Northern Perceptions of Climate Change

by

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ABSTRACT

Inuit living in the circumpolar North have faced a number of rapid changes in the last century with the shift from nomadic to permanent settlements and the lingering negative effects of colonialism, now further challenged by the impacts of climate change. Currently, Iqaluit and other communities in Nunavut are at risk of running out of fresh water as they face factors including changing hydrological systems, increased population, ageing and inadequate infrastructure, and resource development (Bakaic & Medeiros 2017; Daley et al. 2014). Knowledge translation may be an essential tool for communicating these changes, both to Inuit and Western people, and better facilitate adaptation and mitigation strategies relating to climate change and water. This Major Project comprises three deliverables all with the aim of educating a different audience about issues including climate change, Inuit and Northern perspectives, and environmental racism. I have created 1) a children's magazine article about monitoring climate change in the North using paleolimnology; 2) a journal article for Western academia that cautions about ignoring the socio-economic realities of Inuit daily lives; and 3) a magazine article for teenagers that talks about environmental racism and the North. Key findings from my research include that there is embedded racism within climate change, that there is a need for climate communication to be done in a respectful and culturally appropriate way, and that social issues were identified as equally important to climate issues for some people living in places of rapid environmental change.

KEYWORDS: climate change, water, Inuit, Indigenous Knowledge, education, knowledge translation

FOREWORD

I entered the MES Program with a desire to learn more about the issues facing Indigenous Peoples in Canada, especially with respect to water. My Supervisor, Andrew Medeiros, is the Principal Investigator of the "Water Security for Northern Peoples" project, and by joining his team of graduate students I hoped in some way I might contribute something meaningful towards some element of furthering climate justice or helping to improve water security for Inuit in some small way.

This Major Project is reflective of the knowledge that I acquired to fulfil the requirements of the MES degree, as well as the Environmental Sustainability Education diploma. My Plan of Study outlined three overall components that were addressed throughout my coursework, project research, and experiential learning in Iqaluit, Nunavut during the summer of 2019: Indigenous water security; Inuit Perspectives on climate and the environment; and climate literacy, knowledge translation, and education in the North. Each of these components is woven throughout the three deliverables which make up my Major Project, and with all three deliverables, I hope to educate people in different audiences about some of the important things I've learned, including climate change and water security in the North, Inuit and Northern perspectives on these relationships, the importance of Indigenous Knowledge, and environmental racism.

DEDICATION

This work is dedicated to the memory of Valerie, who I was only with for a short time but who was a steadfast companion during a very demanding and sometimes lonely time in my life. I also dedicate this to my mom, Debbie Jewell, who tried to talk me out of going back to school but supported me anyways when I did. Always another mountain.

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I would like to thank Andrew Medeiros, without whom I never would have started on this journey. I would like to thank Patricia E. Perkins for her guidance and advice during the initial part of my time at FES, as well as the members of our original student group. I would like to thank Lisa Meyers, Graham Giles, Deborah McGregor, and the other professors at York University for facilitating really great lectures and discussions from which I learned a lot. I would like to thank my “accountabilibuddies”, my fellow IDS students who were a great source of camaraderie throughout this process. I would like to thank Solomon Awa, Torsten Diesel, Killaq Enuaraq-Strauss, Jessica Kotierk, and the other interview participants who took the time to speak with me in Iqaluit and share their perspectives. I would like to thank Liette Gilbert and the OSAS Office for their prompt responses and administrative support, especially through COVID-19 and two extensions. I would like to thank Sheila Colla and Sonia Wesche, for their comments and mentorship as I continued to shape this project. I would like to thank Elizabeth Heidner and Jennifer Gordon, for providing comments and much need encouragement in the final days. Finally, I would like to thank my partner, Steven Lauck, for his unrelenting love, patience and support. Nakurmiik.

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INTRODUCTION

Inuit living in the circumpolar North have faced a number of rapid changes in the last century with the shift from nomadic to permanent settlements and the lingering negative effects of colonialism, now further challenged by the impacts of climate change. Socio-economic issues include lack of adequate housing, food and water insecurity, low education rates, and higher rates of illness and mortality (ITK 2014), issues which are exacerbated by climate change. Permafrost thaw destabilizes housing and infrastructure, changing conditions on the land make it more difficult to hunt, and to pass on Inuit Indigenous Knowledge, which they call *Inuit Qaujimajatuqangit* (IQ). It is important to listen to Inuit perspectives as they reflect on these and other challenges.

For my own introduction to this topic, I was initially focused on issues of water security. I was invited to join the "Water Security for Northern Peoples" project by the Principal Investigator, Andrew Medeiros, who became my Supervisor throughout my MES program. Iqaluit and other communities in Nunavut are at risk of running out of clean, available fresh water, challenged by factors including changing hydrological systems, increased population, ageing and inadequate infrastructure, and resource development (Bakaic & Medeiros 2017; Daley et al. 2014). As I progressed throughout the MES program, however, and especially after my trip to Iqaluit in the summer of 2019, I also became interested in other issues including concepts like slow violence, (post/neo) colonialism, environmental racism, knowledge translation, and environmental education.

Amongst the general public, climate change remains a contested issue: in Canada, almost half (43 %) think science is "a matter of opinion" (Ontario Science Centre 2017 in Smol 2018). For some Inuit and Northern residents, climate change is seen more as something that happens elsewhere. Without trust in science or belief that climate change is a real phenomenon, politicians and policy-makers will have both less incentive and less pressure from the public to enact measures that curb carbon emissions and protect the environment. As the education system adapts to both improve high school graduation rates and to bridge the gap between Western and Inuit education, we will hopefully see people who are better informed about the challenges with climate change.

Knowledge translation may be an essential tool for communicating these changes, both to Inuit and Western people, and better facilitate adaptation and mitigation strategies relating to climate change and water. We define knowledge translation as the interactive process in the creation of knowledge and its application to yield benefits to society, with emphasis on the effective exchange of information between knowledge holders and those who would use that knowledge (Sudsawad 2007). Knowledge translation does not describe a hierarchical top-down transfer of knowledge, but a two-way system through which knowledge is shared and improved through new ideas and iteration.

This Major Project comprises three deliverables all with the aim of educating a different audience about issues including climate change, Inuit and Northern perspectives, and environmental racism. I have created 1) a children's magazine article about monitoring climate change in the North using paleolimnology; 2) a journal article for Western academia that cautions about ignoring the socio-economic realities of Inuit daily lives; and 3) a magazine article for teenagers that talks about environmental racism and the North. Future work might look at digital storytelling as a means of changing perceptions of Inuit in Western media, helping better inform southern attitudes towards issues in the North, promoting IQ and strengthening Inuit culture and world views, and educating the public in general about climate change.

In the appendices, I included notes from the interviews that I conducted in Iqaluit, Nunavut in summer 2019. I have also included Inuit children's drawings, poems, and stories that had been entered for a contest held by Environment Canada in the 1990s on the topic of weather and climate change.

CHAPTER 1: Magazine article for children

For my first deliverable, I wanted to publish a piece for children that would teach them about how scientists monitor climate change in the North. Drawing on my lab experiences with paleolimnology, I thought children might be interested to learn about how lake dirt and the dead bugs found within it can tell us about what the climate used to be like in a certain area years, decades, and even centuries ago, as well as how scientists can use this data to tell us more about how the climate changes over time.

My target audience for this article was roughly children 8-12 years of age, and I wrote the text for my article to write to that demographic. My Supervisor, Andrew Medeiros, put me in contact with a friend of his in Iqaluit, Ian Etheridge, who is an illustrator and who was willing to work with me on the design and illustrations to go with my text. He had previously created some drawings of baby Arctic animals that hadn't worked out for another project that seemed like a good fit for this project, so that was the direction we decided to go with. He also created a new image of a narwhal and Arctic char standing with a cartoon of a sediment core sample, which really helped to visualize what a sediment core sample looks like for someone who might be learning about it for the first time.

When the piece was finished, I reached out to a few publications and received a positive response from the editor at Brainspace Magazine. This magazine markets itself as a fun, interactive magazine for kids aged 8-14, and seemed like it would be very suitable for my goal. After a few emails, it was agreed that they would publish my article in an upcoming issue of their magazine, and the two-page spread was published in their Fall 2020 issue.

The text from the article is copied below for ease of reading, and is followed by an image taken of the published magazine article as it appeared in the Fall 2020 issue of Brainspace Magazine.

Monitoring Climate Change in the Arctic

Written by Clarissa Jewell; Illustrations and design by Ian Etheridge

What is climate?

Climate is the long-term average weather conditions in a specific area, including how hot or cold it is and the amount of rain or snowfall. Different regions in the world have different climates. Some places being hotter or colder, or wetter or drier, than others.

Why is monitoring climate change important?

Our fresh water and food systems depend on having a predictable climate, which might be threatened with climate change through increased risks of drought, forest fires, hurricanes and other natural disasters. People's homes are also at risk from these disasters, as well as from sea level rise in coastal areas. Inuit, the Indigenous people who live in the Arctic, depend on having cold weather to maintain their traditional activities like hunting and fishing.

How do we know that climate is changing?

We know that climate is changing because of the information that scientists have collected about how the weather has changed over time. There are many ways that scientists can monitor climate directly by looking at things like atmospheric conditions, satellite imagery, ocean currents, and sea level change.

However, there are many cases where we don't have long-term climate data because there weren't any people or instruments recording the local conditions. For these places, we can study what the climate used to be like in the past through indirect methods instead. One important way that scientists look at changing conditions is through the field of paleolimnology.

What's paleolimnology?

"Paleolimnology" comes from the Greek words paleon, which means "old", limne which means "lake", and logos, which means "study", so if you take that all together, it means the study of old

lakes. Paleolimnology shows us how to study the history of a lake including its climate based on the physical, chemical, biological, or mineralogical properties found in lake sediment samples. Scientists do this by collecting sediment core samples.

What is a sediment core? How can lake sediment core tell us about climate?

A sediment core is a section of the dirt and other materials that can tell us about the changes in conditions over time. For scientists studying paleolimnology, these cores are taken from the bottom of lakes. As matter settles in the water, including the remains of plants and animals, they form a layer over the bottom surface. Over time, new layers form on top of old layers, so when you look at a sediment core, the most recent history is at the top of a sediment core while older timelines descend down the core.

What impacts will climate change have for the Arctic?

Climate change is already having big impacts on the Arctic! Thinner ice means it's more dangerous for people to hunt and travel on the land. Melting permafrost is causing landslides in some places and is tearing up roads and homes. Invasive species that have never occurred in the North are beginning to appear, and unpredictable weather is adding to the uncertainty. These dramatic changes highlight the importance of continuing to monitor data so that we can better predict and be ready for the changes to come.

Illustration 1. "Monitoring Climate Change in the Arctic" written by Clarissa Jewell and illustrated by Ian Etheridge.

CHAPTER 2: Journal article for academia

Northern Perspectives on Climate Change, Inuit Well-Being, and Knowledge Translation; A Case Study in Urban Perspectives from Iqaluit, Nunavut, Arctic Canada.

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ABSTRACT

The embedded generational knowledge of weather and climate is a foundational component of subsistence living for Inuit living in the circumpolar North. This knowledge is now challenged by the reality of anthropogenic climate change at a pace that, for Inuit, is changing fundamental aspects of life in a single generation. Warming temperatures in the North are exacerbating issues that Inuit already face with respect to fresh water availability, food security, safety and well-being on the land, housing, and infrastructure, as well as challenging core principles of society. Furthermore, there is little information in the literature exploring the perspectives of Inuit living in larger urban communities in the North. Through a series of in-depth interviews with residents of Iqaluit, Nunavut, we aim to show how the effects of climate change are mediating relationships of urban Inuit to water and land, to understand how these are linked to Inuit well-being, and to discuss how colonialism still shapes knowledge translation and the effects of this on climate literacy for Inuit in the North and for non-Inuit regarding the North. Through our discussions with residents in an urban context, we found that Western science and

discourse were identified to have largely failed to meaningfully and respectfully consider the perspectives of Indigenous Peoples living in Northern communities. We identified that there is currently a knowledge gap between the colonial context in which climate change operates that requires a holistic way forward that can lead to improvements in the urbanized social context for Inuit.

KEYWORDS:

Climate change, Indigenous Knowledge, Inuit, knowledge translation, colonialism, Arctic Canada

POSITIONALITY

Many Indigenous methodologies speak to the importance of positionality, a practice through which the researcher locates themselves in relation to their research: who they are; their personal relationships and connections to the work; their background and personal history; their assumptions, biases, and motivations; and the accumulated knowledge they bring to their endeavours (Russell-Mundine 2012). The authors each come with a different background and perspective of how environmental change is influencing our common future. Clarissa Jewell is a researcher of Euro-Canadian descent and a student at York University in Toronto, Canada, the traditional lands of many nations including the Mississaugas of the Credit, the Anishnaabeg, the Chippewa, the Haudenosaunee, and the Wendat peoples. She is drawn to this research through a desire to learn more about water security issues and Indigenous issues in Canada. Andrew S. Medeiros is an Assistant Professor at Dalhousie University in Halifax, Canada, located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. He is the Principal Investigator of the Water Security for Northern Peoples project and has been actively working in the Canadian Arctic for 15 years on issues of climate change, aquatic biodiversity, and water security. Sonia D. Weches is an Associate Professor and settler scholar at the University of Ottawa in Ottawa, Canada, on the unceded traditional territory of the Algonquin Anishnaabeg People. She is a Co-investigator on the Water Security for Northern Peoples project, and has been working collaboratively with Indigenous communities and partners in the North for over 15 years on research related to environmental change, food and water security, and Indigenous health and well-being. Together, we aim to create a space in which we can bring together both Western and Indigenous ways of knowing for the betterment of all.

INTRODUCTION

For many Inuit, their relationship to the land is important for many reasons, and is fundamentally tied to their health and well-being. This relationship is demonstrated by the concept of *Inuit Qaujimajatuqangit* (IQ), which can be defined as "all aspects of traditional Inuit culture including values, worldview, language, social organization, knowledge, life skills, perceptions and expectations" (Tester and IrnIQ 2008). At the core of IQ is a set of laws, beliefs, and values that teach lessons about how to live a good life that are shared by Inuit across the circumpolar world (Karetak and Tester 2017). Integral to IQ, as with many Indigenous world views, is the importance of caring for the land and the animals; "The land is so important for us to survive and live on; that's why we treat it as part of ourselves" (Mariano Aupilaarjuk in Evaloardjuk et al. 2004). In particular, knowledge of the environment is enshrined in the ability to successfully live a sustainable way of life based on subsistence. As conditions at the poles are rapidly changing with global warming, climate change impacts on Inuit are seen as early warning signs for the rest of the world. Temperatures have increased twice as quickly at the polar regions than the rest of the world, a process known as polar amplification (Larsen et al. 2014). Indigenous Peoples are among the most directly affected by environmental change through their close relationship with their environment (Thériault 2013), and as these changes cascade across all aspects of life and culture in the North (Ford et al. 2010), Inuit perspectives are both important and imperative for understanding environmental change at both a local and global scale.

The observations collected by Inuit over a millennia of successive activities on the land, including hunting, recreation, and travel, can provide observations that Western society would be otherwise reliant on local climate data to provide. This 'baseline data' of observation

has the potential to be used alongside Western science to expand our shared understanding of global climate change (Alexander et al. 2011). Inuit rights activist and author Sheila Watt-Cloutier (2015) defines IQ as science; a body of knowledge gained through centuries of rigorous observation of the environment. Indigenous Knowledge can help augment gaps in data collection on climate change, while also contributing a missing and important human dimension to the scientific understanding of this phenomenon. However, for some, there is a belief that IQ "cannot be incorporated or integrated into science because societal values are broader than traditional knowledge which is anyway, by nature, unlike scientific knowledge" (NTI 2005). It may be better, then, to view IQ as complementary, but not interchangeable or substitutable, with Western science. It is also important to acknowledge that Indigenous Knowledge is not a homogenous framework to be contrasted in a binary with Western science; Indigenous Knowledge is diverse and complex, incorporating relationships, motivations, assumptions, accountability, and self-reflection of the researcher (Johnston et al. 2018). It is important to acknowledge the potential negative implications from such an oversimplification for non-Indigenous researchers regarding Indigenous ways of knowing, including further harm from extractive research practices.

Colonialism has had and continues to have lasting negative effects on Inuit well-being, and this history is important to understand in the context of climate change. The continuing effects of colonialism in the climate change context are not often reflected in academic literature. Inuit experienced rapid and often damaging sociocultural change as they shifted from hunting and gathering to trapping and trading with the arrival of the Europeans and later the establishment of the Hudson Bay Company, and following World War II through colonial exercises such as residential schools and the removal of children from their families (Tester

2017). Inuit faced a number of other challenges during the 20th century including the collapse of the Arctic fox pelt trade economy, caribou population decline causing starvation, relocation from land-based camps to settlements, outbreaks of tuberculosis and other infectious diseases, outbreaks of distemper amongst sled dogs and the RCMP-led dog slaughter, and racism and abuse from Western-European people in positions of power (Tester 2017). These and other challenges are important to understand because Inuit, like many Indigenous peoples today, still experience many of the negative and lingering consequences of colonialism including "poverty, loss of traditional culture, loss of language, loss of control over resource development, suicide, addictions, and physical and mental health disparities" (Cameron 2012). Colonialism is compounded by the effects of capitalism and neoliberalism: capitalism drives climate change and environmental destruction through the relentless pursuit of profit over sustainability (Hickel 2016), while neoliberalism pushes for a radically free market that engenders indifference toward poverty, cultural decimation, resource depletion, and environmental destruction (Brown 2009). This context is critical for the understanding of modern Inuit well-being today.

