atlantic to Pacific, and to the Arctic Circle of the north. … With these changes …Canada is putting on the garments of preparation to enter the race of nations."[14] The phrasing is instructive: Canada was still only preparing to enter the race. Becoming one of the largest nations of the world was, quite literally, groundwork.

In the nineteenth century, the young country had shown itself to be a colonial power, scrambling to gain territory on the far fringes of the continent and using cultural, economic, and political rationales for doing so. At the start of the twentieth century, it turned its colonial impulse inward, developing its territories economically and, where feasible,

12 Quoted in Doug Owram, *Promise of Eden: The Canadian Expansionist Movement and the Idea of the West, 1856-1900*, vol. 2 (Toronto: University of Toronto Press, 1980) 49.
13 See Canada, House of Commons, *Debates*, 3 May 1878, 2386-91.
14 Charles Tuttle, *Our North Land: Being a Full Account of the Canadian North-West and Hudson's Bay Route…* (Toronto: C. Blackett Robinson, 1885), 18.

elevating them to full provinces. When a flood of immigration to the prairies led to calls for provincial status there, Prime Minister Wilfrid Laurier was compelled to articulate the difference between a province and a territory—and, by extension, between the ecumene and the rest of Canada. Noting that the territory under discussion was as large as the seven existing provinces combined, Laurier stated, "I believe that when provinces are not the result of historic tradition, when they have not come to us formed and when we have the control of events, it is preferable that the provinces should be as near as possible about the same size. Therefore, it is impossible to suppose that this immense territory of 1,112,527 [square] miles should be formed into one single province."[15] Of course, neither he nor any other Canadian has ever suggested that Canada is too immense to be a single country. The Laurier government ultimately chose to create two new Prairie provinces, Alberta and Saskatchewan, which stretched all the way to 60° latitude and later to extend Manitoba's, Ontario's, and Quebec's northern boundaries, too—thus giving to many of the provinces the same benefit of a huge hinterland that the overall nation enjoyed.

With the exception of some Newfoundlanders, who joined Confederation in 1949, no Canadian alive today has lived through Canada's growing pains. The federal government has had to fight over the past century to preserve national sovereignty, episodically in terms of Pacific and Atlantic fisheries and continuously in terms of the far North—and the Quebecois and First Nations have long reminded us that the idea of a single Canadian "nation" is far from clear cut—but in the main Canada's physical structure has remained intact. More than that, our size now seems utterly natural, a given. I remember as a child thinking how perfect it was for calendar makers that Canada had ten provinces and two territories. Everyone gets a month! How did other countries do it? (The establishment of Nunavut as a third territory in 1999 has not led to a constitutional/calendrical crisis: there is usually a separate picture on the cover.) A history of Canada's size—besides providing a useful case study of early modern and modern attitudes toward the unknown, toward property, and toward the structuring and cohesion of nation states—could simply go a small way to reminding Canadians how unusual, how lucky, and even how globally inequitable our national path has been.

During the 1905 parliamentary discussion about creating new prairie provinces, Prime Minister Laurier noted it had been said "that as the nineteenth century had been the century of the United States, so the twentieth century would be the century of

15 Wilfrid Laurier in Canada, House of Commons, *Debates*, 21 February 1905, 1426.

Canada."[16] As prosperous as this past century was for Canada, it could hardly be called ours. But in retrospect, the earlier centuries of remarkable, unobtrusive growth may be one of two principal factors making the twenty-first century ours. The other is climate change. The US National Intelligence Council, for example, has dubbed Canada a likely "Climate Change Winner." Agricultural growing seasons will lengthen and crop yields will rise; northern resources such as tar sands and gas hydrates will come online; the Arctic Ocean and Hudson Bay will open up more for shipping; the boreal forest and other vegetation will move north.[17] The picture is not really so rosy, of course: thawing permafrost will hugely disrupt road and runway infrastructure; agriculture will experience more pests and disease; drought and fire will eat away at forests; some populated areas will receive dramatically less moisture.[18] The Canadian ecumene will likely stay much as it is. Agriculture will not suddenly move north onto the Canadian Shield, for example, because it is hard to farm on rock. And our populated places are well established along the southern border. Nevertheless, climate change is on balance predicted to have somewhat less of a cataclysmic impact on Canada than it will have on many other nations (which may not be saying much).

If such a future does come about, it is difficult to imagine other nations not being profoundly bitter about Canada's good fortune: such a small, wealthy population holding such a large, wealthy corner of the globe. But it is equally hard to imagine that opinion ultimately mattering much: the nation state system is far too well entrenched—too convenient a delivery system for property law, resource extraction, and international trade—for the fortunes of a single nation to call the legitimacy of that system into question. Still, it would be nice if Canadians recognized the degree to which our prosperity is not a timeless entitlement but a historical accident. Canada cannot give away our territory, of course, if for no other reason than the First Nations would insist it is not fully ours to do so. The best we can do is ensure we are stewards of this place, that we treat its environmental and economic value in a manner that is enduring and belonging to the world. The map of Canada's ecumene should ultimately teach us to act, in the best sense of the word, ecumenically.

16 Ibid, 1421. The original quote is actually always attributed to him, but in a 1904 speech.

17 US National Intelligence Council, *Global Trends* 2025: *A Transformed World* (Washington: US Government Printing Office, 2008). Russia is the council's other listed "winner." Laurence C. Smith (*The World in 2050: Four Forces Shaping Civilization's Northern Future* (New York: Dutton, 2010)) is also very bullish on a Canadian future during climate change.

18 See Natural Resources Canada, *Climate Change Impacts and Adaptations: A Canadian Perspective* (Ottawa: Government of Canada, 2004) http://adaptation.nrcan.gc.ca/perspective_e.asp and Donald Stanley Lemmen et al., eds. *From Impacts to Adaptation: Canada in a Changing Climate 2007* (Ottawa: Government of Canada, 2008). http://adaptation2007.nrcan.gc.ca.

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Learning to Drive the Yukon River: Western Cartography and Athapaskan Story Maps

David Neufeld

FIGURE 1:
Lake Laberge
Source:
D. Neufeld

This paper introduces the current conversations about the environment taking place between aboriginal and non-aboriginal peoples in the Yukon Territory of northwestern Canada. Viewing this contemporary cultural meeting ground through the lenses of both Western knowledge and Northern Athapaskan traditional knowledge offers insights into the nature and consequences of difference. This wander through Yukon cultural landscapes may help us appreciate the difficulty a culturally pluralist society faces in coming to agreements on defining and participating in the environment we share.

The inspiration for and content of this paper ultimately relies upon my lessons with two brothers, Percy and Victor Henry of Dawson City, Yukon. They continue to generously share their experiences and knowledge of the Tr'ondëk Hwëch'in way of life in the Yukon River basin where we live. Without their care and guidance, my research—and my boat—would have been on the rocks long ago.

Cultural contact and wayfaring in the Yukon

Two cultures, those of Western and Northern Athapaskan, met in northwestern North America in the mid-nineteenth century. For the past century and a half, they have attempted to communicate, trade, and live together peaceably in the Yukon River basin. To understand the present, it is crucial to frame a research approach within this dynamic, culturally pluralistic situation and understand not only the others' culturally entrenched relationships to the environment, but also our own. This cultural consternation is a common experience for Canadians. Hugh MacLennan, a Canadian novelist, notes that Canadians "realize that what they hate is not one another, but the frustrations resulting from the necessity of living an eternal compromise."[1] This fundamental Canadian issue of different peoples living together defies closure, and an analysis of the resulting social, political, and cultural complexity requires an open-ended or reflexive methodology.

Perhaps a useful way of approaching such challenging relationships is through an understanding of the strategies that shape people's actions all over the world. Malcolm Lewis identifies such strategies as answers to "a fundamental human problem—relating themselves to their milieu and the cosmos."[2] The answers are framed within cultural narratives reflecting a people's beliefs and values. There is nothing deductive about the study of such narratives. The teasing of meaning comes more through the experience of actions than the analysis of culturally entrenched principles. My approach, then, is based on the concept of wayfaring: that is, a series of stops in our travels—not unlike an Athapaskan hunting trip. I sense opportunities, sample likely possibilities for their offerings, and explore the landscape and how we live in it. As a public historian working in national parks, I find it unhelpful to pursue a single clear

Thanks to Christof Mauch, Nadine Klopfer, and Kimberly Coulter of the Rachel Carson Center, LMU Munich for the invitation to lecture and their assistance in publishing in this *RCC Perspectives* piece. I am indebted as well to Jackie Olsen, Allie Winton, Sue Parsons, Georgette MacLeod, and Wayne Potoroka of the Tr'ondëk Hwëch'in Government Heritage Department and the participants in a session at the 2008 American Society for Ethnohistory Conference for their interest and review of earlier versions of this paper, enhancing its clarity and purpose.
I am also especially grateful to my family, Joy, Erin, and Andrew, for joining me over some twenty-five years of river journeys.

1 Hugh MacLennan, *Seven Rivers of Canada* (Toronto: MacMillan, 1961), 78.
2 G. Malcolm Lewis, "Maps, Mapmaking, and Map Use by Native North Americans," in *The History of Cartography, Vol. 2, Book 3: Cartography in the Traditional African, American, Arctic, Australian, and Pacific* Societies, ed. David Woodward and G. Malcolm Lewis (Chicago: University of Chicago Press, 1998), 51.

objective through a delimited set of research resources. Rather, my work has more the character of constructing a forum for the presentation of ideas. Public history—and I think this also true of environmental history—is a reflexive practice. The practitioner must constantly adjust the scope, direction, and purpose of research as it evolves.

What does this mean on this traverse? I will not conclude with a series of principles by which Yukoners find their way. However, I hope to enable a more deeply informed sense of the diverse cultural values attributed to this treasured environment, the necessity of continuous negotiation between different and deeply held convictions, and a consciousness of the need for respectful relations with it, and, above all, with the humans and non-humans who inhabit it.

Mennonite heritage and a culturally entrenched narrative

To begin with, it is important to understand the character and potency of a culturally entrenched narrative. I draw upon my own community's sense of itself and its defining narrative of meaning as an example. I am a Mennonite. This Anabaptist sect, part of the radical reformation of the mid-sixteenth century in the Rhineland, was roundly persecuted and its members scattered to safer regions of Europe. By the mid-seventeenth century, my own ancestors had ended up in Prussia. In the 1780s, Catherine the Great, seeking to populate her recent conquests from the Turks, invited German settlers to the lands north of the Black Sea.[3] As experienced farmers, the Mennonites headed for Ukraine, where they settled in an "empty" land and, in the course of a century, grew fat and prosperous. The collapse of this world during the First World War and the subsequent anarchy of the revolution drove the Mennonites to emigrate once again—this time to Canada.

I grew up with my *Grozsma* in the western Canadian city of Winnipeg, Manitoba. As a child, she regaled me with colourful stories about our family heritage, and especially about the edenic life in southern Russia and the terrors of the Bolshevik Revolution.[4]

3 James Urry, *None but Saints: The Transformation of Mennonite Life in Russia, 1789 – 1889* (Winnipeg: Hyperion Press, 1989), 41-7.

4 Dietrich Neufeld, *Ein Tagebuch aus dem Reiche des Totentanzes* (Emden: Selbstverlag, 1921) and *Zu Pferd 1000 km durch die Ukraina* (Emden: Selbstverlag, 1922)

FIGURE 2: Title page and frontispiece of *The Martyr's Mirror*, Amsterdam, 1685

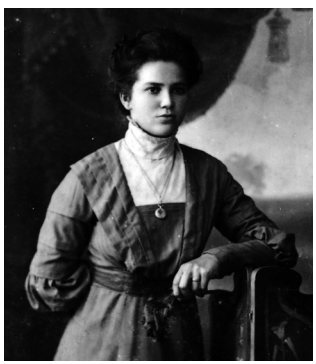


FIGURE 3: *Grozsma* Sarah (nee Siemens) Albrecht, 1911, Nieder Chortitza, Russia. **Source:** D. Neufeld, family collection.

It was only much later in life, after I'd begun work with Yukon First Nation peoples, that I realized her stories were in fact an application of the biblical story of Genesis to history. The Mennonite dispersal was not a result of war and revolution; it was actually quite the opposite. The growing materialism of the successful Mennonite farmers and manufacturers coupled with their failure to acknowledge and respect their "indigenous" neighbours led to the "wrath of God" and their eviction from Paradise.

This was my introduction to an Anabaptist form of traditional knowledge. My Grozsma's powerful moral narrative, grounded in the authority of the Christian Bible, highlighted values and prescribed good behavior. Under her guidance, I heeded Clio's call and studied Canadian history. And for the past two decades, I have lived and worked with my

family in a beautiful land where, like my ancestors, we are newcomers meeting and trying to live with different peoples.

Origins, purposes, and characteristics of historical narratives

Cultural narratives, such as the Mennonite example just related, carry group wisdom from the experience of the past. They incorporate both lessons on how to manage one's future—in the West we call this history—and provide guidance for behavior and responsibilities that make for a being a "good" person, a lesson often referred to as heritage. These narratives are an expression of values which forward a specific set of principles shaping a group's interaction with the environment.

The values-based nature of these narratives suggests that any investigation of them must also be a moral exercise. In his seminal *A Place for Stories*, William Cronon highlights the significance of narrative in understanding the past:

> To recover narratives people tell about themselves is to learn a great deal about their past actions and about the way they *understand* those actions. Stripped of the story, we lose track of understanding itself.[5]

Cronon calls for an engagement in saying that

> the moral problems of living on earth... The virtues of narrative [are] our best and most compelling tool for searching out meaning in a conflicted and contradictory world... narratives remain our chief moral compass in the world.[6]

With such a culturally driven method we must acknowledge that contact with other groups, with different narratives, can be complicated. In the early 1990s, Tr'ondëk Hwëch'in and Parks Canada jointly hosted a Yukon River heritage workshop in Dawson City, Yukon. I hoped the workshop would provide an opportunity to discuss First Nations' cultural values associated with the river and the role Parks Canada might play in presenting these values to Canadians.

5 William Cronon, "A Place for Stories: Nature, History, and Narrative," *Journal of American History 78*, no. 4 (1992): 1369.
6 Ibid., 1374-75.

The program included representatives from a variety of river interest groups, including wilderness protection advocates, several First Nation governments, perhaps two dozen community Elders, and both territorial and national government departments. Canada was represented by Daniel Tlen, the Yukon Territory's member on the national historic sites board. Tlen highlighted the importance of national cultural designations. As an example, he described the commemoration of the archaeological evidence uncovered in Beringia, the unglaciated link between Asia and America, for its telling of the story of the peopling of the Americas.

The audience of First Nation Elders and political leaders listened politely. At the conclusion of Tlen's presentation, Irene Adamson, an Elder of the Ta'an Kwach'in Council, rose and thanked Daniel for his speech. She then went on to say:

> I've heard about those people you are talking about. *My grandmother told me stories* about them. She remembered all these strange people walking around, they didn't have any good clothes, didn't know how to hunt, they were just lost and starving—we killed them, those are the people you are talking about.[7]

Explicit in her story was the primacy of aboriginal peoples in North America: "we" were created here and this is "our" homeland. Implicit was a challenge to the authority of Western science; her grandmother's stories versus old bones scrutinized by archaeologists in distant cities. She thereby questioned the "truth" presented by academic perspectives on Canadian history and the authority and power of government agencies that rely on this history. Mrs Adamson's use of First Nations oral trad tion challenged the assumed distribution of social power inherent in the Western understanding of the past. She articulated

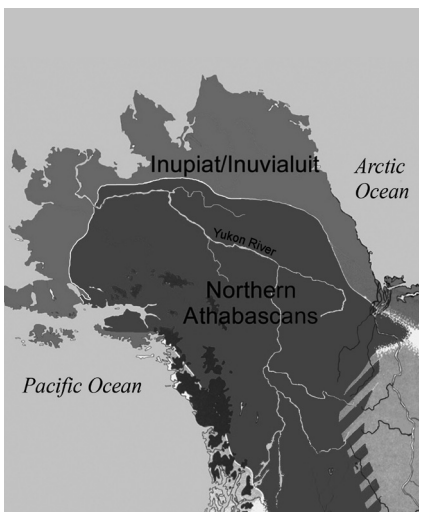


FIGURE 4: Traditional territory of the Northern Athapaskan in the Yukon River basin. **Source:** J.V. Wright, "Plate 9, Cultural Sequences: AD 500 European Contact," in *Historical Atlas of Canada*, Vol 1, ed. R Cole Harris and G.J. Matthews (Toronto: University of Toronto Press, 1987) and map "Key to Tribal Territories," in *Handbook of North American Indians Vol. 6* Subarctic, ed. J. Helm (Washington: Smithsonian Institute, 1981), ix.

7 The italics reflect Mrs Adamson's own emphasis on where authority came from. The story of these killings is recognizable from an Athapaskan myth cycle. A version of this story, "*K'oyeedenaa Yoo*" (Little People) can be found in Catherina Attla, *K'etetaalkkaannee: The One Who Paddled Among the People and Animals* (Fairbanks: Yukon Koyukuk School District and Alaska Native Language Centre, 1990), 140-45.

a different vision of how the world was made and how it should be lived in. She reminded listeners that there were other ways of understanding who we are and where we are going.

Mrs Adamson's "call" highlights the difficulties arising from incommensurable narratives of meaning. Cultural contact has moved to the center of the discussion of our shared future in the Yukon. Different peoples' histories have shaped the way they experience, understand, and respond to the physical world.[8] As a cultural researcher, my understanding comes from the investigation of the narratives guiding a people's actions. What we are studying, according to Cronon, are "the networks of relationships, processes and systems that are as ecological as they are cultural."[9] The evidence to be studied is the great range of activities different groups play out in their relationships with each other and the environment. The very nature of this research is wayfaring, a reflexive methodology gradually piecing together ongoing cross-cultural experiences in order to understand them.[10]

The Yukon River

The Yukon River is the central element of the boreal sub-arctic ecosystem that characterizes much of Yukon and central Alaska. The river bends northwest to the Arctic Circle in Alaska then southwest draining into the Bering Sea, approximately 3,200 kilometers from its origins in northern British Columbia. Major tributaries include the White and Tanana, glacier-fed rivers entering from the south, while the Porcupine and Koyukuk drain the northern permafrost taiga flats. The Yukon River is subject to significant variations in flow throughout the year, with early summer peak flows at Dawson City some ten to twelve times minimum flows in winter. Following a serpentine course through a broad valley, the river has cut its way down 250 metres in some areas over the last five million years. The valley is thought to have been one of the corridors for intercontinental animal and plant exchanges during the time of the Beringian land bridges (35,000 - 15,000 BP).[11]

8 Mere Roberts "Indigenous Knowledge and Western Science: Perspectives from the Pacific," *The Royal Society of New Zealand, Miscellaneous Series* 50 (1998): 59-75.

9 Cronon, "A Place for Stories: Nature, History, and Narrative," 1359. R. W Sandwell also stresses the central importance of relationships in environmental microhistory in "History as Experiment: Microhistory and Environmental History," in *Method & Meaning in Canadian Environmental History*, ed. Alan MacEachern and William J. Turkel (Toronto: Nelson Education, 2009) 133.

10 Richard White, *The Middle Ground Indians, Empires, and Republics in the Great Lakes Region, 1650-1815* (Cambridge: Cambridge University Press, 1991), xv.

11 Duane Gerald Froese, *Field Guide to Quaternary Research in Central and Western Yukon Territory*, Occasional Papers in Earth Sciences, no. 2 (Yukon: Heritage Branch, 2001).

Figure 5:
Isaac Henry and his boat across the Yukon from the Chandindu River confluence.
Source: D. Neufeld

The river represents the central element in the Athapaskan cultural landscape. The story cycle of Tachokaii (in English "the traveller" or "the one who paddles"), a mythic hero who travelled down the river establishing the finely balanced order of the world, is a shared legacy amongst the Northern Athapaskan peoples. The regular arrival of spawning salmon in three runs in late summer and the migration of caribou herds through the region are regarded as a part of this established contact between the human, natural, and spiritual worlds. These relationships remain important elements in the Athapaskan civilization of the Yukon basin.

From the mid-nineteenth century, Euro-American fur traders and prospectors entered the Yukon basin. The development of trade and mining was built upon the extension of a riverboat transportation system that operated until the 1950s, when the road network expanded. The natural resources of the region and large flows of the river continue to spawn grand schemes for water diversion, power generation, and industrialization. Today, the river is the site of a wilderness recreational canoe trip especially popular with Germans.

The meeting of these two cultures, Athapaskan and Western, now extended over some one hundred and sixty years, remains tentative and cautious. The first call for a formal

accommodation came from Kashxoot—also known as Chief Jim Boss—of the upper Yukon River in 1902. However, the small number of newcomers and limited contacts after the Klondike Gold Rush receded into history and limited serious conflicts until the 1940s. Then, the rapid expansion of military and economic development in the Yukon and Alaska and the national governments' desire to "modernize" the Indian led to growing difficulties. In response to pressure from Yukon First Nations for acknowledgement of their sovereignty and a commitment to work towards a shared future, the Canadian government eventually began talks with them in 1972.

The negotiation of this cultural accommodation continued for two decades and specific agreements with individual First Nations are still being finalized and implemented today. The resulting agreements establish advisory and consultative structures designed to bridge the cultural divide in the Yukon. While the agreements are comprehensive, and address, amongst other topics, education, self-government, and cultural heritage, the most extensive discussions were those relating to land use, fish and wildlife management, and the assessment of resource development proposals. That is, the Yukon environment is the focus of attention in this lengthy and ongoing conversation between cultures. And in this process, there is an emerging collision between the traditional First Nation narrative about the character of relationships within the world and the Western narrative of settlement and economic development.

