

“She is Transforming:” Inuit Artworks Reflect a Cultural Response to Arctic Sea Ice and Climate Change

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ABSTRACT. Seven Inuit artists reflect their lived experience of disappearing sea ice and climate change in their artworks. Living in Pangnirtung and Cape Dorset, Nunavut, for five months in 2013 and one month in 2015 enabled me to build relationships with artists and to initiate collaborations for this project. I examine how the artworks and artists use symbolism, metaphor, and other aesthetic devices to convey messages about their lived experience of sea ice and climate change. Stories told by artists about their artworks emphasize the importance of adaptation and interconnectedness and embrace themes about transformation and renewal. The insights provided by the artists participating in this research are crucial in the context of bridging knowledge systems to enhance our understanding of and potential responses to environmental change. Connecting with the intangible aspects of knowledge systems, such as emotional response, values, and identity, is an ongoing challenge; yet, accounting for these aspects of knowledge is a critical component of salient and legitimate environmental governance. Artists and their artworks can illuminate the less tangible aspects of knowledge about change and hence have an important role to play at the interface of diverse knowledge systems.

Key words: bridging knowledge systems; Indigenous knowledge; Inuit art; climate change; Arctic sea ice; resilience; adaptation; values

RÉSUMÉ. Sept artistes inuits illustrent, par le biais de leurs œuvres, leur expérience vécue en ce qui a trait à la glace de mer en train de disparaître et au changement climatique. Parce que j’ai vécu à Pangnirtung et à Cape Dorset, au Nunavut, pendant cinq mois en 2013 et pendant un mois en 2015, j’ai réussi à nouer des liens avec des artistes et à entreprendre des collaborations en vue de ce projet. J’examine comment les œuvres et les artistes recourent au symbolisme, à la métaphore et à d’autres moyens esthétiques pour transmettre des messages sur leur expérience vécue en ce qui a trait à la glace de mer et au changement climatique. Les histoires que racontent les artistes au sujet de leurs œuvres font ressortir l’importance de l’adaptation et de l’interconnectivité, et portent sur les thèmes de la transformation et du renouvellement. Les points de vue exprimés par les artistes prenant part à cette recherche revêtent une importance primordiale dans le contexte du rapprochement des systèmes de connaissances permettant de mieux comprendre nos réponses au changement climatique et nos réactions éventuelles. Se rapprocher des aspects intangibles des systèmes de connaissances, comme la réponse émotionnelle, les valeurs et l’identité, présente un défi constant. Pourtant, rendre compte de ces aspects des connaissances constitue une composante critique de la gouvernance environnementale saillante et légitime. Les artistes et leurs œuvres peuvent jeter de la lumière sur les aspects moins tangibles des connaissances sur le changement et par conséquent, ils jouent un rôle important dans l’interface de systèmes de connaissances variés.

Mots clés : rapprochement des systèmes de connaissances; connaissances autochtones; art inuit; changement climatique; glace de mer de l’Arctique; résilience; adaptation; valeurs

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INTRODUCTION

Together the expertise from two distinct ways of knowing is more enlightening than a singular worldview; hence bridging Indigenous and Western knowledge systems enhances global understandings of environmental change (Tuhiwai Smith, 1999; Reid et al., 2006; Tengö et al., 2014). Engaging with different types and sources of knowledge in the Arctic has important implications for how decisions

are made about the environment in ways that reflect the priorities and concerns of northern communities (Jasanoff and Martello, 2004; Koutouki et al., 2015).

According to environmental change literature and scholarly discourse, the Arctic is experiencing rapid rates of environmental change. Inuit perspectives allude to this rapid change as well, describing that “the earth is faster now” (Krupnik and Jolly, 2002:7). Climate change is occurring in the Arctic twice as fast as elsewhere in the

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world (AMAP, 2011), with Arctic sea ice loss occurring at a rate faster than scientific models had projected (Stroeve et al., 2007). There is scientific consensus that the Arctic will be ice free in summer months well within the century (Overpeck et al., 2005; Lenton et al., 2008; AMAP, 2011). Likewise, Inuit knowledge has long noted changes in weather and climate, although they did not use the words “climate change” (Krupnik and Jolly, 2002; Fox Gearheard et al., 2013). These changes are impacting the well-being of Inuit people, affecting their strong cultural connection to their now rapidly changing biophysical context by, for instance, forcing them to alter the ways they hunt and travel (Fox Gearheard et al., 2013).

Bridging the knowledge of Indigenous and local people with Western scientific knowledge creates opportunities for novel insights about Arctic sea ice change. For example, Inuit expertise (Inuit *Qaujimaqatugangit*) has made significant contributions to understanding the complexity of Arctic sea ice change (Riedlinger and Berkes, 2001; Laidler, 2006; Krupnik et al., 2010). Honouring a plurality of knowledge in the context of efforts to understand and respond to environmental change is a challenging process. There are diverse settings that bridge knowledge systems, including various methods and processes (e.g., scenarios, workshops), bridging organizations that link different knowledge holders, and institutional or governance arrangements (e.g., co-management boards) (Rathwell et al., 2015). A key challenge is to choose appropriate settings in which to bridge different types and sources of knowledge, especially since some settings may diminish or mute dimensions of Indigenous knowledge (Nadasdy, 2003; Fazey et al., 2014; Rathwell et al., 2015).

Another challenge is the growing need to incorporate more diverse forms of expression into settings for knowledge bridging (Cruikshank, 2005, 2012; Maffie, 2009; Dale and Armitage, 2011). Art and artistic processes provide one example of a novel form of expression that has received too little attention in this regard, but that provides an entrée into the underlying belief systems and emotional context associated with environmental change (see Booth and Skelton, 2011; Weiss et al., 2013; Gratani et al., 2014).