Given the rapid changes in the North, there has been significant climate change research done with small, remote Inuit communities that highlights climate change as a key issue and illustrate the challenges (e.g. Ford et al. 2008; Laidler et al 2009; Ford et al. 2009). However, relatively limited work has been done in Arctic urban centres. Here, we focus on the perspectives of urban Inuit through a participatory case study that attempts to understand challenges perceived and realized by climate change. While climate change affects the well-being of northerners, its impacts cannot be isolated from the variety of challenges that modern Inuit populations encounter, and in order for solutions to be effective they must be implemented in a manner which holistically approaches these challenges with the aim of social

improvement. Through a series of in-depth interviews with residents of Iqaluit, Nunavut, we aim: 1) to show how the effects of climate change are mediating relationships of urban Inuit to water and land; 2) to understand how these relationships are fundamentally linked to Inuit well-being; and 3) to discuss how colonialism still shapes knowledge translation and the effects of this on climate literacy for Inuit in the North and for Western perceptions of the North. Through these objectives we will better understand the way that these complex issues are interconnected. Knowledge translation may bridge the gap between Inuit understandings of Western science and southern understandings of Inuit culture.

METHODOLOGY

Study Location

Iqaluit (63.7467° N, 68.5170° W) was designated the capital of Nunavut, Canada, when the territory was founded in 1999 (Figure 1). As of the 2016 census, the population centre contained 7740 residents, of which 3900 identify as Inuit (City of Iqaluit 2021). In contrast, the second-largest community in the territory, Rankin Inlet, had a population of 2842, while eight other communities had populations of over 1000 people (Statistics Canada 2016; City of Iqaluit 2021).

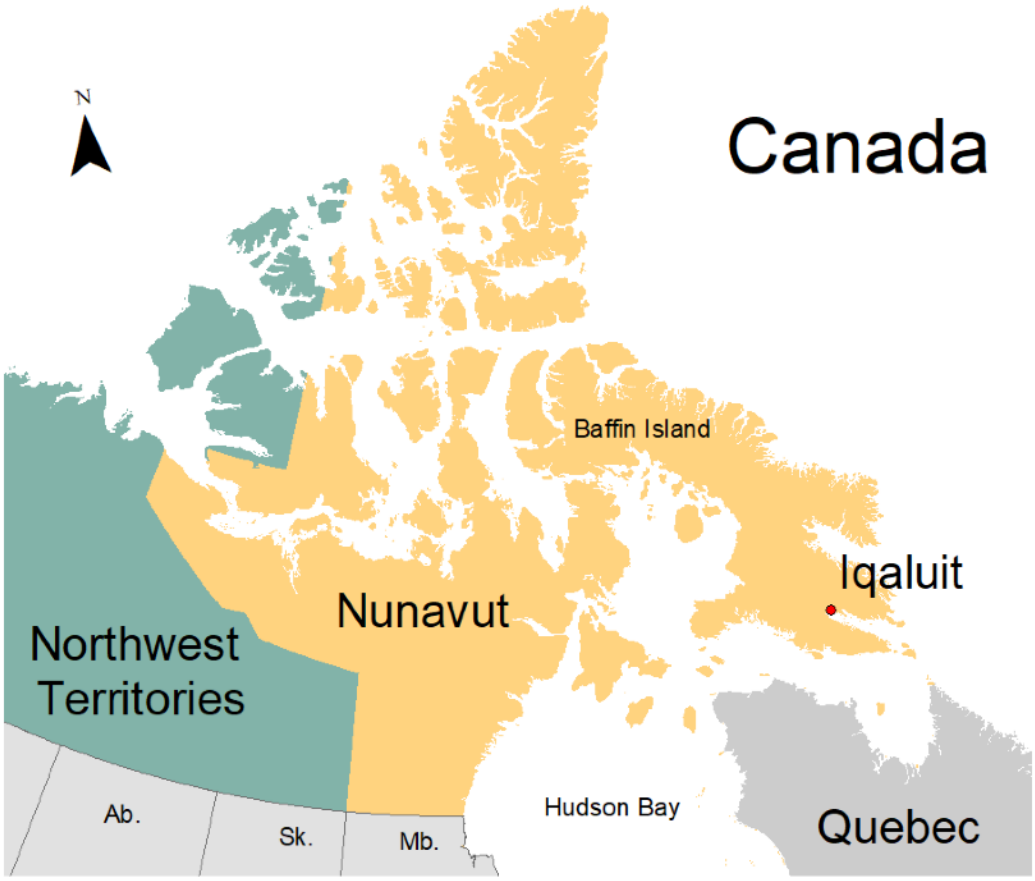

Figure 1. Iqaluit, Nunavut, Canada.

Research Approach

We approach this research from a postmodern, interpretivist paradigm. An interpretivist approach differs from the traditional Western or Eurocentric positivistic approach in that knowledge is perceived to be subjective and influenced by researcher biases and preconceived notions (Kroeze 2012).This research incorporates Indigenous research methodologies, including an understanding of the positioning of the author and decolonizing methodologies, during the pre- and post-interview process. We define decolonizing methodologies here as practices that seek to dismantle colonial authority and challenge the notion that colonizers and their ways of life, knowledge, language, culture, science, and understanding of the world are superior to that

of the people(s) they colonize (University of Warwick 2018). The effects of colonialism extend not just to physical rule and subjugation of a people, but the colonizing of the mind and internalization of feelings of inferiority (Fanon 1963 in Coulthard 2014). Tuck and Yang (2012) caution against the conflation of the term decolonization with social justice and anti-colonial movements, arguing that decolonization is not a metaphor and can only be used to refer to the repatriation of land, power, and privilege to Indigenous peoples; however, we still believe there is work that needs to be done within Western academia to create space for Indigenous peoples and that moves to centre Indigenous voices and epistemologies (Battiste 2000 and Smith 1999 in Datta 2018).

Data Collection

We present perspectives that are generated from two sets of interviews conducted in Iqaluit in 2014 and 2019. During the summer of 2014 a series of structured surveys were completed with seven residents to identify concerns related to how environmental change influenced the urban environment. Building on these findings, we conducted in-depth interviews with nine additional residents in 2019. In total, there were nine male and seven female participants, and all were Iqaluit residents at the time of the interview (Table 1).

Table 1. Iqaluit participant characteristics

Participant Code	Affiliation	Year of Interview	Interview Structure
IR14-1	Iqaluit resident	2014	structured survey
IR14-2	Iqaluit resident	2014	structured survey
IR14-3	Iqaluit resident	2014	structured survey
IR14-4	Iqaluit resident	2014	structured survey
IR14-5	Iqaluit resident	2014	structured survey
IR14-6	Iqaluit resident	2014	structured survey

IR14-7	Iqaluit resident	2014	structured survey
IR19-1	Iqaluit resident	2019	semi-structured interview
IR19-2	Iqaluit resident	2019	semi-structured interview
IR19-3	Iqaluit resident	2019	semi-structured interview
IR19-4	Iqaluit resident	2019	semi-structured interview
IR19-5	Iqaluit resident	2019	semi-structured interview
CI1	City of Iqaluit	2019	unstructured interview
GN1	Government of Nunavut	2019	unstructured interview
GN2	Government of Nunavut	2019	unstructured interview
GN3	Government of Nunavut	2019	unstructured interview

Surveys collected in 2014 were based on understanding initial perspectives on environmental change and the related challenges with respect to water provisioning as part of Bakaic et al. (2018). These surveys focused on a series of structured questions on water security, water harvesting, and local knowledge about water resources. The majority of participants identified as Inuit and had resided in Iqaluit for five years or longer. Participants for these surveys were identified using snowball sampling (Biernacki and Waldorf 1981). In 2019, we conducted four unstructured and five semi-structured interviews, varying by participant type, to explore broader topics informed by responses given during the 2014 surveys. These participants were identified using web searches and our existing social network. Unstructured interviews with government employees at both municipal and territorial levels comprised three non-Inuit and one Inuit participants, and they discussed perspectives on climate change, water security, and the current challenges facing Inuit in local governance. Semi-structured interviews were conducted with four Inuit participants and one non-Inuit participant who was employed with an Inuit cultural NGO. These interviews followed a series of eight questions, from which participants were encouraged to diverge to talk about issues that mattered most to them.

Themes included how participants accessed fresh water in their communities, how they experienced climate change, their views of how Inuit are portrayed in popular culture along with global views of how climate change is experienced in the North. All of the 2019 interviews were conducted face-to-face at a place of the participant's choosing, often their workplace.

The questions prompted discussions involving climate change and its effects on the environment, social issues affecting Inuit well-being, Inuit representation and climate change in Western popular culture, and the ongoing role of education and IQ in Nunavut. The ideas, quotes, and perspectives generated from these interviews and follow up conversations have shaped the scope of this paper through a review of the emerging key themes from observations of climate change, perspectives on Inuit issues, and reflections on knowledge translation.

Data Analysis

Notes taken during both the 2014 and 2019 interviews and verbatim transcripts from the 2019 interviews were transcribed using speech to text software, *Otter.ai,* which we then verified for accuracy. Errors in transcription were corrected manually. A thematic analysis using an iterative coding process (Creswell 2013) was conducted to identify key themes and sub-themes contained in the interview transcripts. This was done manually by multiple, close readings of the interview data and then creation of memos and codes, which were then distilled and categorized into sub-themes and themes. We quantified the number of participants that discussed each sub-theme (Table 2). A word cloud was created using MAXQDA based on word frequency of the top 100 words used at least 5 times using the transcripts of the 2019 semi-structured interviews, including both interviewer and interviewee conversation (Figure 2).

Ethics and Consent

All research activities were approved by the York University Office of Research Ethics (ORE). Interviews were conducted with a Social Science research license 02 005 20R-M registered with the Nunavut Research Institute (NRI).

RESULTS AND DISCUSSION

The results from qualitative analysis of the 2014 surveys and 2019 interviews have been combined, organized into sub-themes, and categorized into three broad themes through hierarchical coding. Even though participants were largely asked questions about water and climate, they often spent more time discussing other issues, such as Inuit well-being and education. Sub-themes relating to relationships to fresh water, changes on the land, and understanding climate change through IQ were grouped under the theme relationships to *water and land*; sub-themes relating to pollution and sustainability, social issues, and Inuit sovereignty were grouped under the theme *Inuit well-being*; and sub-themes of Southern perceptions of Inuit and the North, challenges in teaching IQ, and climate literacy in the North were grouped under the theme *knowledge translation and colonialism* (Table 2). The word cloud generated from the most frequently used words from interview participants gives a high-level view of what we talked about (Figure 2).

Table 2: Themes and sub-themes that emerged from thematic analysis of participant interviews. Themes are listed in bold. Sub-themes are listed under the themes with the number in parentheses showing the number of times each sub-theme was mentioned.

Perspectives on Climate Change (n=16)		
Relationships to Water and Land	**Inuit Well-Being**	**Knowledge Translation and Colonialism**
Relationships to fresh water (9) • Preference for harvesting water from the land over tap water • Water levels dropping • Municipal water shortages Relationships to the land (4) • Seasons ending earlier than normal • Changes to timing of ice freeze-up and ice forming • Permafrost melt and drier conditions • Winter conditions becoming more dangerous with thinner ice Understanding climate change through IQ (4) • Climate is changing and has always been changing • Climate change discussed from a very ethnocentric viewpoint • Western emphasis of writing and statistics • IQ should be given same weight as Western knowledge • Western vs IQ approaches to wildlife management	Pollution & Sustainability (9) • Pollution ends up in the North following wind and ocean currents • Concerns about local pollution from dump, sewage, garbage, legacy pollution • No recycling, composting, or clean energy programs Social Issues (5) • Urgent need to address issues like housing, food security, and agency • With so many social issues, it's hard to focus on the environment Inuit Sovereignty (2) • Not enough Inuit have the training or education required for higher-level government jobs • Inuit are promoted before they are ready and burnout due to hiring pressures • Challenges with non-Inuit who come to work up North temporarily and are not invested in the community	Southern Perceptions of Inuit and the North (5) • Lots of misinformation about climate change in the North • Anti-sealing activism is misguided • Shallow representation of Inuit in Western culture • Inuit representation needs to come from Inuit themselves Challenges in Teaching IQ (5) • Need for more traditional winter activities for youth • Vulnerability when there is a lack of Elders and IQ Knowledge Holders • IQ isn't passed on like Western education; more emphasis on watching and doing Climate Literacy in the North (4) • Inuit education needs to be connected to the land • For many Inuit, Western education system was a negative experience • Classroom teaching often not relevant to Inuit lives • Anti-Inuit racism

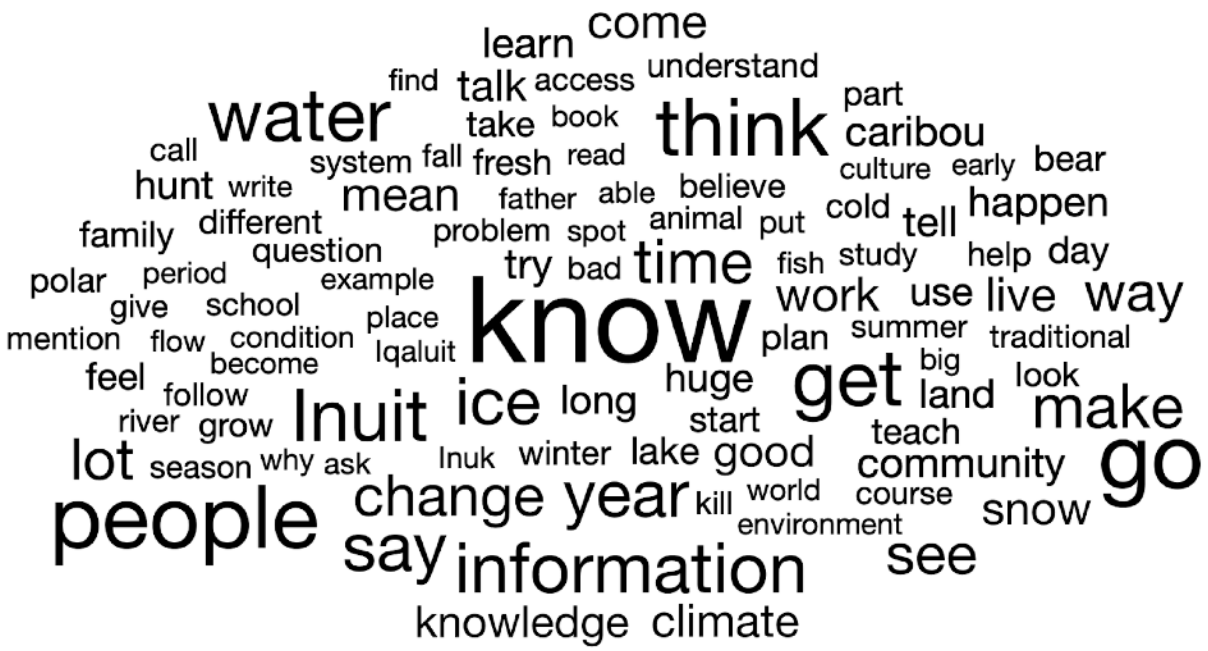

Figure 2: Word cloud based on word frequency from the five transcribed 2019 semi-structured interviews, excluding questions and interviewer comments.

Relationships to Water and Land

The structured surveys from 2014 identified water and pollution issues as important, therefore, in 2019 we aimed to better understand the relationship of Inuit living in urban centres to fresh water and to the land, especially in the context of climate change. Participants also spoke about the different ways that Western and Inuit perspectives differ in understanding the environment.

Relationships to fresh water

Even when tap water was identified as a primary source, several of the participants identified the ability to collect fresh water from the land surrounding their homes as important. Reasons included personal taste preference for drinking, cooking country foods, preparing tea for Elders, and convenience when out on the land. Several participants described tap water as either

looking or tasting different: “darker, sometimes with a shiny layer on top” (IR19-1), and “tast[ing] a little bit like chlorine” (IR19-2). Issues with water quality were also discussed in relation to pollution and its relation to Inuit well-being. Water from the land, on the other hand, especially ice taken from a glacier, was described as “the freshest water you’ll ever taste” (IR19-3). The cultural element to the harvesting of freshwater was identified by four participants; fresh water is also what “you'd use ... to make the yummiest country food … to make the yummiest tea, you use that water for the best reasons (IR19-4). Participants also described convenience; when going out on the land, for recreation or to hunt or fish, it is common for people to bring an empty container to collect water, rather than pack it from home (IR19-2).

Climate change is disrupting hydrological systems in the North, however, causing decreased water levels. Water quantity is reduced through longer ice-free seasons that lead to increased evaporation stress on lakes, reduced winter precipitation that leads to less available snow and ice melt off, permafrost degradation, and reduced snow and ice cover leading to increased exposure to solar radiation due to global warming (Medeiros et al. 2017). These issues have been further exacerbated by resource development, legacy contamination, inappropriate and inadequate infrastructure, population stress, inadequate policy and management, and erosion of Indigenous Knowledge (Medeiros et al. 2017).

> “I noticed that both in the lake here, in our water supply lake, which [has been] the issue now for over a year, that we have to resupply the lake from other resources. But also on the land, when you go hiking and you notice that a lot of the puddles that are usually there are either already dry or much lower in water than usual, and that the wetlands are less wet” (IR19-2)

Observations of lower water levels are consistent with other reports from Inuit Elders and Knowledge Holders, whom have reported how climate change is disrupting the patterns that they have relied upon for thousands of years for survival:

> "The rivers, which used to run healthily throughout the summer, have become very shallow in the summer, sometimes even drying out. We have noticed that the water levels are falling in most of these rivers" (AngutingunIQ in NTI 2001).

One participant mentioned that rivers that people used to be able to boat cannot accommodate them anymore (IR19-2), which illustrates how much conditions have changed.

Lower water levels in local reservoirs also impact the availability of municipal tap water. In the 2014 surveys, the majority of participants reported instances of their household running out of water. The harvesting of fresh water was seen as important for both Inuit and non-Inuit living in the North, for personal and cultural reasons, and climate change is impacting the relationships that people have with this important resource.