Maps as entry points to cultural narratives

Maps, those human reconstructions of the world or a route through it, offer some illumination of this difficulty. The English word *map*, from the Latin *mappa*—a table cloth or napkin—suggests *mappa mundi*, a sheet showing the world, but can also signify dining together, a communion.

J. B. Harley, a cartographic philosopher, argues that maps are valuable in conducting cultural research. In addition to a map's obvious value, deriving from its original purpose, Harley reminds us that "our task is to search for the social forces that have structured cartography and to locate the presence of power—and its effects—in all map knowledge."[12] Harley does not offer maps only as evidence of the real world, but

12 J. B. Harley, "Deconstructing the Map," in *The New Nature of Maps: Essays in the History of Cartography,* ed. Paul Laxton (Baltimore: The Johns Hopkins University Press, 2001), 152.

understands maps as social constructions. He suggests that the artificial simplification of the world implicit in map-making also entails "the potential to constrain the way people thought and acted." Harley makes a case for recognizing the map as an object deeply entrenched in the social and cultural milieu, and sees maps as artifacts of cultural narratives.[13] He encourages us to consider what maps, or more specifically the powers and the technical system that create maps, want us to do or how they shape our understanding of a place.

In this paper, I compare "maps" of the Yukon River produced by two cultures— a Yukon First Nation story map taught to me over a period of several years by two Tr'ondëk Hwëch'in brothers, Percy and Victor Henry, and a Western modern topographical map produced by an American military expedition in the 1880s—and examine the "norms and values of the order of social... tradition" implicit in each.[14]

Victor Henry's story map

A number of years ago, during research on the Tr'ondëk Hwëch'in cultural landscape, I planned a trip down river to visit some of the more remote land selections of the community. It was a new section of the river for me.

In my field notes I observed:

> On Sunday afternoon, I go to see Victor Henry. Victor's the expert on the river below Dawson. I know better than to take my river maps—not so much because Victor disdains maps, actually I don't think he cares about maps one way or the other. Victor is, after all, the man who can drive his boat up river in near dark, navigating the winding channel by the thin corona of day lingering on the ridge tops alongside the river. But I want to hear him tell me.

FIGURE 6: Victor Henry at Danoja Zho Cultural Centre.
Source: D. Neufeld

13 J. B. Harley. "Power and Legitimation in the English Geographical Atlases of the Eighteenth Century," in *The New Nature of Maps: Essays in the History of Cartography*, 113.
14 Harley, "Deconstructing the Map," 152.

> I catch him on his front porch: 'Victor, I'm going downriver tomorrow and wondered if you could give me a few pointers to keep me out of trouble.' Around Dawson, the river is tricky: water levels change quickly with rain, higher flows move the channel, and there are rocks. Locals say you should buy a drum of gas and a crate of propellers and see which one runs out first. Victor smiles and steps down to the White Channel gravel covering his front yard. Using a well-weathered plywood slat, he furrows the coarse broken stones—the river bank, sandbars? I'm not sure. I squint down at the ground trying to make sense of the pattern he is making.
>
> 'The only place you have to watch is by Forty Mile. When you come up there, you'll see an island in front of you.' The slat pokes the gravel amongst the circles and lines in the stones. "Just watch it, when it starts to move, turn and head towards the next island.' The slat curls away from one of the bigger rocks. 'And when that island starts to move, turn away and you're through.' The slat swings up easily like a maestro's baton. Victor smiles again.
>
> After our chat I go back to my map to look for the moving islands. Sure enough, there is a confusing group of bars and islands in the channel, but I can't tell which are the moving islands or even guess where the main channel runs. I don't understand, I can't even compare Victor's directions in any meaningful way to my abstracted aerial view and knowledge of the place. In his front yard Victor, had reproduced the physical experience of passage through this sticky part of the river. He had given me a map, but I don't know how to read it.

Lewis suggests that many Aboriginal maps might best be understood as supplementary maps.[15] That is, the map and its maker assume a certain level of user knowledge of the area and provide only the necessary, selected "supplementary" information to guide the planned journey. Thus, Victor understood I had the requisite knowledge to find my way to the moving islands—how to work my boat in the current, read river eddies denoting rocks just below the surface, how to avoid sandbars, sweepers and deadheads, and other river hazards. His story map was specific not only to location, but also to me as the traveller. My notes continue,

> On the way downstream, with the full weight of the river current pushing us on, I

15 G. Malcolm Lewis, "Maps, Mapmaking, and Map Use by Native North Americans," 178-79.

opt to pull up the motor and float through the confusion I feel. We cling to the north bank, sounding regularly with pole and paddle, and I look out to see how the river islands and bars might have changed since my twenty year-old map was drawn. We drift through easily, but realize there isn't enough water for us to power back upstream in this channel.

Our return three days later is under the flat light of an overcast sky, a strong trailing wind riffling the river's surface. Against the current it's easier to approach this difficult stretch of water—I can cut the engine as soon as we touch bottom and drift back downriver instead of being driven further into grief. Even so, I throttle back and we crawl forward. I head towards the first bar on the right, still some distance away. As we approach, other bars and islands—just shimmers on the water—appear further upstream. Even if I stand up, my eyes are barely more than a meter above the water's surface, not very high to see a wet sandbar three hundred meters away breaching the surface by fifteen centimeters, or perhaps only as a turbid ripple. The bar ahead remains firmly anchored to the bottom of the river as we close. We are no more than fifty meters away and I can see shoal water reaching out towards the boat.

Suddenly, the prow of the bar rises and begins to move. I stare at the bar. The whole mass seems to have cut its bonds to the earth and is quartering upstream at a nearly perpendicular course to my own. I promptly yank the rudder into my side and the boat obediently veers to a track parallel with the bar. We're now angling across towards the grass-covered island on the other side of the channel. As the bar beside us slips behind, I watch the island before me begin to rise in the same way. As it foams ahead to cut us off, I swing in line with it as well. Although there are still two bars and another island ahead, I find solace in Victor's words, 'turn away and you're through.' The channel is now obvious and I push the throttle ahead to clear this interesting point.

Back at home, I met with Yukon College physics instructor Dr Tim Topper in an attempt to regularize my experience, to frame it within the Western way of perceiving the environment. While both of us remain convinced the phenomena can be rationally explained—largely because we think everything can be—we are left in wonder instead of satisfaction. Victor's experiential description might be categorized as paranormal: that is, beyond the scope of normal objective investigation.

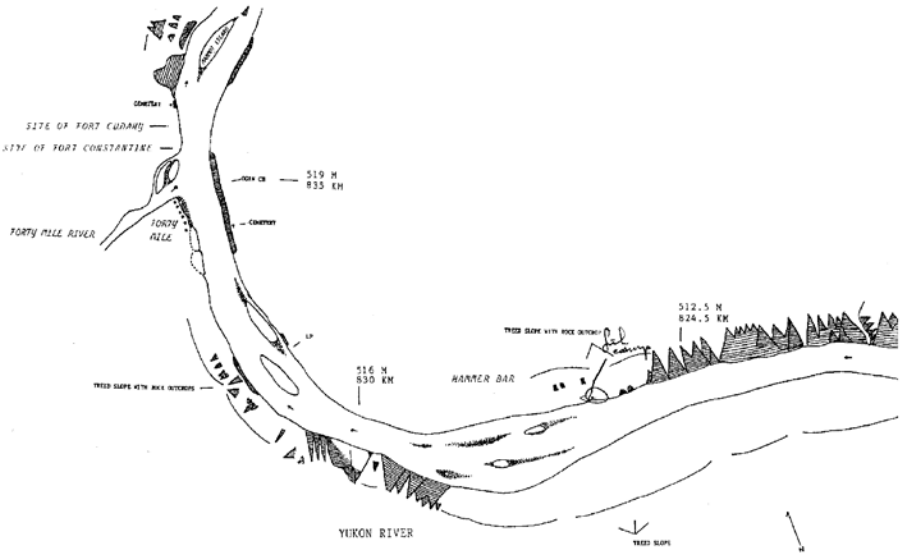


FIGURE 7: The "moving islands" just above the Fortymile River confluence.
Source: (map) Mike Rourke, Yukon River Marsh Lake to Circle, Alaska (Watson Lake, Yukon: Rivers North Publications, 1985), 22-23 and the National Air Photo Library, 2000.

Nevertheless, Victor's "map" allowed me to successfully move through a difficult portion of the river. His story oriented me to a vibrant geography—the river pushes, the islands move—and thus it fulfilled one of the primary demands we make of maps. It offered guidelines for the safe passage through a place. While it is difficult to place Victor's story within the Western cartographers' definition of the "best maps [as] those with an authoritative image of self-evident factuality,"[16] it is what I will call a "story map."[17] As a story cartographer, Victor used his deep experience of place to "produce an artificially simplified world... carrying the potential to constrain the way people [think] and [act]."[18] As a culturally entrenched object, the questions we might ask are what constraints or guides does it incorporate? How does it frame reality for its sponsors, creators, and users? What cultural narrative does it reflect and support? But first, let us consider a Western map of the river.

16 Harley, "Deconstructing the Map," 155.
17 David Woodward and G. Malcolm Lewis ("Introduction," in *The History of Cartography*, Vol. 2, Book 3: *Cartography in the Traditional African, American, Arctic, Australian, and Pacific Societies* (Chicago: University of Chicago Press, 1998)) present a table describing "non-Western spatial thought and expression." While acknowledging the difficulties of analyzing the "inner experience," they recognize the necessity of examining the "external" expression in both material cartographic objects and performance cartography, the latter including the nonmaterial and ephemeral gesture, speech and song amongst other forms.
18 Harley, "Deconstructing the Map," 152.

Lieutenant Schwatka's stop on the moving islands

In 1883, a small US Army exploratory expedition rafted the length of the Yukon River. According to its leader, Lieutenant Frederick Schwatka,

> the main object... was to acquire such information of the country traversed and its wild inhabitants as would be valuable to the military authorities in the future, and as a map would be needful to illustrate such information well, the parties effort were rewarded with making the expedition successful in a geographical sense.

Of its eight members, two were assigned to map making.[19]

FIGURE 8: Schwatka tells a ripping tale.
Source: Frederick Schwatka, *The* Illustrated London News, 1880 http://en.wikipedia.org/wiki/File:Schwatka_sm.jpg accessed October 29, 2010 and *In Rink Rapids by Gloster in Schwatka, Along Alaska's Great River* (New York: Cassell & Co., 1885), 175.

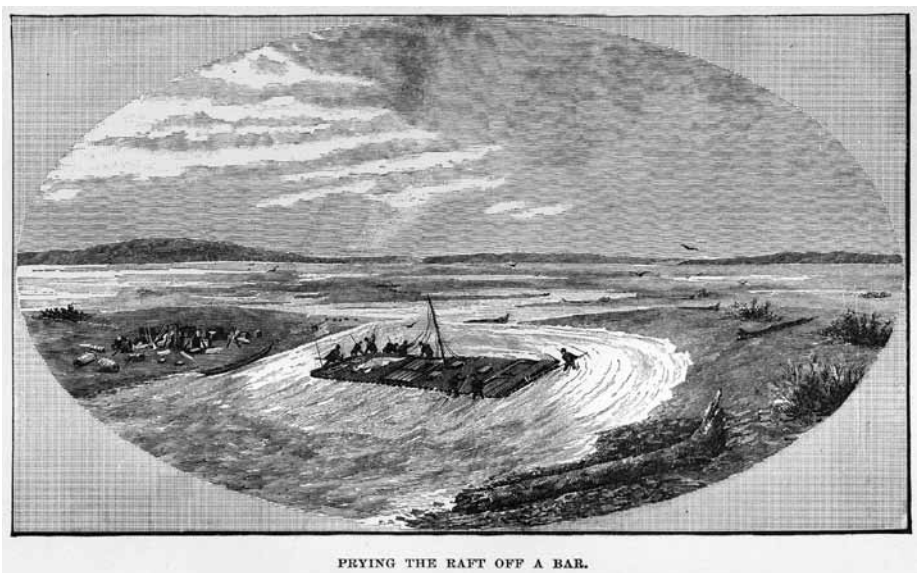
FIGURE 9: "Wild inhabitants" of the Upper Yukon River.
Source: Stick Indians by Gloster, in Schwatka, *Along Alaska's Great River* (New York: Cassell & Co., 1885), 127.

Along the journey, as Schwatka and his party approached the Forty Mile River, he encountered the same "moving islands" I struggled with some 120 years later. His passage, handicapped by both the difficulties of manoeuvring his large raft and uninformed by the

19 Frederick Schwatka, *Along Alaska's Great River: A Popular Account of the Travels of the Alaska Exploring Expedition of 1883, along the Great Yukon River, from Its Source to Its Mouth, in the British Northwest Territory, and in the Territory of Alaska* (New York: Cassell & Co., 1885), 9.

"gross inaccuracies [of] Indian reports," was somewhat less fleeting than my own.[20] His journal recounts:

> The nineteenth [of July] was a most disagreeable day, with alternating rain showers and drifting fog, which had followed us since the day of our failure in securing astronomical observations, and to vary the discomfort, after making less than thirty miles we stuck so fast on the upper point of a long gravel bar that we had to carry our effects ashore on our backs, and there camp with only a dozen water-logged sticks for a camp-fire. What in the world any mosquito wanted to do out on that desert of a sand-bar in a cold drifting fog I could never imagine, but before our beds were fairly made they put in an appearance in the usual unlimited numbers and made sleep, after a hard day's work, almost impossible.[21]



PRYING THE RAFT OFF A BAR.

FIGURE 10: Source: By Gloster in Schwatka, *Along Alaska's Great River*

Schwatka was conscious of his entry into an unknown land. The expedition's raft, swept onwards by the powerful current of the river, took them through a bewildering new landscape of high mountains, rolling hills, open meadows, numerous islands, and seemingly endless forests. Each day reinforced his sense of the importance of his mapping mission. An unmapped place was almost beyond existence.

20 Ibid., 62.
21 Ibid., 247.

> At every few miles we passed the mouths of inlets and channels, leading away into the mountainous country no one knows whither. There are no charts which show more than the mouths of these inlets. Out of or into these an occasional canoe speeds its silent way... but the secrets of their hidden paths are locked in the savage mind. How tempting they must be for exploration, and how strange that, although so easy of access, they still remained unknown.[22]

In the course of the expedition, Schwatka brought order to this unknown place, both by charting and naming (or renaming) the places he found. While hiking through the Chilkoot Pass to the headwaters of the Yukon River, he came across the "the *Kit-lah-cook-ah* River of the Chilkats... I shortened its name, and called it after Professor Nourse of the United States Naval Observatory."[23]

Eventually, Schwatka and his crew arrived at Fort Selkirk, the confluence of the Pelly and Yukon Rivers, and the site of an earlier Hudson's Bay Company fur trading post. "Here, we were on land familiar to the footsteps of white men who had made maps and charts, that, rough and rude though they were, were still entitled to respect."[24] Nevertheless, Schwatka was also pleased by his scientific improvement to the company's maps that now rigorously demonstrated a certain Western cultural construction of place:

> Altogether on the Yukon River, this far, there had been taken thirty-four astronomical observations, 425 with the prismatic compass, and two for variation of compass. I have no doubt that these are sufficiently accurate at least for all practical purposes of geographical exploration in this country, until more exact surveys are demanded by the opening of some industry or commerce, should that time ever come.[25]

Schwatka's map, allowing for the infrequent chances to "true" his data through sun sightings and the quality of his instruments, is easily recognized as a modern Western map. Tied to the Royal Observatory just west of London in Greenwich, England through

22 Ibid., 22.
23 Ibid., 72.
24 The Hudson's Bay Company, trading for furs across Canada's north, was active in exploring and mapping the country. This work was a responsibility in its Royal Charter, though many of the maps produced remained company secrets for decades. Although rarely surveyed, the country was generally accurately represented. Many of the maps, however, focused on the distribution and organization of the regional aboriginal population, that of fur trappers. The Hudson's Bay Company Archives house an interesting array of Yukon basin maps dating back to the 1830s. Hardisty's 1853 map is interesting as it shows the Yukon River unconnected to the Bering Sea, its full route still unknown at that time. (HBCA Map D5 38 fo77). Frederick Whymper published his map showing the complete river in 1868.
25 Schwatka, *Along Alaska's Great River*, 203.

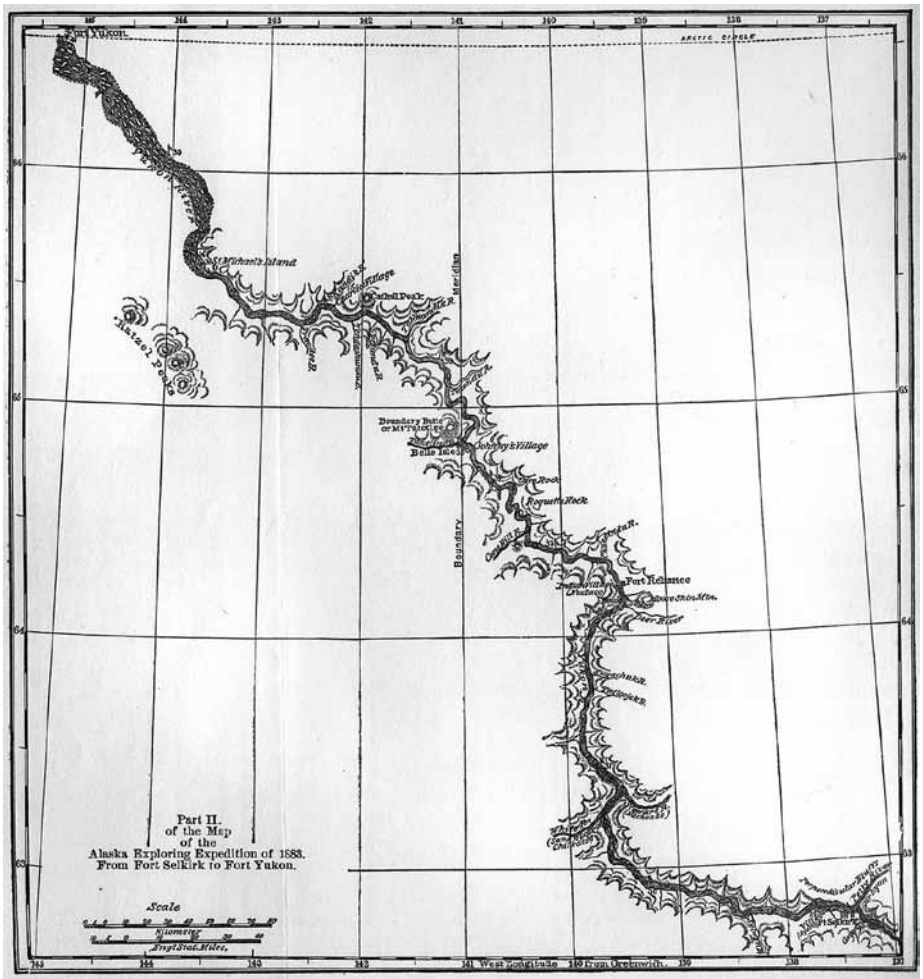


FIGURE 11:
Source: By Homan, in Schwatka, *Along Alaska's Great River*

an abstract grid of lines of latitude and longitude, his team's map works towards the model of an objective, factually accurate representation of objects encountered on his journey.

In the first instance, Schwatka's map is not about navigation. Instead, it is a product of his navigation.[26] The purpose of the map is the representation of information on the "wild inhabitants" useful for the military, and the description of possibilities for

26 Timothy Ingold, *Lines: A Brief History* (London: Routledge, 2007), 24.

economic development by farmers, traders, and miners. And although Schwatka did converse with indigenous people he met on his journey, he carefully separated their "imperfect information"[27] about place, little of which seemed relevant to his purpose, from his mathematically true map.[28]

Cultural roots for the Athapaskan and Western narratives

Harley reminds us that maps have a social purpose: their design and use is not only embedded within the culture creating them, but they reflect and support the social traditions of that culture.[29] What tasks are maps given? What do they focus users' attention on and what do they make invisible? What power do they exert? Are there differences between maps of one culture and another?

Tim Ingold, in his book *The Perception of the Environment*, suggests that the different world views of the Western farmer/settler and Northern hunter cultures can be characterized as "genealogical" and "relational." On the knowledge from the farmer/settler cultures, the genealogical, he notes,

> the very idea that originality can be passed ... along chains of genealogical connection, seems to imply that it is a property of persons that can be transmitted... independently of their habitation of the land.[30]

Life for farmer/settlers, then, is making the most of their inheritance; the development of individuals' potential rises from mastering the elements of the world around him or her.

Western maps of the kind produced by Schwatka and described by Harley highlight resources and opportunities for human endeavour. The object of Western scientific mapping supports this aim by the production of "a 'correct' relational model of the terrain." Such maps assume that:

27 Ibid., 249
28 Schwatka's accompanying report to the army explicitly recognized the Indigenous presence. He carefully describes the structural integrity of coastal villages, noting the size and number of cannon required to reduce them, the logistical challenges of fielding a modern military force in the interior, and the networks of diplomatic relationships amongst tribes that would need to be considered by an attacking force.
29 Harley, "Deconstructing the Map," 152.
30 Timothy Ingold, *The Perception of the Environment: Essays in Livelihood, Dwelling, and Skill* (London: Routledge, 2000), 132.

> objects in the world to be mapped are real and objective, and they enjoy an existence independent of the cartographer; their reality can be expressed in mathematical terms; that systematic observation and measurement offer the only route to cartographic truth; and that this truth can be independently verified.[31]

These assumptions are the basis of an approach designed to secure the investment of human endeavour and economic resources, that is, to exercise mastery over the environment. More importantly, Schwatka's map also describes development potential—a place suitable for the application of his civilization's energy and prowess.