Indeed, Inuit art has a long history of containing spiritual and ideological power (Freeman, 1994). Small carvings, aesthetic tools, and amulets were given, worn, and used for cultural or spiritual significance. A shaman might wear an amulet to take a spiritual journey (Laugrand and Oosten, 2015). Upon first contact with non-Inuit, some Inuit gave and traded aesthetic objects to explorers, missionaries, and military people (Martin, 2012). Since the late 1940s, Inuit art has been expanded into commercial production in some communities. Pangnirtung and Cape Dorset, the communities of focus here, were some of the favoured locations for the creation of a local art industry.

Beginning in 2013, I engaged with seven Inuit artists and their artworks to examine a potentially novel source of knowledge about sea ice and climate change in the Arctic. These artists were selected from a larger sample of 30

because they had created works about sea ice and climate change prior to this study. I therefore saw an opportunity to examine how these Inuit artists and their artworks reflect a cultural experience of sea ice and climate change. In doing so, I assess how Inuit artists themselves communicate the meanings and symbolism of their work. I examine artists’ insights about the sea ice and climate change in their artworks and explore how these insights contribute to efforts to bridge Indigenous and Western scientific knowledge systems.

METHODS AND STUDY LOCATIONS

Cape Dorset and Pangnirtung are two remote communities located in Baffin Island, Nunavut (Fig. 1). I was introduced to the Pangnirtung community as part of a summer field school program offered by the Native Studies Department at the University of Manitoba. The five-week intensive field course, based in Pangnirtung, included a curriculum of Inuit studies, ethics and political philosophy, Inuktitut for beginners, and 10 days on the land hunting and sewing with Inuit families. The program provided an opportunity for me to learn about and engage with an Inuit community. After the program, I stayed in Pangnirtung for an additional four months and then flew directly to Cape Dorset for a two month stay.

Cape Dorset (population 1400), located at the southwestern end of Baffin Island, is the self-proclaimed “capital of Inuit art” and has maintained an art economy as a cultural-economic mainstay since the late 1950s. However, several interacting factors resulted in what is now the Hamlet of Cape Dorset: the establishment of a Hudson Bay trading post in 1913; the mandatory and systematic slaughtering of Inuit sled dogs, which prevented a nomadic lifestyle; a prevalence of new diseases with the possibility for treatment in the settlement; and opportunities for education in the settlement (Tester and Kulchyski, 1994; Watt-Cloutier and McKibben, 2015). The West-Baffin Eskimo Co-op was established in 1959. The art co-op continues to function today, employing many local artists and purchasing works from many more. The co-op and its partner gallery and wholesaler based in Toronto function to connect local Inuit artists with global art markets. Cape Dorset artists leverage art making to maintain culture and create employment.

Pangnirtung (population 1510) is located in Cumberland Sound, Baffin Island. The history of Pangnirtung is characterized by the introduction of a whaling station in the 1800s, a Hudson Bay trading post in 1921, the Royal Canadian Mounted Police’s first detachment in 1923, and St. Luke’s mission hospital in 1929. The settlement of Pangnirtung was also a result of the many drivers of change experienced in the North (e.g., loss of sled dogs, introduction of Western education). The hamlet gained municipal self-governing status in 1973. Pangnirtung has a fish processing plant that provides occasional employment

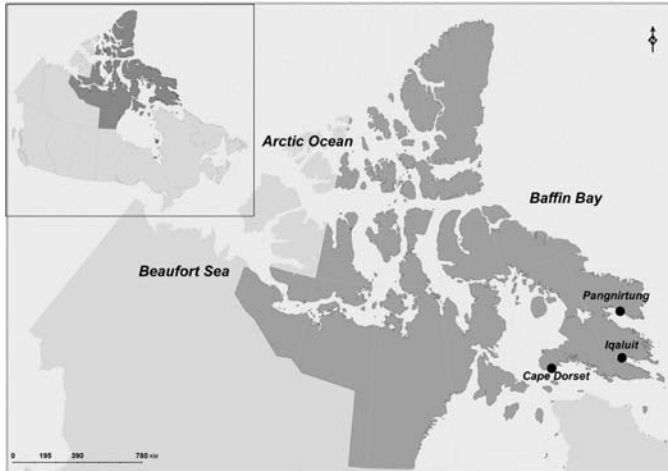


FIG. 1. Location of Cape Dorset, Pangnirtung, and Iqaluit in Nunavut, Canada.

in the community. Like Cape Dorset, Pangnirtung has an art economy and an art co-op built upon the successful Cape Dorset model (Tester and Kulchyski, 1991; Coward Wight, 2012).

I approached my research with the knowledge of the history of colonialism and systematic oppression of Indigenous people in Canada (Tester and Kulchyski, 1994; TRCC, 2015; Watt-Cloutier and McKibben, 2015). I aimed to build relationships of trust with the community members I met, while recognizing that I was an outsider and researcher with a pre-defined agenda. I am also a musician, and music provided an opportunity for me to connect with community members in ways that would not have been possible otherwise. When visiting people's homes, language barriers limited my ability to speak freely with my hosts. However, playing music, dancing, and singing together created a shared experience.

Ethics clearance for this project was obtained through the University of Waterloo Office of Research Ethics. A research license was obtained through the Nunavut Research Institute. A detailed consent process was used to identify potential concerns with individuals prior to their participation. Each artist was asked if the interview could be audio recorded, whether they wished to remain anonymous, and if their artworks could be photographed and used for research purposes (e.g., in a doctoral thesis, publications). I also received informal support for this research from municipal officials, as well as local artists, youth, and Elders. During my time in these communities, I was provided with accommodation by local organizations, such as Kinngait Studios visitor's apartment, or in a municipally-owned house in Pangnirtung.

I used several outreach strategies to increase awareness of and build support for my project (Wolfe et al., 2007). Information about the project was shared on community radio. Community researchers were hired to facilitate organization and translation based on recommendations from community leaders. A list of practicing artists in each

of the communities was compiled based on advice from community researchers, art co-op managers, local artists, and community leaders, as well as web and paper resources (e.g., print shop catalogues). Carving and graphic arts were chosen as the focal medium because artists in Cape Dorset and Pangnirtung maintain strong capacities in both. Once a list of potential participants was established, house visits were undertaken to introduce the project and subsequently invite artists to participate in the study. Finally, a follow-up trip in July 2015 was used to further clarify and verify findings and report on progress to study participants and representatives from each municipality, as well as the territorial government and the Nunavut Research Institute.