Relationships to the land

Climate change is having broad effects on the way that Inuit spend time on the land, affecting the timing for hunting, fishing, and harvesting, and making it more dangerous to travel on the land (Weatherhead et al. 2010). Participants described the effects from climate change have impacted hunters and communities who rely on country foods for sustenance and continuing traditional cultural practices (IR19-1, IR19-2, IR19-3). Inuit rely on snow and ice to travel long distances by snowmobile in the winter, and without the snow and ice, it can become costly or impossible to travel to far away camps and communities (Gearheard et al. 2006); "boating can cost up to ten times more in gas than it would to go by snowmobile" (IR19-1). The thickness of the ice has a huge effect on winter travel and is affected by three things: the temperature, the

snow, and the currents (IR19-1; Weatherhead et al. 2010). Warmer ocean currents and warmer air temperatures result in thinner ice, and snow, while good for the land, is bad for the ice; the snow will insulate the ice and it won't be thick enough (IR19-1). These factors make winter travel dangerous, especially for hunters: "This past winter in particular has been very different with the ice conditions, more dangerous ... I have to be extra careful or not go at all. And sometimes, I just don't go" (IR19-5).

Climate change is also affecting weather patterns, with warming temperatures affecting permafrost melt, altering patterns of flora and fauna (IR19-1, IR19-2, IR19-3). Several participants identified warmer and drier weather (IR19-1; IR19-2). "It was very obvious that the ice was much thinner and broke up much earlier than before, especially the thin ice". Permafrost thawing was identified as a concern, as it affects houses, roads, and other municipal infrastructure (IR19-2, IR19-4, IR19-5, CI-1). The warming climate is also leading to changes in plant growth, along with new flora and fauna appearing where they had never been seen historically: dandelions, different insects, and salmon (IR19-2; IR19-3).

With all of these changes, some participants stated that IQ has become less reliable than it was in the past, which makes it more difficult for Inuit to be on the land. To adapt to this, there has been increased use of modern technology to be safe: ice charts, tidal charts, communication devices, and satellite tools (IR19-1; IR19-2). These tools, used in conjunction with IQ, have the best chance to help Inuit be safe on the land:

> "Traditional knowledge should still come first. There are so many reefs, tides; if you haven't learned from hunters where the safe spots are, the best map won't help you. It's dangerous when the winds are shifting..." (IR19-2)

Although these adaptations will help, it is important to make sure these resources and tools are made available to all Inuit to ensure that opportunities to travel safely on the land are available to all. The multi-faceted ways that climate change is affecting Inuit is worth further study and efforts should be made to help Inuit adapt so that they are able to maintain their traditional culture, especially given how much it is integrated into their physical and mental health.

Understanding Climate Change through IQ

Climate change as a concept is still rooted within a Western worldview, which is not necessarily shared by Indigenous Peoples. There were a few participants who expressed climate change as an imposed Western concept, with the idea that climate has always been in flux: “It always have been different timing. The time of the thawing out, the time the ice flows away, what time the ice melt[s], the time of snow melt, the time of the ice freeze up. It was never the same, and it's still never the same” (IR19-1). In this way, we can understand that weather and climate are not necessarily understood the same way, and with the same urgency, by some Inuit in the same way as Western society. Discussions about climate change still come from “a very Ethnocentric viewpoint” (IR19-2). Western knowledge also places emphasis on statistics and written knowledge, which puts Indigenous Knowledge at a disadvantage due to its oral history: “because it's not written, nobody believed it. It's our oral history” (IR19-1). One participant described a recent example of Western scientists not working with Inuit:

> ...even a few years ago, there were the celebrations for the [150th anniversary of Canada]. There was this ship coming up with researchers that were studying codfish for the last 20 years, and they've never talked to Inuit about cod ... And you know, they are considered experts in their field and there was not just one person, there was a whole ship of people who are basically saying oh, I've never been to the Arctic even

> though this is my subject for the last 15 or 20 years. So that's caused a lot of issues. (IR19-2)

There is still a need from Western academia to acknowledge the skills and agency of Indigenous peoples and the local populations that live in the places being studied (IR19-2).

There are historical and current examples of Inuit adapting to climate change. Wenzel (2009) notes how Inuit have been able to adapt to changing conditions by changing the prey species that they hunt. The period around 1000 CE had prolonged periods of open water that allowed bowhead whale hunting, but with the Little Ice Age that followed, Inuit were able to transition to living in smaller communities, using igloo dwellings rather than dwellings made with whale bone and boulders, and hunting caribou in summer, ringed seals in winter, and Arctic char in spring and fall (Wenzel 2009). More recent evidence from the period from 1800-1950 showed that loss of sea ice cover was also linked to decline in hunting of ringed seal and polar bear, but Inuit were able to adapt by switching to hunt narwhal and harp seals (Vibe 1967 in Wenzel 2009). Through these examples, there appears to be evidence that Inuit are fully capable of adapting to both warming and cooling climates.

Inuit Well-Being

When we discussed issues of water and land with participants, we would often end up talking instead about economic and social issues related to past and ongoing effects of colonialism. Climate change can not be viewed in isolation of socio-economic impacts, as there are intersecting issues that affect Inuit well-being including pollution and sustainability, social issues, and sovereignty.

Pollution and Sustainability

Pollution at a variety of scales was identified as a cause of concern, especially with the implications this has on harvesting fresh water, consuming country foods, and physical health. Local pollution was indicated as an issue for seven participants, including the majority of the 2014 participants, especially in the context of fresh water. Concerns of potential pollution included source pollution from local landfills, controversy over the location of the local cemetery, municipal sewage, as well as general waste from campsites, dogs, and snowmobiles.

> [...] we we still get water from further up the river but my mother and a lot of other fishers have started to be more cautious about where they're fishing where they're getting their water just because of the things that are coming in closer to like the sewage and the dump and things like that because they're right on the water like it's very, yeah, very much right there. (IR19-3).

Concerns about legacy pollution were also identified, largely stemming from past military and colonial expansion projects such as the DEW line or abandoned military bases:

> Like in Greenland a few years back, they discovered because of melting, there was an entire nuclear military base that the United States had there that they didn't dispose of properly at all. And now that it's melting all of all of that is being, like, directly put into our oceans ... If you look at how the tides work, I mean, all of the pollution from the world ends up up here. (IR19-3)

The Arctic is also affected by global pollution originating thousands of kilometres away (Watt-Cloutier 2015). Chemicals and pollutants rise in warm air and fall in cold air, moving out from the equator to accumulate in the poles, a phenomenon known as the “grasshopper effect” (IR19-1; Government of Canada 2013). Once these chemicals reach the poles, they no longer have enough heat energy to “hop” out, hence the concentration of pollutants in the Arctic

despite the relative lack of chemical sources in the region (GC 2013). Mercury and other semi-volatile compounds such as PCBs (polychlorinated biphenyls) are found in relatively high concentrations in the Canadian Arctic (Government of Canada 2013), and studies have found that the levels of some persistent organic pollutants (POPs) were higher in Inuit breastmilk than anywhere else in the world (Watt-Cloutier 2015). These pollutants contribute to worse health outcomes for Inuit, which are compounded by other socio-economic problems we will discuss later.

Green initiatives may be one way to help combat local pollution and promote clean energy, but sustainability initiatives thus far are lacking in the North. “We don't even have a recycling program here, or a compost program here. When those things were started, people laughed about them, and they never ended up actually working” (IR19-3). Plans to begin environmental programs like recycling and composting were announced in 2018 as part of a proposed new waste sorting facility and landfill, which would allow plastic and metal recycling, composting, diversion of tires and steel to the south, and processing of cardboard and wood into pellets to be burned for heat (Frizzell 2018); however, this has now been delayed until 2023 (McKay 2020). Without programs to recycle or divert waste, these materials instead accumulate in the North and contribute to pollution.

There are currently no renewable energy initiatives in Iqaluit, and dependence on imported diesel fuel contributes to social, economic and environmental problems. 99.4 percent of Nunavut’s energy comes from diesel (Windeyer 2014 in Herrmann 2017), with the Government of Nunavut spending 20 percent of its annual budget on energy (GN 2007 in McDonald et al. 2012). This limits the amount of funding that could go toward other needs like housing, education, and health (McDonald et al. 2012). The burning of diesel also generates

black carbon that accelerates the melting of ice and snow, and creates substantial air pollution (Herrmann 2017). A few participants mentioned opportunities for wind and solar energy, (CI-1, IR19-3); however, Iqaluit also has a 38' tide, one of the highest in Canada, that could potentially be used to generate electricity (CI-1, IR19-3). Until there is the leadership and capital to invest in such projects, Northern communities will remain reliant on diesel fuel.

Pollution and sustainability issues are important to consider in their effects not only on Inuit physical health, but also the costs that these have on Inuit society and the local economy. Pollution makes people and animals sick, contaminated land takes significant investment to remediate, and the reliance on diesel has a high cost and creates yet more pollution.

Social Issues

Participants identified social issues as the biggest obstacle for Inuit in their day-to-day lives, affecting physical and mental health and disrupting relationships with the land. The rapid shift from a subsistence lifestyle to the wage economy, especially seen through the lens of colonialism, has been dislocating physically, emotionally, and spiritually: "Honestly, in a place that has so many other social issues, and issues within systemic issues and things like that, a lot of people just can't afford to pay attention to [climate change] right now" (IR19-3). The Inuit Tapiriit Kanatami (2014) representing Inuit in 51 communities throughout Inuit Nunangat identified eleven social determinants of health; in our interviews, participants primarily identified housing, food security, and agency as key concerns. One of the main social issues affecting Inuit in Nunavut is insufficient and inadequate housing: "[The housing crisis] causes a shit ton of bad situations in every other area of this community and society and in the individual's life, and they're not solving that ... You know what a shortage of houses, what the

solution is? Housing" (IR19-4). Housing shortages and high rental costs lead to overcrowding, which in turn are linked to increased mental health issues, illness, and use of poor quality housing (ITK 2014). Overcrowding can also affect water security, as the more people are living in a dwelling, the more likely there is to be a water shortage (IQ14-1). Housing issues also reflect disparities between Inuit and non-Inuit Northern residents, as access to housing is also split along racial and class lines (McKay 2021). Until housing is addressed, Inuit will continue to have negative health outcomes.

Food security, with its inextricable links to poverty and unemployment, was also identified as an important issue, especially as traditional ways of hunting and harvesting from the land are being disrupted:

> "...things are changing, and it sucks because we've always been able to predict these things. And for families who still rely very strongly on traditional ways of life, and traditional hunting and fishing, things like that, this change is very much more of an impact ... there are people whose families are going hungry because ... this was their means of getting food for their family. And it's harder and harder to do." (IR19-3)

While 8.8 % of Canadian households experienced some form of moderate or severe food insecurity in 2017-18, in Nunavut this number reached 49.4 % experiencing food insecurity (Statistics Canada 2016). Rates of marginal food insecurity, households which worry about running out of food and are also associated with poorer health outcomes, are also higher in Nunavut: 7.6 % vs the national average of 4 % (Statistics Canada 2016).

Poverty is linked to a myriad of other social and public health issues. There are infrastructure challenges: one participant described incidents in Iqaluit where residents turn off the circulatory system that keeps water moving to save some money because energy is so

expensive (CI-1). In some Northern communities, electricity costs have reached "over 10 times the average Canadian price on a per kilowatt-hour basis" (Herrmann 2017). Frozen pipes in turn are also very expensive to deal with: just to dig a hole to access the pipes is about $30,000 even before any repairs (CI-1). Poverty is also linked to alcoholism, drug abuse, domestic violence, suicide, and other physical and mental health disparities (Cameron 2012).

All of these socio-economic issues are occurring in tandem with climate change effects, and for some Inuit, they don't have the resources to be concerned about climate change when they don't have adequate housing or know where their next meal is coming from.

> "I honestly think that if we have a healthy population, we will have a healthy environment. And I've already talked about the access to knowledge and access to programs in terms of climate change. Right now, when you're living in third world conditions, that's not a priority." (IR19-3)

Moreover, as permafrost thaw damages the already insufficient housing and dangerous hunting conditions erodes the ability for Inuit to harvest food from the land.

Sovereignty

Local agency and Inuit sovereignty are also important issues to consider; as Inuit become closer to self-determination they should be better equipped to address challenges relating to well-being and environmental change. However, several participants described challenges facing Inuit with securing representation at higher levels in the territorial government, with Inuit often at a disadvantage in the competitive process because they don't have the right education or credentials for these positions (IR19-2; M. GN1). There are also challenges with work culture and human capacity issues. One participant described some of these challenges: a relatively young government, a lack of corporate memory and maturity, more files and higher workloads

than in the south, and a tendency to promote people too quickly before they are ready (GN1). The pressure to hire Inuit employees is an especially complicated issue: Inuit pushed into higher-level positions too quickly are at risk of burnout or being pushed out of the system; at the same time, there was also recently a case where NTI won a lawsuit against the federal government for not fulfilling their obligation to hire enough Inuit as outlined by the Nunavut Land Claims Agreement (GN1). There is a need to ensure that Inuit are given the opportunities to get the education and credentials they need to succeed in the job competition process as well as have the ongoing support they need to succeed in their careers.

At the same time, there are southerners who come to the North to benefit from these open higher-level positions, people who are attracted by the higher salary, who want to be in a place where they can be promoted quickly or who simply couldn't make it in the south, who are able to benefit their careers in the North (IR19-2). While some southerners who move to the North may become good allies and advocates for Inuit, or perhaps even choose to live in the North permanently, there are other cases where southerners become depressed and resentful for having to live there, who only talk about their next vacation to the south, and who do not have a sense of pride or home (IR19-2). This can have a negative impact on long-term planning, because if people are not really invested in the outcomes of the decisions they make, they are not as likely to make well-considered decisions: for example, with drainage, the difference between a ditch or a pipe, or whether the result is aesthetically pleasing, doesn't really matter as much for someone who is leaving in a few years (IR19-2). Thus, southerners who are not invested in long-term Inuit well-being are themselves a detriment to Inuit well-being.

Knowledge Translation and Colonialism

Colonialism was identified by participants as an important factor that shapes knowledge translation and the negative effects of this on climate literacy in the North. Participants were asked about how both climate change is communicated in the North as well as the ways that the North is communicated to southern populations. Knowledge translation can have important effects in terms of mitigation of and adaptation to climate change and well-being.

Southern Perceptions of Inuit and the North

Systemic racism in Western culture, and legacies of colonialism, create challenges with how Inuit are perceived, which affects how seriously and how well-broadcast information about Inuit and Inuit-related issues are taken by the rest of the world. Representations of Inuit in mainstream North American media, if they happen at all, are shallow or affect tokenism (IR19-3, IR19-4), and misrepresentation is common (IR19-4):

> "[On a book villain being revealed as half-Inuk without any other context] I'm like, what does that mean to people who aren't Inuk, right? What, how did they read that and put pieces together? Because when I read it I was like, oh man, like, why have you done this to me? Right? Because that means something to me." (IR19-4).

Even big picture movies and television shows that take place in the North often revolve around stories of the white people who go there, with Inuit as interesting set pieces left largely unexplored (IR19-3, IR19-4). "I have a big problem with how we're represented in Southern media. And in- you know, like, just in stories that need- we need stories that we're telling, not stories that other people are telling for us" (IR19-3). Inuit storytelling and spirituality are sometimes construed as fairy tales that are alternately appropriated or disparaged (IR19-3).

On the other hand, two participants spoke to positive examples of Inuit representation in Western popular culture, including the documentary "Angry Inuk" and the

growing music scene, including The Jerry Cans, Kelly Fraser, and Tanya Tagaq (IR19-2). One participant felt that things were changing in regards to Indigenous representation as a whole:

> "...Indigenous People across the nation, across the world, that are recognizing that, all right, you know, you're playing us, but it's not authentic. We love the shows, we love the movies, we love the storyline. But if you don't include us, like, that's kind of saying we don't matter, but you'll use our culture. And today I can see it more that they're trying and doing their best to include Indigenous people in our, in all the TV shows and all the movies." (IR19-5)

There is overall a greater need for representation of Inuit by Inuit in Western mainstream culture, and for more careful and more meaningful relationships with Inuit for stories featuring Inuit or Inuit lands. At the same time, if southerners are unable to perceive the North as an interesting place or as something worth valuing, there will not be as big of an impetus to create policies and action to help Northern communities.

Southern perceptions about the North and issues affecting the North also impact Inuit. Five participants discussed the image of a scrawny polar bear taken by photographer Paul Nicklen in Nunavut in 2017 and published by National Geographic, which was shared widely on social media and used as an illustration of the catastrophic effects that climate change was having on the polar bear population (Blake 2018). The photo in the context it is most often shared in is meant to be emotionally manipulative, and in most discussions there is no mention that all animals face starvation or succumb to old age, or that polar bear populations in different areas will differ. For many Inuit living in the North, there is a different understanding on the overall population health of polar bears: for some communities like Arviat, they don't have an

outdoor Halloween because of the danger of polar bears (IR19-1), so the idea that populations are declining is in conflict with their lived experience.

> "From an Indigenous perspective, as someone who grew up hearing about all of this and with hunters in the family and eating polar bear … spreading this misinformation is only going to harm Inuit, because we're the ones who get targeted for hunting for survival, it's all sustenance, but we're the ones who are getting in trouble." (IR19-3)

Southern attitudes towards hunting in general tend to be harmful to Inuit, who have long relied on sustenance hunting or the income generated through the sales of furs and skins. Anti-hunting and -sealing activism diminishes both potential revenue streams for Inuit as well as denigrates important aspects of their culture, which includes hunting, fishing, and whaling traditions. Upholding the lives of polar bears and whales over the lives of humans is deeply problematic, but also, does not take into account the fact that Inuit have acted as stewards of their land for thousands of years. Inuit understand that humans are part of the natural cycle, and that without sealing, seal populations explode and they eat all the fish, and the whole system breaks down (IR19-3). There needs to be space in the global conversation for Inuit to advocate for their way of life and the celebration of their culture and traditions.

