

**Landscape and Seascape Instruments:**  
Arctic Bay at The Intersection of Ecology,  
Economy and Infrastructure Development

by

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## **ABSTRACT**

The small hamlet of Arctic Bay, located along the north shore of Baffin Island in Canada's Arctic Archipelago, is the site of rapid economic and environmental change, as well as significant infrastructure development. Close proximity to an idled zinc, silver and lead mine, as well as an increasingly ice-free Northwest Passage has placed this community at the forefront of regional change such as eco-tourism, as well as geopolitical questions regarding Canada's Arctic sovereignty. Implicated always are the communities and people who live and work in Canada's North – communities and people who are often displaced into the background of these important discussions. *Landscape + Seascape Instruments* seeks to investigate the spatial implications of landscape and seascape infrastructure through the development of a universal infrastructural instrument; an architectural device that addresses connectivity and the interstitial space between communities at both the regional and the human scale, to better understand and foster a dialogue about Canada's role in an increasingly accessible arctic region.

## **ACKNOWLEDGEMENTS**

For Brontë, Mom and Dad  
for their unwavering support

Many thanks to my advisor, Ozayr  
for his listening, criticism and guidance

And to my many colleagues who  
have shared a coffee, their time and friendship

“As we enter our centennial year we are still a young nation, very much in the formative stages. Our national condition is still flexible enough that we can make almost anything we wish of our nation. No other country is in a better position than Canada to go ahead with the evolution of a national purpose devoted to all that is good and noble and excellent in the human spirit.”

**Lester B. Pearson**

1967

“A Canadian is someone who keeps asking the question, 'What is a Canadian?'”

**Irving Layton**

“To know where you are going, you first have to know where you have come from.”

**Inuit Proverb**

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## **1.0 - INTRODUCTION**

**1.1**

**A NEW ARCTIC**

**1.2**

**ON INFRASTRUCTURE**

**1.3**

**REFLECTION**

## 1.1 – A NEW ARCTIC

In 2017 Canada celebrated one hundred and fifty years since its confederation in 1867, but not without controversy. The second largest country by total area and the 38th largest by population<sup>1</sup>, Canada occupies a unique position in the world; one that is sparsely inhabited and highly urbanized, but on the other hand, claims territorial sovereignty over some of the richest deposits of natural land and sea resources. Nearly one hundred and thirty-seven years after confederation, the territory of Nunavut - which encompasses the majority of Canada's Arctic Archipelago - was incorporated in 1999. It would take a until 2017 to add the coat of arms of Nunavut to the Centennial Flame – the stone fountain at the foot of the walkway that leads to the Peace Tower on Canada's Parliament Hill in the national capital.<sup>2</sup> This delayed formal recognition of the territory is analogous of its underdeveloped infrastructural connections and disconnected forced settlements that continue to struggle with isolationism.

Composed of nearly 36,000 islands and encompassing over two million km<sup>2</sup>, Nunavut is a vast part of the world - the fifth largest subdivision of any country by gross area. With a population of just under 36,000 (of which nearly one quarter are under the age of twenty-five) spread across twenty-five hamlet communities, none of the territories' communities are connected by roads or has a deep-

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<sup>1</sup> Statistics Canada, *Canada 2016 Census* (Government of Canada, Statistics Canada, 2016) Accessed September 21, 2017 <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/phys01-eng.htm>

<sup>2</sup> Statistics Canada, *Inuit: Fact Sheet for Nunavut Inuit: Fact Sheet for Nunavut* (Government of Canada, Statistics Canada, 2016) Accessed June 01, 2017. <http://www.statcan.gc.ca/pub/89-656-x/89-656-x2016017-eng.htm>.

water port.<sup>3</sup> Relative to Canada's southern region, Nunavut is highly underdeveloped in terms of basic infrastructure.

Regarding regional infrastructure, the territory ports or piers and the only paved runway exists at CYFB in the capital of Iqaluit. With none of the communities connected over land, within the hamlet communities, basic services such as water and sewage are transported via truck. An extreme landscape that oscillates between the sublime and the fragile, the region has experienced a surge of economic growth and spatial intervention since the early 1950's when the area was seen as a strategically important buffer zone to the Soviet Union and economically important to Canada's sovereignty.

While our spatial knowledge of the area in terms of geographical and cultural mapping is fairly sparse, it is becoming increasingly more accessible to the global community through climate changes caused by global warming. The much earlier thawing of sea ice<sup>4</sup> now means that new shipping routes are opening up; warmer temperatures mean that living further north is becoming more viable; depleting fossil fuel and mineral resources have lead the world to

**Figure 01-A // A View of Arctic Bay**

*A typical hamlet community located along the north shores of Baffin Island in Canada's Arctic Archipelago.*



<sup>3</sup> Sheppard, Lola, and Mason White, *Many Norths: Spatial Practice in a Polar Territory* (New York, NY: Actar Publishers, 2017), IX.

<sup>4</sup> Government of Canada, *Historical Data – Arctic Bay, NU* (Environment and Climate Change Canada. January 11, 2018) Accessed March 04, 2018, <http://climate.weather.gc.ca/>.

look to the north for fuel to feed insatiable growth and economic expansion. These developments - combined with retreating glaciers and sea-ice - have opened the region to extraction industries seeking economically lucrative minerals, fossil fuels and precious metals. The arctic, a region once considered an inhospitable wasteland, is now the subject of a new colonialism. Yet in the middle of all this, a community – the Inuit – have been left to grapple with this modernity’s territorial transformations.

## 1.2 – ON INFRASTRUCTURE

As is the case with any urban condition, *infrastructure* is key. It assists in the basic provision of water, electricity, data and communication among other things. The development of permanent *infrastructure* is a defining feature of developed societies; Rome built aqueducts to supply its population with clean water, the Netherlands constructed dikes to channel water and reclaim land from the North Sea. *Infrastructure* enabled ancient populations to shift from a hunter-gatherer, nomadic lifestyle, to a fixed-settlement, industrial one.

The Inuit, too, have also undergone this change, and as dramatically, and as recently, as 60 years ago<sup>5</sup>. This shift in lifestyle from a nomadic hunting society to one that today is comprised of 25 hamlet communities was not, however, of their own volition. Nunavut’s population was settled in service of Canadian sovereignty, to secure the rights to lands that to this day face contest by neighboring arctic states.<sup>6</sup> Canada’s development of *infrastructure* in this region services the same function – the colonization of lands through the deployment of permanent installations and the connections that provision them.

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<sup>5</sup> Sheppard, Lola, and Mason White, *Many Norths: Spatial Practice in a Polar Territory* (New York, NY: Actar Publishers, 2017), IX.

<sup>6</sup> *Ibid*, 25.

Infrastructure in the arctic manifests in very different ways to its southern counterparts. Despite the investments made by the Government of Canada in the arctic, many communities still receive their services in ways unheard of in southern parts of the country. Many houses receive water and have their sewage pumped out by trucks. Communities depend on regular deliveries by aircraft and ships to replenish and resupply food. Here in the Arctic, infrastructure privileges national defense and sovereignty rather than issues at the community or individual scale.