Seven artists were chosen from a larger potential research sample of 30, all of whom had been interviewed as part of a broader project on the mechanisms through which art and artistic processes may bridge knowledge systems (see Rathwell and Armitage, 2016). My selection of the particular seven artists was made for two primary reasons. First, each of the seven artists had been working on artworks that explore the theme of environmental change prior to the start of my project, thus ensuring that the subject matter was not artificially introduced. Second, each of the participants in this study have established bodies of artwork and are celebrated artists at local, national, and international levels. A summary of each participating artist is provided:

- Elisapee Ishulutaq is a graphic artist. She grew up on the land. She was awarded an Order of Canada for her artistic contributions to her community and Canada.
- Jaco Ishulutaq is considered a master carver, and his artworks are exhibited across Canada and internationally. He is a skilled hunter and mentor in the community of Pangnirtung.
- Tim Pitsiulak was a celebrated graphic artist from Cape Dorset. Unfortunately, he passed away in 2016. Pitsiulak's artworks are featured in exhibitions in Canada (e.g., Ontario Art Gallery, Fehely Fine Arts). His drawing of Arctic marine life is on a 25¢ Canadian coin.
- Shuinai Ashoona, a graphic artist and powerful female voice in Inuit art, has had her works presented in galleries throughout Canada (e.g., National Art Gallery of Canada) and around the world (e.g., Basel, Switzerland). She is the topic of books and movies (Sinclair, 2004). Shuinai lives in Cape Dorset and works on her drawings fulltime at the art co-op.
- Atsiaq Allasuaq is a respected Elder and one of the oldest men in Cape Dorset. Known for his storytelling, he is a retired carver of stone sculptures and now crafts harpoons.
- Manasie Maniapik is a master carver, hunter, and Elder who grew up on the land. He lives with his family in Pangnirtung.
- Palaya Qiatsuaq is a master carver and currently the mayor of Cape Dorset. His works are sold throughout Canada and internationally.

Each artist in this study is well-respected in his or her discipline. Works explored herein have artistic merit in their own right, with the capacity for knowledge bridging extending from there. The artworks as aesthetic objects are presented in the results section when the works could be located and where copyright has been granted. It was not possible to locate the artworks described by two artists in this study (Manasië Maniapik and Palaya Qiatsuq).

Of relevance to this project, both Maniapik and Qiatsuq remembered specific sculptures they had created about climate change. However, these works have been sold and distributed internationally and could not be tracked. For this reason, I could not engage with the artworks of each artist. This creates a research limitation, but I felt that maintaining the participation of Maniapik and Qiatsuq was a way to honour their perspectives and voices, given that they have grappled with sea ice and climate change themes in their artistic process and artworks. The artworks presented or discussed here are central to my research. However, my analysis focuses on the meanings and narratives that artists themselves create around the artworks (see Pink, 2001). The artworks are a setting or aesthetic boundary object for discussions about sea ice and climate change and therefore are important contexts from which to explore Indigenous understandings of change in the Arctic (Halpern, 2011; Singh, 2011; Zurba and Berkes, 2014).

While interacting with artists and their artworks, I used two main qualitative data collection methods: 1) semi-structured interviews and dialogue about specific art pieces, and 2) one-on-one art-making projects with two of the artists. Interviews with participating professional artists followed a semi-structured interview guide. Interviews focused on three areas of interest: 1) the role of art in the life of the artist and community, 2) changes in the local environment and climate, and 3) the production of art as a reflection of environmental change. Interview procedures allowed for conversational and storytelling opportunities (Kvale, 1996), especially with Elders, as is respectful to Inuit participants (Martin, 2012). My experience in these communities and the ability to spend time with participants provided opportunities to engage with stories about life on the land, myth, and memory (Brody, 2001; Cruikshank, 2005). Depending on my relationship to the artist and the different themes and questions we discussed, the focus of interviews ranged from short technical responses to storytelling and sharing of oral histories. Sessions for my study were either conducted in Inuktitut and simultaneously translated by a local interpreter or conducted in English, depending on the comfort of the participant. Interviews were digitally recorded and manually transcribed verbatim for later coding and analysis. Elders tend toward storytelling and sharing memories at their own pace and leisure; thus, interviewing length with each artist varied between 40 minutes to several hours. One-on-one sea ice drawing projects were initiated based on relationships built over weeks or months and required more regular interactions with the artists (Cruikshank, 2005; Castleden et al., 2012).

One-on-one art-making projects specific to sea ice change with Elisapee Ishulutaq and Shuvinaï Ashoona complemented the interviews and created an opportunity to engage with artists and their artworks in an alternative way. Both E. Ishulutaq and Ashoona were enthusiastic to participate. They were paid an appropriate honorarium for their time, provided with art making materials, and had the final decision about whether to keep or to sell the piece. Storytelling and question and answer sessions about the artworks occurred over several days in both cases. These sessions were digitally recorded and transcribed verbatim.

Manual coding, which was done on all transcripts, allowed me to be sensitive to how artists engage with metaphors, emotions, and sensory or felt experiences while describing their experiences of environmental change. I coded for both the content of changes and discussed the experiences of the participants as they were described. I also focused my analysis on how artists communicate narratives with different forms (e.g., shape, colour, personas). As noted above, my analysis is based on the discourse surrounding the artworks and how the artists describe their own works (see Pink, 2001). When an artist describes an aesthetic element of their artwork, I take note and reflect on the artwork. I have included images of the artworks when possible and where permissions have been granted. In these instances, the visuals allow readers to see and hear the voice of the artists directly.

RESULTS

Results are organized based on the artists I interviewed, but in the context of the two primary questions guiding this paper: 1) What insights are artists communicating about sea ice and climate change in their artworks? 2) How can these insights contribute to ongoing efforts to bridge Indigenous and Western scientific knowledge systems? The artists collectively referred to 13 artworks on the theme of sea ice and climate change. Eight of the artworks were created by artists prior to the start of this research project. Five artworks were created during the one-on-one sea ice drawing projects. Of these, Elisapee Ishulutaq created four drawings and Shuvinaï Ashoona created one drawing. The statements expressed by the artists below were collected during interviews I conducted in 2013.