Challenges in Teaching IQ

Traditional Inuit education of children has been disrupted by colonialism and the rise of the Western education system with its classroom setting. Participants discussed the need for continuing efforts to bring IQ into the classroom and to take classes out onto the land (IR19-1; IR19-2). One participant discussed how he was taught growing up:

> "The way my father teaches, it's not in the school. It's out on the land. It's not showing how to do, it's what he is doing. One of the Elders told me ... 'You don't need

> to say anything, you just have to do it. Let him watch and he'll learn.' That's what he said. And I get that too. I mean, I was there with my father. He never said anything. He never said 'This is how you do it.' I just watched him. This is how I was learning. At that time, I was not thinking I was learning. At that time, I was too young. I thought I was just going out with him, having a good time. But it was teaching." (IR19-1)

There are ample opportunities to explore Inuk math and science through experiential learning that are possible: how the geometry and physics of an igloo work, how to butcher an animal, how the nourishment that comes from country foods sustains life and health (IR19-3). Participants mentioned the need for greater support and funding to promote IQ and to ensure that Inuit traditions are taught to Inuit children, so that families without money or access to the right teachers are able to pass down this knowledge:

> "...when it comes to the transfer of knowledge ... families have different, also colonial, experiences, some are stronger, some have lost their Elders, some have changed their focus [to the] modern economy. And you don't have the same resources in every family to actually pass on traditional knowledge or cultural knowledge." (IR19-2)

> "There's a lot of programs that are working towards bringing back our cultural practices and values, and all these things that I grew up with, and stuff I didn't learn. … there's a lot of things that are coming out from outfitters or businesses or Inuit organizations, and even the government is bringing a bunch of programs that are helping people with resources for hunting or fishing, or just learning how to make traditional tools or equipment like qamutik and stuff like that." (IR19-5)

However, there still needs to be more funding and infrastructural support, as sometimes these programs can be prone to vulnerabilities: "...a lot of those initiatives really depend on the

teachers. Like, that's our biggest problem in Nunavut, that also, you have this constant change of teachers [to] some degree. And a lot of the programs really depend on the individual" (IR19-2). Ensuring that IQ is passed down helps Inuit not only stay connected to their culture, but also to their language, their history, and the land and environment.

Climate Literacy in the North

Communicating climate change knowledge in the North has challenges depending on the audience, their background, and the format of delivery. For younger generations, this is exacerbated by a curriculum that is often not designed to fit well with cultural identity or existing knowledge of Inuit. Curriculum in Nunavut is still largely modelled after Alberta's K-12 curriculum, but with elements of IQ incorporated (GN 2017). Climate change may have been a topic that was glossed over or not taught effectively in school. In the 1990s, Environment Canada held a contest for children living in what is now Nunavut and the Northwest Territories to send in drawings, poems, and stories on the topic of weather and climate change. Most of the entries were related to problems arising from sudden turns in the weather when out on the land or talked about the origins of how certain weather came to be, while others talked about weather that doesn't occur in the North, like hurricanes and tornadoes, or weather that occurs very rarely like lightning (Natcher et al. 2013). Only a few entries talked about climate change, which shows that students were not taught directly about climate change, or the exercise was not done the same way by all of the teachers. In the future, a curriculum that speaks directly about what climate change is and why it matters would help students and their communities to address these issues better.

Climate education in Nunavut may also be hampered by issues with the education system as a whole. In 2006, Justice Thomas R. Berger called the state of education in Nunavut a

"crisis" in his report to the government of Canada: only 25-30 % of students in the territory graduated high school (Berger 2006 in McGregor 2010). In the 2016 census, only 32 % of Inuit adults aged 25-64 in Nunavut reported having a high school degree or equivalent (Statistics Canada 2016 in ITK 2018). This gap in education, coupled with decline in the passing on of traditional knowledge, may be a contributing factor to lack of knowledge about climate change. There are also still lingering issues with the current education system in terms of its colonial origins and systemic racism—there are still educators who believe that the curriculum needs to be dumbed down for Inuit:

> "We have science. We are scientific thinkers, we had to be to survive here. But going to school here, I was … being told, like, Oh, we have to dumb down the curriculum for Inuit students. You know, Inuit aren't good at math, Inuit aren't good at science, like focus on the arts, because that's how Inuit make their living. And that's great, you know, I'm glad that arts is a huge program and a huge part of life because that's also an important educational tool. And it's also extremely important in our culture. But at the same time, we need to have more of a focus on science, but it needs to be Inuk science." (IR19-3)

Climate education for residents of Nunavut is an ongoing goal of the Government of Nunavut through the efforts of the Climate Change Secretariat's office. Part of their work is aimed at capacity building with increasing climate change literacy through public service announcements and graphics about climate change (GN-3). They also work with local teachers to see what they're teaching as part of the curriculum, and work with Elders to explore ways of continuing oral traditions (GN-3). Because of the lower literacy levels, they try to use stronger imagery and other design principles like a strong text hierarchy to make things easier to

understand; they also try to keep messages people-focused, so that people can see themselves as affected by climate change (GN-3). These efforts assist not only in climate literacy but also with adaptation and mitigation strategies.

CONCLUSION

Climate change is negatively affecting Inuit relationships to water and the environment, and this is exacerbated by conflicts between Inuit and Western understandings of climate and environment. There is a greater need to listen to and understand Inuit perspectives to respect the knowledge that they hold, including observations of how climate change is affecting the North. Likewise, it is important to understand the perspectives of Inuit living in larger urban centres, who may have different perceptions than those in remote communities.

In our conversations we prompted questions that were largely about experiences of water and climate change; however, participants would often move into other topics, such as socio-economic issues and challenges in passing down IQ. These discussions showed how the environmental changes that are affecting hunting practices and food security in turn affect Inuit well-being. These conversations also revealed the influence of both climate change and colonialism on knowledge translation, which affects both climate literacy for Inuit in the North as well as Westerners regarding the North. Inuit well-being should be of primary concern not only for Inuit, but for the non-Inuit who live, work, and conduct research in the Arctic. Our participants identified that they were not well-equipped to tackle issues of climate change or knowledge translation when they had other more pressing concerns in their daily lives. Yet, there was recognition that the changing relationships with the land can lead to negative consequences for Inuit physical and mental health, along with break-down in the passing of IQ to younger generations as being on the land becomes less accessible and as IQ becomes less

reliable than in the past due to anthropogenic climate change. Colonialism is also still affecting the education system, and efforts are still needed to protect the transmission of IQ, Inuit culture and language. Knowledge translation is a concept that may be useful in communicating knowledge not just of Inuit culture, knowledge, and well-being for themselves and to non-Inuit, but also as a way to communicate climate knowledge, from both IQ and Western science, to Inuit.

More effort needs to be put into developing an integrated knowledge system for Western science and IQ, with care to not value either above the other. In Nunavut, there remains a need for increased capacity for Inuit and Northern residents to respond to climate change, while at the same time reducing the factors contributing to vulnerability such as poverty and housing insecurity. By fostering better communication comprising mutually accountable and respectful relations between Western researchers and Indigenous Peoples in ways that are dynamic, responsive, and embody reciprocity, we can both better use the knowledge that we already have and apply it more meaningfully. It has been the intention of this paper to show the resilience of Inuit and other Indigenous communities and to highlight their strengths in helping combat climate change and working towards building prosperous lives.

AUTHOR CONTRIBUTIONS

CJ and ASM designed and coordinated the study. CJ conducted the majority of the 2019 interviews, executed the qualitative analysis, and wrote the manuscript. ASM and SDW assisted with the analysis and edited the manuscript. All authors read and approved the final manuscript.

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CHAPTER 3: Magazine article for teens

For my third deliverable, I wanted to publish an article aimed at teens or adults that explained in more accessible language than my journal article about the types of issues I have looking at throughout my research: namely, climate change in the North, with an emphasis on environmental racism.

I believe there has been a shift in the public consciousness and pop culture awareness of issues with systemic racism as it involves anti-Black racism following the Black Lives Matter movement that became a powder keg issue in the United States last year after the killings of George Floyd and Breonna Taylor, and now more recently with anti-AAPI (Asian American and Pacific Islander) racism sparked by perceived associations of Asians with COVID-19 in the midst of the global pandemic. I wanted to create a parallel between these types of racism with other forms of systemic racism, and specifically, that of environmental racism, and how racialized communities disproportionately face the brunt of environmental pollution and climate change.

I especially wanted to highlight the challenges being faced by Inuit living in the circumpolar North, and to show how they are grappling with high levels of pollutants as well as the rapid changes to their environment caused by climate change. Additionally, I wanted to show the links between how the changes that happen there and at our poles will have global ramifications for people all around the world, and how this will impact different communities in different ways, with more negative outcomes for Indigenous Peoples, the global South, and the poor.

I aimed to write a magazine article between 900-1200 words that could be published in either a North American teen magazine, like Teen Vogue, or a Canadian mainstream magazine publication, like Macleans. This article is not yet published at the time of submission of my Masters Project, but I plan to submit to several magazines with the aim of publication.

Our Refrigerator is Breaking Down: Why Polar Ice Melt is Also Racist

This op-ed talks about how environmental racism disproportionately affects BIPOC communities.

By Clarissa Jewell

View from Iqaluit, Nunavut. Photo by C. Jewell, taken July 2019.

Systemic racism bleeds into all fabrics of our society, but perhaps we don't often think about how it affects our physical world. It wasn't until three years ago that I, a white settler living in Toronto, Canada, learned that Inuit in Nunavut are running out of fresh water. I had known that there are areas in our country where access to fresh water was an issue, but thought this was an issue of infrastructure, funding, and resources—and also a function of racism and colonialism. But in the North, it is the lands themselves that are running dry. This doesn't present the most obvious case for systemic racism, but if you follow the threads, they are there.

Last year in 2020, the police killings of George Floyd and Breonna Taylor tipped off the Black Lives Matter as a worldwide movement, and along with it came a growing understanding of how systemic racism, white privilege, and white supremacy prioritize white lives while simultaneously denigrating and endangering Black, Latinx, Asian, and Indigenous Peoples. While there have been calls in the United States and internationally to address these important issues, such as demands to defund the police, it is also worth evaluating other forms of systemic racism impacting marginalized communities that may not be as easily understood.

Among these, the slow-moving climate crisis serves to bring environmental racism to the forefront. 2019 saw the rapid growth of large international political movements centred around climate change and the activism of Greta Thunberg, a teenager from Sweden who became the poster child for the youth climate movement. Millions of people, including many school children and youth, attended so-called climate strikes demanding change from their governments, including calls for divestment from fossil fuels, protections against deforestation, and declaration of a climate emergency. Although it may seem on the surface level that climate change affects all of us equally—and it will affect us all in some way—the truth is that some will be more affected than others.

The concept of environmental racism is not new. African American civil rights leader Benjamin Chavis coined the term in 1982, describing the disproportionate impact environmental issues have on people of colour. Environmental racism is embodied in the Flint water crisis, in the polluted waterways in the Mohawk territory of Akwesasne, in the bodies of migrant farmworkers exposed to acute toxins in pesticides, and in countless other examples. Also useful is the concept of racial capitalism, which occurs when some human lives are valued over others to create a landscape in which these differential valuations allow for the accumulation of wealth and power in ways that can't be explained by racism or capitalism alone.

A frequent manifestation of environmental racism is evident when we look at the long-term and larger-scale effects of pollution. While pollution can be devastating at the local level, it doesn't always linger where it is produced—much of our pollution ends up in the polar regions. Pollutants like mercury and other semi-volatile compounds such as PCBs (polychlorinated

biphenyls) travel through air currents and have been found to occur at much greater concentration in the North. Remarkably, levels of some persistent organic pollutants (POPs) were found to be higher in Inuit breast milk than anywhere else in the world, leading to a number of negative health outcomes. Most of these emissions can be traced back to the United States. Barry Commoner, a researcher from City University of New York, found that Nunavut could have contributed, at most, 0.32 percent of the total toxins found there, while sources outside North America contributed only 2-20 percent. In other words, the vast majority of toxins were produced from North America, excluding Nunavut, with top polluters including U.S. Steel, Bethlehem Steel, and Southwire Company, among others. The consequences from these activities manifest hundreds of miles away from the source.

Exacerbating these challenges in the North are the carbon emissions that have led to our warming climate. The permafrost is thawing, which destroys homes and impacts critical infrastructure like airport runways and water systems as the foundations upon which they are built are no longer solid. Traditional Inuit Knowledge, accumulated over millennia of lived experience on the land, has become less reliable as weather becomes more unpredictable, which is impacting the transfer of generational knowledge. The melting of polar ice means that hunting and travel on the ice has become increasingly treacherous, and expensive—travel by boat is ten times more costly than travel overland by snowmobile. This in turn affects food security and has ripple effects into communities that already struggle with poverty. Food chains, hydrological cycles, and ecosystems are being disrupted. All of these are having material consequences for the Inuit who live in the North, not just for their day-to-day lives but also for their culture and mental well-being. These are just some of the costs when pollution is externalized, and it disproportionately affects BIPOC communities like Inuit living in the North.

Inuit activist Sheila Watt-Cloutier refers to the polar regions as the “refrigerator” of the planet. Areas covered in snow and ice reflect heat from the sun back into space, but as these areas disappear we lose this mechanism. In the past thirty years we have already lost 95 percent of the oldest and thickest ice in the Arctic, and the area is on track to be ice-free by the year 2040. This will lead to more extreme weather, including more frequent and severe hurricanes, forest fires, drought, heat waves, and extreme winters. We need to do our best to continue to lobby

Ice in the bay at low tide in Iqaluit, Nunavut. Photo by C. Jewell, taken July 2019.

our governments and exert political pressure for serious climate action—if we act swiftly, it may yet not be too late to keep climate change to 1.5°C (2.7°F), mitigate the worst effects of anthropogenic climate change, and help provide vulnerable communities with the tools they need to adapt.

CONCLUSION

Inuit face a number of challenges stemming from livelihood and settlement shifts, colonial legacies, and now climate change; however, these challenges are not insurmountable and there a number of strategies that Inuit can use to adapt and thrive into the future. These strategies, however, will require the political will and capital to implement, which may be further strengthened by good working relationships with Western scientists and organizations.

Knowledge translation as a tool can be used to teach different audiences information about climate change, water, and Indigenous Knowledge in a way that is culturally appropriate and understandable. This Masters Project created three deliverables aimed at a children's, teen, and academic audience in order to educate about climate change in the North, Inuit perspectives, and environmental racism. I believe there are further opportunities, especially in the realm of narrative storytelling and fiction, to create compelling stories that reach much wider audiences to showcase Inuit stories and to communicate the issues that they are dealing with. Arts-based education and media may be an effective way of sharing not only the realities of climate change with the wider public, Inuit and non-Inuit alike (Green et al. 2018), but also a chance to share the lived experiences of Inuit people with Western popular culture.

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APPENDIX A: Interview Notes

These interviews all generally follow the same eight questions, which were approved by York University's Human Participants Review Committee. However, the interviews were meant to more of an informal process, with questions as guiding points; participants were free to skip questions or to talk about things not brought up by the questions.

Use of personal pronouns in the answers below refer to the speaker. These notes are a loose transcription only, and have been edited for clarity.

July 25, 2019 - Torsten Diesel

Project Manager, Inuit Heritage Trust, Iqaluit

Note: Torsten is not Inuit; however, he is a resident of Iqaluit and works for the Inuit Heritage Trust, and I thought he would have an interesting perspective on Inuit issues as someone who advocates for the protection and preservation of Inuit culture and history.

What are your experiences accessing freshwater?

- Taking from the land is common. Most of my drinking water is tap water, but I prefer drinking water from the land. Preference is river water, it tastes way better. Ice is good too. When I go hunting and camping, I don't bring water with me, just an empty bottle. The tap water has a chlorine taste to it. I prefer running water, but will take from standing water if you can just take from the top without disturbing the sediment.

How have you been Impacted by climate change?

- Me personally, not that much, since I've only been living here seven years. I'm based in town, and can tap into the services that the city provides. The main impact is the changing weather. It's difficult to say if that's climate change or if it's just an anomaly in the weather. This year it was obvious that the ice was much thinner and broke up much earlier than before. This was the first time we haven't had any cracks in the first of spring; usually there are cracks that are opening you can use for fishing and gradually those cracks widen; this year this was a matter of only a few days, and then there were ice flows in the bay, and the ice was really thin
- The season ended a few weeks earlier than normal. Usually summers are really wet and cool, in my experience, but this year has been dry and relatively warm
- The water levels sink, both in the water supply lake, and also on the land, the puddles that are usually there, are dry or lower than normal. Usually when hiking he'd come back with wet and muddy boots, but now he doesn't have problems. Fish were running sooner, and you could fish earlier on the river but not on the bay. There were certain spots for hunting that were too dangerous that you couldn't go this year
- Plants are growing bigger. There's the first invasive species, I haven't seen dandelions that much before. I read in the news that there are as well as different insects coming up. There are sighting of salmon, rather than just char. Hunters in Pang saying there are more Orca whales than before. These are all signs that climate is changing.

- I was in Whale Cove nine years ago and there was a presentation with researchers there—their findings correlated with he Inuit observations. Some rivers they used to boat up in summertime were not boatable anymore. They found not that the rivers had less water, but the isostatic rebound of the land was faster. The flow of water was the same, just the land was rising higher, whereas in Nunavik it was the opposite, the ocean was rising faster. Pang had landslides a few years ago because of the melting permafrost, and here, at the Road to Nowhere, you can see spots where there was open permafrost and now it's collapsed

How have Inuit successfully adapted to climate change?

- I'm not Inuit, it's hard to say
- For one I think adaptation is a constant process, it's not like climate change was there and now climate change is finished, but a constant dynamic of figuring out what to do in a changing landscape. When it comes to hunting—in some ways it's nice to have access to running char earlier, but we need to see what other impacts there are
- Increased use of modern technology to be safe on the land, especially ice charts. Traditional knowledge of the land is still important, but is not as reliable as it used to be. Hunters have started relying more on communication devices and satellite tools.
- You want to work with both traditional knowledge and modern technology. Traditional knowledge should still come first. There are so many reefs, tides; if you haven't learned from hunters where the safe spots are, the best map won't help you. It's dangerous when the winds are shifting. Like if we see "oh, we're supposed to have south winds but we have north winds" from the maps and technology that's useful, but it's the traditional knowledge tells you north winds mean a storm is coming.