On knowledge from hunter/gatherer cultures, Ingold writes that

> [in the] relational approach ... both cultural knowledge and bodily substance are seen to undergo continuous generation in the context of an ongoing engagement with the land and with the beings—human and non-human—that dwell therein.[32]

Life for hunters is characterized as growing out of relationships developed and participated in by the individual with the world around them. Julie Cruikshank, a highly regarded oral historian of the northern Athapaskan people, characterizes Yukon Indigenous narratives depicting these relations "as occurring within a deeply moral universe where natural-cultural histories are always entangled.... [Yukon aboriginal elders listen, observe and participate] in ritualized respect relations." Story maps rising from this "co-production of a shared world"[33] are consequently less interested in the tangible components of the land and more interested in the relationships among its human and non-human inhabitants.

Ingold offers a way to understand the differences between the search for opportunities and the co-production of the world. In his lectures on lines, he suggests we consider our reading of print in two ways: as wayfaring or as pre-planned navigation. While for the wayfarer "the text was like a world one inhabits, and the surface of the page like a country in which one finds one's way about," for a navigator "the text appears imprinted upon the blank page much as the world appears imprinted upon the paper

31 Harley, "Deconstructing the Map," 154.
32 Ingold, *The Perception of the Environment: Essays in Livelihood, Dwelling, and Skill*, 133.
33 Julie Cruikshank, *Do Glaciers Listen? Local Knowledge, Colonial Encounters, and Social Imagination* (Vancouver: UBC Press, 2005), 243.

surface of a cartographic map, ready-made and complete."[34] What Ingold finds significant about the navigator's approach is the absence of time:

> ...The Western map effaces memory... [it] eliminates all trace of the practises that produced it, creating the impression that the structure of the map springs directly from the structure of the earth. But [it is a world] without inhabitants: no one is there; nothing moves or makes any sound.[35]

It is a map driven by desired outcomes—settlement, development, and production—not one responsive to the experiences of contact and travel.

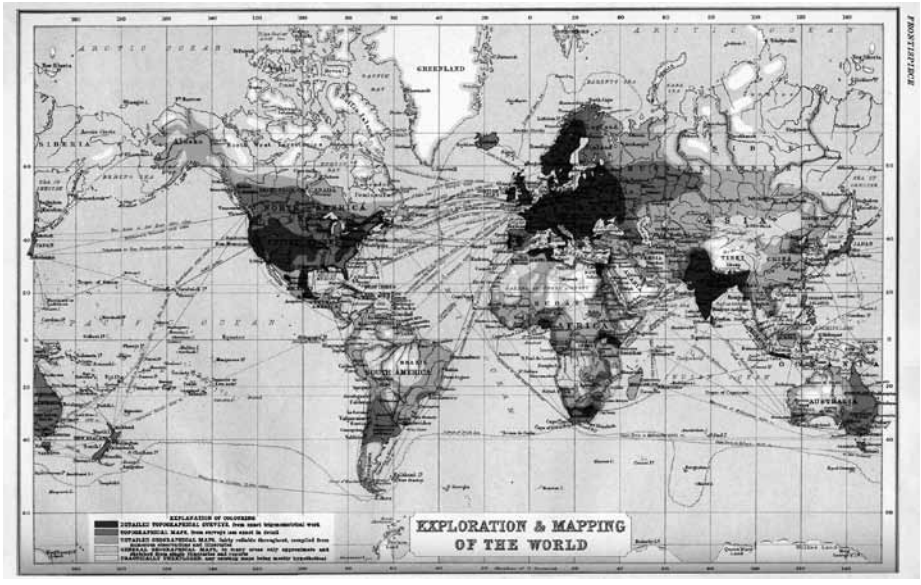


FIGURE 12: Map of 1900 highlighting the expansion of the different stages—from "single itineraries and reports" to "exact trigonometric work"—of the Western scientific map.
Source: J.G. Bartholomew, *The International Reference Atlas of the World* (London: George Newnes, Ltd.), Frontispiece.

To be effective in its cultural application, the map had to deny the validity of other forms of spatial representation. In Western cartography, this was achieved by delivering a scientific map based upon:

34 Ingold, *Lines: A Brief History*, 24.
35 Ibid., 24.

> true, probable, progressive, or highly confirmed knowledge.' .... creat[ing] a 'standard'—a successful version of 'normal science'—that enabled cartographers to build a wall around the citadel of the "true" map. Its central bastions were measurement and standardization, beyond this there was a 'not cartography' land where lurked an army of inaccurate, heretical, subjective, valuative, and ideologically distorted images.[36]

To ensure that the primary focus remains on the mastery of resources in new lands, maps silence differences in landscape and erase the presence of indigenous inhabitants; they produce an empty land, a land of unexploited resources and opportunities. According to Harley, "this sort of cartographic silence becomes an affirmative ideological act. It serves to prepare the way for European settlement... such maps are ethnocentric images.... the map becomes a licence for the appropriation of the territory depicted."[37] Maps serve as a foundation for the development of a secure future.

The wayfarer's map, like Victor's story map, is set in both place and time.[38] Such maps are about journeys and the relationships exercised during travel. The object of story mapping is to engage with place. The story cartographer assumes the world is a network of journeys, each with sets of unique relationships to be repeated or replicated by travellers, their reality expressed in experiential or relational terms, with continuing engagement offering the only path to cartographic reliability. So which journeys are being replicated by Victor's story map about moving islands? To address this question we need to meet Victor's older brother, Percy.

Percy Henry offers other kinds of travelling stories. While Victor's moving island story map provided guidance in the animate landscape, Percy introduced me to the larger contextual story map of the Yukon River, one describing the accompanying moral compass. The Yukon River and time itself were created by an Athapaskan hero figure known as Tachokaii. The Tachokaii story cycle, an oral map of a journey and associated adventures from the river's origin to its mouth, describes the transformation of the world from chaos—not a void as in Genesis, but rather a time of limitless possibilities when

36 Harley, "Deconstructing the Map," 155.
37 J. B. Harley. "Silences and Secrecy: The Hidden Agenda of Cartography in Early Modern Europe," in *The New Nature of Maps: Essays in the History of Cartography,* ed. Paul Laxton (Baltimore: The Johns Hopkins University Press, 2001), 104-5.
38 Ingold, *Lines: A Brief History*, 89.

humans and animals spoke with each other and in fact regularly changed from one form to the other—to its present more fixed, more reliable, but still dynamic, balance. This balance requires each element of creation, human and non-human alike, to know its role and fulfil its responsibilities.

FIGURE 13: Victor and Percy Henry on the steps of the Danoja Zho Cultural Centre. **Source:** D. Neufeld

The Tachokaii story cycle highlights the importance of the Yukon River to the life of the people living along it. The episodes of Tachokaii's adventures are shared and consistent among the Athapaskan people of the Yukon River valley. The stories are tied to specific locations along the river. Frederica de Laguna, a noted Athapaskan anthropologist, characterizes these "[serious stories] as indirect conveyors of knowledge about the natural (and supernatural) world, of man's place in it, and of how he should behave."[39] These stories are, in fact, the components of a cultural narrative.

Athapaskan people share this riparian cosmology through their continuing relationship to their river. The clarity of place represented in these stories is reinforced by their repetition in time. Amongst the Tr'ondëk Hwëch'in of the Dawson area, the story cycle was traditionally told in the fall, during the seasonal move down river from the summer fish camp to winter hunting grounds. As the Tr'ondëk Hwëch'in journeyed, stories that linked to the places where they camped were repeated, and the audience would be reminded of both the moral lessons gained from Tachokaii's experiences there and the practical knowledge of that place and time of year that were part of the story. The story cycle acts as a cosmographic map. Its ephemeral nature, perhaps, imbues it with a resilience that allowed it, along with its more practical story map, to continue to serve the Tr'ondëk Hwëch'in into the present.[40]

39 Frederica de Laguna, *Tales from the Dena: Indian Stories from the Tanana, Koyukuk, & Yukon Rivers* (Seattle: University of Washington Press, 1998), 288.
40 G. Malcolm Lewis, "Maps, Mapmaking, and Map Use by Native North Americans," 180-81.

FIGURE 14: A young woman sights in her rifle during First Hunt, an annual Tr'ondëk Hwëch'in event introducing youth to an element of their community's traditional round of hunting and fishing.
Source: D. Neufeld

The territory of the Athapaskans is created, understood, described, explained, and owned by these stories of travel and interaction. The stories instil and reinforce a sense of cultural identity and morality, they remind the participants of their responsibility in maintaining the balance of the world and, through their detailed ecological knowledge, the power to envision and control their future. The stories are also potent statements of ownership. The river and the journeys connecting the people in a shared experience are the foundation for and object of their story maps. The features encountered while travelling along the rivers and through the land are a chart for their complex value system and moral order. The story maps of the Yukon River basin are thus a source for the guides to proper behavior, instructions in the exercise of land skills to build a desired future, and the cultural foundation of the Athapaskan civilization.

These maps offer valuable insights into the social structures, historical processes, and cosmographic objectives of the culture that created it. A culture vests power in representations of place—power that guides or constrains thinking and thus guides us to the values and morality of the culture. Thus, such representations offer an opportunity to begin conversations between cultures with at least a modicum of understanding.

Conclusions

The recently negotiated agreements between Yukon First Nations and Canada are now based in law. As diplomatic treaties between sovereign governments, they describe mechanisms for conversing between these two cultures. Nevertheless, there remain significant difficulties in recognizing the realities of cultural pluralism. On both sides, deeply held assumptions of the nature of the world we live in often limit understanding.

FIGURE 15: Tr'ondëk Hwëch'in Elder Angie Joseph Rear shows young people how to cut salmon for drying in the smokehouse behind them. **Source:** D. Neufeld

At a 2002 meeting of Yukon-based scientific researchers, including conservation biologists, hydrologists, planners, land managers, and one historian, there was a presentation on the agreements. A biologist analyzed and prepared a complicated schematic illustrating the legislated consultation mechanism for joint decision making. He carefully outlined each step required, concluding that the process was actually a closed loop; that is, it did not lead to any decision. The biologist also reported a personal conversation with a First Nation Chief where the chief acknowledged that that was the case. The biologist concluded that the process was flawed and should be set aside until it had been adjusted. There was silence in the room as we digested his recommendation to ignore an element entrenched not only in law, but in the Canadian constitution. I suggested the First Nation intention was to make the process circular, noting that while it offered no solution, perhaps consensus was the only way through such a mechanism.

The agreements recognize the importance of pluralism and establish these mechanisms to ensure the continuing richness of cultural diversity in our part of the world. Our challenge in the Yukon today is to accept cultural pluralism. James Tully, a philosopher of democratic constitutionalism, describes a plural nation as "a State with distinct cultural groupings constantly negotiating with each other on the basis of mutual recognition, respecting the continuity of group traditions with shared governance rising from mutual consent".[41] For environmental historians, the investigation of the Yukon's rich intellectual

41 James Tully, *Strange Multiplicity: Constitutionalism in an Age of Diversity* (Cambridge: Cambridge University Press, 1995), 116.

soil reinforces Cronon's direction to maintain a moral engagement with the world, and to care for it in new ways: "to try and escape the value judgements that accompany storytelling is to miss the point of history itself, for the stories we tell, like the questions we ask, are all finally about value."[42]

Mida Donnessey, an Elder of the Kaska Tribal Council, in a telling of the Tachokaii adventures, explained that the purpose of this story map is to "make the world good for baby."

Figure 16: Percy Henry and the author relaxing at the 2008 Moosehide Gathering, a bi-annual event hosted by the Tr'ondëk Hwëch'in open to all. It is an invitation to get to know each other better. **Source:** D. Neufeld

42 Cronon, "A Place for Stories: Nature, History, and Narrative," 1375-76.

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Montreal and Its Waters: An Entangled History

Michèle Dagenais

> 'Where is my river, the St. Lawrence? It is here. You can't hear it. It's like the horse that awaits you in the stable. You don't see it. But I can feel that it's there, that it flows while it pretends not to flow, that it embraces the city…[1]

This quote suggests the complexity of the relationship between contemporary cities and water. This relationship is characterized by a number of entanglements that often escape the notice of the observer, even though they are no less real than the tangible entities of land and water. These words, borrowed from novelist Réjean Ducharme, date back to the late 1960s, a key period in the recent history of Montreal, which, like many North American cities, suffered from deindustrialization. At the time, discourses critiquing the strong push towards urbanization since 1945 were abundant. The consequences of this transformation on the environment became more and more apparent as Montrealers started to suffer the repercussions of the recession. The idea that Montreal had cut itself off from water, and that it had turned its back on the St. Lawrence River, comes from this period. To this day, this myth is still central in debates concerning water in Montreal, feeding the desire to re-establish the city's connection to water and to go back to the period when Montrealers lived in symbiosis with the St. Lawrence. Of course, the city and its population were never separated from water. What changed over time was the form that the water took within the Montreal landscape, and the relationship between the city and water.

The idea that there had been a break between the city and water has had a particularly strong resonance in Montreal, a city characterized by the omnipresence of water. Situated on an island at the confluence of the St. Lawrence and Ottawa Rivers, Montreal is located in the middle of a rich archipelago. The southern part of the island is surrounded by the St. Lawrence River, which approaches Montreal through Lake St. Louis before entering the strait of the Lachine Rapids and reaching the city. To the north, the Ottawa River enters the Lake of Two Mountains and reappears in the form of two smaller rivers, the Rivière des Prairies (also known as the Back River) and the

1 Réjean Ducharme, *Le nez qui voque* (Paris, Gallimard, 1967) in Bryan Demchinsky and Ealine Kalman Naves, eds, *Storied Streets: Montreal in the Literary Imagination* (Toronto: Macfarlane, Walter, and Ross, 2000), 123.

Mille-Îles River, which flow on either side of the island known as Île Jésus (now Laval). These rivers run for over fifty kilometers before flowing into the St. Lawrence River on the northeast end of the island. Water is also omnipresent in Montreal because it is an archipelago city, and its urban development has spread to the shores of the archipelago's rich water basin. Yet although the city's abundance of freshwater is often celebrated, Montreal has become the object of a good deal of criticism. The presence of waterways around Montreal complicates traffic in and out of the island, and is the subject of numerous complaints. In fact, crossing the rivers surrounding Montreal can be a frustrating ordeal due to frequent traffic jams on the bridges.

Figure 1:
Montreal and its environment, circa 1900.
Source:
Bibliothèque et Archives nationales du Québec

Be it through geography and the environment, nostalgia, or everyday complaints, all debates surrounding Montreal's waters attest to the fact that the city's relationship to them has always been experienced and mediated through two intersecting processes: (1) the actual state and presence of water in the landscape and (2) current representations of water and the ways in which water manifests itself in everyday life. Today, these two dimensions are as closely intertwined as they were in the past. It is this

entanglement that I would like to disentangle in this article in an effort to highlight the ways in which Montreal's relationship to water has been transformed over the years from the pre-industrial period until today. Hence, I propose to reflect upon the co-construction of the city and its waters: in order to do this, I will present the main findings of extensive research I have conducted on Montreal and its waters from the beginning of the nineteenth century.[2]

To what water am I referring? How can it be defined? In my research, I approached the study of water in its entirety and in its diverse forms, examining both the waterways that surround the island and the water that runs through the city's underground networks. I consider water in its tangible dimension, as a physical element that has developed alongside Montreal, and which at the same time helped facilitate the transformation of the city. I also contend that water cannot be studied without considering the interrelated social and cultural dimensions. Thus, I examine water on a socio-cultural level: as a crucial component in the production and transformation of the Montreal space.

This research was inspired by environmental history and urban history. In the past few years, many works associated with environmental history focused on the history of waterways. Studies on the Rhine, Bow, and Columbia Rivers led to rich monographs in which authors examine the natural and social dynamics at the heart of the rivers' transformation over time. Yet by making specific rivers the central object of their study, these authors tend to see rivers as autonomous entities. They sometimes neglect the spatial context in which the history of these waterways has been inscribed. In sum, these rivers were studied primarily as natural objects.

However, when urban historians took on water as a research subject, they largely studied the phenomenon of networking and its impact on the structuring of urban space. Less frequently, attempts have been made to assess how the natural characteristics of a setting weigh on the configuration of technical networks, or to document the fact that technical networks formed at the junction of the urban and the natural, and how this influenced the political and technical decisions taken. For these reasons, urban

2 I would like to thank Nadine Klopfer and Christof Mauch for inviting me to present an overview of this research at a Rachel Carson Center seminar in June 2010. I would also like to thank Daniel Rueck, whose comments were very useful in preparing for this seminar. I recently published a monograph outlining the results of this research entitled *Montréal et l'eau: Une histoire environnementale* (Montréal: Boréal, 2011).

historians generally tend to perceive the natural environment as a cultural object. Urban environmental historians have recently produced some studies that shed light on the intermingling of natural and the built environments in cities. This approach is also useful to help grasp the natural and social processes through which cities have been transformed over time, and to perceive of them as hybrid spaces.

Inspired by these historiographies, I have conducted a study on Montreal and its waters using a two-pronged approach: first, by showing how the territorial urbanization process and its extension modified the Montreal's hydrology and riverside environments, and, inversely, by demonstrating how the transformation of watercourses and their inclusion in technical networks contributed to urban development. When I refer to water in its plural form, it is to draw attention to the fact that water is not a permanent element and does not have the same characteristics in every situation. Whether I am dealing with the present or the past, it is important to perceive water as both a reality and a concept to be denaturalized. Hence, I have constructed water as an historical object, or as an object that must be historicized.

The reality of water was constructed according to representations as well as the changing forms of this element. How were these representations elaborated upon? What were the processes that transformed water into an object to be understood and managed? I have chosen to use the term "perspective" to take into consideration the theories, values, and beliefs in circulation through which the collective relationship with water was built upon. Therefore, I have structured this article around the following diverse perspectives that show how water was conceived of and represented, how and why its forms have changed over time, and what its developments and uses are.

The idea of circulation for governing the city

The starting point for a new era in Montreal's history coincided with the demolition of its fortifications at the turn of the nineteenth century. At that time, the destruction of the surrounding walls was the most visible sign of the ongoing redefinition of the city, its boundaries, entities, and organization as a whole. This happened a couple of years after the central authorities, in 1792 and 1796, had redesigned and extended Montreal's borders to include a territory much larger than the one than that had previously been

established. Both the extension of Montreal's boundaries and the demolition of the walls attested to a new way of conceptualizing space, which from then on was imagined in a more dynamic fashion. This new perspective reflected the idea of circulation in governing the city. The same concept was also visible in the actions of the political elite, who now thought of Montreal in a more comprehensive way, showing their ability to anticipate the city's growth and conceive of it in relation to future trends.

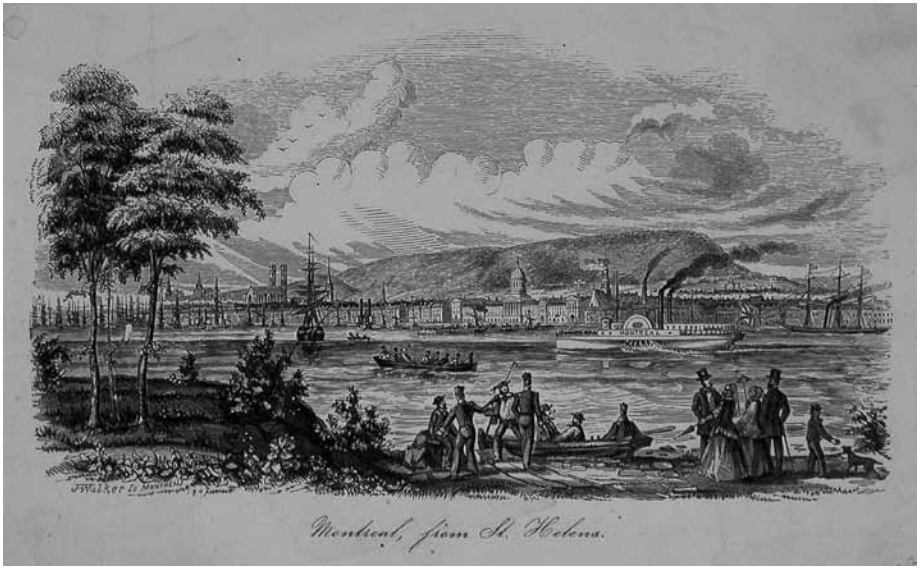

Figure 2: Montreal from St. Helens Island, John Henry Walker (1831-1899). **Source:** McCord Museum

Water, which up to that point had rarely been mentioned in public documents, became an increasingly important object in debates. During this period, water was mainly discussed alongside issues relating to circulation. On the positive side of the discussion was flowing water. It started to be considered important to profit from water in order to expand commerce and the shipping industry. On the negative side were discourses mainly referring to stagnant water; decision-makers considered this an obstacle that hindered movement and traffic in the city, in addition to being detrimental to the city's health. Such discourses surrounding water and water-related problems prepared for, as well as accompanied, its governance. More than being an accurate description of this reality, these accounts played a crucial role in fostering a new understanding of the territory and the relationship between the city, its inhabitants, and its waters. What is also striking is the fact that during this period, the words used to describe water or to com-

plain about related problems betrayed the fact that there were very few opportunities to change the situation, be it on a political, scientific, or technical level.

In 1828, near the end of this first period of transformation, Montreal merchants and dignitaries petitioned the central government for a charter that would allow them to govern the burgeoning city. The incorporation of the city in 1832 led to the first efforts aimed at organizing the urban fabric and controlling the surface water. Certain streams going through the city were canalized or covered. In the aftermath of these changes, many of the small bridges allowing residents to cross watercourses were demolished. Montreal's elites also succeeded in obtaining the power to develop some facilities intended to expand the capacity of the city's harbor. But because of the tense political life at the end of the 1830s, few of these projects were realized during this period.