Tim Pitsiulak

Tim Pitsiulak shared his perspective as a hunter and artist. He described his knowledge of changes in the weather and sea ice formation and breakup. Pitsiulak articulated how sea ice and changes in weather impact Inuit practice in terms of travel safety and ability to obtain “country food” to feed families and communities. In his artworks, Pitsiulak created visualizations of what ice breakup at the floe edge looks like and how people adapt to these changes in practice (see Fig. 2). His artwork



FIG. 2. Tim Pitsiulak: “Launching canoe at flow edge,” 2012. Shown with permission of artist, co-ops, and galleries.

emphasizes both knowledge of how sea ice is changing and at the same time embraces change and uncertainty as a part of life:

The ice is forming a lot later and it is not as thick as it used to be ... once the ice is forming, the ice forms in a pretty bad way—meaning in the spring when the ice starts to thaw there will be open areas in some places where it doesn’t freeze up at all. So that is some of the risk that is very bad with the global warming because the ice doesn’t freeze as much as it used to ... It is very hard, because we need to catch [country foods] for our families and friends. Catching country food ... hopefully someday it will bounce back, the climate that we used to have, but you never know, we can’t tell the future. We must be able to deal with the changes that are around us. Hey, it’s life I guess.

(T. Pitsiulak, 2013)

In this quote Pitsiulak described the challenge of changing sea ice. He emphasized how the ice is different than it used to be, the impact that sea ice change has on the capacity of hunters to provide for family and community, and how hunters co-operate to adapt to these changes. The figures in his drawing are helping one hunter to launch his boat in changing ice conditions. At the same time, the value and belief communicated by Pitsiulak and evident in his artworks and descriptions is the necessity to embrace change and uncertainty as part of life and to maintain a positive outlook.

In a second artwork on the theme of sea ice and climate change, Pitsiulak used metaphor and symbolism to convey his perspective: a portrait of an Elder with half a human face and the other half a reflection of sea ice breakup (Fig. 3). Pitsiulak described the piece:

That drawing is a picture of an Elder on one side, the half of the face, and the other half of the face is the

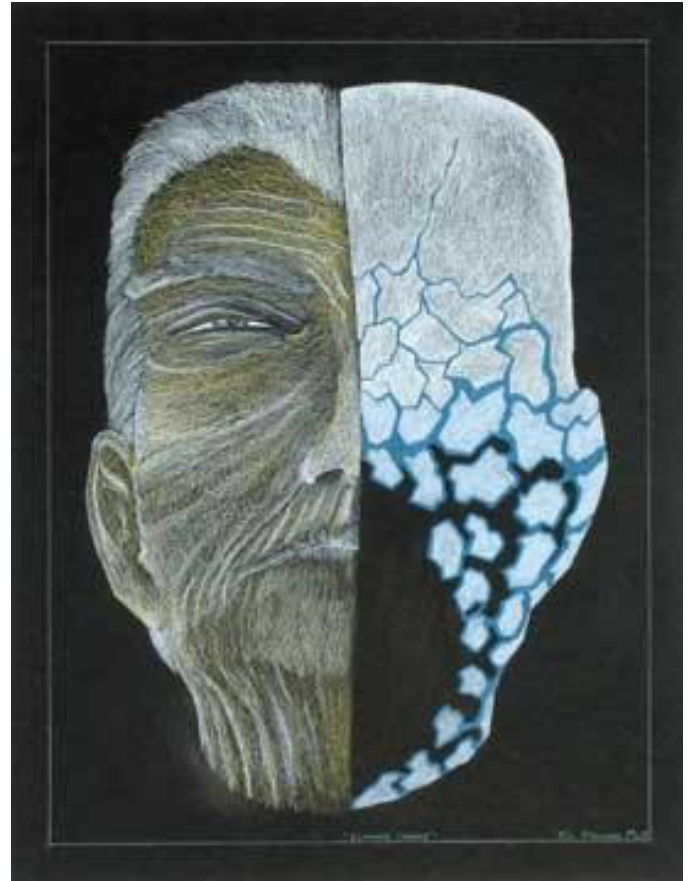


FIG. 3. Tim Pitsiulak: “Climate change,” 2012. Shown with permission of artist, co-ops, and galleries.

ice breaking up. [The drawing communicates that] the Elders notice the ice breaks up much earlier, and the ice does not form as it used to in the past. The Elder is facing upward, it means no worries; people tell you that the climate is going to be screwed up, but no worries, keep your head up high. Another meaning to the drawing, if I made the face look downward that would mean that the end is near, but you are always told to keep your head up.

(T. Pitsiulak, 2013)

Pitsiulak emphasized his belief in the wisdom of the Elders and the importance of a positive outlook during change and uncertainty. This artwork tells us about both the practice and emotional dimensions of “keeping your head up high” during periods of change and uncertainty. The Elder in his drawing models patience and not holding on to worry, while knowing that change is occurring with the sea ice. Pitsiulak leverages artwork to communicate his perspective: “I wanted to show how I feel or think of the climate change through drawing.” His drawings about climate change do just that, revealing his specific knowledge of sea ice and climate change and his beliefs about how to approach those changes.

Elisapee Ishulutaq

Elisapee Ishulutaq reflected her experiential knowledge of environmental change during our interviews and while we collaborated on the sea ice-drawing project. For example, to discuss how wind patterns and strength of the wind has changed over her lifetime, she referred to her place-based knowledge of being on the water in a small boat. In this way, she revealed knowledge and practice together. E. Ishulutaq also described changes in the sea ice formation and thickness. She has witnessed many people falling through the ice and drew a depiction of this during our drawing project (Fig. 4).