What kinds of activities and initiatives do you think might help Inuit to succeed in the future?

- If you're speaking specifically to climate change, it's a hard one to answer. Without addressing the social issues, there's not much economic or personal thriving
- The extended family is the core of your identity, and you're learning from them year round. Traditional knowledge encompasses all of the seasons and you have to know how to be on the land year round or you're not safe
- We're still in such a post-colonial society up here that there are some things that need to be addressed first: like housing, food security, and local agency. Agency includes all of the cultural aspects. If it was possible to address all of these issues and climate change at the same time, that would be the best outcome. If you don't have the resources to address housing and traditional knowledge, do you put effort into some housing and some TK at the same time so that some people are left with inadequate housing which could affect them even two or three generations later, or do you put everything into housing and risk people losing their culture?
- Looking at cultural particularities, for communities to thrive, there needs to be more effort put towards community building. Traditionally the core was the extended family, and with many families this is still the case. This can create bigger hurdles for larger communities to form unity. if knowledge is passed on through the family all with their own experiences and colonial experiences, families who have lost their Elders or traditional knowledge, families

don't have the same resources. If knowledge is kept insulated within the extended family, you don't incorporate the knowledge from the rest of the community.

How do you think climate change is discussed in the south?

- From a very ethnocentric viewpoint
- It's amazing how many tools and research potential there is in the south, and it definitely benefits our communities too. At the same time, I feel like in the southern discussion, at the academic level and access level, theories are being presented too fast as facts. Since you want to convey easy messages, a lot of the time complex messages are being simplified. There's a lot of risk is communicating misinformation. The southern attitude of putting emphasis on statistics and written material, there's the easy competition between Western and Indigenous knowledge, and not enough examples of these two disciplines working closely together. But even a few years ago, during the celebrations for the Canada 150, there was a ship coming up with researchers studying codfish for the last 20 years, and they had never talked to Inuit about cod, and they're considered experts in their field. There's still this dissonance, especially in the non-social sciences. It's important to speak to not just Indigenous people and local people in the places you are studying. You need knowledge and experience
- The sad polar bear image—the polar bears go through their own annual cycles, and the ageing process. The two things I remember, maybe two years ago, National Geographic photographer took a photo of a scrawny polar bear in Churchill. Another photo was a polar bear climbing to get bird eggs as an example of polar bears struggling, but that's part of their normal diet
- The southern debate needs more Northern knowledge, and traditional knowledge given the same weight as western knowledge

What do you think about how Inuit are represented in the media?

- Not much. It is changing too. It's neat to see an increase of the Inuit artist scene that is both national and international levels. Also actors like Johnny Issaluk and Vinnie. There's a growing music scene, like the Jerry Cans who've toured in Australia and Europe. Kelly Fraser who's winning some awards. Tanya Tagaq
- I think it's good that the movie Angry Inuk was really popular in Canada and reached quite a few people, even those who were critical of hunting who then had to reconsider their perspectives.
- Another really good advocate for Inuit representation is ITK. I feel like Etan is a really great president for them right now. He's gotten some criticism for not being a fluent Inuktitut speaker, but I feel like that's not the main thing to look at. He's well educated, well connected to his community, and has lots of networks and experience, is well-spoken—he knows how to put Inuit issues into the international discussion in a respectful way, which is what we need right now.
- A lot of people don't look at the North as an interesting place, non-Inuit who complain about being here and just talking about the next time they can get away for their next holiday, and that doesn't help Inuit be well-represented in the south.
- [*me: There are some people who criticize the white people who come to the North for a short time to benefit their careers, whether at the end of their career to top up their pensions or*

young people who are trying to advance quickly] It's a complicated situation, I'm white too, I'm not planning to stay forever, so I do see both sides, but I don't lump myself in with these other transients. I was talking with my banker, and he maybe said some things he shouldn't have, but a lot of people who come up too are people who are newly divorced and need the extra money or people who couldn't make it in the south—they can't be promoted down south they have some degree, there are lots of open positions here, unfortunately the Inuit workforce is not educated enough or didn't get educated enough yet to fulfill these positions yet, so they usually lose out in the competitive process. The decision-making positions are all filled with non-Inuit. You just have the Inuit heads who are representing the department. It's complicated.

- My boss here has a close connection to Greenland, and there are a lot of Danes living in Greenland, and it seems like a lot of Danes living in Greenland have a stronger sense of home when living in Greenland, whereas the non-Inuit living here don't consider the North to be "home" despite living here long-term. This seems to impact decision-making long-term, and creating a place that people feel they really want to stay at. Like for drainage, whether you have a ditch or a pipe or whether it's aesthetically pleasing doesn't really matter to you as much if you're leaving in five years anyway. The skidoo trails are a great examples. There's an entirely different transit system in the winter vs summer because of snow and wind conditions. The city hired consultants to research the issue, and all they did was set up warning signs where the connections are, but nothing has changed to help hunters

Do you play video games? Have you heard of the game *Never Alone*?

- No, I don't. Pang did something like *Never Alone*, but I can't remember what it was called or what it was about.
- We had before a strong video project, well-known anthropologist on enhancing their videography capabilities, working mostly in Arviat. One of those guys went on to work for the CBC and also started his own company.
- A lot of these initiatives depend on having the right teachers, and on individuals, so they're more vulnerable to risk if the next person doesn't have the same interests. For this reason, for when I founded the qajak club, I tried to prevent this by making sure my job is tied to the qajak club and my predecessor must be a board member and help with the fundraising and report writing to ensure the sustainability of the club

Do you think positive representation of Inuit in media could have an impact on climate change?

- More awareness of climate change will help. How you put the Inuit perspective in there—you need to be careful. It's easy to use a culture for a different purpose. My experience, especially with my experience living in Europe, is that it can easily go overboard the other way in idealizing Indigenous people as the bon sauvage, as "positive" stereotyping. If you generalize and say that Inuit do everything better that has its own problems, you still need to have a critical discussion. Try not to stereotype or generalize Inuit as a spokesperson for nature, that's my concern. Indigenous people should be seen as stewards and knowledge holders of a lot of important knowledge who can help Western researchers, that would be a huge benefit.

What advice do you have in navigating collaborative relationships with Indigenous people in a good way?

- My personal experience as a researcher is that people are usually pretty open and willing to listen and hear what you have to say, and will then tell you how comfortable they are to do stuff.
- Need to set boundaries and expectations, especially on the financial side. Figure out what knowledge can and should be shared.
- Communities need to be able to see the benefit for themselves

July 30, 2019 - Solomon Awa

Manager for Language Marketing; Department of Culture and Heritage, Government of Nunavut

What are your experiences accessing freshwater?

- Think of freshwater in terms of harvesting wildlife
- in winter we make water from the snow or ice, or drill down through the ice to get access to the river or lake
- It depends on the location. Here in Iqaluit our freshwater is very good, even drinking from the tap water. But in the other communities, they have artificial lakes, which was bombed to make the hole, but that hole is too close to the salt water level. It's also muddy, it's not clear, it tastes a little bit like salt. Here in Iqaluit we have glaciers, but far away. Some communities have glaciers nearby, so they can grab freshwater from the ice all year round.
- We have plenty of water
- When you asked the question, I was thinking about how we travel on water, and what fish are fresh, edible in the lake before now.
- All the bad chemicals and pollutants tend to rise in the warm air and fall in the cold air, so they fall into our water. Even volcanic ash can get into our water.
- I prefer water from the land. It has no chloride. If I make two different teas, one with water from the land and one with water from the tap, and everything else the same, the tea made with freshwater will be lighter in colour. The tea made from tap water will be darker, with a shiny layer on the top.

How have you been Impacted by climate change?

- In Western tradition, there are four seasons, and we know the seasons from the calendar. That's how we know that climate change is happening, because some seasons are shorter and then other seasons are longer. But in Inuktitut, we have six seasons, but they're not set to a calendar. The time of snow melt, ice freeze up, all these things, it was never the same and it's still never the same.
- I'll tell you a story. When I took the students from the south, I was the leader, we had four or five skidoos and about 40 people total: 20 from the south, 20 from the community with six or seven guides. We'd travel, and then we'd stop for something. And they always wanted to know why we were stopping, how long we stopping, etc. It always seemed like everything had to be according to a plan. That was what I learned. We don't have a plan, we don't have

a set time, we don't have "according to". We have a plan, but it's different than in southern understanding. For Westerners, things go according to the plan. For us, the plan is set to the according to.

- For example, imagine a plane trip. You probably want to know when. Let's say August 27, so now we have a plan according to the time. If it's at 1:15pm, we have to get there an hour before, so we can board to get to our destination. We have the plan, we have to follow it, and if you don't follow it you're left behind. Your brain is set like that. We don't have a plan set like that. We have a plan set to the environment. Like if I have a plan to fish on the first day of snow melt, it doesn't matter what day that falls on, I'm not late.
- Right now, we have a longer summer. The ice breaks up earlier and freezes later. We follow the season, not the dates.
- Have you been to the store Malikkaat? Do you know what it means? It's a flower, and it twists. These twists are the followers. It twists one way in spring, opens in summer, and twists the other way in the fall. We also follow the malikkaat, and wait for the malikkaat to tell us to do things. Another example, when people ask me if the fish are running yet, I ask them, have you seen any mosquitoes? You have to follow the signs.
- So yes, climate change affects some people, the ones who follow the dates. For the people who wait for the malikkaat, who follow the environment, it doesn't affect them.
- There's pros and cons for the changing weather. Longer summer is wonderful. But if there's too much heat during the summer, there will be too much cold in the winter. Once my father told me if there's no snow, it'll be extremely cold. The snow keeps us warmer; we can make igloos. The snow also helps the berries grow, it acts as insulation for the ground. Another con is that snow machine uses 90% less gas than boat usage. So, if I need to go across the river to a community in the winter I might need 30 gallons of gas. If I want to go on the boat, I can't go on the land, I have to go around the peninsula which adds time and distance, and I need four barrels of gas, ten times more than I'd need in the winter.
- We need the snow and ice to travel on the skidoo over long distances in winter. There are three things that affect the thickness of the ice: the temperature, the snow, and the currents. Warmer ocean currents mean thinner ice. Warmer temperatures are also not good for ice. Snow is good for the land, but bad for the ice; the snow will insulate the ice and it won't be thick enough. At least four people I know we've lost. There's one Elder that lost his legs due to hypothermia after going through the ice

How have Inuit successfully adapted to climate change?

- Inuit follow the moon cycle. I think farmers used to follow the moon cycles too. For clam digging we follow the tide charts now, but we used to follow the moon cycles in the old days. Traditional knowledge says the weather is the boss, no matter what. We also watch the cloud changes, we can read the clouds and can plan that way.

What kinds of activities and initiatives do you think might help Inuit to succeed in the future?

- I think we need more winter activities. There was a school trip recently, it was a bit stormy in the morning but our traditional knowledge told us that it would dissipate and be a good day, but they cancelled the trip. My brother was so upset. The officials, they want to go when the weather is right.

- I think the Elders would prefer we go out in the blizzard days. Yes, it's brutal, but you have to go through it. My father mentioned to me, you have to start doing it yourself, I won't be around. That hurt me, but it lifted me up—it made me more self-reliant.
- When my father would teach me, it's not like learning at school, it's on the land. It's not showing how to do, it's doing. My father never told me "this is how you do it", I would just watch. I didn't know I was learning, but he was teaching me. This kind of thing should happen more. Mistakes are okay, you learn your mistake, but if you make more than one mistake, you're not learning.

How do you think climate change is discussed in the south?

- That's a lot of people. In Canada, that's about 30 million people to ask, and that's only in Canada. What about the US? Americans still ask if we live in igloos. I think not long ago Donald Trump asked Trudeau if he was still with those igloo people. I'm not really worried about Canadians, because I feel like more than half have information [about living in the North]; they live in it.
- I think there's a lot of false information in the United States. Like the polar bears, that picture with the ice and the skinny polar bear. Some people believe it. Does that really affect the decision makers, the politicians? Another example is caribou migration. They think they're in decline, and scientists and Western people think this. We don't believe this. Our knowledge tells us it's on a cycle, it goes up and down. It's a 60-year cycle. They moved away from the island, and they'll come back to the island. The reason is because their food source, the grasses and other plants, grow so slowly. I was born in 1959, and my memory goes back to '64, '65. When I was born there weren't many caribou. I remember we moved back, we were in Pond Inlet in 1974 and the caribou started coming back, the people there had never seen a caribou, and my father had to teach them how to butcher it so you could make caribou clothing, so around then they started coming back. By 1999 there were so many caribou, even here in Iqaluit. Today, nothing, but I know from our traditions, from our oral history, they will come back. I might not be alive, but my children will see them.
- We were never worried about camping on the land in our tent, about polar bears approaching us. There's two possible things: there's not enough polar bears to walk around. Polar bears are loners, their radius is about 30-60 miles. If you come closer, they push you away. They have a keen sense of smell. If we walk, they can smell us. If they sense another polar bear, especially a male, they'll leave. So in a 60 mile radius, there's only one bear. But since the harvesting quota went in place, the population has been skyrocketing. If you go to Arviat, tomorrow, you might see them at their dump. They don't have outdoor Halloween there, they have indoor Halloween, that's because of the polar bears. Different seasons have different amounts of risk too. The not too old males are the most aggressive. The older males are not as bad. The mother bears are maybe the most aggressive, they'll kill to protect their cubs. The males will kill the cubs, not for food, but because they want to mate. Polar bears always have enough food. We have more defence kills since the quota system was put in place. I think also it's bad that we shoot them with rubber bullets—the bears learn they won't be killed, they lose their fear of humans, it makes them more dangerous.

Do you play video games? Have you heard of the game *Never Alone*?

- Do you want me to show you my phone? Haha. Yes, I do. In Pond Inlet, where I was raised, when the co-op introduced those things with the big screen I remember those. I also remember when televisions were introduced. Everybody was inside, that was kind of culture shock.
- So, I'm working on the language. There are people asking how we can keep our language alive. And I thought, what about a video game that was all in Inuktitut? It would have to be exciting, maybe have fighting in it so the kids like it. It would have Inuit characters too and be on XBox, PlayStation 2.
- One of the Elders said, we're not going to be going back in time. We're not going back to the igloos or the sod houses. We have to push ourselves in order to save ourselves, and invent new things. We cannot control the world.
- Back before, there were shamans. One of the shamans was speaking to a group of shamans, telling them he had had a dream, and there were faces that he had never seen before. A black face, a white face, a yellow face. He asked them what it meant. They concluded that it was their future. They knew that if we say no to these outsiders, we'll be killed. Instead, we need to welcome them, be with them, even have children with them, work side by side with them. If we try and tell them they cannot come here, we'll be destroyed. From that day, that has been the information until this day. If that story was not told, Inuit would very easily would have killed the outsides, but if we had, there would have been retaliation. That shaman's dream and the shaman's wisdom saved us.

Do you think positive representation of Inuit in media could have an impact on climate change?

- If you have the correct information, and you share it in the right way, I think it can help. Some of our knowledge and traditions are starting to be written down, and I think that will help. When the scientists listen to us nd cn corroborate the facts we already know, I think that will help too.

July 30, 2019 - Killaq Enuaraq-Strauss

Warehouse Attendant, Department of Health, Government of Nunavut

What are your experiences accessing freshwater?

- I've always been able to access freshwater. Our family has always been lucky to have access to boats, so I have lots of memories of taking a boat out to take water from a freshwater glacier. It is the freshest water you'll ever taste. Even the river here at low tide is freshwater. We still get water from further up the river, but my mother and other people have become more cautious about where they take water because of the dump and sewage contaminating the water
- Living in Iqaluit we never really had boil water advisories
- I still use tap water, but even now I have a jug of river water in my car. We use river water for drinking

How have you been Impacted by climate change?

- It is such a huge thing, especially here, it's something we're not talking about. We don'y even have a recycling program here, or a composting program. When those things were talked about people laughed about them. In a place where there are so many other social issues going on, a lot of people just can't afford to pay attention to it
- I'm very grateful I was able to get an education outside of Nunavut, an education that focused on marine life and marine biology, as well as having exposure to other parts of the world, I can see how climate change is affecting things here. For example, the caribou moratorium that came up because of the declining caribou numbers. Things like that might seem insignificant, but forInuit, who've had our way of life has changed so quickly, so intensely, and so negatively in many regards, something like that can really affect how we are and how we live. It's not just a food source, it's our home, so when things happen it affects us. It's depressing
- In Clyde River where my mother is from there was a huge case on seismic testing that they wanted to do off the shores. There was a huge protest by the community and luckily it made a difference and it's been postponed, and that's great, but there's not regard for the well-being of animals.
- Recently, the federal government declared a climate change crisis, and then the next day signed on for this huge pipeline. Trudeau said we care equally about the economy as we do on climate change. How can we be prioritizing this false concept of money that doesn't really exist outside of our heads over the death of the planet?
- Nature here is changing. Plants are growing higher than ever before. We're seeing birds we haven't seen before. We're seeing bugs that we've never seen before—do you know how terrifying that is to Inuit women? Things are changing, and it sucks because we'd always been able to predict these things. For families who still rely strongly on traditional ways, it has an even greater impact. I can laugh about some things [the bugs], but there are families going hungry.
- As someone who grew up here but who is only half-Inuk, and who's spent the past six years in the south studying, something that had a huge impact about how climate is viewed in the south is how much propaganda there is. [*me: the skinny polar bear?*]. I was just in a class, environmental science class, in university and the professor was talking about how we as scientists have a duty to listen to Indigenous people and to listen to their knowledge, and then he shows this picture of this darned polar bear and tells us all the ice is melting. As someone who grew up with all this and grew up eating polar bear, spreading all this misinformation is only going to harm Inuit, because we're the ones who get targeted for sustenance hunting. Polar bear lives aren't more important than Inuit lives. If you want Inuit to be active in the conversation, it needs to be assessable space and a place where we don't feel like we're evil
- I think to me, the worst is the sense of [in]humanity. In Greenland a few years back, they discovered because of melting there was an entire nuclear military base that the United States had there where they didn't dispose of things properly, so because of everything melting it's going directly into the oceans. And if you look at ocean currents, a lot of the pollution of the world ends up here. If you don't see it it doesn't matter to you, but here we do see it

How have Inuit successfully adapted to climate change?