### **1.3 – REFLECTION**

Resources, indigenous peoples, nationalism, sovereignty – many of the typical tropes of Canadian identity can all be found in the vastness of this burgeoning region and in the history of its people. As Canada celebrates and reflects upon one-hundred-and-fifty years of confederation, we are offered a poignant opportunity to reconsider our relationship with the north, its peoples, its resources and its part of what constitutes a Canadian ethos and identity.

While I am acutely aware of the privileged position that I am conducting this exploration from, I am also aware of the contemporary condition that the Inuit occupy; one that is still deeply connected to the ice, sea and land, but in many ways not so different from that of most southern Canadians. This research does not seek to fetishize the history and lifestyle of the Inuit and the north, nor does it seek to disregard or absolve Canadians of that history in the pursuit of a utopian vision of arctic settlement. Rather, it aims to develop an infrastructure that is positioned somewhere in-between; celebrating the identity of the north, reflecting on its past, and providing a catalyst for the dialogue on its future.

This thesis asks what role infrastructure can play in present-day Nunavut, how it can improve the lives of the Inuit through the provision of basic necessities for an urban living condition, while supporting contemporary realities of economy and industry. It offers

a commentary on what it means to inhabit the hamlet community, but also the interstitial space that exists between those communities. It also questions the agency of these provisions and interventions, the intention and role of Canada's relationship with the north, and how an infrastructure can be tailored to the unique circumstances that exist in the communities of Nunavut today.

## **2.0 – THE TEMPORAL METROPOLIS: ARCTIC BAY**

2.1

**SITE**

2.2

**SCARCITY + ABUNDANCE: INITIAL INQUIRIES**

## 2.1 – SITE

This thesis will explore the current state of arctic based infrastructure in the Canadian Arctic Archipelago and will propose new methods for rapidly deployable infrastructure that meets functional, human needs as well as regional infrastructural requirements in an attempt to reoccupy the space between the towns. These interventions – at the scale of the body, the essential dimension of this type of infrastructure – will need to respond spatially to the site, in line with Inuit IQ principles<sup>7</sup> to address contemporary conditions, as well as new activities such as mining and eco-tourism, that have become a necessary part of the landscape. As such, due to the vastness of the region, it became critical to site the thesis in a relevant community to provide a catalyst for dialogue.

### **Settlement:**

The site was chosen because it was representative of a typical hamlet community. Iqaluit, Nunavut's capital, was omitted as its population and size make it an outlier of the typical hamlet community. Cruise ship arrivals (such as the *Crystal Serenity*) required an adaptive infrastructural system that addressed a number of scales at once. The goal was to redefine the hamlets and develop connectors that could be readapted for other functions relating to the local community and the region at large, addressing these new conditions. How could the infrastructure change the relationship of the hamlet to these new secondary sites such as the cruise ship?

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<sup>7</sup> The Inuit IQ Principles, also known as the *Inuit Nuatqatigiittiarniagut*, are a set of guiding societal principles adopted by the Government of Nunavut. These values relate to community, stewardship of the land and sea, as well as innovation and resourcefulness. Source: <https://www.gov.nu.ca/information/inuit-societal-values> (accessed March 6, 2018)

**Site access:**

Proximity to an existing typical standard of infrastructure, such as a small airport (the quintessential access point for most hamlet communities in Nunavut), or access to the sea (all hamlet communities in Nunavut are located on the coast) was essential. The *infrastructural connector* discussed in later sections was designed to connect primary and secondary sites – a solution to the vast interstitial space between fixed points. Operations such as the sea-lift (the yearly visit by barges to resupply the communities in the north) are a critical part of life in the north. How might activities such as these be reconsidered? How might community reliance on these sea-lifts be reduced or eliminated all together? How will improved access to regional scale primary sites (e.g.: the airport, mine, town) and intermodal access to the secondary sites (e.g.: cruise ship, sealift beachhead, and mine processing) influence conditions at the human scale?

**Industry:**

For most hamlets in Nunavut, adjacency or dependence on a major industry (i.e.: oil, gas, mineral resources, defense, etc.) is typical. As noted earlier, the siting and founding of many of these hamlets was established by the Canadian Government and not the Inuit themselves. The settlement of many of these hamlet communities was contingent on the location of natural resources or strategically important locales and, of course, in service of nation-building. The colonialist ties these communities have to these sites is a stark reality that will need to be considered in any intervention proposals. How might operations like mineral and resource extraction be reconsidered in light of their initial and continued colonial intents? While these industries offer many economic benefits to their associated communities, their reliance on them is ultimately unsustainable, as is evidenced in the idling of the mines. How could the placement of any new infrastructure and the deployment of that

infrastructure constitute a *new colonialism*? How could the infrastructure respond to that fraught history and the realities of a new urban condition simultaneously?

**Arctic Bay:**

Under these set of themes, the hamlet of Arctic Bay<sup>8</sup> was selected for the following reasons: it is a medium sized hamlet that is representative of a typical Inuit community. It is located within close proximity to the Northwest Passage, a major trans-arctic seaway that is used by marine vessels to traverse the Arctic Archipelago east/west. It is in close proximity to Nanisivik, a zinc, silver/lead mine that has been idled. And finally, the town features a small airport facility with a 3000x75 foot gravel runway and terminal building (another inactive airstrip located between Arctic Bay and Nanisivik is currently not in use but is of similar size).<sup>9</sup>

**2.2 - SCARCITY + ABUNDANCE: INITIAL INQUIRIES**

When many southern Canadians are asked to imagine the Arctic, they often think of a harsh, unforgiving landscape that is cold, windswept and devoid of human existence. Wildlife features prominently in this Northern imaginary, of commonly held and stereotypical perceptions of the sparse, nomadic native peoples that wander the sea ice, carving out an existence far from towns and metropolitan centers.

Arctic Bay, in reality, is undergoing its own unique urbanization anomaly through the advent of ecotourism which appears to be accelerated by climate change. In 2016, as is evidenced in the weekly ice chart publications (below) issued by the Canadian

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<sup>8</sup> Inuktitut syllabics: ᐃᐱᐱᐱᐱᐱᐱ, translation: *the pocket*

<sup>9</sup> Ottawa: Surveys and Mapping Branch, Dept. of Energy, Mines and Resources, *Canada Flight Supplement: Canada and North Atlantic Terminal and Enroute Data 1984* (Ottawa, ON: NAVCANADA), B23.

Ice Service, the Northwest Passage experienced an unprecedented break up that left the entirety of the passage ice free for nearly fourteen days. This meant that any ship, regardless of ice breaking capability, was able to make the entire journey from the Pacific to the Atlantic without the aid of an ice breaker.