Figure 4 depicts an Inuk who has fallen through the ice on his snowmobile. In the drawing, a second character is depicted carrying a rope to pull his friend and the equipment out of the water. The drawing depicts the reality of hunting on dangerous ice and how the Inuit adapt to implications of unsafe ice. The symbolism of this piece seems apparent. However, when she discussed the drawing, other dimensions of the environment surfaced. E. Ishulutaq emphasized how she chose colors to depict that the sky: “[it] looks like a glassy blue nowadays; it was nice clear blue back then.” She emphasized that the ocean has gotten warmer and assigned this as the reason why the ice does not freeze as much. She said, “the ice is not all that strong anymore; ice conditions are more dangerous now, not forming as thick as back then.” Indeed, E. Ishulutaq emphasized this latter point when describing her drawing, “Sea ice is dangerous today”:

[In my drawing] it is visible that that ice is incurring melt from beneath, not the surface. [This is] the floe edge; this is ice and both sides are open water [pointing to drawing]. Now he has fallen through, suddenly, he has gone too close... Right now, when you travel, even if you are a good hunter, it is dangerous. [The ice] looks like it is all the same, but underneath it is not.

(E. Ishulutaq, 2013)

Elements of E. Ishulutaq’s knowledge that might be considered belief or spiritual were raised during the sea ice drawing discussions. It was in this bridging setting that E. Ishulutaq described the spiritual importance of sea ice and its role in the maintenance of social norms and Inuit identity. She recounted the legend of *Qallupilluit*, a sea monster that steals children from the floe edge. The story teaches children to stay away from the floe edge. She spoke of her own experience encountering the thumping sounds of the sea monster with her childhood friend. In another example, E. Ishulutaq considers sea ice change together with mermaids and how her mother taught her to treat them, should they wash up ashore. In describing her relation to mermaids, she alluded to her central belief in the interconnection between humans and non-humans. She also described a deeply rooted belief about her place in the cosmos when she said, “...we are just visitors to the land,”



FIG. 4. Elisapee Ishulutaq: “Sea ice is dangerous today,” 2013. Shown with permission of the artist.

establishing a transient relationship to the environment and a belief requiring respect and courtesy to be given to the land. She described how in the past they wasted nothing and used every single part of the animal, saying about seal, “even the bladder was used as a window for our igloo.” In fact, she described memories of drawing on the bladder window, made possible by condensation. E. Ishulutaq used sensory descriptions when conveying her experience. For example, she portrayed the warmth and security she felt being wrapped in caribou hides when she reflected, “I long to sleep in the layers of caribou hide.”

During the sea ice drawing project, E. Ishulutaq shared oral histories of her life on the land. She spoke about using the *qulliq* (seal oil lamp) inside her warm igloo. Sea ice is interconnected with other aspects of identity and being on the land. For example, the first drawing E. Ishulutaq created had no representations of sea ice. From my perspective, this was confusing at first because the thematic focus of sea ice was the only restriction on the project. However, sea ice and its change are intimately connected to the camping scene she drew (self-titled “It is a wonderful day, it is a beautiful day”) (Fig. 5). It is a wonderful and beautiful day precisely because the sea ice is forming. In the scene she drew, her family is waiting for the sea ice to form at an autumn camp. Her stories about the artworks and about sea ice reveal an interconnected way of seeing the world.

E. Ishulutaq also used sensory descriptions of colour, texture, and light when describing her drawings and telling stories about the changes in the sea ice and climate. For example, when describing a drawing of sea ice in the past, she reflected nostalgically on the aesthetic appeal of moving water on sea ice: “Nowadays, we don’t even get to see puddles of water accumulating on top of the ice ... giving a nice ripple.” Similarly, in another artwork about climate change titled “Climate change,” E. Ishulutaq uses the symbolic power of a melting igloo and a tree growing on the tundra to convey messages about transformation and renewal (Fig. 6):



FIG. 5. Elisapee Ishulutaq: "It's a wonderful day, a beautiful day," 2013. Shown with permission of the artist.

The igloo is melting and we see a tree we don't see here in the Arctic. I was told you won't see it here, but we see more and more new and larger plants... [The drawing is] about the way the climate is changing—it's warming up ... The person there is glad to see the tree. The person is happy to see the tree growing where it is not even supposed to grow ... I like anything that grows on the land, anything that renews itself, like springtime ... The igloo is long gone history and [the Inuk] is happy that things are growing; it is a transition theme.

(E. Ishulutaq, 2013)

E. Ishulutaq's drawings and stories reflect key themes for how to live life and the place of humans in the cosmos. She describes her drawing in a way that indicates her pleasure in renewal and acceptance of transformation, yet she points out that the figure still wears traditional clothing and therefore represents some continuity in identity. In her artworks and narratives about them, E. Ishulutaq reflected a cultural response to climate change that embodies her views about the connection between humans and the environment around them, the importance of knowledge gained through experience, and the need for patience in approaching how we live and in our daily practices.

Jaco Ishulutaq

Jaco Ishulutaq revealed detailed knowledge of environmental change during our discussions. He discussed his knowledge of sea ice and climate change on several occasions: during a hunting trip on which I accompanied him, during our interview, and when describing his carving, "Global warming," 2010 (Fig. 7). He described how the winter cold is different now and how one can feel that on the cheek. He explained how the wind has changed direction and described how "the temperature in the water is warmer now ... it is never the same as it used to be." He also described how the ice is softer and how it changes at



FIG. 6. Elisapee Ishulutaq: "Climate change," 2010. Shown with permission of the artist, co-ops, and galleries.

a different time in the season than it used to. "During fall when the ice starts to form, it gets really cold and it seems like the ice is going to form, but then it does not really form for a while. When it does finally form, it is softer ice than what it used to be."

This level of experience and knowledge of change on the land is the specific context for the insights and important messages he associates with his carving. Indeed, when describing his carving, J. Ishulutaq connected with his beliefs regarding Arctic sea ice change and how people should respond to it. He illuminated his belief about human agency and his call to action regarding climate change:

I've carved climate change. Global warming. One is holding on to the Arctic, holding on to the south, holding on to the whole world. It's a carving of hands holding the world. It's carved out of a walrus skull with the tusks, it has animals on it and hands holding it all. The hands represent that the world is delicate, that we must take care of it. Since we are ruining it with the atmosphere with the pollution of smokes ... it's in our hands. If we take care of our planet, our animals and the plant life won't be ruined.