- I'm honestly not sure I can answer this question. I've been away for too long; I've been living in the south for ten years.

What kinds of activities and initiatives do you think might help Inuit to succeed in the future?

- If we have a healthy population, we'll have a healthy environment. I've already talked about the access to knowledge about climate change, but when you're living in third world conditions it won't be a priority. At the same time, it needs to be culturally relevant. I'm a firm believer that education doesn't mean you're going through a system that was literally designed to kill you. Western systems were designed to see us fail. I think the best thing for Inuit youth would be to have an academic environment that is as traditional as possible. I can't imagine how we would feasibly do that, which sucks. But I think it's what would help, because we'd have Inuit who are connected to the land, but it'll make education something that we want. Education as it is now here was one of the worst things that happened to me, and it's like that for many others. Growing up here learning about physics, we had these random examples from these far away places when we could have been studying the physics behind building an igloo and how intricate that is. English scientists don't speak Inuktitut and don't understand we have our own vocabulary for these things. We have science, we are scientific thinkers—we had to be to survive here. Going to school here, I was always told we had to dumb down the curriculum for Inuit, because Inuit aren't good at math or science and to focus on the arts because that's how Inuit make their living. Arts are still important, but at the same time we need to be more focused on science, but it needs to be Inuk science—things like butchering an animal, eating that animal, understanding that nourishment. Culturally relevant, Inuit-run education is to me, going to be the life-changer.
- Access to the land is also important. It's one of the things that brings me the most joy, the most peace, and it's something that I think here in the capital city we're the most removed from. If we're removed from it, how can we respect it? We need something in place so that Inuit youth still have opportunities to be on the land, especially for those who can't afford to go hunting or be out on the land.
- So yeah: education and access to the land. Oh, and recycling programs, composting programs! I have so many ideas for renewable energy. Did you know that our dump is constantly burning? It's always on fire. Why aren't we using that as a source of energy? Or the fact that we have such as high tide—they have a buoy system in Italy that works, I'm sure there's a way to make them ice resistant and have them work here. And wind? We have crazy strong winds here. There have been wind turbines set up in the NWT before, and because of the ice and conditions they're just sitting there not being used, but in Alaska they have the technology to have them work. For solar power, in the summer, we have enough energy to store it for the rest of the year. But because there's no money in any of these we're going to keep going back to oil. I think it's also because there aren't enough Inuit in science.
- [On greenhouses] it's that the UV and the heat to keep them up is so expensive. I do think the greenhouses are great, but I also think it's kind of silly to spend money on greenhouse programs when that money could be going to hunting programs. It's still the diet Inuit bodies work best on. I left here when I was 16 to go to school in BC, it was wonderful, but my stomach couldn't handle the food. You don't feel healthy when you don't have fresh meat. When you're homesick, you miss the food. For me it's seal, caribou is a close second.

What do you think about how Inuit are represented in the media?

- I think that all representation is bad representation unless it's representation from that individual from themselves. In terms of Inuit representation, we're not being represented on our own terms. For example, there was a movie recently, *Iqaluit*, and it was a white director, and you could tell by the tone of it it was from a southerner's perspective. It touched on all of the trauma without actually getting into it. It's tone deaf, it's not actually relevant to how we think or who we are. Or another example, Marvel has a character Snowguard, who's an Inuk superhero. I read the first little bit that was released, but none of it felt relevant. They're taking Inuit spirituality and Inuit deities and turning them fantastical. I think that's a problem with Indigenous spirituality in general, they're seen as fairy tales rather than actual theological beliefs and actual lifestyles that have allowed us to survive for a million years.
- I've been to so many conferences where I've felt like a token, to say what they want me to say and have the perspectives that they expect me to have. We need stories that we're telling, not stories people are telling about us. Like, for Snowguard, I think there's one Inuk person working on it. I tweeted at the head guy at Marvel in Toronto and told him Inuit have been artists and storytellers for generations, so why aren't there more Inuit working on this? And he tweeted back asking if I had any names, but that's not my job. We don't have time for that, I can't do your job for you for free.
- I think we're being seen as more aggressive these days, especially activists, but they way that they're talked about online, it's exhausting.

Do you play video games? Have you heard of the game *Never Alone*?

- I haven't played *Never Alone* yet, but I want to play it, since I had a "no games while at school" and now that I'm here in Iqaluit the internet is so bad I can't download it.

Do you think positive representation of Inuit in media could have an impact on climate change?

- In terms of representation, as long as Inuit are speaking for themselves. But even for me, this is my view but I don't represent all Inuit either, there's a diversity of opinions amongst Inuit too.

Other points

- Another important point is about activism and especially anti-hunting activism and anti-sealing activism and how it relates to climate change. It comes from this really ignorant point of view. If you don't kill the seals, the populations will get wild and they'll eat all the fish and the whole ecosystem will break down. There's knowledge that we have as Inuit. Saving the planet doesn't mean saving every single animal, but actually being part of those cycles in a way that is natural and normal and resourceful. We're animals too. Southern activism isn't helping at all, it's just marginalizing us from the conversation.

August 1, 2019 - Johnny Issaluk

Actor, Cultural Educator, Diver, Hunter, Traditional Inuit Games Athlete

Note: I originally interviewed Johnny on July 24, 2019 at the Frobisher Inn over dinner; however it was too loud to record and too awkward to take notes over dinner, so although we spoke at length I did not feel comfortable to trust my recollections of our talk. I met with him again the morning of August 1st in a quieter space where we would be able to record.

What are your experiences accessing freshwater?

- Experiences overall good, freshwater easy to get
- For really fresh water, easy to go and get jugs from the land, but also drink tap water
- For Elders or people visiting, prefer to have water from the land
- Glacier ice is the best, but from snow, lakes or rivers also good

How have you been Impacted by climate change?

- Ice conditions have been changing, last winter in particular conditions have been different, getting to hunting spots with respect to ice conditions is more dangerous; sometimes he doesn't go
- Caribou have been impacted by freezing rain in the past

What kinds of activities and initiatives do you think might help Inuit to succeed in the future?

- Lots of programs are coming out now to help Inuit learn about their culture, from local organizations, businesses, even government to help people get resources for hunting and fishing, learning to make traditional tools like qamutik, etc.
- Sedna and Students on Ice isn't just for students--though it helps students get hands on experience in the Arctic
- Sedna is about awareness, great program, proud of it and lucky to be part of it; Arctic is rich is culture, animals, land
- People want to use the Northwest passage for their shipping companies, dangerous for our environment
- Lots of direct benefits for Inuit communities WRT cruise ships--people on the ships economically support people, buy their art, support traditional activities

How do you think climate change is discussed in the south?

- Youth down south are doing amazing work in advocating for what's happening in the Arctic [WRT climate change]
- I pay more attention to what the youth are doing than with the politicians are doing, as with politicians is always 50/50, even though they have more power; youth are our future and they will be the ones to make a difference for my son who's four years old
- Things are rapidly changing: ice melting, permafrost melting so fast, with ocean warming we see a lot of mammals washing up
- New inventions are helping, one person could change the world

What do you think about how Inuit are represented in the media?

- Today it's getting better because of all Indigenous people around the world who are recognizing that even though you're playing us but it's not authentic; Indigenous people like watching TV and media and they enjoy it but they also feel like inauthenticity makes them feel like they don't matter
- I was just in a TV show called *The Terror* that included a handful of Inuit actors and made an effort to make it authentic; I was very skeptical because it was filmed in very hot places, but when I watched it I was blown away by how good it was
- When I read the script I was very surprised as to what they had already known that I'd thought about; they seemed to have done their research; some little things were contributed by the actors as well to make it more authentic; script was already translated into Inuktitut and the English actors had already been practicing Inuktitut
- Friends and family were excited to see Inuit in such a big production

Do you play video games? Have you heard of the game *Never Alone*?

- No, I don't play video games very often. Occasionally I'll play something with my son, or once in a while play VR games, but very rarely. I'm talking to somebody about a reality game, but it's still in the works.

Do you think positive representation of Inuit in media could have an impact on climate change?

- We're constantly trying to educate people about how we live up here and what we've accomplished; I've taught at over 600 schools and people are still asking questions about whether we still live in igloos or if we have internet
- The more people we talk to the more people we'd have on side
- Loaded question--we have extremists who are fighting for what they believe in. It doesn't matter if you educate people if they have their own beliefs; you can't force people to live by what you believe because you think that's the only way
- I do my best to live by what I know and what I was taught
- In the big cities, it's all about pleasing "the man", he just wants money; if you don't just stick to your 9-5, you're screwed; sometimes you don't have time to learn about the rest of the world, even your own country
- Part of my work is to educate people, mostly at a youth level, because they're gonna end up working, but they'll also have an understanding that the Arctic is part of us, and that's my hope

August 1, 2019 - Jessica Kotierk

Curator, Nunatta Sunakkutaangit Museum, Iqaluit

What are your experiences accessing freshwater?

- So here living in Iqaluit I don't really do anything with freshwater; I just use tap water. But I do feel like if I wanted to, I could talk to someone and get someone to tell me how to get freshwater. I do have the idea that you use freshwater to make the yummiest country food, the best tea. When I'm with my father, who's a hunter, that is something more that we talk

about, that someone will be the one to go and get the freshwater. It's specific to your location, you need to know where the best spot is.
- I remember we had a family reunion, we had a boat trip to where my father grew up, and we would collect water from the ice

How have you been Impacted by climate change?
- I don't think I've noticed climate change. I don't know if maybe I'm too young and unaware of environmental things, and I'm a homebody, so it doesn't really affect activities I like to do. But I hear about it affecting people I know, and I believe them.

How have Inuit successfully adapted to climate change?
- I think Inuit like to talk about being adaptable in general, and in sharing information between family groups, and having that community network makes it so that there's an issue it's not something just one person deals with, it gets around.
- Very strong family and local connections is something that Inuit are known for, and having that local knowledge. It's not about developing a brand new technique or changing the animals we're hunting. On the other hand, people on Baffin Island can't hunt caribou anymore because of the moratorium.

How do you think climate change is discussed in the south?
- It's really depressing. It's used like a blanket statement without talking about particulars, or talked about like it's something that happens somewhere else. The heat wave currently on in the south was communicated as if "hey, it's finally happening here too" which kind of lets you know that before it wasn't something they felt a part of.
- If polar bears are doing good or not has nothing to do with climate issues, it's a separate issue. Discussion about climate change gets sidetracked, even talking about the validity of climate change science instead of focusing on the issues that are affecting people. Weather, soil erosion, these are big monumental issues that people aren't talking about.

What do you think about how Inuit are represented in the media?
- I just read a book, you know the television show Bones? They're based from books. The second book is called Chef Du Jour and at the end of the book, the villain turns out to be half Inuk, but there are no Inuit in the rest of the book, it's not set in the North, and it was unnecessary. The book is from the late 90s, but I feel like if it was written today, there would have to be more context about how the woman became a villain and bringing any of the context of an Inuit experience into the narrative, or talking about issues like residential schools or intergenerational trauma.
- There's also shallow representation. The film Iqaluit is about a white man whose white wife comes to visit and finds out about his secret other family, but there's nothing about the nuance of Inuit lives or explaining anything from the Inuit point of view.
- My father was in *The Terror*, and I was in Budapest when they were filming. I read the book, but it's mostly about white men, and the hierarchy of the ship, their supplies—there's only a short chapter at the end that talks about the Inuit side of things. Overall, it was fine, but it wasn't by or for Inuit, and showed Inuit as one homogenous group, which they are not. It was fine, but it's they weren't showing it correctly, but I know why you're not doing it correctly, because you don't know you're not doing it correctly, and it won't matter to your viewers

because your viewers are mostly non-Inuit and won't know you're not doing it correctly. They wanted to do something, for example, and I could tell by looking at it it was something from Alaska, and they didn't know they couldn't use it.

Do you play video games?

- I don't play video games, but I am aware of *Never Alone*. I feel like I wouldn't really play it but I do want to check it out, but it wouldn't work on my tablet.

Do you think positive representation of Inuit in media could have an impact on fighting climate change?

- I don't think so. I sometimes wonder how we tell people we're at our last straw. If you look semi-capable, people think you're fine. So, how do you say we're desperate for help, but don't come here and try to do it for us? People can feel like they're off the hook because of the efforts of other people or thinking people are resilient and I don't need to help.
- The housing crisis causes huge problems, and it's a simple problem. Housing! You don't need feasibility studies or flow charts, just make more houses. If they suck, just adapt them, fix them, edit something that's there. Individuals right now have nothing to work on.
- I don't think people are really aware about water issues. I know that Iqaluit has a water shortage, and I'm aware of it, but it doesn't seem like a big issue. Like, you can't wash your car, but I don't have a car, so it's not an issue for me. One time I read a self-help books about dealing with problems, and they split it into quadrants, and it was saying you should be focusing most of your time of issues that are not yet problems, so things don't become a crisis.

APPENDIX B. Non-Culture Interviews and Co-Interviews

July 17, 2019 - Brian Springer

Superintendent of Water and Sewer, City of Iqaluit

This was the first interview I was part of, which was lead by another student researcher, Sevrenne Sheppard. This was really informative for me because it helped give me a baseline of what the water infrastructure in Iqaluit is currently like and the challenges they are facing.

Some of the discussion was about infrastructure; I learned about the Utilidor system, which is how many residents in Iqaluit and some other communities get water to their homes. We talked about some of the current problems that this system is facing, especially with regards to the melting permafrost, and steps that the municipal government is taking in order to address them, like trying to install new flexible joints and changing the thickness of the pipes. Leaks are a big issue, and that's something they're trying to address. The also have challenges where some residents will turn off the circulatory system that keeps water moving to prevent it from freezing to save some money because energy is so expensive, but sometimes that would result in pipes freezing which is also very expensive to deal with. Just to dig a hole to access the pipes is about $30,000 even before any repairs.

Currently, at Brian's level, he was only aware of planning one to two years ahead though he acknowledged there may be longer term planning going on that was not shared with him. They are aware of low water levels, and consulting was looking at either pumping from the Apex River or Sylvia Grinnell River, with the Engineering Department to decide. Iqaluit is projected to double in population by 2025, so having adequate water supply will only become more critical in the future.

We also talked a bit about energy, and the fact that there's currently no renewable energy initiatives in Iqaluit. Wind and solar are the more obvious cases, but Brian also pointed out that Iqaluit has a 38' tide, one of the highest in Canada, and that that could potentially be used to generate energy.

July 18, 2019 - Meredith Clayton

Program Manager, Water Strategy, Department of Engineering, Government of Nunavut

This was another interview where I tagged along with Sevrenne, where she led the interview and I was mostly listening. We talked about the water strategy in Nunavut and the challenges involved, including capacity and turnover. I also learned a little about how the devolution of water responsibilities is being negotiated. There are currently no policies or regulations about freshwater as a resource or sustainability, and the water board currently has no mandate for human health risk; however, the Department of Health has its own initiatives regarding drinking water, including assessing multi-barrier source to tap risks.

I learned more about the influence that Nunavut Tunngavik Incorporated (NTI), who represent Inuit, has on both the devolution process as well as their role in the water strategy. Although issues like food security, contamination, and travel seem to be more important, water security may become a bigger issue in the future. Mining might also become another big issue in the future, especially with warming temperatures and melting permafrost due to climate change.

We also talked a little bit about work culture and the human capacity issues in government in Nunavut. Because the GN in particular is a young government, there's a lack of corporate memory and a need to mature. People tend to have more files and a higher workload in the south. People can also be promoted too quickly and get out of their depth; they don't have a chance to get enough experience before they are moved up. The pressure to hire Inuit can also be a challenge, as they too are pushed to be promoted before they are ready. On the other hand, NTI won a lawsuit against the federal government for not fulfilling their obligation to hire enough Inuit as outlined by the Nunavut Land Claims agreement.

July 23, 2019 - Andrew Dunford

Director, Climate Change Secretariat, Department of Environment, Government of Nunavut

This was the last interview that I did jointly with Sevrenne, though she asked most of the questions. This was a shorter meeting and most of the useful things I got out of it were suggestions from Andrew of other people I should contact and resources I should look into.

It seemed that his office was doing a lot of work preparing for devolution. We talked about the potential for self-governance in Nunavut, as well as the development of a youth advisory committee. We also talked a bit about Iqaluit's need to diversify its water supply, and to learn more about where people gather water when they're on the land.

July 31, 2019 - Will Hopkins

Communications Specialist, Climate Change Secretariat, Department of Environment, Government of Nunavut

This interview I did one-on-one with Will, but I've placed it here as I did not ask him the same scripted questions as in Appendix A, but instead wanted to ask him more particularly about how he communicated climate change to people in Nunavut in his job.

Will is a graphic designer, and as communications specialist, he creates public service announcements, designs graphics about climate change, and does media monitoring. Part of the work he does is aimed at capacity building, by increasing climate change literacy and doing permafrost mapping with CGS and Housing. He helped to create the Homeowner's Guide to Permafrost. Will works with teachers to see what they know and what they're teaching as part of the curriculum. His office also works with Elders and in exploring ways of continuing oral traditions. They try to reach people multiple ways, such as community nights, tea and bannock

events, through radio and broadcasts. He made the point that they try to make items for iPods, since not everyone has a smartphone.

I asked Will how his office communicates climate change--he said they design their reading material to be at a 5-6th grade level. Material is also usually made available in four languages: English, French, Inuktitut and Innuinaqtun, and sometimes using other regional dialects of Inuktitut. Because of the lower literacy levels, they try to use stronger imagery and other design principles like a strong text hierarchy to make things easier to understand. They also try to keep messages people focussed, so that people can see themselves as affected by climate change.