Running water as a tool for managing the urban environment

The mid-nineteenth century ushered in a new era characterized by the growing importance of technical means and their capacity to reshape urban settings. This period led to a closer intertwining of the natural and the built environment. Central to this period was the shift towards "running water." In the case of water from the St. Lawrence, freshwater was transformed into "running water" that circulated through the urban space via pipes and conduits. It became the quintessential means for relieving urban problems of the day, cleansing the city, and structuring political life. This shift in perspective coincided with the advent of the sanitary ideal as a new framework intended to govern Montreal during this period of heavy industrialization. This framework rested upon the idea that the solution to urban turmoil was a continuous flow of water. Achieving this solution required turning freshwater into a commodity that could be measured, channeled, transported, used, and taxed. In Montreal, this shift in vision was the result of a two-pronged transformation: first, a transformation on the political level via the municipalization of Montreal's territory; second, a transformation on the environmental and technical levels with the transportation of freshwater and its commodification.

These two changes took place simultaneously and fed into one another. In fact, Montreal's political territory came into being with the actual construction of drinking and wastewater systems and the creation of a regulatory framework governing their use.

In turn, new uses for water arising from its broad distribution helped consolidate the developing municipal space. But the ability to provide a reliable and continuous distribution of water was not realized all at once. Among other requirements, such a project would always need adaptation to meet demand. Thus endowed, Montreal appeared to be undergoing a continuous process of adaptation and progress. While this process was never completely finished, it had to be maintained, inspected, and improved upon. The maintenance operations required by all the municipal projects were tangible proof of the power of the city.

Figure 3: Bird's-eye view of Montreal at the turn of the twentieth century. **Source:** McCord Museum

During the same period, considerable construction work was undertaken to transform the St. Lawrence into a navigable waterway, a project deemed essential for ameliorating the traffic of goods, capital, and humans. An entire set of empirical data was gathered to measure the water level and the water flow, its slope, its currents, and ice movements. This data also provided information on the depth and width of the river from Montreal down to Quebec City, situated 250 kilometers further down the St. Lawrence. By enabling objective knowledge of the river, the collected data provided arguments to sustain the ambitious projects that economic elites wanted to undertake in order to transform the river into a seaway. In addition to such constant interventions related to water networks, the work done on the river transformed it into a permanent construction site. The river started to be seen as technical device susceptible to "improvement" according to human needs and definitions.

But like any undertaking that relies on natural elements, this project was never completed, and those involved had to deal with an environment that was forever changing. Before the end of the nineteenth century, this situation of permanent change had already become visible in the frazil ice that had formed at the entrance of the aqueduct canal, the city's main water supply facility. This was also the case with the floods that regularly occurred in the winter and spring. These, among other problems, can be read as signs of the irreducible character of natural elements that rebelled in the face of the harnessing efforts of industrialization.

The bacteriological perspective: Reconfiguring the relationship between Montreal and its surrounding suburbs

While the flows of water drawn from the Saint Lawrence helped make Montreal a modern, continuously cleansed city, it caused new problems with regard to where the wastewater was being discharged. The city was indeed being cleansed, but this was only achieved by removing the refuse beyond its limits and dumping it into the watercourses and territories of surrounding towns. The use of running water thus accelerated the deterioration of shoreline environments, particularly those downstream from Montreal and on the north shore of the island. The situation led to a new crisis that exploded in the late decades of the nineteenth century in the wake of the growth in population and the growth of suburbs around Montreal.

This crisis was partly related to an ongoing debate pertaining to the quality of drinking water. On the one hand, the use of waterways for both the provision of drinking water and the dumping of wastewater was increasingly questioned. Although idea of the dilution power of rivers was still considered valid, it was not possible to rely solely on it anymore. In fact the diluting capacity of running water was no longer sufficient for eliminating the growing quantity of sludge. On the other hand, a new perspective came to be accepted, namely the bacteriological paradigm. I will not go into the details of this well-known shift, which I have studied in detail in the Montreal context. It suffices to say that this new conception of water accelerated its commodification. Water started to be defined as an objective, measurable quantity reduced to its fundamental unit—a molecule of H_2O.

This new definition of water had important practical consequences. As with previous perspectives, it involved a new rapport to water and new relationships between urban settings and the environment. This new conception of water meant that from then on, the City of Montreal would not only have an obligation to provide running water, but also to guarantee its safety as well. By becoming the primary water supplier, the City of Montreal could thus impose its norms for sanitary installations. This shift led to the production of manufactured water, a move which happened through different social and political processes. Among other things, manufactured water was instrumental in heightening the power exerted by local and central governments on defining the environment and on local populations. For instance, from that time on, only scientists could attest to water's safety. This, in turn, discredited other empirical evaluations of water quality.

The bacteriological paradigm also contributed to the reconfiguration of the relationship between Montreal and its surrounding suburbs. The western part of the island, which primarily consisted of wealthy suburbs populated by Anglophone majorities, was able to maintain its autonomy from the central city in regards to the management of drinking water. But in the eastern part of the island, home to the less well-off French-speaking population, polluted wastewater from the city accumulated. This connection between wealth and topography was not coincidental: uphill and upstream land was more valuable, in part precisely because it was free of such problems. As a result, the eastern part of the island was forced to connect itself to the Montreal aqueduct in a position of increasing subordination to the central city. Even though this was not the only reason Montreal extended its city limits, the provision of drinking water eased the expansion.

Furthermore, from the moment Montreal was able to provide the surrounding areas with drinking water, it became less urgent to stop polluting the St. Lawrence and in particular the Rivière des Prairies with wastewater. By the end of the 1910s, the situation on Montreal Island had reached a breaking point. Where urbanized districts on the south side of the island disposed of their sewage by dumping it into the St. Lawrence, the new residential areas on the north side discharged theirs into the Rivière des Prairies, as did the small communities that had developed along its shores. In sum, through a set of water-related infrastructure facilities, waterways around the island were on their way towards integration into the city of Montreal's drainage plan.

The situation was particularly critical on the north shore of the island because the Rivière des Prairies was a smaller tributary and also received wastewater from upstream. In the 1920s, the building of a hydroelectric dam transformed the riverside environment to an even greater extent. It aggravated the water pollution problem in this area. It changed the river flow, thereby preventing the increasingly abundant sewage from being discharged, so that, as a result, it accumulated along the shoreline.

Figure 4: Hydropower plant on the Rivière-des-Prairies, n.d.
Source: Archives d'Hydro-Québec H2 Commission hydroélectrique de Québec

The construction of the dam had other consequences as well. By lowering the intensity of the rapids, the dam changed the flow of the Rivière des Prairies, creating new conditions favorable to swimming. During this time, recreational use of the river increased. In contrast to the part of the St. Lawrence next to Montreal, which had been largely transformed into a harbor facility, the Rivière des Prairies seemed like an oasis, appreciated all the more as its shores were easily accessible by urban transit. Here, the dam did not appear to be a problem. On the contrary, there were indications that the changes in flow would be beneficial for water sports. Thus, the already popular area became even more attractive. During the summer, hundreds of Montrealers flocked to the Rivière des Prairies. Even though the river's contamination was increasingly condemned, discourses of hygiene authorities and warnings published in the newspapers and posted on river banks had little impact.

The environmentalist perspective: Reconnecting the city with its river

In the early 1940s, hygiene authorities were joined by anglers and hunters in their complaints about the deterioration of the Rivière des Prairies and the St. Lawrence. But in contrast to critiques motivated by health issues, anglers expressed concerns regarding the leisure practices and other activities on the rivers. Through the discourses of anglers and hunters, a new battle was gradually taking shape. This time, it was in favor of protecting riverside environments for the sake of sport. This battle would have effects similar to the one conducted by medical authorities in that it would help redefine the Montreal area.

The arguments put forward by anglers' associations were similar to the ones expressed by conservationists at the turn of the twentieth century. Both groups were intent on protecting nature and natural resources. But at the same time, there was an important difference between the anglers and the conservationists. Where conservationists cited the importance of "wild nature," activists of the mid-twentieth century were preoccupied with the protection of "nature" in urban settings. In the Montreal area, anglers and hunters took the lead in commissioning inquiries to document the pollution of watercourses and rivers. Their studies contributed to the construction of a more holistic vision of the diverse functions of water and hydrology on a citywide scale.

This new movement, which favored the protection of the environment and which did not call itself "environmentalist" at first, became more active in the context of the intense economic and suburban development following the Second World War. This led to the densification of the Montreal area as well as the more intense occupation of the island's and region's shores. The attraction of the river banks provoked a phenomenon of encroachment on the littoral zones of the St. Lawrence and its tributaries. The resumption of important civil engineering projects on the St. Lawrence aimed at facilitating the transit of ships of increasing tonnage between the Great Lakes and the Atlantic transformed the river. All in all, these undertakings resulted in more water pollution and the privatization of shores.

An environmentalist perspective emerged from critical stances to the intense pace of the developments mentioned and the results of inquiries about the polluted waters. This new point of view, which focused on issues relating to water pollution and environ-

Figure 5:
Aerial view of Montreal harbor, circa 1945.
Source:
McCord Museum

mental deterioration, developed according to a new representation of waterways in the metropolitan region: they were considered sick and in need of healing in order to have new life breathed into them. The St. Lawrence was particularly targeted. This new perspective was also fuelled by a complex set of demands to protect and rehabilitate the waterways and to democratize access to the riverside environments and the water itself.

Dredging, encroachment, filling, dumping: new vocabulary and notions emerged to define the St. Lawrence and the assaults of which it was the target. All these words, and the realities they translated, helped communicate the project of reconnecting people and water. In fact, critics asserted that the traditional links that had connected the Montreal population and the river had been severed in the postwar era. New policies had to be implemented to reestablish the connection between the people and water in the area. All this critical debate contributed to the establishment of an enchanted vision of the past that longingly looked back at the benefits people had apparently

drawn from the waterways surrounding Montreal in the "good old days." By doing so, these debates also contributed to the creation of the myth that the river had once been dedicated to recreation.

From the 1970s onwards, the environmentalists were at the forefront of the movement to rehabilitate the St. Lawrence. They replaced the political elites of the early nineteenth century as well as the engineers and the hygienists of subsequent periods. Environmentalists' complaints about the degradation of the water quality surrounding Montreal fuelled growing criticism of development and land management in the post-war period. The rancor was further reinforced by the fact that Montreal had been hit hard by deindustrialization. Activists exerted pressure on political authorities for the sake of nature protection and the democratization of riverside environments. It was in relation to these two new goals that the relationship of the city to its waters would be defined from then on.

The city's reconnection to water did not exclusively depend on the efforts of the anglers and environmentalists. Other campaigns were undertaken during this period of deindustrialization in the same vein. In response to the closing of factories and the unemployment that ensued, public authorities worked to rejuvenate parts of the river abandoned by industrial facilities by developing riverside parks and new openings onto the river. The development of the Old Port, the rehabilitation of the industrial canal bank Lachine, and the development of parks on the perimeter of the island in the 1980s were all evidence of accomplishments in this direction. In sum, these developments partially transformed the orientation of Montreal which, deprived of its industrial base, turned towards recreation in order to revitalize its economy. Moreover, such efforts legitimated the desire to reconcile water and urban life, a goal that that had been in the works since the 1950s.

But where did this push towards restoring water and natural environments lead? On which environment and which waterways did such efforts concentrate? The projects, far from helping recover the lost river, further contributed to its transformation and urbanization. In fact, discourses and initiatives that promoted the protection of the St. Lawrence and its reappropriation by the population involved increasingly invasive interventions in order to decontaminate, get closer to, or reconnect with the river. Overall, the desire to reconcile the city and its waters did not lead to a new relation-

ship between them so much as it facilitated the adaptation of the latter to the former according to new aspirations, notably based on leisure considerations.

Figure 6: Shad fishermen below the hydro-power plant on the Rivière-des-Prairies, 2010. **Source:** Michèle Dagenais

Conclusion

The extent to which remarks in favor of better access to river banks and the protection of the St. Lawrence continue to be formulated in terms of reconquest, recuperation, and re-appropriation is striking. Such terms evoke the idea of property, as if the river had originally belonged to the population, was stolen, and is now being reclaimed. This project of reconquest, as we have seen, had its roots in the 1960s and 1970s, and was first influenced by important changes in the Montreal landscape, then by deindustrialization. A number of voices rose up against developments that had occurred since the Second World War. These critics called attention to the pollution of the archipelago's waters and the concurrent deterioration of riverside milieus. Thus, these voices contributed to the construction of the idea that Montreal had turned its back on the St. Lawrence, and that from then on, the population had been cut off from the river. Thus, the myth was born that the city had once been in close communion with the river and that the population

had at one time lived in symbiosis with water. Since its creation, this myth has occupied a central place in debates surrounding demands for increased access to the water.

One of the objectives of my research has been to debunk this myth in order to show that the city and its population have, in fact, never really been separated from water. What changed over time were the forms in which water was present in the Montreal landscape and the city‘s relationship to water. Yesterday, as today, the presence of water and the terms defining access and supply result in constraints connected to its biophysical milieu as much as to the nature of social and power relations. The population’s relationship to water was the product of complex entanglements characterized by the policies adopted and technical decisions that were carried out, as well as by environmental transformations. In sum, the changing ways in which water has been portrayed at different times were constantly produced and reproduced through both the natural and the socio-political processes that I have brought to light in this study.

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Nutritional Science, Health, and Changing Northern Environments

Liza Piper

The boundaries of "northern Canada" have never been universally defined. For some, the North begins at the southern limit of discontinuous permafrost; for others, it embraces the territories (the Yukon, Northwest Territories, and Nunavut), but not necessarily the provincial norths (the northernmost regions of some of Canada's ten provinces); for others, it is confined to the High Arctic—the northernmost part reaches Ellesmere Island, or the Arctic Archipelago.[1] To further complicate matters, relations between residents of the North and the state historically varied depending on whether one was First Nations (Indian), Métis, Inuit (Eskimo), or non-aboriginal.[2] For instance, the federal Indian Act (the earliest precedents to this act lay in the Canada of the 1850s, i.e. present-day Ontario and Quebec) applied only to First Nations and some Métis people, not to the Inuit. Finally, the treaties signed by the federal government with northern aboriginal populations governed relationships between northern peoples, their lands, and the state.

However, much of the North remained outside of treaty areas for much of the twentieth century. Specifically, most aboriginals living in the Yukon Territory did not have a treaty agreement with the federal government, even though they called for such a settlement in the first decade of the twentieth century.[3] Aboriginals who lived to the east of Treaty 11 (in the central and eastern Arctic), and who were predominantly Inuit, likewise did not have land claim or treaty settlements with the federal government until the creation of Nunavut. Even for those who lived in the lands ceded by Treaty 11, the treaty process was rushed and the federal government ultimately failed to meet its obligations under that document. Claims to Treaty 11 lands thus remained unresolved.[4]

The author gratefully acknowledges the Gwich'in Social and Cultural Institute and the Inuvialuit Cultural Resource Centre for granting access to unpublished interview transcripts with Gwich'in and Inuvialuit elders as part of the research for this project. The Social Sciences and Humanities Research Council of Canada and the Killam Trusts funded this research.

1 The first is the definition of the "North" employed by the Social Sciences and Humanities Research Council of Canada; the second applies to most works of history on the North; the third is a view that I have heard expressed most commonly by physical research scientists who conduct field work in northern Canada.
2 The misapplication of the term "Indian" is well known; "Eskimo" was the name given to the Inuit by First Nations, and means "eater of raw meat," where "Inuit," which means "the people," is the name they use for themselves.
3 Kenneth S. Coates, *Best Left as Indians: Native-White Relations in the Yukon Territory, 1840-1973* (Montreal-Kingston: McGill-Queen's University Press, 1991), 162-4.
4 A subject I have explored in brief in *The Industrial Transformation of Subarctic Canada* (Vancouver: UBC Press, 2009).

From this almost impossibly complicated mix of people, land, and government, it is nevertheless possible to historically understand Canada's North as a region primarily comprised of the three northern territories and the provincial norths. It is the only part of Canada where the aboriginal population has either remained in the majority or is a significant and powerful minority.[5] Nature in the North is equally varied, although its high latitudes lend important continuity to the length of daylight and the annual transitions from ice and snow to water and land, and back again. Canada's northern environments range from expansive tundra (or the "Barrens"), to the extensive coastline of the Arctic Archipelago, the boggy muskeg of the Hudson Bay lowlands, the glaciated mountain ranges of the Yukon, and the spectacular Peace-Athabasca freshwater delta.

This essay is drawn from a larger research project that examines this expansive, varied, and complex region of Canada in the nineteenth and twentieth centuries.[6] The research takes ill health and disease in this period as its point of departure, and asks how these were linked to changed relations between people and the rest of northern nature. Diet and food figure prominently in these relations: northerners harvested the land for food—not through agriculture, but rather by relying on hunting (large game animals, marine mammals, smaller furbearers, and a range of waterfowl), fishing, and consuming a wide range of plants and berries.[7] The health of northern lands and waters, and the health of northern people were closely intertwined, with food acting as a key intersection of people's bodies and the rest of nature.[8] This essay explores changing nutrition across the Canadian North in the twentieth century and the impacts these changes had on relations between northerners and the federal government.[9] Specifically, I examine how,

5 At present, aboriginal people are in the minority in the Yukon, but make up approximately half the population in the Northwest Territories, and 85 percent of the population of Nunavut.

6 Other findings from this research have been published in Liza Piper and John Sandlos, "A Broken Frontier: Ecological Imperialism in the Canadian North," *Environmental History* 12, no. 4 (2007): 759-95; Liza Piper, "Chronic Disease in the Yukon River Basin, 1890-1960," in *Locating Health: Historical and Anthropological Investigations of Place and Health*, ed. Erika Dyck and Christopher Fletcher (London: Pickering & Chatto, 2011), 129-49.

7 For details on agriculture, as limited as it was, see Piper and Sandlos, "A Broken Frontier," 775-81.

8 I have explored these ideas in greater detail in Liza Piper, "Industrial Fisheries and the Health of Local Communities in the 20th Century Canadian Northwest," in *Aboriginal History: A Reader*, ed. Kristin Burnett and Geoffrey Read (Oxford University Press, forthcoming). There is, of course, a much wider body of literature on environment and health, which includes important works such as Linda Lorraine Nash, *Inescapable Ecologies: Environment, Disease, and Culture in the History of California* (Berkeley: University of California Press, 2006); John R. McNeill, *Mosquito Empires: Ecology and War in the Greater Caribbean*, 1620-1914 (Cambridge: Cambridge University Press, 2010); Gregg Mitman, "In Search of Health: Landscape and Disease in American Environmental History," *Environmental History* 10, no. 2 (April 2005): 184-210.

9 Important works in Canadian historiography that this research draws on in thinking about health, diet, and aboriginal relations with the state include Mary-Ellen Kelm, *Colonizing Bodies: Aboriginal Health and Healing in British Columbia* (Vancouver: UBC Press, 1998) and Maureen Lux, *Medicine that Walks: Disease, Medicine, and Canadian Plains Native People, 1880-1940* (Toronto: University of Toronto Press, 2001).

by the latter half of the twentieth century, the Canadian state came to use nutrition and nutritional science as the means by which to understand and to attempt to manage changing relationships between (predominantly aboriginal) northerners and their environments.

At the turn of the twentieth century, several thousand indigenous peoples and a few hundred non-natives lived in Canada's northern territories. In the Mackenzie district (along the Mackenzie River, extending to the delta that outlets in the Beaufort Sea), there were around 250 "whites," over 3,600 Dene, and no more than 1,000 Inuit.[10] In 1901, in the wake of the Klondike Gold Rush, the Yukon aboriginal population was counted at 3,322, while the non-native population was remarkably high at 27,219.[11] To the east of the Mackenzie, between 1900 and 1920, there were over 2,500 Inuit and fewer newcomers compared to the western Arctic. By the 1921 census, 7,988 people were recorded as residents of the (then) Northwest Territories (encompassing the present-day Northwest Territories and Nunavut) and 4,157 in the Yukon.[12] With the dramatic impact of epidemic diseases between 1860 and 1930, this period was a low point in the demographic history of northern aboriginals. By the 1951 census, the population of the Northwest Territories had risen to 16,004, and that of the Yukon to 9,096.[13] These dramatic increases reflect improved coverage by census takers and larger numbers of non-aboriginals who had moved north in the twentieth century following resource-extraction operations, in particular.[14] They also reflect increased fertility and lower mortality for northern populations as a whole, although major demographic impacts of improved health care would not be apparent until the very end of the twentieth century.

10 See Martha McCarthy, *From the Great River to the Ends of the Earth: Oblate Missions to the Dene, 1847-1921* (Edmonton: University of Alberta Press & Western Canadian Publishers, 1995), Appendix A: Dene Population Statistics; René Fumoleau, *As Long as this Land Shall Last: A History of Treaty 8 and Treaty 11, 1870-1939* (Toronto: McClelland and Stewart, 1975), 17 (MacFarlane's 1884 census); June Helm, "Female Infanticide, European Diseases, and Population Levels among the Mackenzie Dene," *American Ethnologist 7* (1980): 259-85; Eric Alden Smith et al., "Inuit Sex-Ratio Variation: Population Control, Ethnographic Error, or Parental Manipulation?" *Current Anthropology 35*, no. 5 (December 1994): 595-624; David A. Morrison, *The Kugaluk Site and the Nuvorugmiut: The Archaeology and History of a Nineteenth-Century Mackenzie Inuit Society* (Ottawa: Canadian Museum of Civilization, 1988).

11 Coates, "Table 7" in *Best Left as Indians*, 74.

12 Canada, Dominion Bureau of Statistics, *Fourth Census of Canada, 1901* (Ottawa : S.E. Dawson, 1902-06); and *Sixth Census of Canada, 1921* (Ottawa: F.A. Acland, 1924-29).