**Figure 02-A // 2016  
Season Ice Charts**  
Grey and red represent solid layers of ice impassable by ships of any kind. Orange and yellow represent ice passable only by ice-breaking ships. Green indicates 'growler' or 'floe edge' ice, small chunks that may be passable by non-ice breaking ships, while blue represents little to no ice (open water)

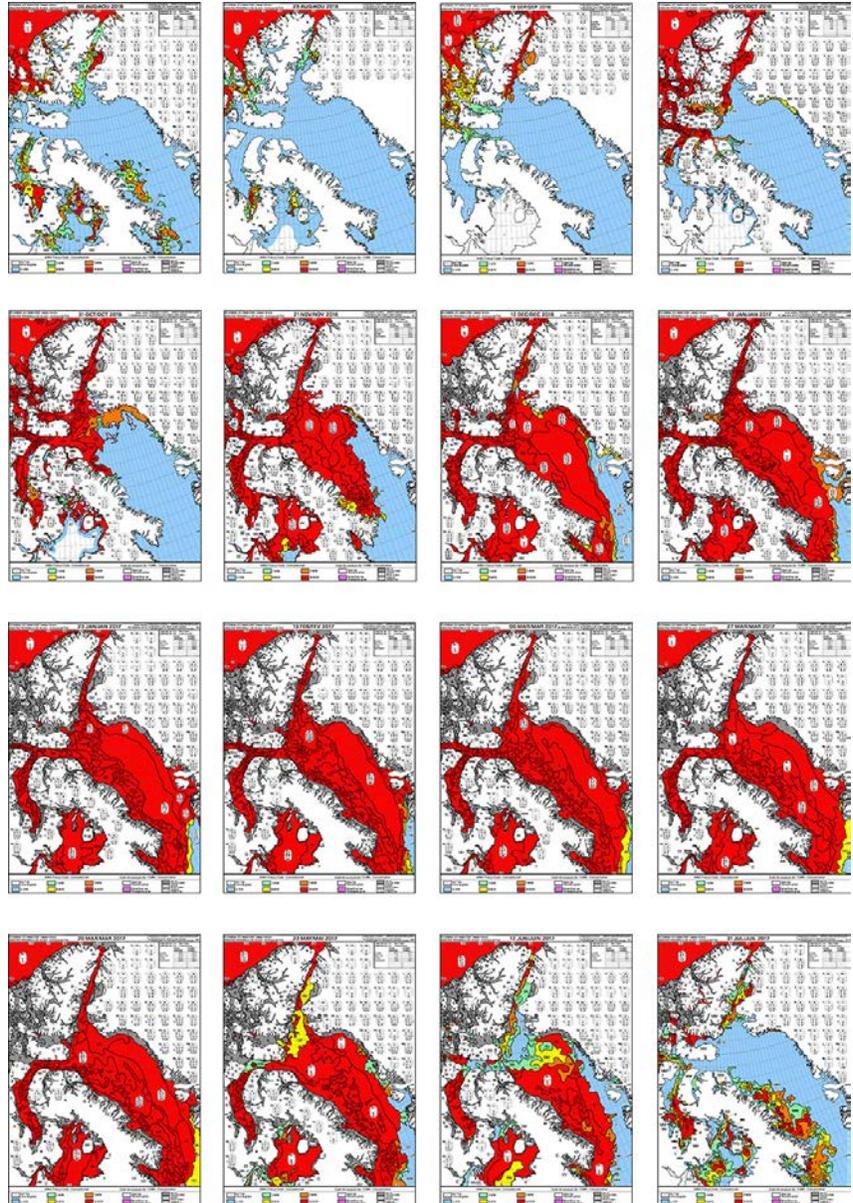
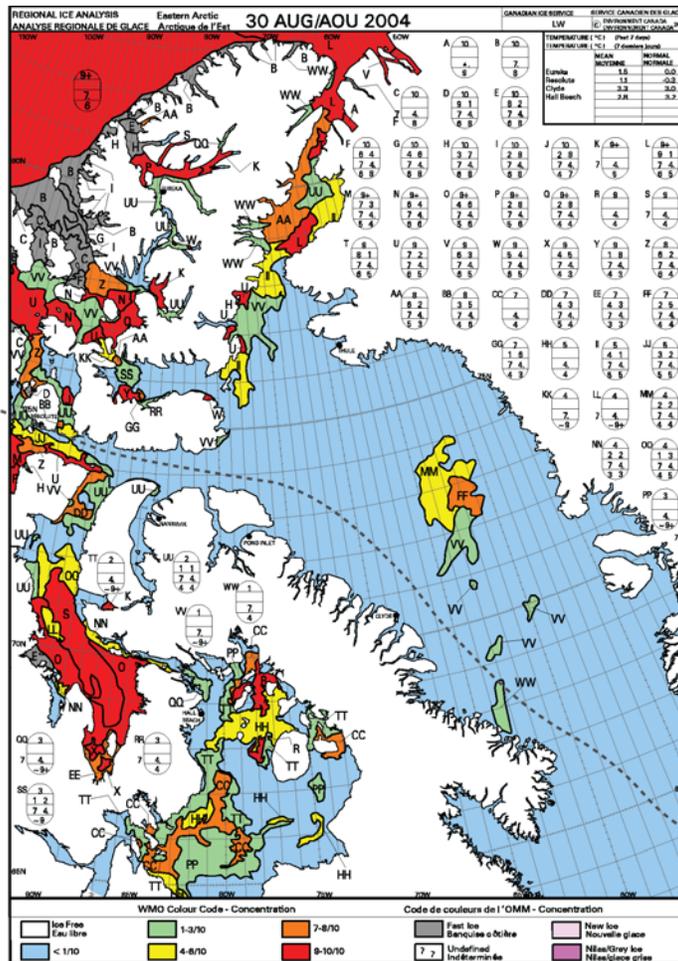
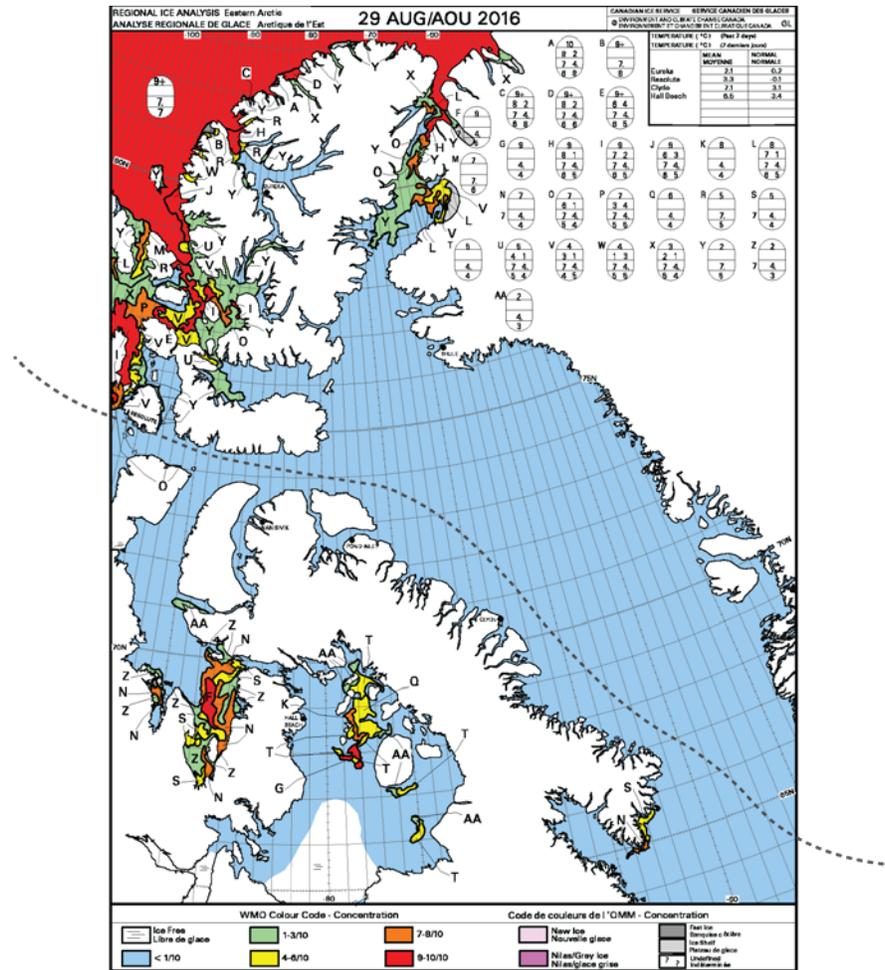


Figure 02-B // August 2004 Sea Ice Chart



The black dotted line indicates the Northwest Passage.