APPENDIX C: Children's Drawings and Stories

THE SUN THE MOON AND THE CROW

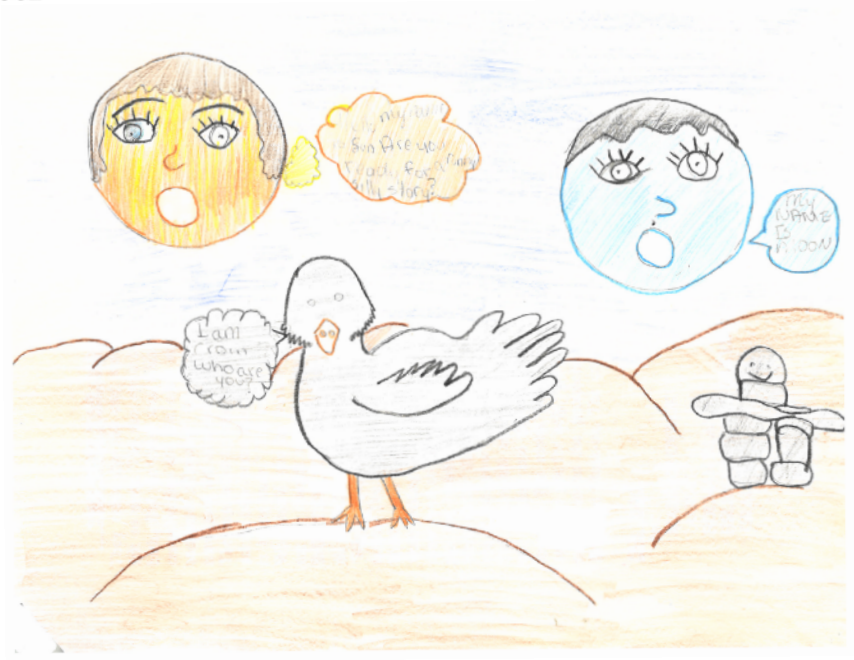
They other day the sun went to go have a bath because she felt so dirty. The sun came down to the water falls to take a bath. But the crow was taking a bath.The sun didn't see the crow.Neither did the crow see the sun. The sun jumped up and said" Mommie" the sun started to go back up and the crow saw the sun and said "Go away. It's my turn to bath." The sun went up and started to cry. The moon came and asked how come the sun was crying.The sun said"That crow is being rude." The moon went straight to the crow and said" Why don'd you be friends with the sun." The crow said 'why me be friends with the sun! Never in your whole life BUSTER."The moon went up and had 3 tears but that was all right.The sun said "Mean crow, right." The moon said "Right."Maybe we should bring guns and bombs" said the moon. The sun and the moon split up and went to go look for bombs and guns. They went back to the spot where they were talking. The sun and the moon went to go check if the crow was still there. But he wasn't there. So the sun and the put the bombs and guns on the ground. ground. The sun went under the water falls and the moon was watching to see if the crow is coming. The sun took 4 hours in the bath. The moon fell asleep and the crow came while the moon was not looking and the crow shot the sun. The sun got shot by the hip. The moon woke up and said "whats wrong?"The sun said "Go ask for help." So the moon rushed back to town. The moon ran to the paramedics.The paramedics were Polar Bear and Musk-ox. The crow was in jail for 25 years.

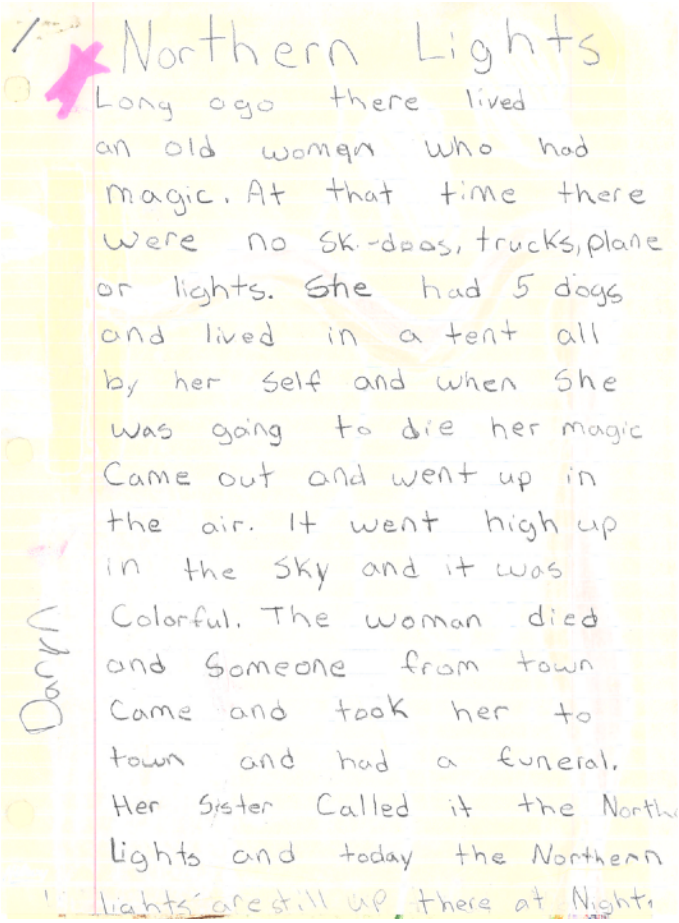
the end

by
MARILYN OVILOK
AGE 11
HOLMAN ISLAND
HELEN KALVIK ELIHAKVIK SCHOOL
GRADE 6

"The Sun The Moon and the Crow"
by Marilyn Ovilok

Grade 6
Helen Kalvik Elihkvik School
Holmon Island





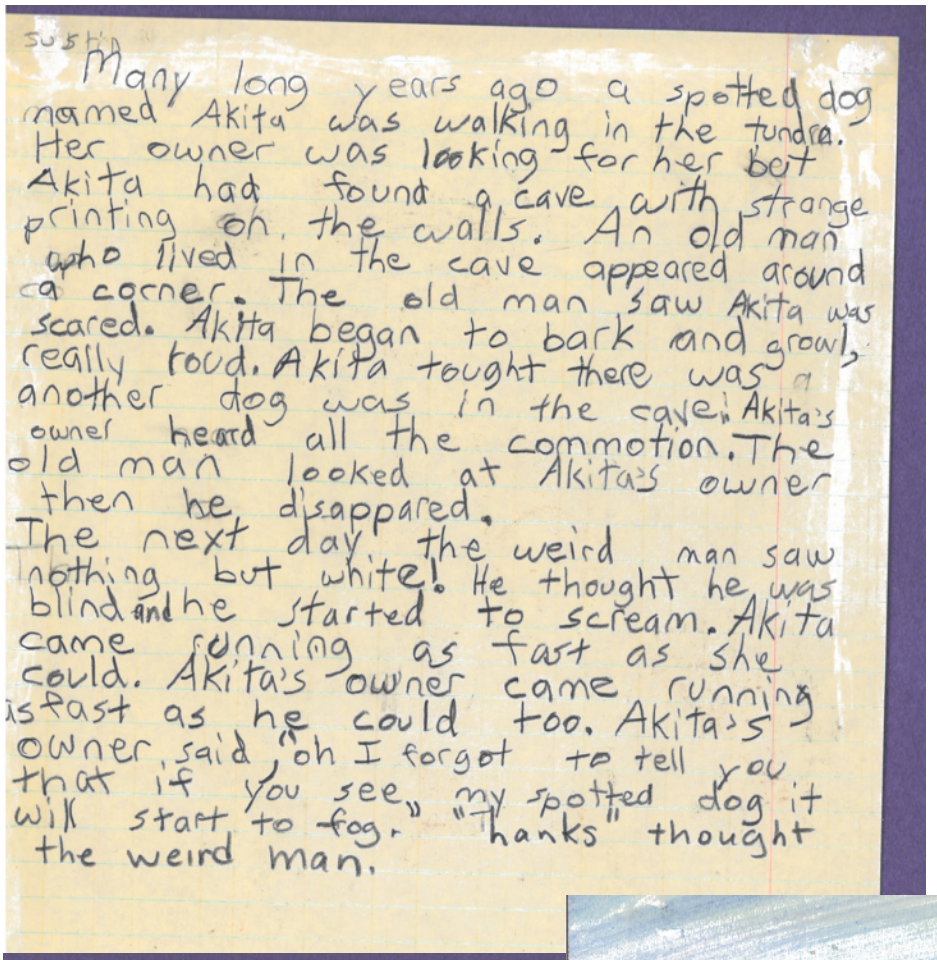
Northern Lights

Long ago there lived an old women who had magic. At that time there were no Sk-doos, trucks, plane or lights. She had 5 dogs and lived in a tent all by her self and when She was going to die her magic Came out and went up in the air. It went high up in the Sky and it was Colorful. The woman died and Someone from town Came and took her to town and had a funeral. Her Sister Called it the North lights and today the Northern lights are still up there at Night.

Daryn

Northern Lights
by Daryn Archie

Grade 6
Moose Kerr School
Aklavik



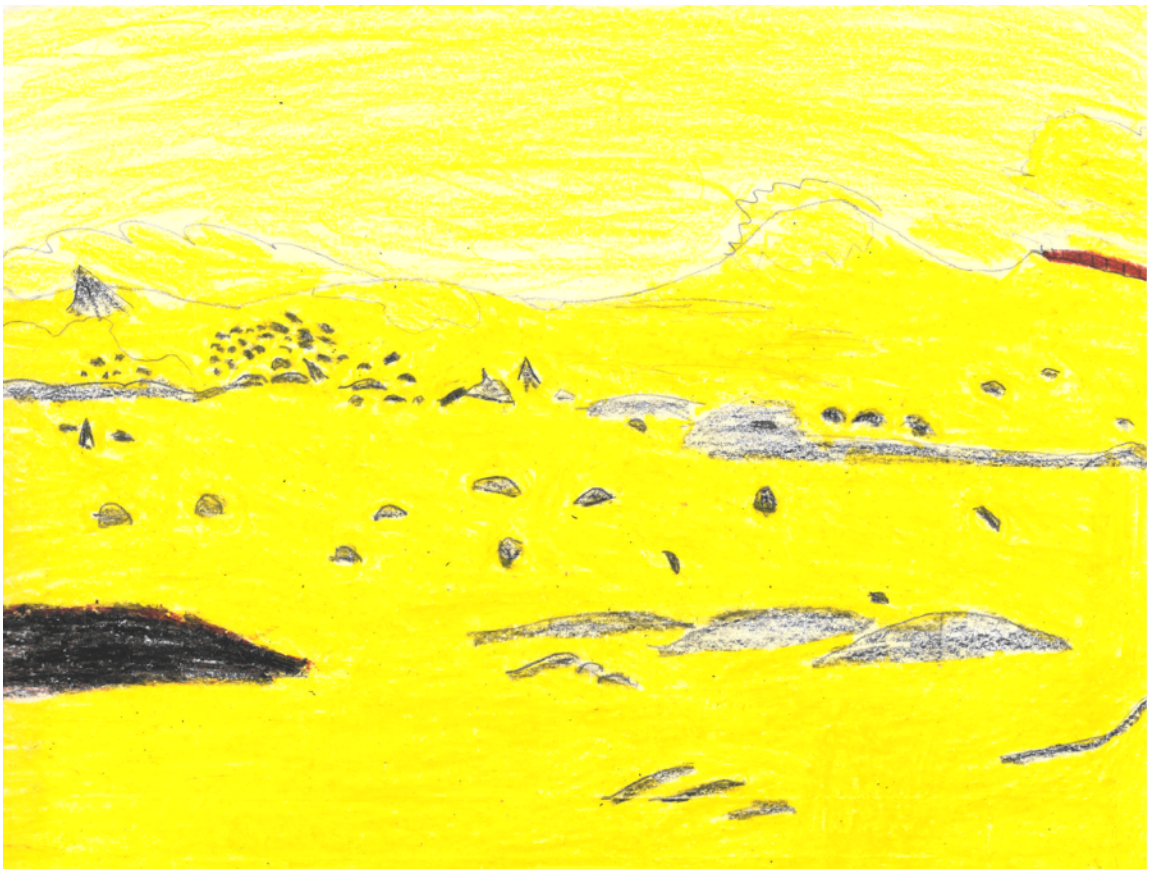
Justin

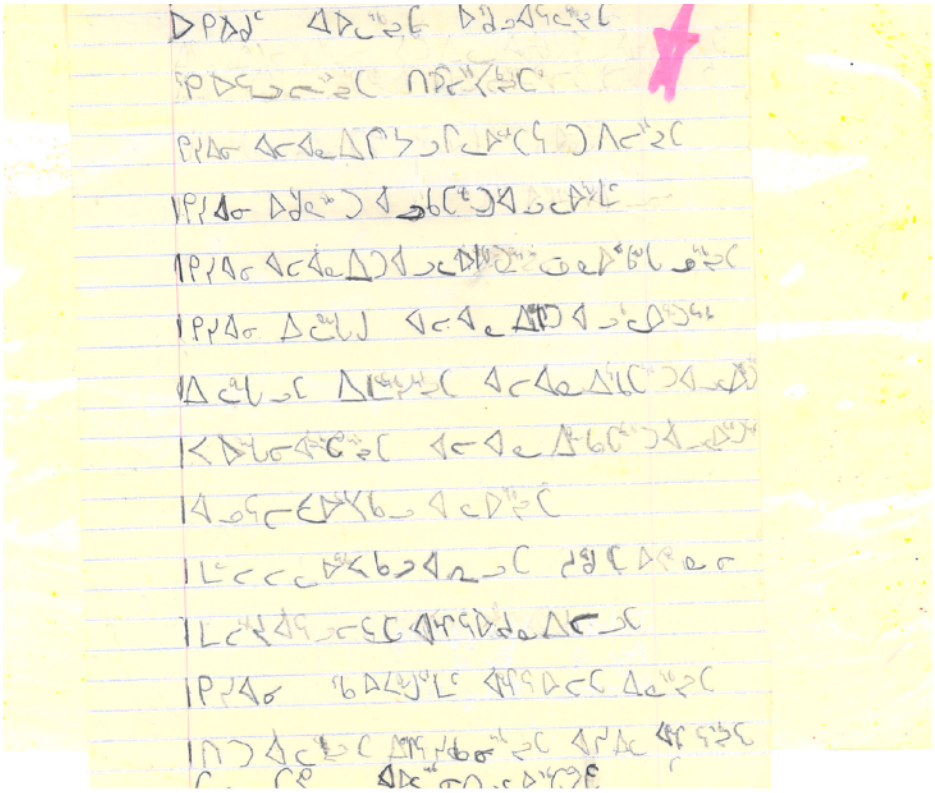
Many long years ago a spotted dog named Akita was walking in the tundra. Her owner was looking for her but Akita had found a cave with strange printing on the walls. An old man who lived in the cave appeared around a corner. The old man saw Akita was scared. Akita began to bark and growl, really loud. Akita tought there was a another dog was in the cave. Akita's owner heard all the commotion. The old man looked at Akita's owner then he disappared.

The next day the weird man saw nothing but white! He thought he was blind and he started to scream. Akita came running as fast as she could. Akita's owner came running as fast as he could too. Akita's owner said "oh I forgot to tell you that if you see my spotted dog it will start to fog." "Thanks" thought the weird man.

"The Spotted Dog"
by Justin Bourque

Grade unknown
Fort Smith





Untitlted
by Julian
Iqaqqsaq

Grade 4
Arctic Bay

The moon shone brightly on the calm water. There wasn't any noise but the sound of an owl hooting. The rocks were shining brightly. The sky was beautiful and blue. The smell of the air was breath taking. It was a gorgeous summer's night. It was great walking out side.

I called my friends Andrea and Madeline and told them to come. We all agreed to go to the whale's Tail sculpture.

When we got to the whale's Tail we saw some dark green northern lights. For a while Andrea was looking at the northern lights. Then she started to whistle. As she was whistling the northern lights got lower. They seemed to be coming right at us.

Madeline started running. She fell on a rock and the northern lights chopped her head off. When Andrea saw Madeline Andrea started to panic. Andrea couldn't move until I hit her by her shoulder.

I told Andrea to rub her finger nails before the lights cut her head off. Andrea started rubbing her finger nails. The northern lights began to go away. As they were going away the northern lights made a sign of a happy face; then they disappeared.

Andrea and I ran to town to tell what had happened. People couldn't believe it. We took them to the body to prove we were telling the truth.

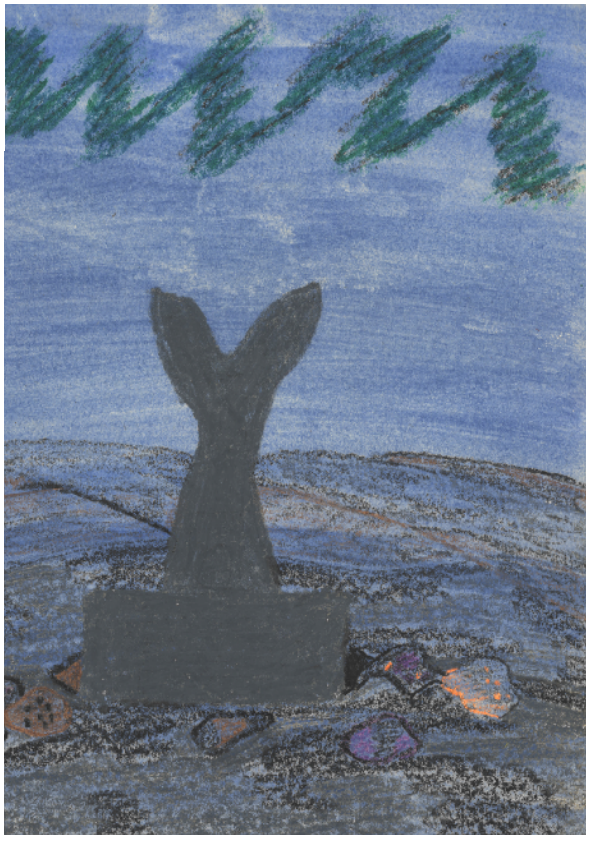
Every one learned that the old story was true and no one ever whistled at the lights again.

note: The Inuit used to believe that if a person whistled at the northern lights the lights would come down and chop their head off.