13 Breakdown: Northwest Territories (Eskimo—6,857; Indian—3,803; others—5,344): Yukon (Indians—1,533; others—7,563). Source: Canada, Dominion Bureau of Statistics, *Ninth Census of Canada, 1951* (Ottawa: E. Cloutier, 1953-1955).

14 For movements of southerners northwards in the twentieth century see Morris Zaslow, *The Northward Expansion of Canada*, 1914-1967 (Toronto: McClelland and Stewart, 1988); Liza Piper, *The Industrial Transformation of Subarctic Canada* (Vancouver: UBC Press, 2009).

Significant socio-economic change occurred in northern Canada in the twentieth century; nevertheless, before 1970, it is possible to speak of patterns of settlement and resource use that prevailed across the Subarctic and Arctic. Northern community life included smaller nomadic bands (ten to forty people), who might visit a larger settlement or be visited by other native peoples, missionaries, or police officers on patrol. There were also larger settlements, such as Pond Inlet, Providence, or Fort McPherson, including hamlets or villages of a few hundred that were oriented around the fur trade and missions, with a population that spent a good portion of the year in the bush. The largest communities in this region were in places like Dawson or Yellowknife, which were based around industrial resources with more fixed-in place, but also more transient populations in terms of residency in the North. The role the government played—initially through treaty relationships and wildlife regulations and subsequently through its takeover of health and social services in the post Second World War period—created two axes around which social and community life in the North was oriented. One axis was within the North, in the camps, villages and towns, while the other bound northerners to the federal administration in the South.

By the early twentieth century, tea, bannock or biscuits, molasses, flour, and sugar were well integrated into the diets of most northerners. Nevertheless, and as should be obvious from the paucity of that list, indigenous diets (and those of non-natives in the North) continued, through most of the twentieth century, to rely upon the resources of the land for sustenance. Such resources ranged from waterfowl, fish, caribou, moose, and sea mammals, to smaller creatures, such as hares, and plants, most notably berries. All these foods were harvested from the land, but were differently available in different years or at different times of the year. As Frank Tough has detailed with regards to the seasonal subsistence cycles at Norway House and Churchill, a complex food economy prevailed across northern Canada, in which people harvested many different resources from many different sites.[15] Such harvesting involved an intimate knowledge of the land and animals, but perhaps paradoxically for those of us who understand close relationships with nature to be focused upon local places, this intimacy extended over a wide area. Such complex and extensive food economies served as a strategy for resilience in a highly variable environment often visited by periods of hardship: people could turn to a range of resources to ensure health, particularly during times of scarcity.

15 Frank Tough, *"As Their Natural Resources Fail": Native Peoples and the Economic History of Northern Manitoba 1870-1930* (Vancouver: UBC Press, 1996), 24-5.

Scarcity was neither uncommon nor unanticipated. Across the North, people relied upon migratory animals whose migrations shifted, and upon species, such as the hare, with cyclic fluctuations in population. Families and traders froze and dried freshwater fish in the fall to sustain them through the long winter and in particular through the spring, which was often the hardest, most vulnerable time of the year. Climate could fluctuate dramatically, as it did, for instance, between 1910 and 1920 in the central Arctic. As Renée Fossett writes: "Increased precipitation and fluctuating temperatures created conditions particularly inhospitable to caribou." The herds to the west of Hudson Bay disappeared for a decade.[16] In the boreal forest, fires could drive game far from the expected hunting grounds. As historians Gulig, Coates, and Morrison have noted, such fires increased with the arrival of industry, whether as a consequence of prospectors burning off the brush to facilitate mineral exploration, or as a by-product of the presence of more machines.[17]

The periodicity of hardship could range from season to season, year to year, or decade to decade. It meant, at times, going hungry. Occasional and seasonal malnutrition was not uncommon in the Subarctic and Arctic at the turn of the century. Gwich'in elders from Fort McPherson and Tsiigehtchic (Arctic Red River) described hungry times and deaths from starvation from their childhoods in the early twentieth century.[18] At other times, sustained hardship required families or communities to relocate. In longer northern history, there are many instances of places being abandoned, particularly in response to declining environmental conditions and climatic change. With the onset of the Little Ice Age in the fourteenth century, people in the Coronation Gulf area turned to new food sources (fish, caribou, and seal). Ultimately, though, Thule and their descendants abandoned sites such as Somerset Island and south Baffin in the 1300s. The same south Baffin villages abandoned by the 1300s were repopulated by 1500, with residents maintaining mobile harvesting practices needed to acquire certain materials for manufacture

16 Renée Fossett, *In Order to Live Untroubled: Inuit of the Central Arctic, 1550-1940* (Winnipeg: University of Manitoba Press, 2001), 190.

17 Anthony G. Gulig, "'Determined to Burn off the Entire Country': Prospectors, Caribou, and the Denesuliné in Northern Saskatchewan, 1900-1940," *The American Indian Quarterly* 26, no. 3 (2002): 335-59; Kenneth S. Coates and William R. Morrison, *The Alaska Highway in World War II: The U.S. Army of Occupation in Canada's Northwest* (Toronto: University of Toronto Press, 1992), 86-8. See also Stephen J. Pyne, *Awful Splendour: A Fire History of Canada* (Vancouver: UBC Press, 2007).

18 Michael K. Heine and the Elders of Tsiigehtshik et. al., *Gwichya Gwich'in Googwandak: The History and Stories of the Gwichya Gwich'in, As Told by the Elders of Tsiigehtshik* (Tsiigehtchik: Gwich'in Social and Cultural Institute, 2007).

or for greater variety in their diets. As the Little Ice Age continued, and, in particular, as whale resources became scarcer off of south Baffin Island, peoples living around Frobisher Bay became more mobile, spending much of their summers in portable skin houses rather than in the stone-sod-whalebone houses better suited to whale-hunting communities.[19] Other sites were famous as ancient gathering places. Such sites include the village at Kittigaryuit, where John Richardson (the naturalist and surgeon who accompanied the John Franklin expeditions) reported two hundred men in kayaks in 1826, suggesting as many as one thousand people in the village. Kittigaryuit was the site of a natural beluga whale trap,[20] and the length and intensity of occupation at that site, or others like Deline, or the site at the confluence of the Yukon and Klondike rivers, was indicative of the uncommon local wealth of resources.[21] Mobility was a means to ensure adaptation to environments that, during periods of climatic variability, offered very limited ways of sustaining life.

The Canadian North was never a uniformly, or even a broadly resource-rich environment, at least not when it came to food resources. Instead, the opportunities for harvesting varied significantly across space and through time. Between 1870 and 1940, the opportunities for subsistence from the land were further affected by an increased number of people harvesting the land—in particular, newcomers to the region from the outside and new activities taking place on northern lands and in northern waters. From the late nineteenth century, whalers, scientists, and larger research expeditions contributed significantly to the depletion of musk ox, caribou, and walrus populations. There exists important anecdotal evidence of the decline of game populations. For instance, David Hanbury, in the journal recorded while he undertook geographical explorations along the western coast of Hudson Bay in 1901-2, wrote "altho' game may not be so plentiful now as in former times, still there is plenty of it." In April 1902, Hanbury noted as follows:

> Musk ox he reports to be scarce both N and S of Backs river. Long ago they were numerous. How have they disappeared? (Red bears are scarce, this man has never seen one). Why have musk ox disappeared? The population of these northern parts

19 Fossett, *In Order to Live Untroubled*, 33.

20 Whales entering the estuary, seeking out its food-rich waters, had greater difficulty leaving, offering opportunities for Inuvialuit hunters.

21 For details on the rich fishery and whaling in the Mackenzie Delta, see David Morrison, "Inuvialuit Fishing and the Gutchiak Site," *Arctic Anthropology 37*, no. 1 (2000): 1-42.

> is the same. Certainly it has not increased. The introduction of fire arms can have no say in the matter, for they still only have their bows and arrow.[22]

Aboriginal hunting of musk ox was for the meat. Although hunters traded the skin at the trade posts or with whalers, this was an occasional trade, not a robe trade on par with the bison robe trade to the south. There was no evidence of either an increase in the resident population or in their harvesting of musk ox in this period, certainly not to the extent required to significantly deplete the musk ox populations. So where had all the musk ox gone? In 1875, vessels travelling in the eastern Arctic waters stopped where game was plentiful. Such hunting was in part for meat: men on board Victorian research vessels or those who were part of search parties for the lost Franklin expedition, kept fresh meat in the holds by harvesting from northern lands. But hunting was also very much for sport.[23] Lieutenant George Gifford, with the British Arctic Expedition (a scientific expedition in search of the North Pole), wrote about a hunting excursion from Bellot Bay in August 1875:

> Just as we anchored a herd of 9 Musk Oxen were seen onshore close to the water line. Immediately a shooting party was organised—I am sorry to say that I did not go but I was turned in at the time—the party consisted of the Commander, Parr, May, Fielder, Moss and White with some men. They landed and separated into parties so as to surround the herd which was so successfully done that the whole 9 were killed, they are very difficult to kill even when surrounded. Their hair and skins are very thick and tough and unless hit in the heart they require a great many bullets, alone it takes a long time as they put their heads down and stand facing you. Their heads are so large that they cover all their bodies and so thick that even at 20 yards a rifle bullet failed to penetrate one. They all had five or six bullets in them then the bull took fourteen I think, when skinned with their heads cut off and cleaned they have us 2200 lbs of meat, we sent half to the Discovery as they got on shore too late to shoot any of them. We are well set up in fresh meat now, from the number of shells etc lying about there and hare marks I should think that game was plentiful there is also plenty of vegetation here, more than we have seen since we

22 David Theophilus Hanbury, Journal Kept During his Explorations of the Keewatin District of Canada 1901 02, Sept. 18, MS 699 / 1; BJ, vol. 1 June December 1901; Apr. 12, MS 699 / 2; BJ vol 2 2 Dec 1901 12 May 1902, Scott Polar Research Institute [hereafter SPRI] „This man," referred to in the journal, is Hanbury's indigenous informant.

23 See Greg Gillespie, *Hunting for Empire: Narratives of Sport in Rupert's Land* (Vancouver: UBC Press, 2007).

> left Cape Sabine. The meat will keep now for the rest of the winter as it freeses [*sic*] all day, in case we don't get anymore we shall keep some of this for Christmas.[24]

The impact upon large animals by occasional research parties was intensified by the activities of whalers, who began wintering in the area in 1864-65, and who relied upon local game harvested by Inuit hunters for the subsistence of their crews. Elsewhere in the Canadian North, resource and research expeditions brought outsiders, along with their intensified food and recreation demands upon local wildlife, which included large game and smaller furbearers. To the west, American whalers, using Herschel Island as a base, had depleted delta and northern Yukon (Porcupine) caribou herds by the 1890s. The influx of trappers and traders prior to the First World War led especially to a direct intensification of pressures upon northern furbearers. Their activities, as well as the arrival of men and women working in the surging mining industry, continued the pressure upon all kinds of fish, fowl, and game populations well into the twentieth century. Miners at Port Radium on Great Bear Lake, where pitchblende was extracted beginning in 1929, relied upon locals who traded fish, moose meat, and other country foodstuffs for variety in a diet that otherwise consisted of canned and preserved goods that had been shipped north. As George Douglas wrote later in the twentieth century,

> the opening of rail to NW, the booming fur market of the twenties, modern fire arms [and] plentiful ammunition in the hands of men who would shoot anything alive at sight—I was much disgusted with the decrease in all kinds of animal and especially bird life after 1928 even and 1931 in Great Bear Lake.[25]

As with the scientists and hunters of the nineteenth century, there was twofold pressure upon northern food resources: immediate pressure, where potential food animals were harvested for trade or killed for sport, and secondary pressure, where game animals were killed to sustain larger newcomer populations engaged in a variety of economic or research activities.

In the first half of the twentieth century, the Dominion government greatly increased its presence in and oversight of Canada's northern territories. Government officials, fac-

24 George Gifford Journal—British Arctic Expedition, Bellot Bay. Lady Franklin Straits, Wed. Aug. 25, 1875, MS 41; BJ, SPRI.

25 George Douglas to P.G. Downes, 24 Apr. 1955, George Mellis Douglas Fonds, Library and Archives Canada [hereafter LAC]

ing pressure from hunters and concerned about sustaining the livelihoods of northern aboriginals, became attentive to the depletion of game populations.[26] These concerns were, moreover, situated within broader continental attention to conservation. Within a decade, the Dominion government introduced the Northwest Game Act (1917) and the Migratory Birds Act (1917), established Wood Buffalo National Park (1922) and the Thelon Game Sanctuary (1927), and expanded the 1924 ban on musk ox hunting in the Northwest Territories to include aboriginal hunters, who had previously been exempt from the ban if they were starving. In many respects, the changed relationships between people and the land that came to the fore in the early twentieth century were to be managed through the regulation of wildlife.

Regulation was a response to the depletion of northern food resources from intensified harvesting. However, regulation was also reinforced for northern aboriginals, trappers, and traders, all of whom lived off the land and faced the challenges of obtaining food. As John Sandlos and Tina Loo have examined in detail, these new regulations criminalized northern aboriginal subsistence activities. Waterfowl regulations were the most egregious in this regard, as the open and closed seasons were timed in the interests of southern, not northern hunters. While most of the new regulations were honoured as much in the breach as in the observance, they nevertheless directly impacted the ability of northerners to continue to obtain subsistence from the land in the fashion to which they had been accustomed to as recently as a few years or decades earlier. These, then, can be considered the cumulative pressures on the supply side, when it came to northern subsistence in the early twentieth century: in addition to environmental variability, which caused fluctuations in the availability of game, fish, and fowl, newcomers increased pressures upon northern food resources often to the point of depletion, while regulations introduced in response to some of these new pressures further affected the ability of aboriginal northerners, in particular, to continue with their historical harvesting practices.

From the end of the nineteenth into the early twentieth century, there were also a range of new pressures that affected the ability or desire of northerners to harvest

26 This concern was for both northern and southern interests: migratory birds act as more a product of southern hunters pressuring the government. To see these subjects addressed in detail, see John Sandlos, *Hunters at the Margin: Native People and Wildlife Conservation in the Northwest Territories* (Vancouver: UBC Press, 2007); Tina Loo, *States of Nature: Conserving Canada's Wildlife in the Twentieth Century* (Vancouver: UBC Press, 2006); Kurkpatrick Dorsey, *The Dawn of Conservation Diplomacy: U.S.-Canadian Wildlife Protection Treaties in the Progressive Era* (Seattle: University of Washington Press, 1998).

food resources from the land. Perhaps most notably, from the mid-nineteenth century through until 1960 or so, northern peoples were faced with repeated outbreaks of infectious diseases. While not virgin soil epidemics per se, these epidemics did share some characteristics with the contact-era outbreaks had that affected indigenous populations across the Americas. They tended to affect communities that, due to small population sizes and distance from larger centres, had acquired limited immunity to certain "crowd" diseases (measles, scarlet fever, and influenza, for instance). In turn, the outbreaks often led to significant mortality, or had complex social and economic effects upon families and communities.[27] Part of the reason for greater mortality and more profound impacts of infectious disease outbreaks lay with the fact that particular infections often worked synergistically, both with other disease organisms and with malnutrition, to intensify their impacts.

Epidemic disease and malnutrition have historically travelled hand-in-hand, both literally and figuratively.[28] Malnutrition, by weakening individual immunity, can lead to epidemic outbreaks. Seasonal malnutrition was not uncommon in the North, with the spring being the hardest period: food stores from the winter months were often low when supplies from the South (for those who relied upon imported goods for at least part of their diet) had yet to be restocked, and travel for hunting was complicated by the break up of ice. Spring malnutrition, for instance, directly contributed to the influenza outbreaks that often came with the arrival of the first boats from the South. Epidemics and ill heath also made it much more difficult for people to harvest food in Subarctic and Arctic environments. The illness itself, whether it was influenza, typhoid, or another disease, weakened those who were afflicted, and healing demanded considerable energy resources that otherwise would be put to hunting, fishing, trapping, or harvesting activities. Moreover, by the late nineteenth century, hunting and trapping relied upon dog teams that also needed to be fed (typically with fish) during an outbreak. By the turn of the century, quarantines were an increasingly commonplace response to northern epidemics, as officials sought to check the spread of diseases across extensive northern territories. Yet, quarantines also acted to prevent healthy persons from harvesting as effectively as they might otherwise, because they restricted the travel necessary for extensive harvesting practices across the North.

27 A fuller examination of these processes is the main focus of the larger project from which this essay draws.
28 For the most devastating overview of this relationship, see Mike Davis, *Late Victorian Holocausts: El Niño Famines and the Making of the Third World* (London, New York: Verso, 2001).

The influenza outbreak of 1928 in the Mackenzie district offers good evidence of the synergistic relationship between an infectious disease and hunger in this period. Helge Ingstad, a non-aboriginal trapper living near Lustelk'e (Snowdrift) on the eastern shore of Great Slave Lake, wrote about his experience with the flu that summer: "I began with chills and fever and a splitting headache." The combined effects of disease and poor nutrition weakened Ingstad, as it did his neighbors:

> [The flu] came at a time when I was living from hand to mouth. Fish was my sole diet, and this I had to procure by hauling in the nets. So far as I was concerned, it might just as well have stayed there till it rotted, for I was unable to swallow a mouthful of food in any event.[29]

From his patrol in the Talston River region, Royal Canadian Mounted Police (RCMP) Inspector Gagnon reported that "these people are practically starving, as they are unable to hunt; there are only three boys attending to the fish nets and the wants of the community."[30] The communities in the Mackenzie Delta were among the hardest hit by the flu that summer, and reports from there indicated that, at Shingle Point, three Inuvialuit died not from the flu but from eating spoiled whale meat. They had eaten the old meat because of a shortage of fresh meat, given that the entire community was struck by the influenza.[31] Illness could not only be intensified by malnutrition, but also led to hunger, as it weakened people beyond the point where they could engage in their necessary harvesting activities.

The interrelationship between epidemic illness and nutrition in the early twentieth century encouraged significant historical developments in the Canadian North, specifically a growing dependence upon rations and foodstuffs (typically preserved) imported from the South at the expense of country-food based diets. Rations were already a part of the treaty process, and thus with the introduction of regular treaty payments after 1898 in the Treaty 8 area and after 1921 in the Treaty 11 area, eligible individuals and families could expect to receive ammunition and twine (used for hunting and fishing) as well as rations (in particular tea, sugar, flour, and bacon).[32] These rations and supplies were dis-

29 Helge Ingstad, *Land of Feast and Famine*, trans. Eugene Gay-Tifft (New York: A. A. Knopf, 1933), 149-55.
30 Extracts from the report of Inspr. M. Royal Gagnon dated at Fort Smith N.W.T., August 11, 1928, on his summer inspection patrol to Reliance. RG 85 C-1-a vol 789 file 6099, LAC.
31 Indeed, Shingle Point (the site of an Anglican mission established in 1922) was one of the communities hardest hit in the epidemic.
32 See for example Fumoleau, *As Long as this Land Shall Last,* 225, 240.

tributed at the annual treaty gatherings that took place in early summer and included a visit to the medical doctor assigned to the area. Rations were not exclusively distributed as part of the treaty process, although that was a way in which they had been normalized in northern life. They were also distributed by RCMP officers or other agents of the state to people who faced hardship, whether or not they had a formal treaty relationship to the state.

Outbreaks of infectious diseases created increased dependence on rations because of the ways in which they interfered with regular harvesting activities. This disruption could have consequences that extended long after the epidemic had passed. When an epidemic arrived during the summer, it disrupted immediate harvesting activities as well as the work necessary to ensure subsistence during the fall and winter months (harvesting, gathering, repairs, etc.). Over the longer term, camps and family groups hit repeatedly by epidemics would find themselves too weak to produce food, and relied upon rations from missionaries and RCMP officers. During the 1928 influenza outbreak, the disease was spread at the treaty gatherings themselves, and, as news of this travelled, some families chose not to travel to the treaty gathering, or fled them before rations and supplies were even distributed. These families were, in some instances, spared the infection—but not always. Some fled the treaty gathering only to later fall ill and often die at their camps elsewhere across the North. But those who had not gotten necessary rations and supplies further undermined their opportunities to produce the food needed for the rest of the year. Thus, it is apparent in the record of deaths from 1928-29 that, while many died from the infection, others perished because of the hardship they faced in the months that followed. René Fumoleau has likewise noted that dependence upon rations intensified as the tuberculosis epidemic took off in the late 1920s and 1930s in the Treaty 8 and 11 regions. Thus, disease accelerated the twentieth-century shift, apparent across northern Canada, from country-food diets to reliance upon southern, imported foods.

The expansion of the residential school system had a similar long-term dietary impact. The first residential school in the North opened in Providence, on the Mackenzie River just west of Great Slave Lake in 1867, the same year as Canadian Confederation.[33] Following the establishment of this first school, operated by the Roman Catholic

33 The earliest residential schools in Canada opened in the 1840s. For a comprehensive history of the residential school system see James R. Miller, *Shingwauk's Vision: A History of Native Residential Schools* (Toronto: University of Toronto Press, 1996).

Soeurs Grises (Grey Nuns) and the Oblates of Mary Immaculate, further institutions spread across northern Canada. The schools were initially operated by Roman Catholic and Anglican missionaries, although the majority were Roman Catholic. The federal government took over both residential and day schools in the early 1960s, and all the residential schools in the North had closed by 1970. The missionaries depended upon local food supplies to feed the resident children, although these local foods were not necessarily indigenous. The children themselves assisted in providing their own food supplies, whether by berrying in late summer, helping with the fish catch and the potato harvest, or cutting hay to feed the cattle (or the occasional ox) also found at the missions.[34] At Hay River, the Anglican mission hired a Métis father and son, Charlie and Frank Norn, to fish for both the mission and the school. Fish dominated in the diet of children at the Hay River school, although the missionaries also purchased moose meat for the children from local hunters.