Figure 02-C // August 2016 Sea Ice Chart



The black dotted line indicates the Northwest Passage.

Departing from Seward, on the Kensai Peninsula of Alaska and sailing a thirty-two-day long voyage, the Crystal Serenity marked a watershed moment in high arctic travel. Carrying nine-hundred passengers and over six-hundred crew, the ship dwarfed almost every port of call on its voyage and was unable to reach the shallow beaches of arctic communities. While certainly not the first luxury cruise to visit the arctic, the Crystal Serenity is by far the largest, and the least protected.<sup>10</sup> Most of the vessels that make the journey through the Northwest Passage are rated for light to moderate ice conditions, with reinforced bows capable of withstanding the frequent pack ice and low 'growlers' (small ice chunks that sit low in the water) that usually mark the voyage. While the cruise line did arrange for an ice-breaker/support ship to accompany the vessel, the Crystal Serenity voyage is a critical mark of the impact of climate change in this extreme landscape.

**Figure 02-D // Crystal Serenity at Anchor in Arctic Bay**

*Due to the shallow waters surrounding Arctic Bay (typical of most hamlet communities), cruise ships and other large vessels are prohibited from approaching the shore, relying on small zodiac tenders to ferry people and supplies back and forth*



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<sup>10</sup> The Associated Press, *Giant Luxury Cruise Ship Crystal Serenity Makes Historic Voyage in Melting Arctic* (National Post. September 12, 2016) Accessed June 07, 2017. <http://nationalpost.com/travel/giant-luxury-cruise-ship-crystal-serenity-makes-historic-voyage-in-melting-arctic>.

In the case of Arctic Bay, *Crystal Serenity's* arrival meant a tripling of the town's population. Small tenders ferried curious 'eco-tourists'<sup>11</sup> back and forth from ship to shore. While most in the town welcomed the sight of the cruise ship and its passengers and its promise of wealthy tourists infusing much needed capital into the local economy, it was also met with a degree of skepticism by the community.<sup>12</sup>

One of the largest concerns about the undertaking of the cruise was the lack of local infrastructure should the ship experience distress in this – one of the most remote channels and inlets in North America. While monitoring the vessel's every movement from the Canadian National Ice Survey in Ottawa, the Canadian Coast Guard admitted that should anything go wrong, they would be unable to provide adequate assistance to the vessel and her passengers for up to seven days.<sup>13</sup> Many in the community also questioned the environmental impact of any spill or wreckage, should the vessel ground in the often shallow and uncharted sections of the passage route.

The *Crystal Serenity* is simply one example of a new contemporary condition condition – a new reality – that is taking place in northern communities. As was the case when the Inuit

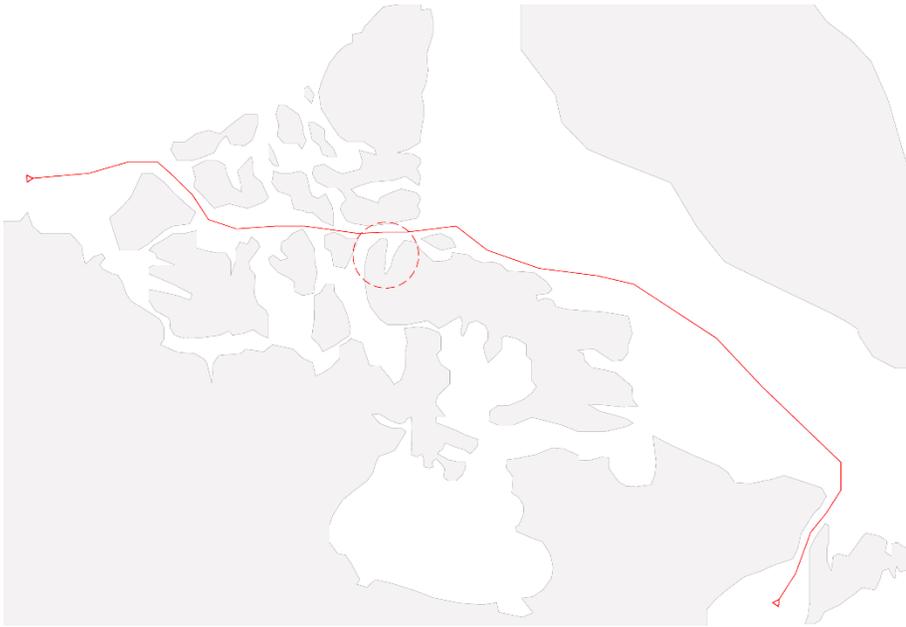
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<sup>11</sup> Claus-Dieter (Nick) Hetzer, an academic from Berkeley, CA, is believed to have first coined the term. *Ecotourism* involves the visit by tourists (rather than scientists or conservationists) to pristine, fragile, and relatively untouched ecosystems. Source: Weaver, David B., *The Encyclopedia of Ecotourism*, (Wallingford, UK:Cabi Publishing, 2001), 5.

<sup>12</sup> Canadian Broadcasting Corporation, *Massive Cruise Ship Brings New Era of Ecotourism to Cambridge Bay*, (Canadian Broadcasting Corporation. August 29, 2016), Accessed October 04, 2017. <http://www.cbc.ca/news/canada/north/massive-cruise-ship-brings-new-era-of-arctic-tourism-to-cambridge-bay-1.3739491>