Gloria Kowtak
Inuglak School
Whale Cove NT
X0C-0j0 Box 90.

Untitlted
by Gloria Kowtak

Grade unknown
Inuglak School
Whale Cove



It was a beautiful day. The bright sun was shining. The high white clouds were moving towards the south . There was some little sik-siks playing out on the soft slushy snow. As i was walking i relized that spring was coming.

All of a sudden a blizzard came out of no where. The storm out side was very white . The cold wind was blowing stronger and stronger.

When i was walking the wind was diying down. The blizzard snow was getting clearer. i kept listing to the wind whistling.

When i was listning to the wind whisling i fell a sleep on a snow bank. When i got up i was stuck in a tunnel that piled up so fast. inside the tunnle it was warm with the soft snow packed around it. I couldnt get out for a while but i manage to open a hole with my feet. I made the hole bigger to get out. I got out and it was the most beautiful day . Ijust started walking back home , amazed at how fast the weather could change up here in the north.

Michelle Sabourin
Gr. 9.
Inuglak School
PO Box 90
Whale Cove NWT
X0C 0J0

Untitlted
by Michelle Sabourin

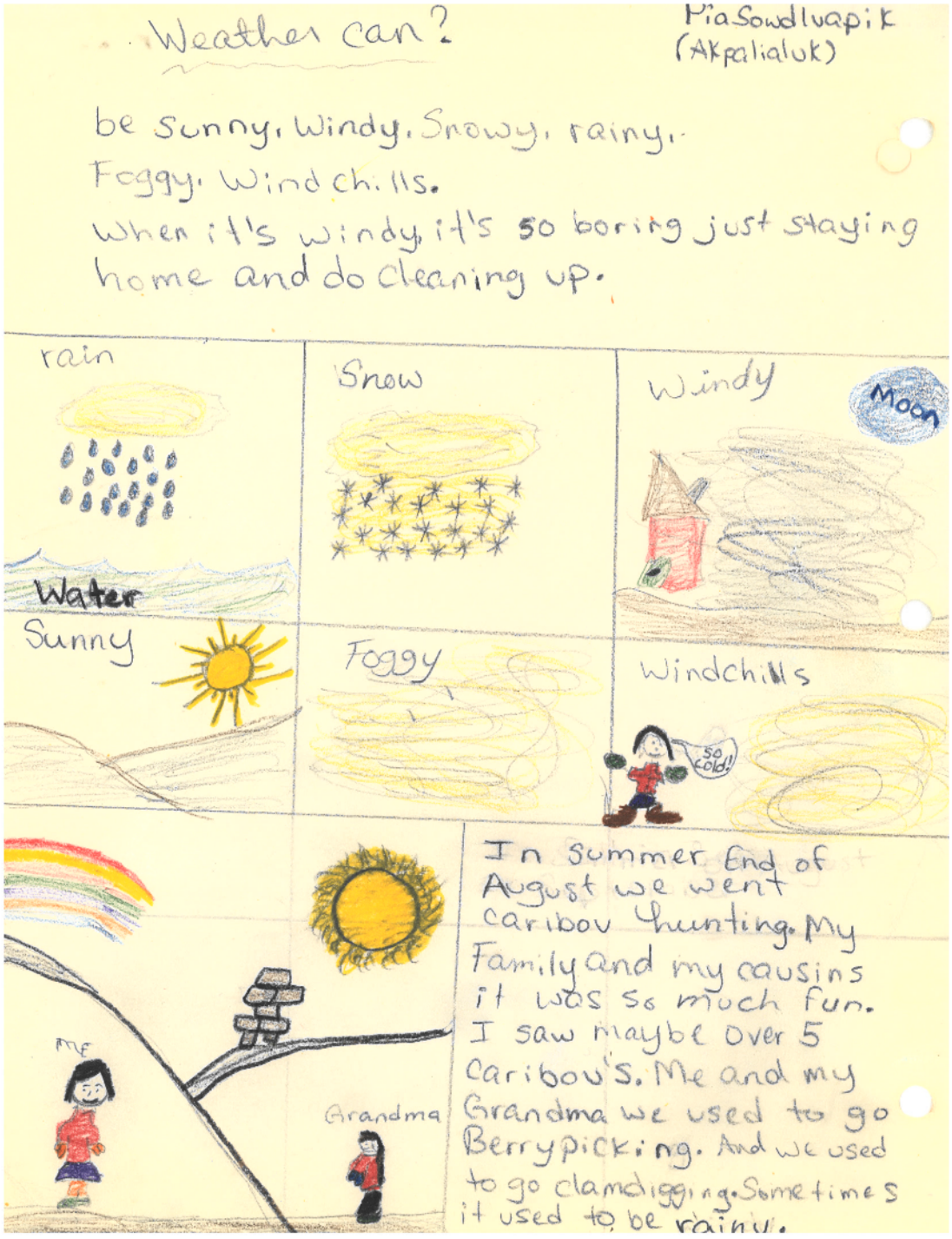
Grade 9
Inuglak School
Whale Cove

Above: Untitled
by Siuraq Pitaulasie

Grade 7
Peter Pitseolak School
Cape Dorset

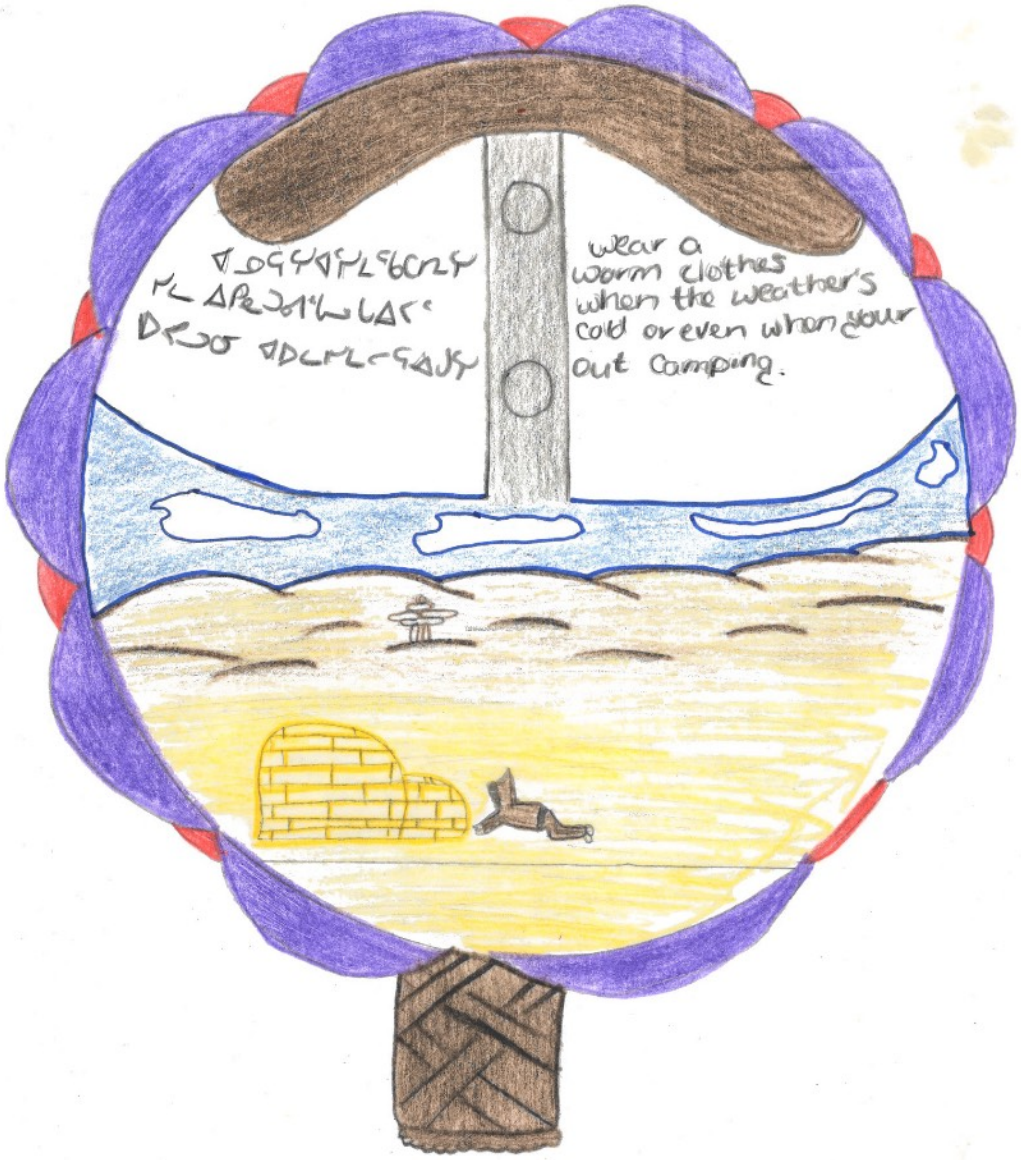
Below: Untitled
by Justine Perry

Grade 4
Mangilaluk School
Tuktoyaktuk



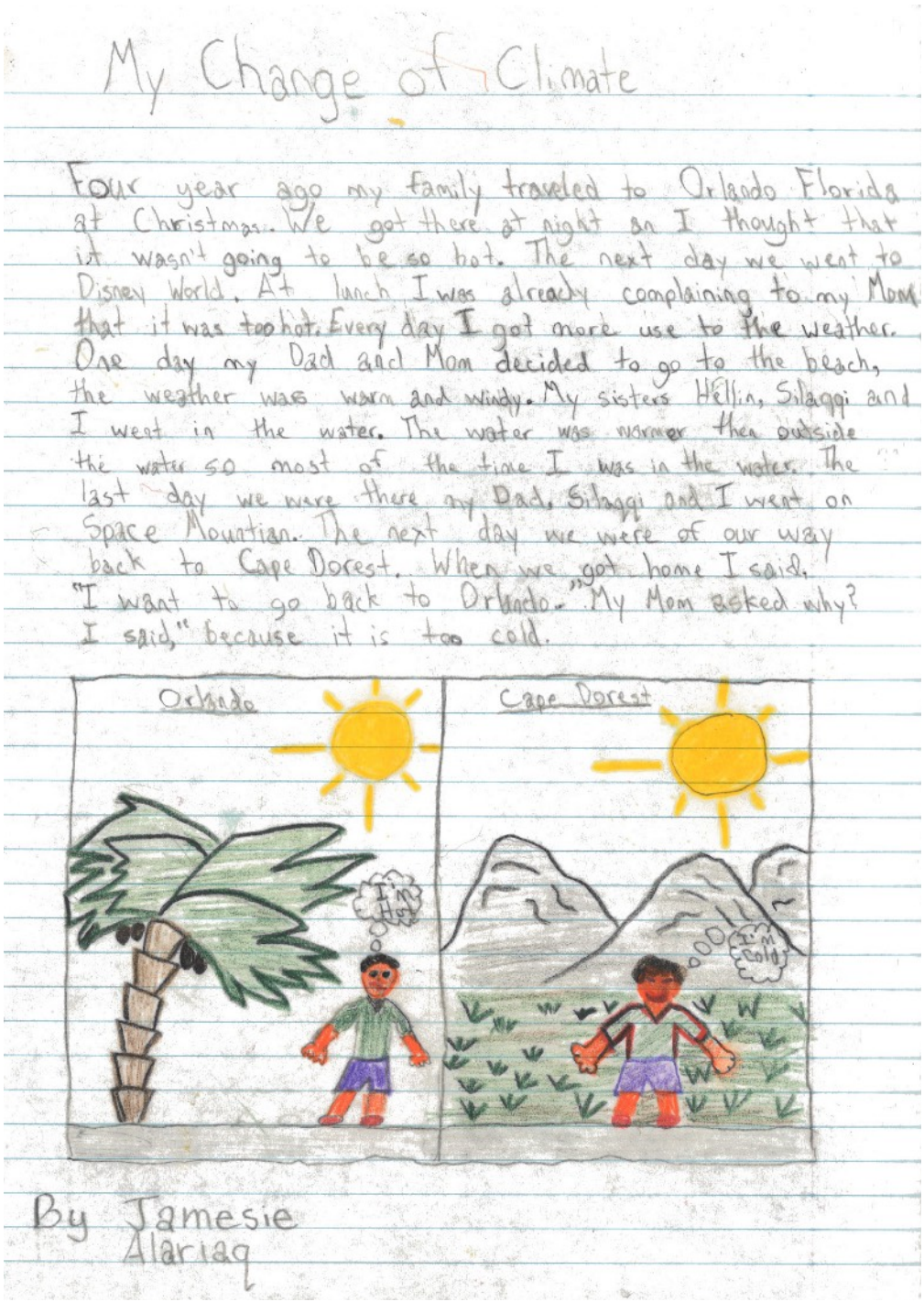
Weather Can?
by Pia Sowdluqpik

Grade 4
Pangnirtung



Untitled
by Mialisa Peter

Grade 7
Peter Pitseolak School
Cape Dorset



My Change of Climate
by Jamesie Alariaq

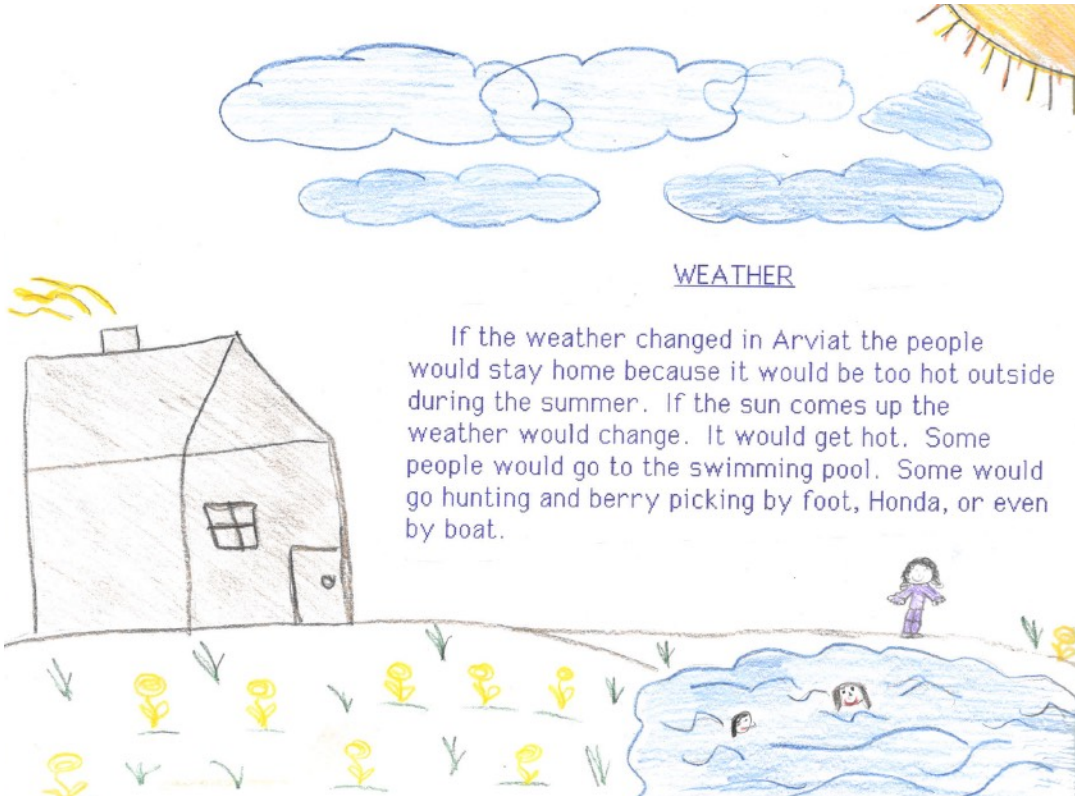
Grade 7
Peter Pitseolak School
Cape Dorset

Untitlted
by Brett Saville Anderson

Grade 4
Mangilaluk School
Tuktoyaktuk

Untitlted
by Kyle Kuptana

Grade 4
Mangilaluk School
Tuktoyaktuk



Weather
by Shannon Okatsiak

Grade 8
QitiqlIQ School
Arviat

IT WAS A COLD MORNING. THE SUN, BIG AND DARK ORANGE, SHONE BRIGHTLY ON THE LAND AND WATER. ITWAS SO BRIGHT THAT IT ALMOST MADE ME BLIND. I WAS COLD AND TIRED OF HUNTING AND DECIDED IT WAS TIME TO HEAD BACK TO TOWN AND MY NICE WARM HOUSE.

ON MY WAY HOME MY MACHINE BROKE DOWN. I STARTED WALKING BACK TO TOWN. IT WAS SO HARD WALKING AND TIRING CARRYING ALL MY SUPPLIES. THE LAND WAS SO ROUGH AND THE SNOW AND THE ICE WERE SO SLIPPERY.

THE WEATHER WAS GETTING COLDER AND COLDER AND I WAS GETTING VERY WEAK.

THEN I SAT DOWN TO TAKE A REST. IWAS TRYING TO LISTEN FOR OTHER PEOPLE AND LOOKING FOR SHELTER. I HEARD NOTHING AND SAW NOTHING SO I GOT UP AND STARTED WALKING AGAIN.I CAME ACROS A POLAR BEAR DEN. I LOOKED INSIDE AND I STAYED THERE TO REST AND STARTED WALKING AGAIN.

THEN I HEARD A MACHINE FAR AWAY. I RAN TOWARDS THE SOUND BUT IT WAS TOO FAR AWAY. I WAS FEELING VERY COLD AND I WANTED TO SLEEP.

I WENT TO SLEEP . THEN SOMEWHERE AND SOMEHOW I HEARD A NOISE. A HUNTER FROM TOWN CAME ACROSS MY TRACKS AND FOUND ME. HE GAVE ME SOME TEA AND PUT ME IN THE SLED, WITH BLANKETS.THEN HE TOOK ME TO TOWN.

Colin Kabloona
Gr. 7
Inuglak School
Whale Cove N.T.
X0C 0J0

Untitled
by Colin Kabloona

Grade 7
Inuglak School
Whale Cove