The residential schools thus acted to create new food relationships with the land, through their encouragement of agriculture and the very fact that they kept children away from their families out on the land, where they would otherwise have learned necessary hunting, trapping, and fishing skills. For Dene and Inuit children, education was experiential: learning took place on the land by doing what they needed to know how to do in future. When children were kept off the land for part of the year, they missed out on a crucial part of their education. For instance, if they only went back to their families in the summer, as was typically the case, they missed out on much of the seasonal harvesting. The residential school system, too, created new appreciation for southern food. These new tastes were cultivated as part of school menus, which introduced children to lettuce, tomatoes, beef, and chicken, or when the missionaries distributed chocolates, gum, and sweets to the children as treats on special occasions such as Christmas or Easter. As the residential school system expanded across the North, epidemic outbreaks provided opportunities for missionaries, physicians, and RCMP officers to coerce families into sending their children to these schools. Clermont Bourget, a physician who worked in the Great Slave Lake region at the time of the 1928 influenza outbreak, bartered with a family, promising them rations and medication if they promised to send their children to school.[35] In multiple ways, then, the residential schools directly contributed to the twentieth-century dietary shift across the North.

34 Piper and Sandlos, "A Broken Frontier."
35 Dr. C. Bourget, Report from Great Slave Lake district, September 1928, RG 85 C-1-a vol 789 file 6099, LAC.

The other dimension of this transition lay in the broader movement from life on the land to life oriented more closely around communities. As a caveat, it is important to note that northern peoples in the nineteenth century, and even earlier, should not be characterized as "nomadic" in the sense of permanently wandering, or being without a home. Rather, the extensive harvesting described earlier demanded movement from place to place; yet these movements typically occurred between well-established places that were visited repeatedly by individuals and families time and again. The remnants of ancient villages mark the landscape of the North, from Baffin Island to the Mackenzie Delta. But if we imagine these villages as posts to which families were ultimately tethered, even as they moved great distances across the lands and waters, we must also recognize that the tethers became shorter in the twentieth century. In the late Thule period, people located their villages in such a way so as to shelter themselves from the winds coming off the sea. According to archaeologists, "most were nestled under the sheltered side of a hill where heat loss is significantly less than on the windward side. Over eighty percent faced either south or west."[36] The other great asset of south-facing villages was that, over the course of the year, they captured more sunlight, which assisted in hunting, travel, and in generally making life more pleasant. Large, stable polynyas—natural holes in the ice through which seals, walruses, and whales can be hunted in winter—attracted human settlement by ensuring the availability of resources.[37] New environmental rationale underpinned the establishment of newcomer communities, such as at Pond Inlet, which offered a good harbour for whaling ships, but was otherwise a relatively unimportant site for the Inuit and was particularly dark in the long winter months, making it a relatively unattractive site for habitation.[38]

Both older indigenous village sites and newcomer communities came to figure more significantly in the life of northern peoples in the twentieth century. As more children were sent to residential schools, the communities in which these schools were located (Aklavik, Fort McPherson, Providence, Fort Resolution, Fort Simpson, Hay River, Chesterfield Inlet, Carcross, Dawson, Whitehorse, Shingle Point) became home for the child-

36 Fossett, *In Order to Live Untroubled*, 28. She cites John D. Jacobs and George Sabo, "Environments and Adaptations of the Thule Culture on the Davis Strait Coast of Baffin Island," *Arctic and Alpine Research* 10, no. 3 (1978): 608, 612.

37 James E. Woollett et al. "Palaeoecological Implications of Archaeological Seal Bone Assemblages: Case Studies from Labrador and Baffin Island," *Arctic* 53, no. 4 (2000): 409.

38 Doug Wilkinson Daily Journal, Dec. 6, 1953, N 1992 012 file 1 4, Northwest Territories Archives [hereafter NWTA]

ren for at least part of the year. These communities, in turn, became destinations for the parents, who, while they were not permitted to visit their children while in school, would come to pick them up for the months that they spent fishing, hunting, and harvesting out on the land. Individuals and families came into communities to trade and, after 1898 and 1921, to receive treaty payments. They also increasingly came to collect relief (first from trade posts, then from missions, and ultimately from the government). From the nineteenth century if not earlier, northerners had gathered in communities for trade, or to celebrate holidays such as New Years. By the mid-twentieth-century, many had adapted their subsistence strategies so that they now came to communities to collect relief as well, and many stayed on longer in the village or town. Tester and Kulchyski argue, for instance, that by the 1950s, the Inuit in the Garry Lake region had shifted from "a condition of total independence and reliance on caribou and fishing, to a reliance on caribou, fishing, and relief to tide them over."[39] These new subsistence strategies undermined families' abilities to obtain necessary sustenance from the land. Moreover, the greater dependence upon relief was ultimately at odds with the government, who saw relief as demeaning and wanted to keep northern indigenous people as independent as possible. As a result, relief from the government was far from generous and instead created conditions of poverty for those who altered their livelihoods in response to its availability.

For historians, these dietary shifts signal major changes in relationships between northerners and their environments; indeed, the histories of nutrition and diet are critical ways of examining the environmental history of places like northern Canada. For southern researchers at the time, including the renowned Vilhjalmur Stefansson, and for government administrators responsible for northern territories, diet and nutrition similarly illuminated the major transformations underway in the modern North and provided opportunities to manage some of the negative consequences of these transformations.[40] By the 1960s, specifically, the federal government came to wholeheartedly embrace the issue of nutrition and the findings of nutritional science as the optimal means by which a southern administration could control problems that ensued from changed relationships with the northern environment.

A series of tuberculosis surveys, conducted across Canada's northern territories in the 1940s, provided a crucial model for subsequent health and nutrition research. Tubercu-

39 Frank J. Tester and Peter Kulchyski, Tammarniit (Mistakes): Inuit relocation in the Eastern Arctic (Vancouver: UBC Press, 1994), 238

40 See Vilhjalmur Stefansson, *Cancer: Disease of Civilization? An Anthropological and Historical Study* (New York: Hill and Wang, 1960).

losis had a long history in the North. The disease was well established among newcomer populations in the nineteenth century, and had spread to most indigenous families and villages by the early decades of the twentieth.[41] Nevertheless, at the beginning of the twentieth century, TB was left largely untreated in the North, as treatment required sanatoria or hospital stays that were neither readily available in the North nor a feasible part of the annual harvesting round. With the greatly increased southern interest and presence in the North during the Second World War, it became clear that tuberculosis was a serious health problem. An initial survey of the northern population for tuberculosis was conducted in 1943 along the Mackenzie River. This survey principally consisted of the systematic x-raying of people to see whether they had an active tuberculosis infection. When the results were published in 1945, it became clear that tuberculosis was a foremost health problem in Canada's northern territories, and, indeed, the problem across the North was considered to be staggering. For the Inuit population alone, the death rate was 314 per 100,000, compared to 53 per 100,000 for the rest of Canada.[42] In the next few years, Eastern Arctic, Western Arctic, and Yukon surveys followed. The aim of these surveys was to x-ray the entire population, aboriginal and non-aboriginal, and then to isolate those who had active tuberculosis and send them south for treatment. Given the size of the region, the fact that most northerners lived off the land rather than being concentrated in communities, and the relative inexperience of southern doctors with Subarctic and Arctic environments, these comprehensive surveys were a massive undertaking. Every few years, more followed as the federal government (including bureaucrats with the Department of National Health and Welfare (DNHW) and the Department of Northern Affairs and National Development (DNAND) and its successors) sought to assess whether or not the problem was under control.

By the 1950s, the research methods were well established, and enabled annual health surveys of northern populations. Such large-scale surveillance contributed to growing interest in nutrition and malnutrition in the North. Nutrition was central to tuberculosis treatment, particularly prior to the advent of effective antibiotics in the 1940s. In the North, malnutrition was seen as having played a direct role in the tuberculosis epidemic.[43] There were also wider issues around nutrition in the North in this period. A poliomyelitis epidemic in Chesterfield Inlet in 1949 brought international attention to this tiny

41 See Robert Fortuine, *Chills and Fever: Health and Disease in the Early History of Alaska, Part 1* (University of Alaska Press, 1989); Piper, "Chronic Disease in the Yukon."
42 Pat Sandiford Grygier, *A Long Way from Home: The Tuberculosis Epidemic among the Inuit* (Montreal: McGill-Queen's University Press, 1994), 64.
43 Grygier, *A Long Way from Home*, 55.

community, and raised the issue of whether growing reliance upon imported southern foodstuffs had played a direct role in the appearance of this modern epidemic.[44]

Starvation and famine in the North came to prominent public attention through the work of photographer Richard Harrington and author Farley Mowat. Harrington, a freelance photographer and writer from Toronto, travelled to the Arctic between 1948 and 1953, getting out on the land with Inuit guides on five dogsled trips. On one trip in 1950, he met a band of Padleimiut who had missed the caribou migration that fall, and were starving. He shared what he could of his supplies with the families and documented their suffering in a photo essay that was published in April 1950 by the *Toronto Star,* where Harrington's photographs became internationally famous as the "Padlei Collection."[45] Shortly after, in 1952, Farley Mowat's first book, *People of the Deer*, was published. Tester and Kulchyski describe the impact of this publication: "Mowat claimed that the Ahiarmiut, a group of Inuit in the interior of the Keewatin, were approaching extinction as a result of government incompetence and neglect." These claims "set the Arctic administration on edge. As the book was serialized and published internationally, the minister and the department were swamped with letters from outraged readers, not only in Canada but in Britain, Europe, New Zealand, Australia, and the United States."[46] Both Harrington and Mowat wrote about the Inuit in a very particular region of the North—the Keewatin, off the western shore of Hudson Bay. Within a few short years, the health and, specifically, the hunger of northern indigenous peoples became matters of public concern in southern Canada. Public pressure significantly influenced greater government intervention across the North, and new policies towards the Inuit in particular.

By the late 1950s, federal government officials initiated assessments of nutritional requirements for living in the Arctic and Subarctic. These assessments dovetailed nicely with Cold War scientific research focused on the circumpolar North as a newly militarized environment.[47] The concerns of Canadian and US military officials in the North lay primarily with the bodies and diets of military personnel. The Department of Indian

44 See materials in "Epidemiology Diseases Poliomyelitis—Poliomyelitis Epidemic, Chesterfield Inlet, NWT," RG 29 Vol. 203 File 311-P11-22 pt. 2, LAC.

45 One of the photographs was included in a 1955 exhibition, *Family of Man*, at New York's Museum of Modern Art. See Harrington's obituary by John Goddard, "Richard Harrington, 94: A photographer to the end," *Toronto Star,* December 20, 2005.

46 Frank J. Tester and Peter Kulchyski, *Tammarniit (Mistakes)*, 56-7.

47 Matthew Farish, "Frontier Engineering: From the Globe to the Body in the Cold War Arctic," *The Canadian Geographer* 50, no. 2 (2006): 177-96.

and Northern Affairs, by contrast, was concerned for the resident population. The new research quickly came to inform debates over relief and rations for northern residents. In 1956, Inuvialuit chiefs and the Citizens' Committee in Aklavik sought an increase in the caloric content of rations from 2,800 calories to 8,400 calories a day. They drew upon the new scientific research to make their argument. The state also used military research that looked at soldiers, air crews, and lumberjacks—people working hard, outdoors, and in northern climates, but who did not require such a high calorie intake—to justify keeping the caloric content of rations lower. State officials opposed race-based differences in rations, on the grounds that this impeded their fundamental assimilationist project. The argument was resolved by keeping the caloric content of rations higher than it was in southern Canada, and approving additional rations for those with active cases of TB and their immediate family.[48] This demonstrated the emphasis upon environment over "race," within the rationale for improved nutrition. It also exposed the new emphasis upon scientific authority. Northerners had long argued for improved rations; now they deployed the language of nutritional science to do so, although ultimately, they remained unsuccessful in having their needs fully met.

By the early 1960s, the new emphasis upon nutritional science, following the success of the TB surveys, led DNAND and DHNW officials to agree to survey nutrition at large. The nutritional surveys initiated in this decade used health information collected during the annual tuberculosis testing, such as blood and urine samples, combined with information supplied by questionnaires through the school system (which reached both children in residential schools and children and their families who attended day schools). The researchers also measured the nutritional content of a range of country and non-indigenous foods. More detailed dietary surveys were also conducted with school children, family groups, and communities. To survey a community, researchers would question local merchants, area administrators, and RCMP officers. Families were given money to purchase food (which acted as an incentive, as well), and their food consumption was then monitored by Health and Welfare workers for one week each month over a six-month period. Teachers distributed survey booklets to all children who could write. The children took these home to complete for one week out of every month over a one year period. Teachers then returned the original booklets to the Department of National Health and Welfare for analysis.[49]

48 See letter Re: Relief Rations for Eskimos, Jan. 27, 1956, RG 85 Vol 463 File 1003-1-8 pt 1, LAC.
49 B. Thorsteinsson, Chief, Education Division to B.C. Gillie, District Superintendent of Schools, Mackenzie District, Jul. 23, 1965, RG 85 Vol 1416 File 252 1 2 part 4, LAC

In general, the children cooperated with the survey process. Some, teachers complained, lost their forms or forgot to fill them out. While it is not surprising that young children might lose their booklets or be less than assiduous record keepers, it is also likely that in some instances, this carelessness reflected opposition to the survey itself. Active opposition was also clearly articulated by some parents. Mrs. Cockney, an Inuvialuit mother in Inuvik, wrote the following note to Sister C.:

> I just want to know if Margaret has to write what she eats all the time cause I don't think its not anybodys business to know what our children eats as far as I know I always give my children what's good for them.
>
> So please let the Principal know.
>
> Regards, Mrs. S. Cockney[50]

Food and diet, much like health, were deemed personal information and northerners responded to the survey with "opposition and hostility."[51] By the latter half of the twentieth century, the state had become increasingly intrusive in the lives of northerners and northern aboriginals in particular, and Mrs. Cockney's letter—as well as other evidence of opposition—reveal resistance to these intrusions. In their correspondence, survey administrators took such opposition seriously. They expressed concern that it would lead to inaccurate survey results as well as apathetic or antagonistic attitudes towards proper nutrition. Officials with the Department of National Health and Welfare tried to assuage community concerns by holding meetings, but ultimately, such consultative efforts did not lead to changes in the overall program.

The 1965-66 survey revealed a marked preference among northerners for store-bought foods (hard biscuits, lard, jams, tea, dried milk), even as country foods (moose meat, caribou, seal, fish, and berries) continued to make up a significant portion of their diet. Even though, to indigenous northerners, these results emphasized the importance of good childhood nutrition, the surveyors nevertheless focused in particular upon school children, whose dietary habits were seen as the most amenable to "improvement" due to their age and their access to nutrition experts through the school system. One Health and Welfare worker suggested that

50 Letter S. Cockney to Sister C. n.d. [1965], RG 85 Vol 1416 File 252 1 2 part 4, LAC.
51 J. Maher to Mrs. E. Ellis, Feb. 15, 1966, RG 85 Vol 1416 File 252-1-2 part 4, LAC.

> we introduce whole wheat or dark breads at the Transit Centre. Mr. Anderson, the cook, makes the most delicious whole wheat bread, but the Eskimo residents were not interested. Mr. Anderson made several attempts to interest the residents in something new, but had no success. The Eskimo children, unlike the adults, will use dark breads. Also it has been noted that the children consume larger amounts of vegetables than the adults.[52]

In most northern communities, a significant divergence was apparent in the diets of those who attended residential schools (at the time, typically called "hostels") and those who continued to live with the families. The latter typically ate much more country food, but also more store-bought "junk food," including "candy, pop, chocolate bars, bubble gum, suckers."[53] The children at the hostels were characterized as "eat[ing] better" and having "more nutritionally adequate" diets—revealing the ways in which the nutrition researchers viewed country-food diets as problematic.[54] In general, the residential school system was praised for the ways in which school administrators drew upon nutritional science in preparing weekly menus and daily meals. All the children in the hostels were, moreover, given vitamin A and D supplements in fortified bannock, although it was duly noted that the children did not like these biscuits. researchers also found that, in addition to vitamin deficiencies, anemia was common in children outside and sometimes inside residential schools.[55]

The solution to the problems identified by the survey, whether evidenced in deficiency diseases such as anemia, or in the perceived imbalance of country-food diets, was intensified intervention in the diets of both adults and children. The expanding social service network would enable such interventions by permitting regular, rather than just annual surveillance.[56] Relief was also seen as an important opportunity to intervene, by including in rations fortified products that would help to ensure balanced diets.

The authors of the results of the 1965-66 nutritional survey, including distinguished physician Dr. Otto Schaefer, wrote:

52 A.M. Millican, Regional Admin Memo for Administrator of the Arctic, Churchill MB, Dec. 14, 1962, RG 85 Vol 1416 File 252-1-2 part 4, LAC.
53 Report on Northwest Territories Nutrition Survey 1965-1966, p.6, RG 85 Vol 1956 File A 1003 20 pt. 3, LAC.
54 R. J. Orange, Regional Administrator, Memo for the A of the A, Frobisher Bay, NWT, Jan. 2, 1963, RG 85 Vol 1416 File 252-1-2 part 4, LAC.
55 H.A. Procter, Director General, Medical Services, Re: Nutrition Survey, Jul. 5, 1965, RG 85 Vol 1416 File 252-1-2 part 4, LAC.
56 Tester and Kulchyski, *Tammarniit (Mistakes)*, Chapter 2.

> Experience in other parts of the world has indicated that cultural change is almost invariably accompanied by a nutritional inadequacy of diet and the consequent appearance of clinical disorders in the native people resulting from malnutrition and metabolic change.[57]

In the context of the twentieth-century Canadian North, cultural change was synonymous with environmental change or, more precisely, changed relations with the environment. The centrality of animals, the land and waters, and other aspects of the natural world to indigenous economy and culture in the North has been well established in the historical literature. Northern society was by no means exclusively indigenous in the nineteenth and twentieth centuries, and the importance of environment to society, economy, and culture was likewise not confined to indigenous communities, but shared among all northerners. The survey authors had focused their attention upon food and nutrition in an indigenous population, but the changes their study identified revealed broader transformations in relation to a changing environment. In their language and conclusions, the survey authors also suggested that the poor nutrition they found was an inevitable product of cultural change, and one that stemmed from choices made by aboriginal northerners as they "select[ed] the more tempting but generally less nourishing components of the 'civilized' diet, and decreas[ed] their consumption of more nutritive indigenous foods."[58] The role of the churches and the state, through relief, rations, and residential schooling, was obscured by the purported choices of aboriginal northerners, and such choices, in turn, were seen as indicative of cultural weakness.

Federal government officials recognized the value of country foods and their importance to northern health. However, they also saw northerners as caught up in a unidirectional and inevitable process of modernization: a series of changes that led away from the land and into the communities and which was indeed reflected by the transformations apparent across the North since the late nineteenth century. This process of modernization evoked longer-standing beliefs rooted in culturally dominant ideas about race and culture: the forward progress of northern indigenous peoples from primitive, traditional lives to civilized and modern ones. Thus, where problems in diet were apparent and seen to be consequences of "cultural change," the apparent solution was through nutritional interventions: namely dietary supplements, balanced diets using imported south-

57 Report on Northwest Territories Nutrition Survey 1965-1966, p.1, RG 85 Vol 1956 File A 1003 20 pt. 3, LAC.
58 Ibid.

ern goods, and by encouraging children to adopt southern dietary practices through residential schools in particular.

Yet the process that was underway was neither inevitable nor solely cultural; it was, instead, historical (and therefore could potentially have moved along any of a number of paths) and much more about environmental than cultural change. However, because southern, federal administrators saw close relations between people and the environment as indicative of primitivism (modern life, by contrast, was much more divorced from nature), when they engaged with northern aboriginal subsistence, rather than addressing themselves to the root of the issue (environmental change), they looked instead to its consequences and aimed to manage these instead.

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A Lake of Opportunity: Rethinking Phosphorus Pollution and Resource Availability

Andrea E. Ulrich

Since the Second World War, inorganic phosphorus fertilizers have become an increasingly crucial building block in our modern agricultural systems, which have both achieved vital growth rates in global food production and spurred population growth. Since 2007, however, discussions surrounding the potential decline of the global supply of easily accessible, high-quality phosphate rock for fertilizer production continue to emerge. The term "peak phosphorus" has been applied to the potential scarcity of rock phosphate in the twenty-first century. The use of this term aims to encourage a new perspective on regional and global food security and water quality: in other words, the relationship between the modern agricultural production system and the prevention of eutrophication, or the excessive plant growth resulting from antrophogenic nutrient loadings. This contribution outlines the "global P problem sphere" before moving to insights obtained from a Canadian case study that examines the opportunities of applying a paradigmatic focal shift to phosphorus understanding—"from noxious to precious"[1] — as assessed and evaluated through the direct participation of local stakeholders. The conclusion of this study was that a broadened science-practice mutual learning process can enhance our ability to sustain phosphorus supplies for soils and crops.

A short story about (peak) phosphorus

In 1669, Henning Brand discovered the chemical element phosphorus (P) in Hamburg, Germany while trying to uncover the secret principle of the philosopher's stone,

The author wishes to express her thanks to Diane Malley and Paul Watts for contributions and comments on this work as well as to Fridolin Brand and Bao Quand Le for critically reading and providing valuable suggestions for its improvement. She also thanks Claudia Whiteus for polishing up the language of this piece.
The TUM graduate research and ETH doctoral research in this contribution received support from DAAD (Deutscher Akademischer Austausch Dienst), GKS (Gesellschaft für Kanadastudien), the Lake Winnipeg Foundation, the Thomas Sill Foundation, the Swiss National Science Foundation, as well as in-kind support from the International Institute for Sustainable Development and the University of Manitoba's Natural Resources Institute.