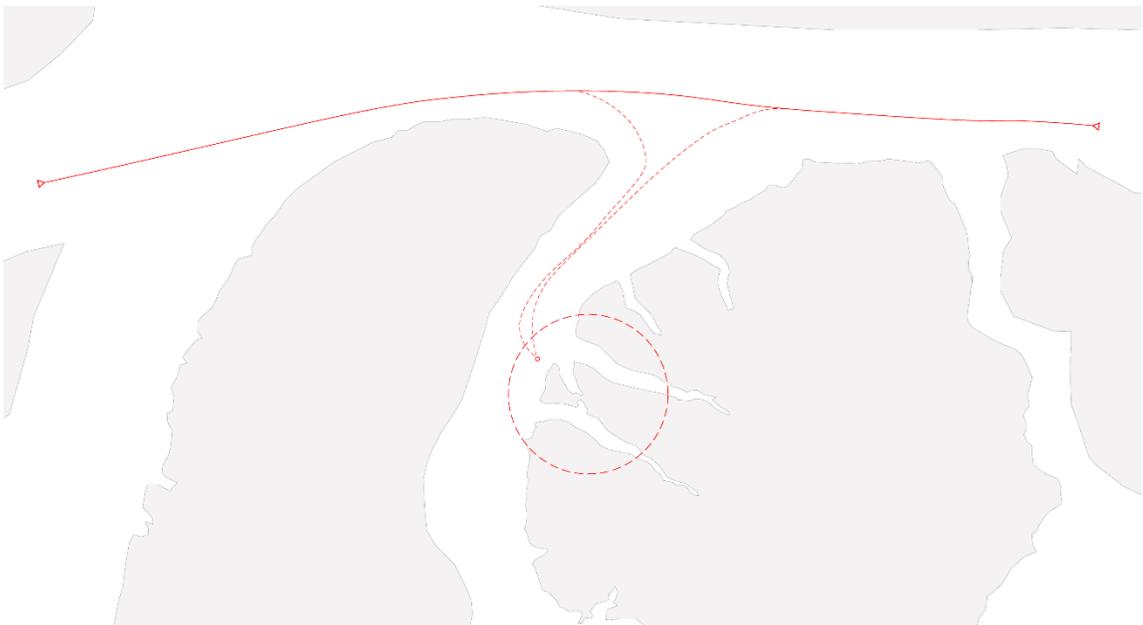
<sup>13</sup> The Associated Press, *Giant Luxury Cruise Ship Crystal Serenity Makes Historic Voyage in Melting Arctic*, (National Post. September 12, 2016), Accessed June 07, 2017. <http://nationalpost.com/travel/giant-luxury-cruise-ship-crystal-serenity-makes-historic-voyage-in-melting-arctic>.

experienced the acculturation that led to their current urban condition, so too are they now having to adapt to these new anomalies that are fast becoming a new normal for the arctic. What role can infrastructure play in mediating these existing conditions with rapidly developing new ones? How can the resultant infrastructure provide agency for the Inuit to have a voice in the development of these new landscape and seascape instruments?



**Figure 02-E // Northwest Passage**

*The red line indicates the main route of the northwest passage. Admiralty Inlet is marked with a dashed circle.*

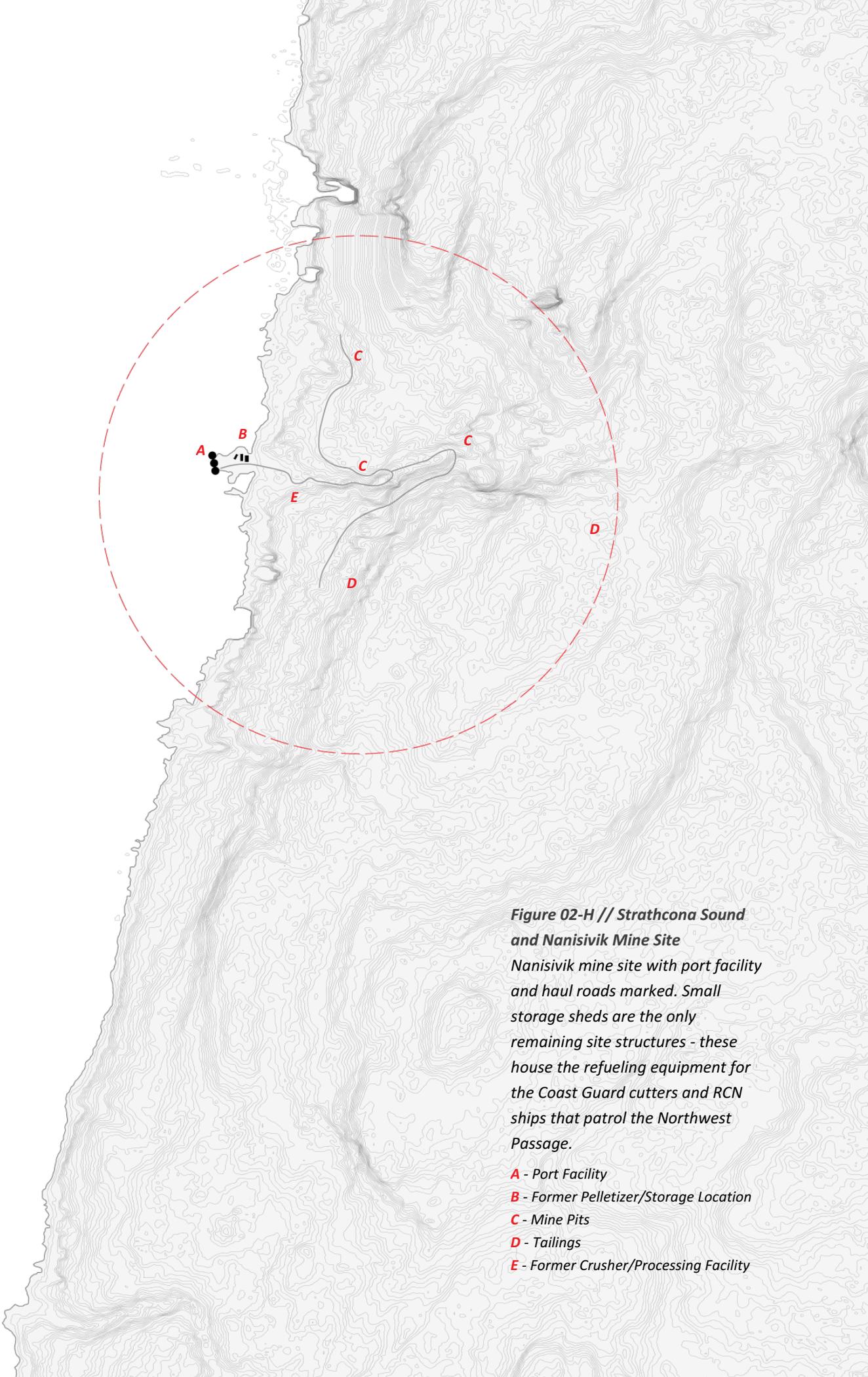


**Figure 02-F // Admiralty Inlet**

*The red line indicates the main route of the northwest passage with the Crystal Serenity deviation marked dashed. The Borden Peninsula is marked with a dashed circle.*