(J. Ishulutaq, 2013).

J. Ishulutaq also explained that the carving reflects his knowledge of the multilevel component of climate change. He depicts humans as the cause and the solution to the problem of global warming. J. Ishulutaq uses the hands holding on to the Arctic ecosystem as a symbol of the responsibility and role of humans in relation to these changes.

Shuvina Ashoona

Shuvina Ashoona reflected on changing Arctic sea ice and climate during interviews and during the drawing



FIG. 7. Jaco Ishulutaq: “Global warming,” 2010. Soapstone and walrus bone carving. Shown with permission of the artist. Exhibited in photo as part of *Cape Farewell’s Carbon 14: Climate is Culture* exhibition at the Royal Ontario Museum, October 2013—February 2014, Toronto, Ontario. Photo credit: Susana Reisman.

project. She recounted a time when she was out clam digging and saw new bird species that had never been there before. Ashoona interpreted that the sea ice is warmer than it used to be, making a distinction between the past and the present. When I asked about changes in her local environment, she used the metaphor of a “paralyzed world” to describe something not functioning as it used to. During the art-making project, Ashoona pointed out important elements of her drawing, such as a fisher falling through the ice but still being happy and her belief in interconnection. Transformation colours Ashoona’s thoughts, memories, and artworks. Ashoona created a drawing that reflects a cultural response to climate change.

The cultural response reflected by Ashoona and her artwork is one that embraces transformation and interconnection. The image Ashoona created during our drawing project was a combination of fantasy and real-world reflections on her practice of harpoon fishing on the shoreline ice (Fig. 8). Ashoona describes going fishing like that “all the time” and retold some of the family jokes she remembered from experiences on fishing trips. The theme of transformation is central to Ashoona’s drawing (Fig. 8). She said: “Her foot is becoming fish flippers ... She is transforming ... Her other arm is becoming a northern light.” She approached transformation with enchantment and humour, not fear. She reflected on the person in the drawing saying, “it would be fun.” This transformation between human and animal and object (northern lights) depicted in her artwork reflects her belief and values about continuity and connection created via relationships and reciprocity.

Another belief held by Ashoona and embedded into her drawing is intergenerational connection. Ashoona portrayed that “our grandchildren would be dancing up there [as northern lights]” (Fig. 8). The drawing emphasizes belief in the existence of spiritual connection via entities like northern lights. “Our grandchildren are dancing and



FIG. 8. Shuvina Ashoona: “Untitled,” 2013. Pencil crayon on large format paper. Shown with artist’s permission. Photo credit: Kaitlyn Rathwell.

having a good time as the northern lights; in the drawing, we see tiny figures moving amongst the swirling skyline.” Ashoona has a lived experience of changes in the sea ice and animals that inform her drawing of sea ice. She emphasized themes of transformation and interconnection as culturally relevant when considering changes in sea ice and climate.

Atsiaq Allasuaq

Atsiaq Allasuaq situated his experience of climate change and sea ice change with his personal history of being on the land. Accordingly, his artwork is rooted in his knowledge of the importance of physical adaptation to sea ice and climate change. His artwork, hand-crafted harpoons, are themselves part of the adaptation story and reflect a focus on the increasingly uncertain Arctic sea ice conditions. Hunters can check the ice thickness with a harpoon, and the need to do so has become paramount. This is the main message in the artwork depicted in a photo of Allasuaq on the sea ice with one of his own harpoons (Fig. 9).

I even make harpoons now too ... those harpoons are the only source of materials to know if the ice is thick or not thick enough. Men used to use their harpoons to see if the sea ice is well enough to travel. The harpoon is the



FIG. 9. Atsiaq Allasuaq with one of his handmade harpoons. Photo credit: Gita Ljubicic.

only friend for a man. Because it tells him if the ice is thick or if it is not thick. When you can see the surface, but you can't see the underneath right, and [the harpoon] is how we know if it is thick or thin.

(A. Allasuaq, 2013)

Indeed, Allasuaq delineated the necessity of the harpoon, especially in the current context of changing sea ice conditions (Fig. 9).

Allasuaq's experiences are also linked to sensory descriptors of sound. For example, he remembered leveraging the acoustics of crisp cold air to make sounds for navigation:

Men would say, if they want to go faster [signalling to the dog team] they would do "hahahah" without a voice at all; you can hear it through the wind because of the pitch of the sound in wintertime, you can hear that over long distance. We used to call it *imina*. That pitching sound in wintertime it doesn't work anymore because it is not as cold as it used to be.

(A. Allasuaq, 2013)

While this experience with sound (as an aesthetic form) was not reflected in his artworks, it is an example of his aesthetic experience on the ice and depicts how that experience changes because of warmer weather. As Allasuaq explained, these sounds are no longer possible because the air does not get cold enough. Adaptation is a central theme embedded in Allasuaq's artwork and narratives. At a walking pace, the end of the harpoon can be used by the Inuit as an adaptive tool to monitor ice conditions on changing sea ice. Even as the environment changes, finding ways to continue interacting with it by using the senses (sound, feel) reflects an adaptive culture. Learning about Allasuaq's harpoons is a way to understand how he has combined craftsmanship with an adaptation technique to changing ice conditions.

Manasie Maniapik

Manasie Maniapik chronicled knowledge of changing weather and temperatures long before white people began talking about climate change. During the interviews, he emphasized how glaciers used to extend from the mountains on the Pangnirtung fjord, but that now the glaciers have all melted. Maniapik reflected on shifts in Inuit practice on the land due to climate and sea ice change. For example, in the past, he could read the skies to know what the weather would be, but he laments that "today the wind just comes, like really strong wind, without a warning." Maniapik described how in his young days the sea ice was safe for travel and hunting by October, while nowadays it does not form until Christmas. In his examples, being on the land is the source of his experience and knowledge about sea ice and climate change.