1 International Institute for Sustainable Development, "Moving Phosphorus from Noxious to Precious: IISD report sets out the challenges for Lake Winnipeg," press release, March 4, 2010, http://www.iisd.org/media/press.aspx?id=164.

which at the time was believed to be able to transform base metals into gold. Because the material resulting from a synthesis using urine glowed in the dark and ignited when it was exposed to air, it was given the name "phosphorus," which is the latin word for light-bearer. Instead of calling it life-bearer—which would have stressed the element's fundamental role in life's metabolism—Isaac Asimov called phosphorus the "bottleneck of life" because the nutrient, for which there is no substitute, plays an essential role in all fundamental biochemical processes including photosynthesis, respiration, cell division (ATP/ADP), and heredity (DNA). In 1842, Justus von Liebig declared phosphorus one of the six elements indispensable to life on earth (together with carbon, hydrogen, nitrogen, oxygen and sulfur). Since phosphorus is highly reactive and is never found as a free element, it is frequently the first nutrient in which agricultural soil becomes deficient. Therefore, phosphorus plays an essential role in soil fertility, food production, and fertilization. In fact, its most important commercial use is in fertilizer production. Today, only one-fifth of all phosphorus produced is used in feed, detergents, and other non-fertilizer products.

The phosphate industry was founded in 1846 by John Lawes, who mechanized the labor-intensive activity of releasing phosphorus from bones, apatite, phosphorite, and other substances containing phosphoric acid. By 1853, there were fourteen superphosphate manufacturers in England. In 1867, South Carolina began mining mineral phosphates, and in 1887, Florida followed suit, establishing the United States as the world leader in phosphate rock mining until well into the twentieth century. In 1847, five hundred tons were mined, and world production rose to five thousand tons in 1850 and 148 million tons in 2008.

Today, the phosphorus market is dominated by China, Morocco, and the United States, together accounting for two-thirds of world production. Overall, the world's consumption of phosphorus is expected to continue to rise, especially in emerging countries and developing regions such as East Asia. With the economy recovering, the demand for P fertilizer experienced an 8.8 percent increase in 2009/2010, and is expected to increase by 4.5 percent in 2010/2011. *The Fertilizer Outlook 2010-2014* predicts that the world's demand for P fertilizer will rise in the medium term by 3.1 percent. Nevertheless, as environmental scientist Vaclav Smil pointed out in 1999, "it would be a sign of naiveté and intellectual irresponsibility to suggest that with no serious resource obstacles ahead of us the future of global fertilizer use will be a

case of unimpeded growth."[2] This comment essentially refers to the fact that P, like any other element, cannot be viewed in isolation from other resources such as land, water, soil, and energy, or seen in a compartmentalized view. Instead, the study of P requires a whole life-cycle demand-supply chain view embedded in a coupled human-environment system perspective for assessing related challenges and opportunities of its sustainable use.

The staggering increase in the use of inorganic phosphorus during the second half of the last century has altered the natural dynamics of the phosphorus cycle. The volume of anthropogenic P flows compared to the natural flows has doubled, if not tripled. The natural global phosphorus cycle extends from the earth's crust, where weathering and other geological processes convert phosphate rock to soil. Erosion, leaching, and rainwater run-off transport P to rivers, lakes, and eventually to the ocean floor, where through geological processes that take up to ten to fifteen million years, P again becomes part of the lithosphere in the form of a calcium phosphate known as phosphorite. Outside the influence of humans, terrestrial ecosystems cycle P tightly through the phytomass, back to the soil, and through the phytomass again. On average, this process occurs several hundred times before P finally joins the mineral cycle, mainly through erosion. Nevertheless, as outlined above, industrial fertilizers have become the main source of nutrient addition, and humans have sped up the terrestrial cycling of P to an extent that not only questions its overall long-term availability, but also puts severe stress on our fresh water and marine ecosystems through an excess of this element and an imbalance in related cycles.

Insights into the emerging matrix of phosphorus criticality

Since 2007, there has been an almost contagious increase in attention to phosphorus. There are several reasons why phosphorus has recently been subjected to debate. For one, the question of how long P reserves will last has emerged several times in the last century on both national and international research agendas and in literature (Box 1).

2 Vaclav Smil, "Long-Range Perspectives on Inorganic Fertilizers in Global Agriculture" (International Fertilizer Development Center, Travis P. Hignett Memorial Lecture Florence, Alabama, November 1999), 19.

Aldous Huxley's Literary Perspective

Excerpt from *Point Counter Point* * on progress, wasteful resource use, and endless growth:

'With your intensive agriculture,' he went on, 'you're simply draining the soil of phosphorus. More than half of one per cent a year. Going clean out of circulation. And then the way you throw away hundreds of thousands of tons of phosphorus pentoxide in your sewage! Pouring it into the sea. And you call that progress. Your modern sewage systems!' His tone was witheringly scornful. 'You ought to be putting it back where it came from. On the land.' Lord Edward shook an admonitory finger and frowned. 'On the land, I tell you.'

'But all this has nothing to do with me,' protested Webley.

'Then it ought to,' Lord Edward answered sternly. 'That's the trouble with you politicians. You don't even think of the important things. Talking about progress and votes and Bolshevism and every year allowing a million tons of phosphorus pentoxide to run away into the sea. It's idiotic, it's criminal. it's ... it's…it's fiddling while Rome is burning.' He saw Webley opening his mouth to speak and made haste to anticipate what he imagined was going to be his objection. 'No doubt,' he said, 'you think you can make good the loss with phosphate rocks. But what'll you do when the deposits are exhausted?' He poked Everard in the shirt front. 'What then? Only two hundred years and they'll be finished. You think we're being progressive because we're living on our capital. Phosphates, coal, petroleum, nitre—squander them all. That's your policy. And meanwhile you go round trying to make our flesh creep with talk about revolutions.'

*Aldous Huxley, *Point Counter Point* (Leipzig: The Albatross, 1937), 77-8.

In 1938, for example, President Roosevelt stressed that "the disposition of our phosphate deposits should be regarded as a national concern. The situation appears to offer an opportunity for this Nation to exercise foresight in the use of a great national resource heretofore almost unknown in our plans for the development of the Nation."[3]

3 Franklin D. Roosevelt, "Message to Congress on Phosphates for Soil Fertility, May 20, 1938," *The American Presidency Project*, http://www.presidency.ucsb.edu/ws/index.php?pid=15643.

In 1975, a case study in mineral resource analysis revealed that given recycling and a certain cost threshold of phosphate rock, the concept of phosphorus "exhaustion" was incorrect.[4] The appropriate way of thinking about the issue, the study's author F. J. Wells argued, was not that we will run out of phosphate rock, but that its cost will increase. The main uncertainty, he continued, relates to whether this cost will ever be prohibitive. Today, five years after the emergence of the new wave` peak P discussion, the underlying assumptions and time prognosis are once more being challenged.[5]

It is both interesting and important to note the remarkable similarities between questions and concerns that have arisen in the past and in today's discussion on future phosphorus resource availability. Hence, taking a rear-view mirror perspective opens helpful new horizons for learning about the current situation, especially given the void in research on rock phosphate reserves over the last two decades, and the complete lack of a concerted effort to formulate a remedial social process to support adaptive capacity building in coping with current and future challenges. Nevertheless, there are two new aspects that differ from past research; firstly, the worldwide reflection on phosphorus (both as a commodity in the form of phosphate rock and as an element) and its role in global food security as well as water quality and, secondly, the broad spectrum of connections to other knowledge sets, information opportunities, and social, economic, and environmental strategies. We should not, however, treat the new challenge presented by potential P reserve depletion as just another case of "the boy who cried wolf." The challenge is not only economic.

The nine points below summarize priority issues in P management and stewardship:

- Regional and global food security
- Securing drinking, ground surface and marine water quality
- Environmental and human health protection
- Global geopolitical stability and security
- Independence from phosphate rock or phosphate fertilizer imports
- Safeguarding ecological diversity and ecosystem integrity

4 Frederick John Wells, "The Long-Run Availability of Phosphorus: A Case Study in Mineral Resource Analysis," *Resources for the Future* (Baltimore: Johns Hopkins University Press, 1975), 69.

5 For more details see Allenby et al. *Global TraPs Workshop Propositions* (5 February 2011): http://www.uns.ethz.ch/gt/news/GT_Newsletter_2.pdf, and Mew, Michael, "Future Phosphate Rock Production - Peak or Plateau?" *Fertecon Research Center Limited* (3 March 2011): http://www.fertecon-frc.info/page15.htm.

- Safeguarding economic profitability and competitiveness (green innovation)
- Sustainable development (especially intergenerational justice and fairness, as well as distributive justice between the northern and southern hemispheres)
- Waste avoidance and conservation of an essential (eventually limited, in human terms non-renewable) resource using the precautionary principle

A connection frequently made in the current discussion is that "peak P" is the successor of peak oil. However, unlike with oil, there is no substitute for phosphorus. The element is an absolute requirement for life and the production of food. Also unlike oil, phosphorus is not destroyed when it is used, but is endlessly recycled by the earth's natural processes. While we can never "run out" of phosphorus, when it is washed from the land to the oceans, it is returned to mineral forms that cannot be mined for tens of millions of years. Yet phosphorus stores within agricultural soils, crops, foods, composts, biomasses, and wastewater can be controlled, managed, and recycled rather than being lost to the oceans.

Intitial research results suggest a paradigmatic shift in resource understanding: that is, to consider phosphorus both as an essential, ultimately finite commodity in the form of phosphate rock and as a critical nutrient along the global phosphorus supply chain—from "cradle to cradle." This could alter the focus from managing phosphorus as a pollutant to protect the environment, or as a cheap, readily available commodity used to increase soil fertility and crop yield towards managing it in an integrative manner as a life-supporting resource that secures global food production to support a growing world population. This attitude, that is the understanding of phosphorus both as a strategic resource and as a vital element should be synergistic with other issues, such as productivity of land and water, waste management, energy production, and the efficiency of water and energy use. Such a shift in focus has the potential to significantly transform the management of fertilizers on land and land management, by reducing loss of nutrients and encouraging the precise recycling of nutrients in composts, manures, and bio-solids or their derivatives. These strategies need to be clearly linked to social processes at the local level. Below is an example of a strategic intervention in one significant North American ecological system.

Eutrophic Lake Winnipeg: The need to slow the phosphorus flow

Figure 1: Accumulated blue-green algae at Connaught Beach, Lake Winnipeg in 2008. **Source:** Greg McCullough.

Historically, activities surrounding food production and the protection of water quality have often been at cross-purposes to one another, since one of the sources of P in water bodies is the agricultural use of fertilizers. Focusing on food security, these two activities are synergistically moving in the same direction, with a common interest in keeping phosphorus on the land for crops. Therefore, the present loss of P in Lake Winnipeg and the Hudson Bay represents an unacceptable waste of an essential resource that, particularly given Canada's heavy dependence on imported phosphate rock, puts soil fertility and agricultural production in one of the world's strategic agricultural areas at risk. The image of Lake Winnipeg beaches covered by a thick layer of floating algae provides a striking example of the adverse impact of elevated phosphorus levels in one of the world's largest lakes (see Figure 1). Improving the lake's health will require a decrease in the flow of phosphorus throughout the Lake Winnipeg basin, which includes portions of the United States (see Figure 2).

The case study region: The Lake Winnipeg basin

Lake Winnipeg, the world's tenth largest freshwater lake, is the most eutrophic large lake on Earth. Striking images of this extreme eutrophication have been captured from

space (Figure 2). Its basin is the second largest in North America, draining portions of water from four Canadian provinces and four American states (see Figure 3).

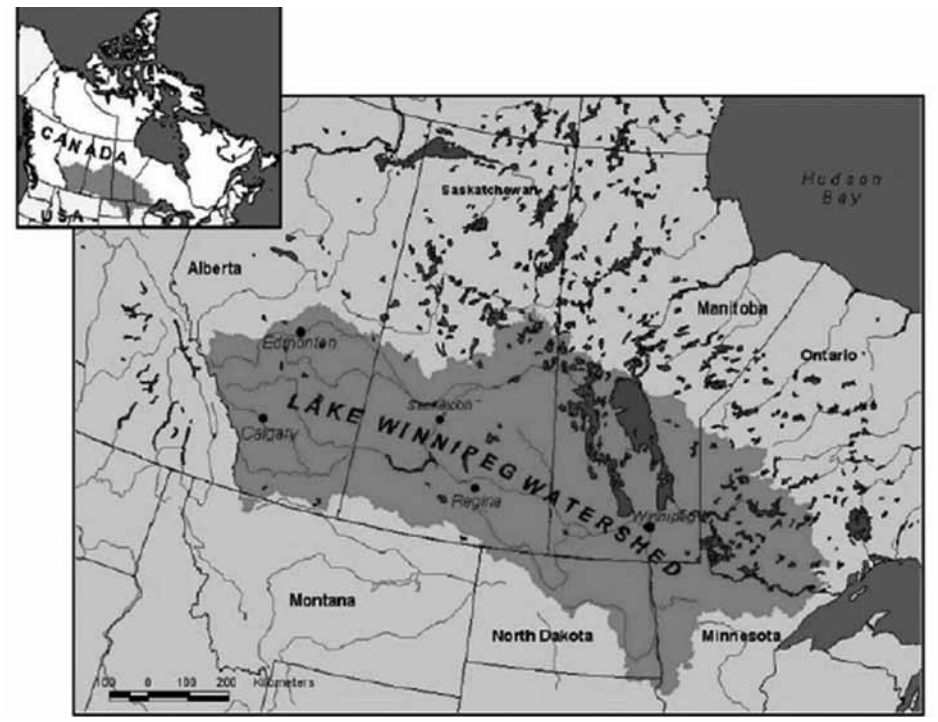

Figure 2:
Waters from the Lake Winnipeg Basin flow into Lake Winnipeg drain into the Nelson River at the north end of the lake, and finally into Hudson Bay.
Source:
Manitoba Water Stewardship.

Home to six million people and seventeen million farm animals, the watershed covers nearly one million square kilometers, including fifty-five million hectares of agricultural land. Major livestock operations receive the largest input of commercial phosphate in the form of fertilizers. Waters that pass through Lake Winnipeg flow into the Nelson River and finally into Hudson Bay. Lake Winnipeg serves multiple purposes, including recreation and commercial fishing. Moreover, the lake is arguably the world's larg-est reservoir for hydro-electric power generation. These functions affect—or are being affected—by high phosphorus levels. For instance, Manitoba Hydro's dams control the water flows and levels in the lake, affecting nutrient flow. As members of the Lake Winnipeg Research Consortium state, this adds to the difficulties the lake is facing.

Figure 3: Satellite image of Lake Winnipeg in 2009 showing the large expanse of surface blooms in the North Basin. In 2005, 13,000 square kilometers were covered by surface blooms. Source: Greg McCullough.

Lake Winnipeg's phosphorus sources are less obvious than they are in some other eutrophic lakes. In the case of Lake Erie, for example, a reduction of phosphate content in detergents and tertiary wastewater treatment in the 1960s resulted in a dramatic amelioration of the lake's poor water quality. For Lake Winnipeg, on the other hand, the majority of phosphorus flows are from non-point sources. Agriculture, which plays a key role in the basin's economy, is important for non-point phosphorus emissions. Prior to the arrival of Europeans, the ecosystem was dominated by grasslands that held phosphorus except for the cyclic background flows to streams, rivers, and lakes that had evolved over time. Cultivation and land use changes introduced vast areas to wind and water erosion as well as run-off. This resulted in a significant increase in the flow of phosphorus to water bodies. Furthermore, new data suggests that frequent floods and climatic conditions that predominantly come from the Red River Basin that is shared with the United States are causing increased phosphorus loading.

Linking agricultural P nutrient management to water pollution

As a result of water quality issues and the uncertainty of global rock phosphate supplies, phosphorus management on land and the prevention of excessive nutrient pollution run-off into aquatic ecosystems are connected. The key objective of this ongoing work is to study the confluence of these two intertwined areas of global importance within the Lake Winnipeg Basin. From the initial efforts of the conducted studies (Box 2), synergies from aligning both perspectives have been identified.

How We Conducted the Lake Winnipeg Study

The circular participatory action research concept structured and guided the Lake Winnipeg Basin-study methodologically. This concept dates back to social psychologist Kurt Lewin, who defined this method as a "spiral of steps" composed of a circle of planning, action, and fact-finding. In its practical and explorative research format, this study strove for a better understanding of the pollution-resource nexus in the basin, and aimed at co-generating knowledge through mutual learning of the researcher and participants alike.

The empirical study was conducted in 2008, and a follow-up study was conducted in 2009. Together with Diane Malley and Paul Watts, I surveyed representative agencies and organizations (government, private, non-profit, and academic) in the Lake Winnipeg watershed that focus on agricultural systems, aquatic ecosystems, or both for their positions, policies, perspectives, advice, and actions regarding sustainable phosphorus use and the protection of water bodies. Data was assembled via website research, individual interviews, and questionnaires. This information was finally compiled in a report that was subject to evaluation by participants, and followed-up on in 2009 to assess a basis for future pathways to jointly move forward in developing abilities to improve and sustain both food security and water quality in the basin.

These efforts can be used as the basis for a next phase of the project. Further efforts should focus on the assessment of phosphorus flows in the basin, obtaining a better understanding of system vulnerabilities, avoiding unwanted rebound effects, and increasingly looking for opportunities to create supportive and remedial social process activities.

There are many good reasons to engage in interdisciplinary approaches and perspectives on sustainable resource management challenges. Each discipline has aspects that are being addressed in a more progressive fashion than others, yet as a whole, these different disciplinary constraints can be overcome. Engaging various disciplines can promote innovative exchange on both challenges and potential strategies for enhanced phosphorus security. Therefore, this research project combines methods, tools, and

perspectives from different disciplines, including resource management, agronomy, political science, social and natural sciences (e.g. geochemical cyles, limnology), and industrial ecology, and integrates them under the common normative framework of sustainable development and global change.

Nevertheless, it is not sufficient to think about complex problems horizontally. It is similarly important to view the issues vertically by integrating science and practice cooperation. The resulting exchange between researchers, practitioners, and other societal groups working in different disciplines on various scales is likely to result in a better understanding of inherent complexities, and will allow the formulation of entry points for improving current practices. The development of linkages for these strategic inputs is intended to serve as a foundation for social process, thus supporting desired changes in values and practices through a transdisciplinary approach.

Outlook: Making space for discourse

Given that the problem sphere surrounding phosphorus is not only a pressing and contested environmental and societal challenge, but at the same time is an issue in which scientific knowledge is scattered across different disciplines or stakeholders and sometimes simply not readily available, an expansion of the initial action-research approach should make broader use of transdisciplinary perspectives, which means switching from the concept of "science for society" to "science with society." In this situation of uncertainty and major societal risks concerning the P challenge, novel and synthetic approaches are necessary. We must bridge knowledge dimensions from different scientific disciplines and link science with wider societal actors in order to enhance sustainability learning and encourage socially conscious behavior, such as recycling and reusing P. The definition, representation, and transformation of these challenges demand the interaction of theory and practice.

The Lake Winnipeg case study is embedded within this effort as part of a broader global initiative called *Global TraPs*, a project led by NSSI, ETH Zurich, and IFDC (International Fertilizer Development Center, USA) in cooperation with a wide pool of international cooperation partners from science and practice backgrounds. The current phase of this project aims to address the need for global cooperation in order

to improve our collective understanding of the issue by facilitating a global transdisciplinary learning process along the phosphorus supply chain and addressing three issues central to sustainable resource management: the long-term management of biogeochemical cycles, closing fertilizer loops and related food security issues, and sustainability learning on a global level. The project will organize transdisciplinary learning processes (case studies) that strive to build regional and global capacity to use phosphorus sustainably.

Opportunity in the making

The Lake Winnipeg Basin, arguably the most organized watershed in North America, faces unprecedented challenges in terms of resource use. Above, I presented a possible way of approaching these challenges. The idea reflects what Rachel Carson proposed in 1953:

> The real wealth of a Nation lies in the resources of the earth—soil, water, forests, minerals and wildlife. To this, the previous and current work emphasizes the additional wealth represented by the people themselves, their values and principles. To utilize all of these sources of wealth means not only a consideration of present needs but also ensuring their preservation for future generations. These goals require a delicate balance of science within society and a continued program, based on extensive research and action. The research administration is not properly, and cannot be, a matter of politics.[6]

The phosphorus challenge represents a vast and complex task that cannot be dealt with as a question of science alone. In an economically, environmentally, and socially interdependent world and focusing on an issue so inherently global, going beyond the nation-state is essential in developing abilities to sustain agricultural production and improve water quality. These goals far exceed the capabilities of governments and institutions, and so the questions of scale and genuine cooperation are essential. Furthermore, we need to emphasize the importance of bridging the existing information gap in existing coping strategies within a society, anticipating and preparing a society for adaptation, and mitigating the different needs and rationales of a diverse stakeholder group.

6 Rachel Carson in Linda Lear, *Lost Woods: The Discovered Writing of Rachel Carson*, edited by Linda Lear (Boston; Beacon Press, 1998), 99.