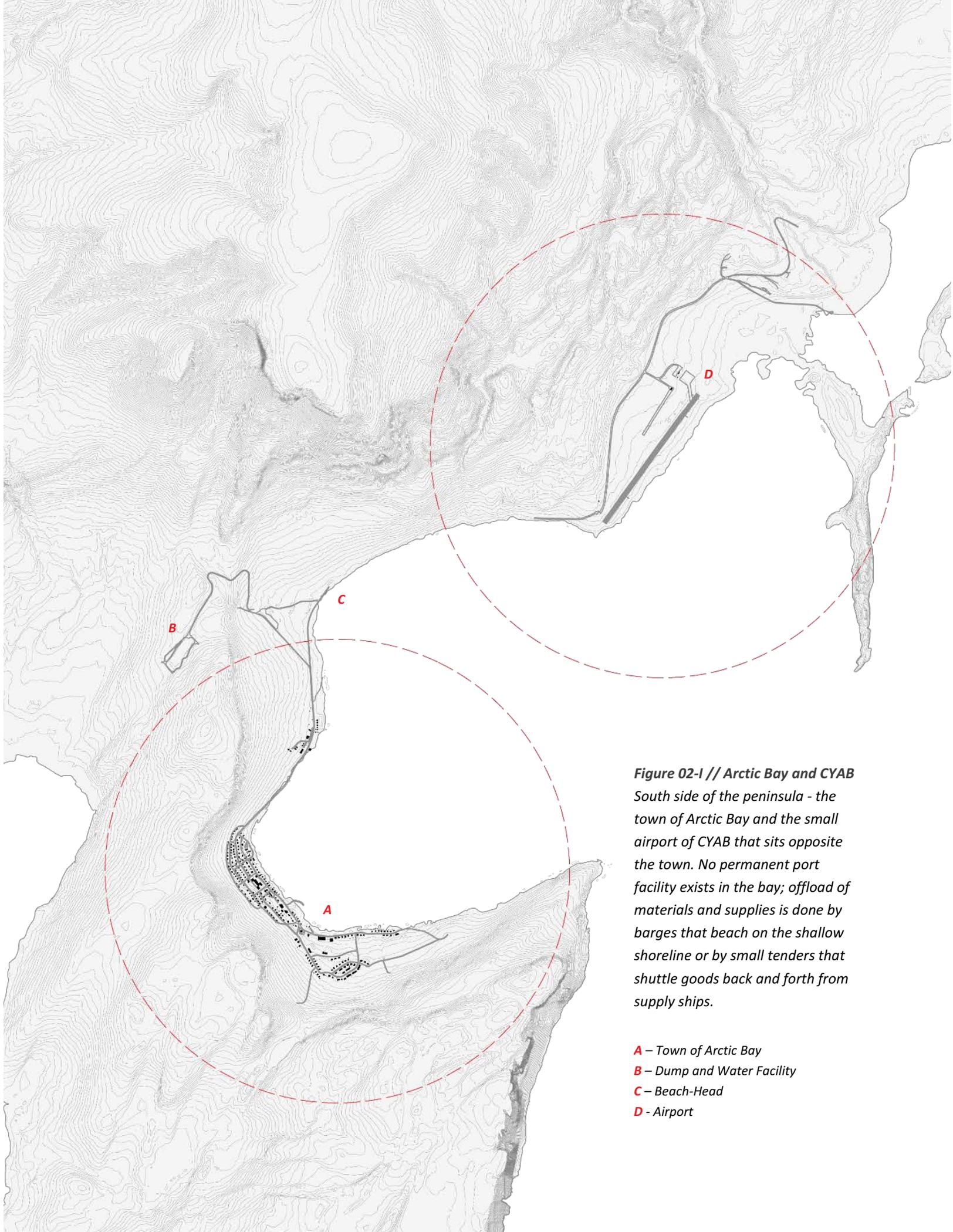
Figure 02-G // The Borden Peninsula





**Figure 02-H // Strathcona Sound and Nanisivik Mine Site**  
Nanisivik mine site with port facility and haul roads marked. Small storage sheds are the only remaining site structures - these house the refueling equipment for the Coast Guard cutters and RCN ships that patrol the Northwest Passage.

- A** - Port Facility
- B** - Former Pelletizer/Storage Location
- C** - Mine Pits
- D** - Tailings
- E** - Former Crusher/Processing Facility



**Figure 02-1 // Arctic Bay and CYAB**  
South side of the peninsula - the town of Arctic Bay and the small airport of CYAB that sits opposite the town. No permanent port facility exists in the bay; offload of materials and supplies is done by barges that beach on the shallow shoreline or by small tenders that shuttle goods back and forth from supply ships.

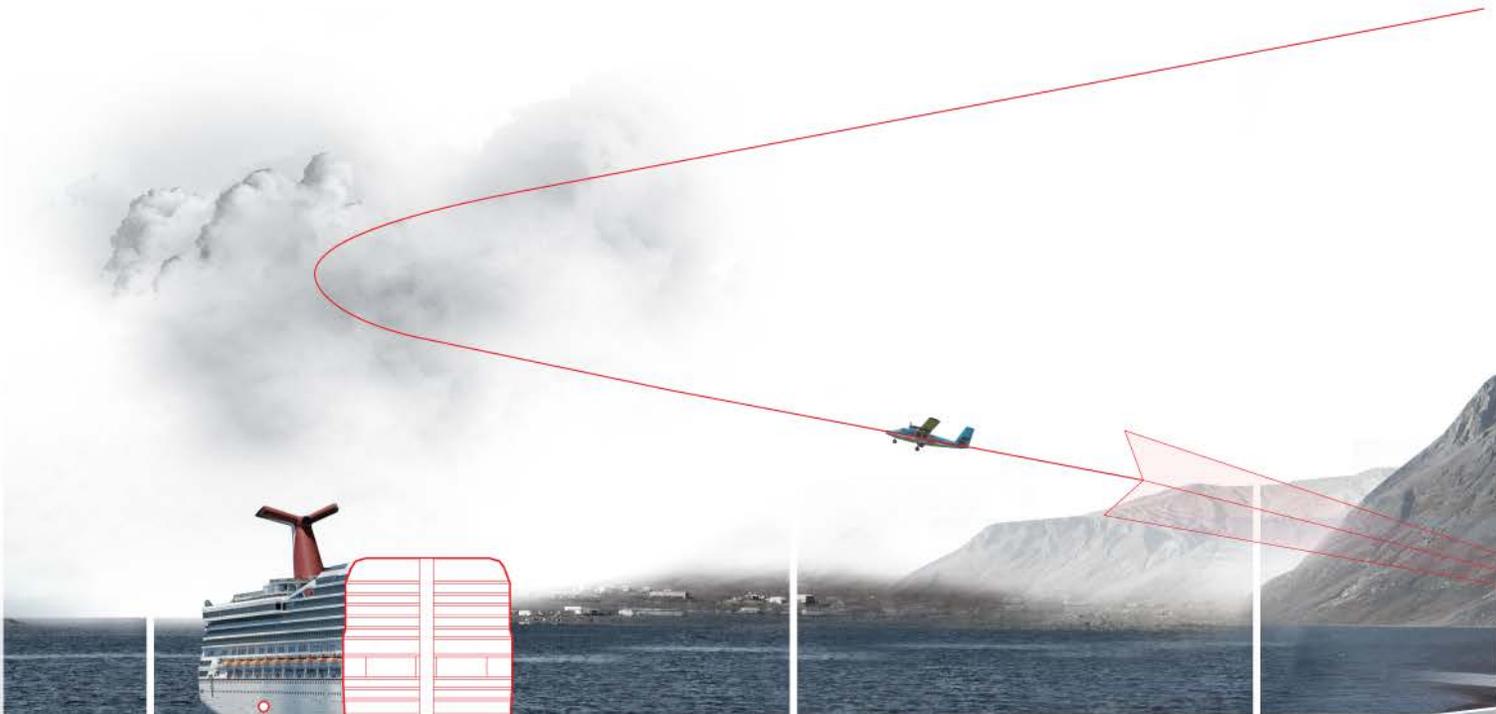
- A** – Town of Arctic Bay
- B** – Dump and Water Facility
- C** – Beach-Head
- D** - Airport