Maniapik further explained that he was commissioned to make a carving about climate change several years prior to our interview. He could not locate a picture of the carving, so instead he described it to me. In the carving, Maniapik emphasized the practice of wearing traditional clothing. He took the opportunity to describe all the types of traditional clothing and the different skins (e.g., seal, polar bear, caribou) that his people wore. However, in describing his carving, Maniapik pointed out how traditional clothing is no longer used. There are potentially several reasons for this, but Maniapik explained that it is no longer cold enough to require traditional skin clothing. The artist is using his sculpture as an artistic boundary object to describe a cultural transition or adaptation to climate change.

Padlaya Qiatsuq

Padlaya Qiatsuq had a broad depth and range of knowledge about the changing Arctic sea ice and climate based on his experience on the land. During an interview with Qiatsuq, he described that there is less sea ice than before, and that the snow melts more quickly than it did in the past. He recounted changes in animal behaviour and in the types of animals that he now sees living in the area for the first time, such as wolverine.

Qiatsuq showcased the themes of interconnection and transformation in his artworks and articulated an underlying belief in these phenomena. He illustrated the potential for a new world to emerge following a transformation. Qiatsuq narrated the story of one carving: "There is a spaceship, there is also an asteroid that hits the earth and then a tsunami ... A shaman is communicating that a new world forms after that." He said the carving expresses his experiences of changing sea ice and climate more broadly as a transformation. When I probed further on the topic of transformation depicted by the carving, he described it as change and uncertainty with potential for renewal and new beginnings.

In a second carving about climate change, Qiatsuq again described the importance of transformation and spoke of interconnection:

There is a little bit of transformation—a man mixed with an animal. It is about climate change and the weather and the animals. They are together. The weather it is changing, and you know animals behave differently.

(P. Qiatsuq, 2013)

A cultural belief in interconnection among humans, animals, and the weather is reflected in his carving. Further, transformation is communicated in his artwork because the form is that of human-animal transformation. Qiatsuq's carvings create a setting to learn about the underlying values and beliefs he has regarding sea ice and climate change. He emphasized knowledge of sea ice and climate change during interviews; values and beliefs about transformation and interconnection become apparent through his descriptions of his artworks.

DISCUSSION

Bridging Indigenous and Western knowledge systems in meaningful and respectful ways is important in ongoing efforts to understand and respond to sea ice and environmental change in the Arctic (Riedlinger and Berkes, 2001; Smith and Sharp, 2012; Arctic Council, 2013). Further, bridging these systems is important in ongoing reconciliation efforts between Inuit, First Nations, Metis, non-status Indigenous peoples, and the federal government. In this study, I have revealed how Inuit artworks can set the stage for bridging processes about Arctic sea ice and climate change in ways that showcase the resilience and adaptation strategies already being employed by Inuit people.

I also establish what a group of leading Inuit artists are communicating about sea ice and climate change in their artworks, and how their artworks and related insights contribute novel perspectives about change. In doing so, I have focused on what these artists themselves emphasize about sea ice and climate change and some of the meanings and narratives the artists seek to communicate.

The narratives Inuit artists share communicate a cultural response to climate and sea ice change. This cultural response embraces transformation as renewal, emphasizes interconnection between humans, animals, and elements of the environment (e.g., northern lights), and displays a profound adaptability that connects myth and tradition (e.g., wisdom of the Elders, harpoons) with modern techniques for how to adapt to change and uncertainty. The participants acknowledged this underlying worldview of resilience and the capacity to embrace transformation as beneficial in the context of the rapid environmental changes occurring today (Berkes, 2004; Scheffer et al., 2009). Accepting transformation as a central dynamic in the world (i.e.,

rooted in one's ontology), as reflected in many of the artists artworks, communicates the uncertainty currently being experienced (Cruikshank, 2005, 2012; Kunuk and Mauro, 2010). Indeed, artists in this study revealed their ontological outlook regarding change and uncertainty by reflecting a world that connects humans, animals, and nonliving beings in transformation. An ontology that embraces transformation may contribute new insights into the decisions individuals and communities make about responding to changes in sea ice and climate. Two practical challenges exist: First, global decision making and national policies maintain a bias favouring Western science over Indigenous expertise, and second, there is a lack of settings that can help decision and policy makers understand the complex and multifaceted worldview of Indigenous knowledge holders (as a knowledge-practice-belief complex). I propose that art and artistic practices are settings that hold great value for understanding Indigenous worldviews and deserve further exploration (see Rathwell et al., 2015).

Inuit artists and their artworks provide a compelling setting in which to connect with Indigenous knowledge about environmental change. Inuit artists weave together their unique and expert knowledge of environmental change with emotion, belief, and sensory experience in their artworks to create compelling narratives. Formally trained scientists have a growing appreciation for the value of Indigenous expertise when it comes to the details and extent of environmental change (Nichols et al., 2004; Thaman et al., 2013). Nonetheless, it is crucial for legitimate and salient action that the human emotional and belief system experiences of change be included in the discourse. Belief orients a person's understanding of his or her place in the world and relationship to other living and non-living things (Godfrey-Smith, 2003; Wilson, 2008). Beliefs fundamental to the maintenance of knowledge systems are often overlooked in efforts to understand Indigenous perspectives on environmental change and resource governance. This neglect has led to negative consequences for Indigenous peoples with direct implications, such as in the context of co-management efforts or climate change adaptation initiatives (see Booth and Skelton, 2011; Weiss et al., 2013).

People maintain an intricate web of belief, values, and emotions about the environmental changes they experience. If legitimate processes for addressing climate change and its implications are to be enacted, especially in contexts where historical power relationships have negatively affected Indigenous communities, it is important to account for all aspects, including those less-tangible knowledge system aspects mentioned above that frame peoples' experiences of environmental change (Wilson, 2008; Leduc, 2011; Weiss et al., 2013; Daw et al., 2015). Failure to do so may perpetuate existing social divisions and ongoing mismanagement of environmental resources (Nadasdy, 2003; Booth and Skelton, 2011; Weiss et al., 2013). For example, an investigation of a co-management strategy in Australia found that managers engaged very little with the beliefs

and worldviews framing the knowledge of Australian Aborigines. Poor understanding of the underlying belief systems and values of Aboriginal participants is identified as a major barrier to effective environmental governance (Weiss et al., 2013).