The pace of change necessary to keep up with increasing national and international efforts on the issue requires significant coordination. In this respect, it seems essential to create coherence so that efforts towards sustainable P use do not contradict or duplicate one another, but instead go beyond fragmented and partial answers by creating a synergy. It appears critical to create a multi-stakeholder forum that includes groups who have traditionally been excluded, for example First Nations and their traditional knowledge. This is also a basic finding of our previous study suggesting that everyone—and not just policy makers, agronomists, and experts—can contribute to the sustainable use of phosphorus and, by extension, towards increased food security and water quality. Perhaps the key message of "peak phosphorus" emerged from the earlier phase of the current study, which was, according to the president of DALUHAY, Paul Watts, "a potentially critical tipping point in the global approach to public participation and social process."[7]

In such a scenario, the Lake Winnipeg Basin is uniquely positioned at the forefront of sustainable phosphorus management, stewardship, and governance. Given Canada's economic, environmental, social, and scientific richness, the Lake Winnipeg Basin features a supportive foundation from which to act as a pioneering agent. As an indicative case study region, the strategic actors of the basin can enhance the well-being of the people and gain competitive economic advantages by managing essential resources according to the sustainability principle, demonstrating responsibility at a critical stage of evolution. This, however, requires overcoming what has been termed the "mikado and silo mentality." The former relates to the concept that characterized the Copenhagen Climate Summit. It is the unwillingness to move forward and show commitment to necessary action. The second relates to disciplinary boundaries that need to be opened and linked for an integrated system-wide approach. The "window of opportunity" presented at this time should therefore be used to take action toward the stability and security of the future wealth of the basin in societal, environmental, and economic terms. Thus, in this respect, Lake Winnipeg can indeed become a lake of opportunity.

7 For more information on DALUHAY, see http://ecosystemics.info.

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Pragmatism and Poetry: National Parks and the Story of Canada

Claire Elizabeth Campbell

> "Our National Parks are the envy of the world."
> – *The Globe and Mail*, 18 March 2011

For environmental historians, the history of national parks in North America tends to spiral around one central question: Were national parks designed for ecological protection or recreational use? If we have insisted on both, how has that impossible duality played out? In Canadian Studies, we begin from a different starting point: by seeking to understand the character and identity, the mechanics and agendas, of Canada as a nation-state; how that nation-state relates to its citizenry, on the one hand, and the international community, on the other. National parks do tell us a great deal about our attitudes toward, or priorities in, the natural world. But they are also artifacts and tools of the prevailing process at work in nineteenth- and twentieth-century North America: the physical, political, and imaginative construction of the nation-state. For Canada and the United States, this meant the acquisition of territory, then the more difficult task of devising ways of governing that territory, making it accessible—physically and intellectually—to a geographically and ethnically disparate population. Designating specific places as parks created spaces for a citizenry to occupy, an environmental sampler by which to understand and possess a complex geography, and a statement of national greatness in environmental wealth. National parks, in short, are a way to understand Canada's political evolution and political character—essential, in turn, to understanding its environmental policies today.

A North American origin story and a "national dream"

For a country that spends so much time insisting we are *not* American (and relies on our national parks and historic sites to remind us of this), we share a very North American origin story. The political independence of the revolutionary United States at the end of the eighteenth century required a new language or basis of nationalism: what Americans could not claim in *human* antiquity (at least from a European perspective), they would claim in *geological* antiquity and vastness. Such a campaign depended heavily on the

topography and scale of the new western interior. Monuments like Yosemite Valley provided powerful visual icons, and western spaces were also increasingly valuable in sustaining the so-called frontier thesis. If the American character emerged through struggle with a frontier, then the country required permanent wilderness spaces to approximate such an environment in the modern era. To both encourage and regulate visits to such places, the United States created the world's first national park at Yellowstone, famed for its geysers and hot springs, in 1872.

The story was remarkably similar in Canada fifteen years later, exactly in keeping with the rate of these two countries' development: most notably, completing national transcontinental railways fifteen years apart (1869 and 1885). Lacking the revolutionary imperative, Canada after Confederation still needed to acquire suitably distinct and iconic "nation-building" imagery in order to convince the inhabitants formerly known as British North Americans (and the British, and the Americans) of the providence of a Canadian project. The Canadian Pacific Railway (CPR) proved particularly useful in this regard. As construction reached the Rocky Mountains, workers discovered a natural sulphur spring near the proposed railway route in Banff. Surveyors reported that the site had "features of the greatest beauty, and was admirably adapted for a national park," and in 1887, Parliament passed the Rocky Mountains Park Act, which borrowed language from existing park legislation in the United States to create "a public park and pleasure ground for the benefit, advantage, and enjoyment of the people of Canada."[1]

The concept of a restorative, healthful spa visit to a hot springs was not new, given the establishment of an entire resort landscape in, for instance, western Germany by the mid-nineteenth century. But from the start, the small tourist siding became a vehicle for a much larger nationalist project in both countries, particularly useful in Canada, which was faced with claiming a larger territory with a smaller population. First, it created a clear destination deep in the western interior, making a statement of claim to the distant and contested territory that preoccupied much of Ottawa's attention in the latter part of the nineteenth century. Second, it helped validate the enormous financial and political investment (or gamble) that had gone into acquiring the interior and underwriting the railway project. As Prime Minister John A. Macdonald told the House of Commons, the hot springs at Banff would "recuperate the patients and recoup the treasury."[2] Third, it created permanently

1 *An Act respecting the Rocky Mountain Park of Canada* (assented 23 June 1887).
2 John A. Macdonald, Prime Minister, House of Commons *Debates,* 3 May 1887.

federal spaces while the land was still federal territory (Alberta would not come into being until 1905). Today the five "mountain parks" occupy about sixty-three thousand square kilometres, the largest contiguous area in any province, in Alberta, one of the provinces most likely to challenge the federal government. Fourth, it generated art for an eastern audience that was distinct from, but complementary to the artistic norms of a newly postcolonial Canada taken from London and Paris. The CPR sponsored artists such as John A. Fraser and Lucius O'Brien on trips to the mountains, in what became known a bit prematurely as a "Rocky Mountain School." Finally, it set in place a formula for citizenship, suggesting an *activity* by which Canadians could affirm their national identity. As historian William L. Morton would write seventy years later, "this alternate penetration of the wilderness and return to civilization is the basic rhythm of Canadian life, and forms the basic elements of Canadian character."[3] The remote nature of the mountain parks was a virtue here: setting up the expectation, or requirement, of travelling across territory, thus allowing a largely eastern population to occupy a western space.

National parks were imagined not as a way of preserving nature from development, but merely as reserving nature from private settlement for public use. Both the western territories and national parks were the responsibility of the Department of the Interior, the powerhouse of the federal government in the decades following Confederation. Its central mandate was "nation-building" through agricultural settlement of the continental interior and development of natural resources in other industries. Recreation was simply a new industry, and one that benefited from a state-corporate partnership. The corporate is a major theme in Canadian history, both in the sense of a financial entity and as a collective unit. And while it is something of a cliché to talk about the transcontinental railroad, it is hard to overstate its role as linchpin in delivering settlers and tourists alike into the Canadian west, and giving Canadians a sense of entitlement to, ownership of, and investment in this distant and "sublime" territory.

Too much geography: Expanding the national parks system

But the creation of the Dominion Parks Branch in 1911—the first time in history a country created an agency devoted specifically to managing national parks—produced a new nationalization of national parks. (While the American narrative as scripted by Ken

3 William L. Morton, *The Canadian Identity* (Madison: The University of Wisconsin Press, 1961), 4-5.

Burns presents national parks as "America's best idea,"[4] it seems inventing a bureaucracy to manage them is Canada's best idea. In fact, I would suggest that America's best idea was actually coining the phrase "unimpaired for future generations," which appears in the founding legislation of the National Park Service in 1916, fourteen years before it was written into national park legislation in Canada.) The Parks Branch took up what the railway had begun, in both the rationale for national parks and in making nature accessible. First, it heavily and successfully promoted tourism as the purpose of the parks. In 1919, Branch director James B. Harkin argued that through tourism revenue, "scenery" could generate $13.88 an acre—at least three times that of an acre of wheat on the prairies.[5] The Branch actively developed parks to accommodate visitors, especially through building roads. And it helped entrench a message about the naturalness of the Canadian presence in these places. For much of the twentieth century, the federal government needed to convince an ethnically complex and historically transient assortment of immigrant communities that we, collectively, belonged here. Pinpointing spots as accessible "national heritage" suggested an inherent emotional affinity for, and territorial right to these places, however distant.

Or close. With "getting back to nature" already popular among the well-to-do in southern Ontario and Quebec, colonizing parts of the Canadian Shield for summer camps and cottages, the Parks Branch began establishing new parks closer to where most Canadians lived. This really was the start of a national park system, one that began to reflect the country's ecological and regional diversity. This certainly raised the public profile of national parks, and by the 1920s, Canadians generally agreed that parks could be both nationally valuable and locally profitable. But it is at this moment of expansion that, not surprisingly, we see a tension emerge between the central authority of the Parks Branch and numerous communities who may have had very different ideas about what they wanted from a national park. At Prince Albert National Park, cottage holders resisted efforts to eliminate their leases, even as the Branch argued such properties undermined the park idea of wilderness for all Canadians. In this tension between the local and the national, the Parks Branch mirrored the dilemmas of life in a country that, as Prime Minister William Lyon Mackenzie King said, has too much geography.[6]

4 Ken Burns, *The National Parks: America's Best Idea* (Hollywood, California: PBS [Public Broadcasting Service] Home Video, 2009).

5 J.B. Harkin, "Report of the Commissioner," Annual Report of the Department of the Interior, 1919, Sessional Paper no. 25 (Ottawa, 1920) 3-4.

6 The full citation is "It is equally true, I should add, that as some countries have too much history, we have too much geography." W. L. Mackenzie King, Prime Minister, House of Commons *Debates*, 18 June 1936.

The politics of federalism also coloured the creation of parks in the older, settled region of Atlantic Canada. These required the Parks Branch to invent and promote new categories of scenic beauty, such as "the coastal sublime," to compete with (and justify the turn away from) the alpine, though all were designed for scenic views from the highway or the golf course. But unlike in the western territory, these parks required strategic negotiations with the provincial governments, which constitutionally are responsible for property and natural resources. Land use is typically one of the most fraught questions in federal/provincial relations, but in the crush of the Great Depression, the hard-hit Maritime provinces were more than willing to cooperate in turning land over to the federal government in the hopes that new parks would spur new tourism revenue. Unfortunately for residents, this land was usually acquired through outright expropriation, in order to create appropriately unpeopled landscape views.

"Water, ice, and land": Complicating parks in the postwar era

Canada emerged from the Second World War with its economy booming, and major transcontinental infrastructure projects in the 1950s and 1960s—the TransCanada pipeline in the West, the St. Lawrence Seaway in the East, and most importantly, the Trans-Canada Highway from sea to sea—seemed to herald a twentieth-century version of the CPR's "national dream," literally engineering a new federal presence across provincial borders. Likewise, national parks continued to mark Canada's transcontinental reach, and were more than ever a useful, accessible space, especially for family-oriented suburban communities enjoying new income levels and leisure time.

By the 1960s, it was clear that Canada's mountain parks were wearing thin from their own popularity. Concern over their sustainability and overuse prompted a new public presence from an emerging environmentalist lobby on the one hand, and the academic community on the other. At a 1968 landmark conference on "Canada's National Parks: Today and Tomorrow," sponsored by the National and Provincial Parks Association (now the Canadian Parks and Wilderness Society), scientists and environmentalists levelled pointed criticism at the Parks Branch's tradition of user-oriented management. The US National Park Service actually retreated in the face of new concern about park overdevelopment, and the preservationist directive of the 1964 Wilderness Act. Although Canada had no equivalent to the Wilderness Act (and why this case is a story still to be written),

Canadians *were* becoming uncomfortably aware that national parks were not wilderness sanctuaries, though we nevertheless persisted—and persist—in referring to them as such. Films such as *Enduring Wilderness* (1963), produced by the National Film Board, urged viewers to see the parks as pieces of Canada preserved "in their original state," even as the narrator asked, "How can we use the parks without spoiling them?" (The film's title was translated in French as *Jardins Sauvages*—in some ways a more accurate description.)[7]

A number of factors coalesced by the late 1960s to generate a strong flurry (if not perfect storm) of activity around national parks. The partly complementary, partly contradictory twin enthusiasms for outdoor recreation and environmental protection met with a maturing of the Parks Branch's bureaucratic capacity, a certain generational idealism about the capacity of the liberal state, a definite nationalist language around the country's Centennial, and a new interest in Canada's northern territory. Ottawa created new parks with remarkable speed, from sea (the Atlantic shores of Newfoundland) to sea (the Pacific shores of British Columbia) to sea (the Arctic watershed). Thinking of Canada in this expansive, triangular, and maritime way was new in national parks, but very much in keeping with the times. A National Parks System Plan divided the country into thirty-nine natural regions and promised to have at least one park representative of each; this remains the governing approach to park creation today. While it claimed to be "*fondé sur les sciences naturelles et être dégagé de toute entrave politique ou sociale* [founded on the natural sciences and free from all political or social hindrances]," such a claim was either naïve or outright disingenuous. Redrawing an area of rural Quebec in La Mauricie as wilderness, and representative of one of Canada's most iconic landscapes—the boreal forest of the Canadian Shield—neatly cleared the area of its history of resource use (and reference to people), instated "objective" ecological categories, and bolstered federal authority in a separatist-leaning Quebec.

Yet it was at precisely this moment that thinking of parks as human eco-zones became problematic, because Parks Canada was being forced to acknowledge that people lived in these "natural regions." The most dramatic conflict arose in northern New Brunswick, in a decade-long protest over the expropriation of land for Kouchibouguac National Park. For the francophone Acadians who lived here, expropriation seemed too near to the memory of expulsion: namely, the expulsion of 1755, when the British forcibly

7 Ernest Reid/National Film Board of Canada, *Enduring Wilderness/Jardins Sauvages* (1963).

deported thousands of Acadians before the Seven Years' War. Resistance to the national park included occupying and burning park buildings, amidst an outpouring of Acadian nationalist writing. (In February 2011, the House of Commons issued an official apology to people whose properties were expropriated to create Forillon National Park in 1970.)

But it was the new voices of aboriginal history and aboriginal politics that most effectively challenged conventional thinking about national parks. The rapid expansion of the parks system in the early 1970s intersected precisely with a watershed in relations between the Canadian state and Canada's First Nations. Widespread opposition to the "White Paper" of 1969 (a policy paper that recommended the elimination of Indian status and the apparatus of the Department of Indian Affairs), and televised hearings over a proposed pipeline through the Northwest Territories, presented to a national audience really for the first time in Canada's history a highly mobilized, highly visible First Nations community: one result of which was a more consistent treatment of land claims. In 1974, the National Parks Act was amended to allow traditional hunting and fishing practices, and introduce a new concept of national park reserve, meaning land set aside for a future national park pending the settlement of land claims. Acknowledging aboriginal claims of occupation required Parks Canada to recast parks from wilderness zones to "cultural landscapes" inhabited by sites of cultural and spiritual significance, and adopt new processes of consultation and co-management.

Still, for most southerners (including Prime Minister Pierre Trudeau, who canoed the Nahanni River in 1970), the North still represented the last, best Canadian wilderness—hence its appeal. While the presence of humans living and working within protected areas is common in European countries, I would suggest that in Canada, it is thought of primarily as an aboriginal feature; ironically, further evidence of its wilderness character. Nahanni, the homeland of the Decho, Dene and Métis, remains a park reserve thirty-five years after its designation. In 2009, however, the reserve was expanded six fold (from five thousand square kilometers to over thirty thousand square kilometers), a dramatic reminder that despite outstanding claims, the North is still conveniently federal territory. These northern park reserves also remind us of Canada's longstanding tendency to see nature as both wilderness and resource. Whether through climate change or seabed mapping technology, the North is increasingly accessible to mining exploration. The Nahanni expansion and its new neighbor, the Naats'ihch'oh reserve (2008), carefully excluded existing mining leases, claims, and two working mines.

Asserting Canada's presence in the North, of course, has been the other defining feature of the parks system and Canadian politics since the 1970s. There had been concerns about American and Russian presence in the Arctic since the turn of the twentieth century, though these became much more acute from the Second World War into the Cold War. But the uninvited crossing of the S.S. Manhattan through the Northwest Passage in 1969 sparked a focus on Canadian sovereignty in the region that was cloaked in, or at least married to, assertions of environmental protection. In this new national policy, northern parks still demonstrate Canada's territorial authority; unlike the mountain parks of a century ago, however, they are presented not as aids to the national treasury but as evidence of a distinctly Canadian sense of ecological responsibility for this place. After the Manhattan crossing, Trudeau told the House that:

> Canada regards herself as responsible to all mankind for the peculiar ecological balance that now exists so precariously in the water, ice and land areas of the Arctic Archipelago. We do not doubt for a moment that the rest of the world would find us at fault, and hold us liable, should we fail to ensure adequate protection of that environment from pollution or artificial deterioration. Canada will not permit this to happen.[8]

According a 2011 poll, a majority of Canadians believe that Arctic sovereignty should be the country's first priority in foreign policy. And Canadian governments—including Stephen Harper's Conservatives since 2006—generally have been committed to this by whatever means are convenient. In August 2010, the Canadian Forces ran their second consecutive joint exercise in Nunavut, code-named Nanook; four months later, the government announced a park reserve at Lancaster Sound at the eastern mouth of the Northwest Passage (a mere twenty-five years after a policy recommendation to this effect). From this perspective, national parks are simply one tool among many by which to show the flag.

Where to from here and now?

By way of closing, I would like to highlight three directions in which Parks Canada appears to be heading with our national parks in the twenty-first century.

8 Pierre E. Trudeau, Prime Minister, House of Commons *Debates*, 24 October 1969.

1. For the past forty years, the most consistent effort has gone into making parks in the North. We now have ever-larger parks, to which only a few people go. In 2009-10, Quttinirpaaq National Park, on Ellesmere Island, counted 2 visitors; Kluane National Park, in the Yukon, and right on the Alaska Highway, just under 42,000; Banff, over 3.1 million. Are we making two classes of parks, one for our "benefit, education, and enjoyment" and the other for keeping "unimpaired"? Or is this a good strategy of deflecting human impact by concentrating it in older areas, and keeping less-trodden parts of the North as ecological reserves?
2. Engaging with the northern archipelago and its thousands upon thousands of kilometers of coastline has produced another frontier for park creation: marine ecosystems. Introduced in 1987, National Marine Conservation Areas have been proposed in the Great Lakes and across Canada's three oceans in a system plan that attempts to both consolidate and extend Parks Canada's authority—much like an earlier system plan. In 2010, for example, Ottawa announced a national park on Sable Island, three hundred kilometers off the shores of Nova Scotia at the edge of the Scotian Shelf (and like Lancaster Sound, in the midst of oil and gas exploration).
3. In the Darwinian world of federal politics, Parks Canada needs to justify its own existence as much as the lands for which it is responsible. In its centennial year, Canadians have been treated to waves of publicity materials that celebrate the agency as a world leader in environmental protection, and a steward of our "national treasures" that are, apparently, the envy of the world. Meanwhile, anxious to cultivate new audiences among, in particular, urban and immigrant populations (who may well come to Canada with different cultural traditions toward nature and wilderness), it has embraced a public relations campaign to woo visitors into parks that evokes the unprecedented tourism advertising of the 1920s. "Learn to camp" weekends, for example, promise a gentle introduction to life in the outdoors. Happy campers are happy citizens.

So generations of national parks tell us as much about Canada's political landscape as its biophysical one. Ours is a New World story of pragmatism infused with poetry. We have contentedly used nature for political and economic gain, while cultivating a romance and mythology about wilderness. But both are to the same end: to affirm a young country's claim to its place on the globe. We can see the political priorities of a

maturing nation-state as it wrestles with territorial expansion and constitutional jurisdiction as well as shifting public opinion. Parks Canada's famous dual mandate, to provide national parks for our "benefit, education, and enjoyment" as well as keep them "unimpaired for future generations," really says something about how Canadians have always wanted to have our environmental cake and eat it too. Certainly Parks Canada *is* a world leader in the management of protected places. But national parks should compel us to talk about all the kinds of relationships that Canadians have, want to have, and should have, with the natural world in the fullest sense. We can hardly congratulate ourselves on protecting our national treasures while an hour's flight north of Banff are the Athabaska tar sands. In this, our nineteenth-century predecessors were at least a bit more honest.

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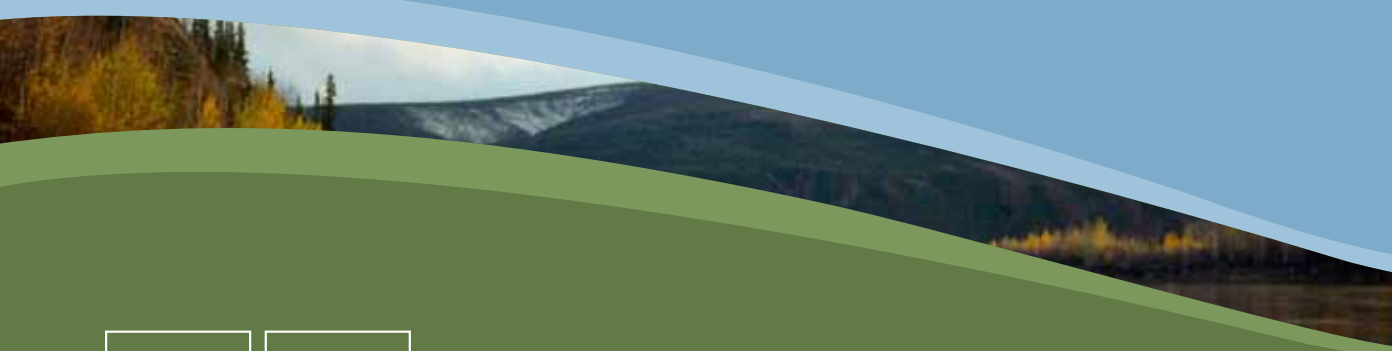

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ISSN 2190-5088