**Figure 02-J // Town Site – Deposition**  
*The depositing of primary and ancillary structures on the landscape and seascape – building/individual scale of the human*



**Figure 02-K // Cruise Ship/Airport Site –  
Fluctuation**

*The dispersal, convergence and connections  
between local and regional elements  
- infrastructure  
scale of the regional*



**FLUCTUATION**



**CRYSTAL SERENITY**  
*first cruise ship to transit the northwest passage  
in 2016 carrying over 1600 arctic eco-tourists  
from 20 countries*



**ZODIAC**  
*fast moving inflatable craft used to shuttle  
people ship to shore. used primarily for its  
shallow draft and fast speed, carries 20 people*



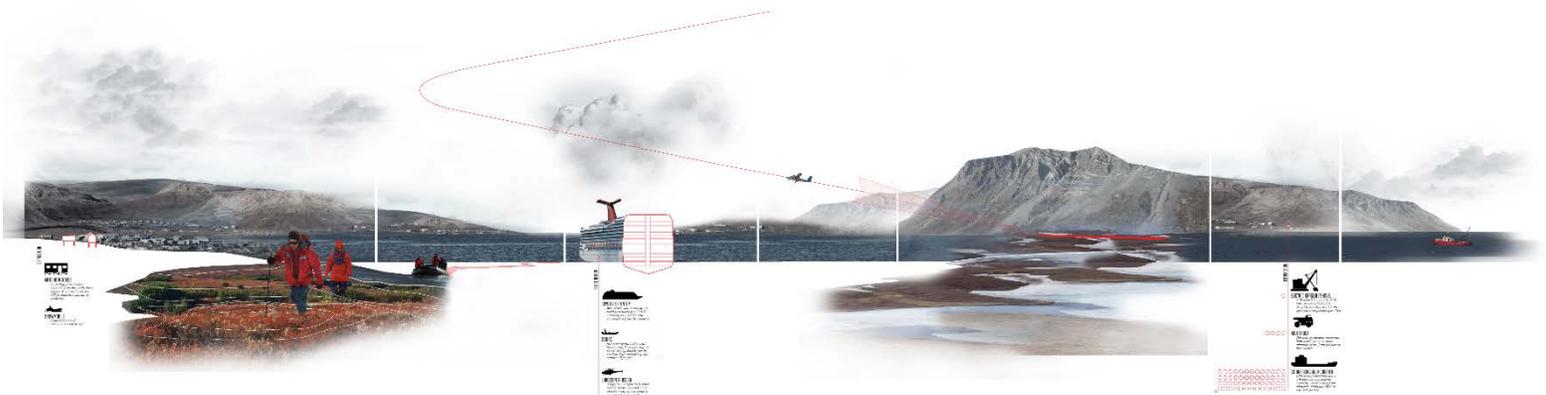
**EUROCOPTER AS350**  
*a light twin-engine helicopter used to scout ice  
conditions and ferry patients in medical  
emergencies, crew of 6*



**DHC-6 TWIN OTTER**  
*a medium twin engine turboprop aircraft  
capable of landing on short, unprepared fields,  
the twin otter is a staple of the arctic, carrying  
supplies and people between the hamlet  
communities*







**Figure 02-M // Site Section at Arctic Bay**

*It became critical to understand the site, its individual components and how they were composed in concert with one another. The site section explores the primary sites of the town, the airport and the mine, as well as the subsites of the eco-tourist landing, the cruise ship and the mine beaching area.*

## **3.0 - RESEARCH THEMES**

**3.1**  
**OBSERVATION A: EXTRACTION**

**3.2**  
**OBSERVATION B: DEPOSITION**

**3.3**  
**OBSERVATION C: FLUCTUATION**

**3.4**  
**SUMMARY + PROCESS**

### 3.1 – OBSERVATION A: EXTRACTION

Many of the small hamlet communities in Nunavut are paired with an industry and/or installation (such as a research station or national defense infrastructure). For Arctic Bay, it is the zinc, silver/lead mine of Nanisivik<sup>14</sup> on the northern edge of the peninsula. Mining in the north is a surging industry that will only continue to grow as commodity prices rise and as sea ice and permafrost retreat due to global warming, making the area more accessible than ever. Until 2005 most northern mining centered around Yellowknife and locations throughout the Yukon. In comparison, resource extraction in Nunavut was a small part of the overall industry, worth approximately \$19.8 million<sup>15</sup>. This stands in stark contrast to 11 years later in 2016, when the territory saw an exponential industrial expansion worth a record \$733 million.<sup>16</sup> As routes like the Northwest Passage continue to have longer ice-free seasons, access to current and potential mine sites – and sites that have been idled due to economic downturn (as is the case at Nanisivik) - become more and more feasible.

Mining is representative of work at a scale that is at times incomprehensible. It is a redefining of the landscape that is limited only by the scale of the machine; and mining landscapes can change at a geological scale of time and scope because of machinic and chemical technologies. Nanisivik, like many high arctic mining operations, was a combination of open pit and sub-surface mining methods.

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<sup>14</sup> Inuktitut syllabics: ᐱᐅᐅᐅᐅᐅ, translation: *the place where people find things*

<sup>15</sup> Source: NWT & Nunavut Chamber of Mines, Accessed January 10, 2018. [http://www.mc-fm.ca/issues/Spring2017/Spring2017\\_news11.html](http://www.mc-fm.ca/issues/Spring2017/Spring2017_news11.html) (accessed March 06, 2018).

<sup>16</sup> Ibid.

**Town of Nanisivik:**

While the main community of Arctic Bay predates the mine and still exists to this day, a smaller company community named Nanisivik was once present on the site near a small airstrip roughly eight miles to the south of the main facility. As recently as 2010, the population of the town was a mere seventy-seven residents, with the community registering no residents as of 2016.

The town provides an example of the permanence that all materials have in the arctic. The expense involved in moving commodities so far north means that it is economically impractical to move the materials back down south where they could be recycled. Conversely, the towns useful materials have been cannibalized and reused by Arctic Bay, a reminder that whatever is deposited in the north, often stays in one form or another, being repurposed as required.

**Port Facility:**

Nanisivik was and is still home to a basic pier facility. Though it has since been appropriated by the Canadian Armed Forces as an arctic replenishment outpost, this small outcropping into the bay provided a lifeline for the mine; a way for equipment and facilities to come ashore, and the ability for the mine to offload concentrate to bulk carriers that visited during sea-ice break up.<sup>17</sup>

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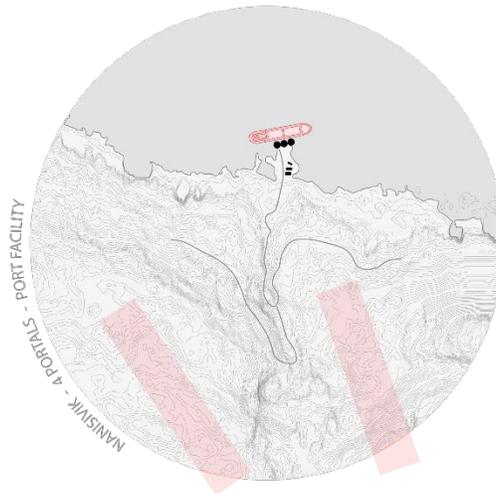
<sup>17</sup> "From March to May, shipping activity is halted to protect seal pups...an agreement between the port authorities and local hunters.