My research demonstrates how artists and their works create settings to bridge the less tangible dimensions of knowledge systems. Artists are a rich source of knowledge and insight, and their art reflects that knowledge and the beliefs, values, and emotional responses to environmental change. Illuminating what is considered sacred, for example, can help to make multi-stakeholder processes (regardless of their focus) more meaningful (Daw et al., 2015). Indeed, as shown here, Inuit artists are particularly suited to communicate dimensions of climate change and sea ice loss by creating narratives that frame corresponding actions. To date, efforts to draw upon these rich sources of knowledge in an applied decision-making context has been rare (although see Rathwell and Armitage, 2016).

My research highlights several barriers to overcome when engaging with Inuit artists and the broader implications of their insights into sea ice and climate change. For example, there is a tension between the expectations of the academy and the expectations of communities and people who participate in the research (see Castleden et al., 2012). I spent five months in Pangnirtung and Cape Dorset, which was necessary for my research, but more time would have been beneficial, and participants would have liked me to stay longer. Maintaining the participation of individuals in data analysis and reflections enhances the legitimacy of findings when working with Arctic communities (as it does in other contexts). The cost of living in northern communities and the timeframe I had available constrained this process to a certain degree. Translation between English and Inuktitut is difficult, and during interviews and artistic processes, information and meaning can be lost (Leduc, 2011). For example, during a workshop with youth and Elders, the Elders told stories about travelling on the sea ice, and a translator was present to simultaneously share the stories in English. We all sketched the stories as they were told, but it became clear that one event in a story had not been translated for the English speakers when the event was sketched differently by the youth.

Having artworks as boundary objects buffered against this challenge. I could use artworks to clarify what the artist was saying. Practically speaking, some art materials can be difficult to find in remote communities. For example, E. Ishulutaq would have preferred thick pastel crayons rather than paints and coloured pencils. But she and other participants described enjoying the artistic approach taken: “I liked that I drew only what I wanted to draw. Just the way I thought about it and the way I planned it. I decided how to proceed.” While these challenges are specific to my own research experiences, they have broader relevance to others. Finding a balance between the demands of the academy and expectations of local populations for useful research processes and outcomes requires ongoing communication

and connection, flexibility, and an openness for learning (Castleden, 2012; Ford et al., 2014).

There are other significant barriers to contend with. For example, Inuit Elders may only share knowledge that they feel the listener is ready to hear, and for this reason participants may have only shared with me what they felt was appropriate, or provided only a portion of their full perspective (Martin, 2012). Knowledge is shared with purpose in an Inuit context (Brody, 2001; Leduc, 2011; Martin, 2012). Engaging with the artists and their artworks created a portal through which to discuss beliefs and values, sensory experience, and practical knowledge about sea ice and climate change. However, two participants did not touch on belief and values, and two participants did not discuss elements of practice.

Those participants who self-identified as hunters but did not reflect practice may have thought it was inappropriate to share Inuit knowledge about practice without engaging in that practice on the land (Martin, 2012). In other words, practice, as a dimension of knowledge systems, did not emerge during the interviews or during discussion of artworks because the settings in which I engaged with them did not facilitate that dimension (see also Fazey et al., 2014; Rathwell et al., 2015). Practice is learned while doing, while out on the land interacting with animals and the environment.

Since I became a close friend of both Elisapee Ishulutaq and Shuvina Ashoona, our relationship of trust and friendship provided opportunities to discuss in more depth some of their underlying beliefs and values reflected in their artworks. The importance of building trusting relationships to engage with different knowledge holders is documented elsewhere (Wolfe et al., 2007; Castleden et al., 2012), and these lessons should also frame any interactions with artists engaged in discussions about their knowledge and the role of their art in communicating different perspectives on change.

CONCLUSIONS

Bridging diverse knowledge systems is recognized as important in ongoing efforts to understand and respond to environmental challenges (Reid et al., 2006; Tengö et al., 2014; Rathwell et al., 2015). Moreover, the United Nations Declaration on the Rights of Indigenous Peoples (UN, 2007) emphasizes the legal rights of First Peoples over their traditional lands (Koutouki et al., 2015) and recognizes the importance of Indigenous knowledge as it relates to Indigenous self-determination. This is the case in Nunavut, where Inuit *Qaujimagatuqangit* forms the foundation for how decisions are supposed to be made. In settings such as Nunavut, efforts to bridge knowledge systems will continue, and respect for Indigenous peoples will be enhanced when cultural perspectives are accounted for (Koutouki et al., 2015). Engagement during knowledge bridging processes must be more than superficial (Booth and Skelton, 2011; Weiss et al., 2013; Gratani et al., 2014).

As illustrated here, artists and their artworks are an important and rich source of understanding that offer both practical insights and a window on the underlying values and beliefs that shape people's actions.

The artists showcased in this study reflect experiences of disappearing sea ice and climate change in their artworks. Beliefs, including values and emotional responses to sea ice and climate change, are also illuminated by Inuit art. As explained above, connectedness among humans, animals, and the changing climate were main themes in the work of E. Ishulutaq, Ashoona, and J. Ishulutaq. In their artworks, they conveyed hope in human agency to heal the planet. Indeed, the artists and the artworks in this study reflect a wide range of themes, such as the resilience and renewal of individuals in the face of change, the importance of connections among humans, animals, and the land, and the need to reconcile the past, present, and future.

Artists and their works have a significant role to play in creating settings for robust knowledge bridging processes. Through art and artistic process, knowledge can be bridged between Inuit and Western scientific knowledge systems; likewise, it can be bridged between Elders and youth. In both cases, artworks and artistic processes create a platform to connect with the many dimensions of knowledge, including content, values and beliefs, emotions, and sensory experience.

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