Source: Sheppard, Lola, and Mason White, *Many Norths: Spatial Practice in a Polar Territory* (New York, NY: Actar Publishers, 2017), 259.

**Production Area/Mine Pit:**

Mining at the Nanisivik site officially began in 1976, after being originally staked as a mineral deposit claim almost forty years earlier.<sup>18</sup> Primarily a zinc mine, the facility also produced a quantity of lead and silver as by-products of the refining operation. Annual mine production when the site was active yielded over 125,000 tons of ore concentrate which was then sold to smelters, many of which were located in Europe.<sup>19</sup> The main production facility primarily consists of a series of small to medium open pits, a number of tailings piles and basins to the southwest, and a crushing and concentration facility near the port location on the south side of Strathcona Sound. With production halted in 2002, the facility has been idled and lies dormant. The community of Arctic bay has been in talks with the government of Nunavut and the federal government to reopen the mine or turn it into a skilled-trade training facility to support local workers in the territories' flourishing mineral industry.

**Figure 03-A //**  
**Nanisivik Mine Site**



<sup>18</sup> Gait, Robert I., George W. Robinson, Karen Bailey, and Doug Dumka, *Minerals of The Nanisivik Mine Nov-Dec 1990* ((Volume 21, Number 6) *The Mineralogical Record*). N.P., 05 Oct. 2011.

<sup>19</sup> *Ibid*, 2.

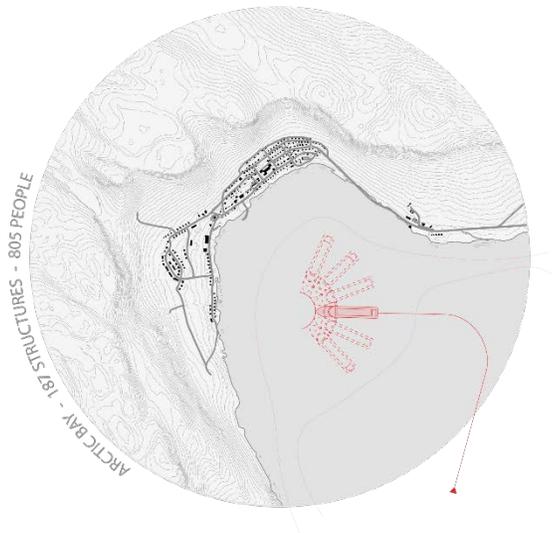
**Summary:**

Mines such as these are prevalent in the north – how might a community such as Arctic Bay be re-envisioned should the mine be re-activated? How might the scale and scope of manufacturing, extracting and redepositing of the landscape alter the community? With climate change well underway, how (and why) should the infrastructure introduced today impede or embrace a climate driven terra-forming of the landscape? How can extraction at the scale of the machine be repurposed for the essential scale of the individual?

### 3.2 – OBSERVATION B: DEPOSITION

Communities such as Arctic Bay are a relatively new feature in the north. Only since the 1950's have the Inuit called the 24 hamlets set up by the Government of Canada across Nunavut 'home'. The Inuit people have traditionally existed as nomads, travelling the land and the ice, foraging and hunting. Centralized and stationary community living has brought with it the deposition of foreign objects on the landscape which have dramatically changed the Inuit way of life: houses, infrastructure, roads, etc. In 2016, the visiting cruise ship *Crystal Serenity* brought over 1600 people to this small community of 800, tripling its size in a matter of an hour. How does the deposition of 'permanent' buildings and structures, as well as the depositing of thousands of people onto the shoreline impact the functioning of a community like Arctic Bay? How do elements such as the cruise ship redefine the ideas of permanence and adaptability for the North?

**Figure 03-B //**  
**Town of Arctic Bay Site**





heavy machinery such as wheel loaders are used to move palettes into the communities they connect to. Ships such as the *Crystal Serenity* depend on small *tenders* (zodiacs and launchable life-boats) to ferry passengers at ports of call. Of critical importance to the government and community is the ability to provide search and rescue, as well as defense and regulation capabilities of these vessels. The lack of marine infrastructure means that the Government of Canada does not possess the capability to station coast guard vessels in the north. Does this responsibility fall to the communities that line what might someday be major shipping lanes?

Both people in the towns and communities, as well as the industries often associated with these settlements, depend on these vital networks that have come to define life in the north. With more and more people moving into arctic and high arctic regions due to climate change<sup>21</sup>, these *thin* connections will need to be amplified. How might these new paths and new points of infrastructure redefine the landscape and seascape? How does this 21st century topography overlay onto the physical topography of the land/ice/sea? How does it interface with how the Inuit view the land as infrastructure?

### 3.4 - SUMMARY + PROCESS

Clearly, for a small site that at first impression may seem like a quiet frontier outpost, there are a multiplicity of activities at varying scales taking place. This prompted a series of further questions: how was the community participating in these activities? What type of infrastructure and architecture existed to support the current scale and future expansion of these facilities? Was there an architecture that could give agency to a community such as Arctic Bay, to provide

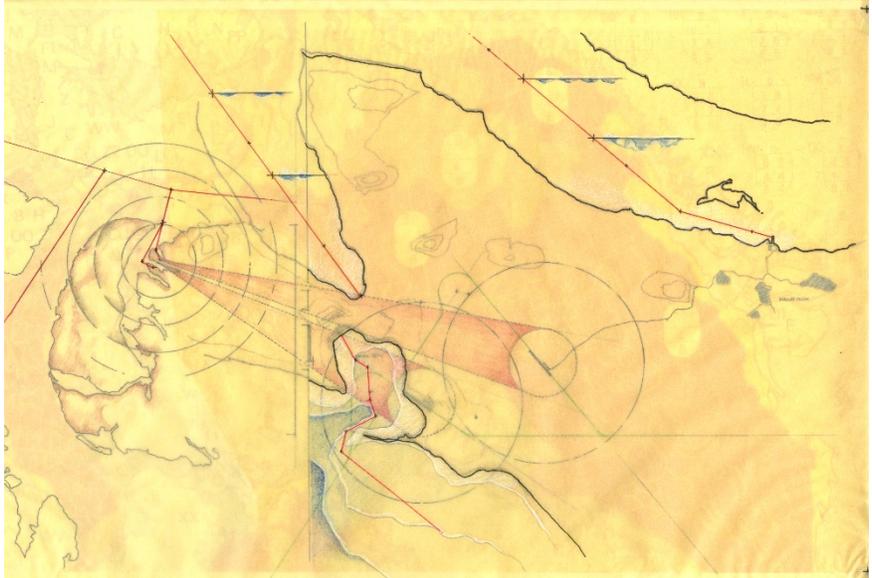
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<sup>21</sup> Sheppard, Lola, and Mason White, *Many Norths: Spatial Practice in a Polar Territory* (New York, NY: Actar Publishers, 2017)

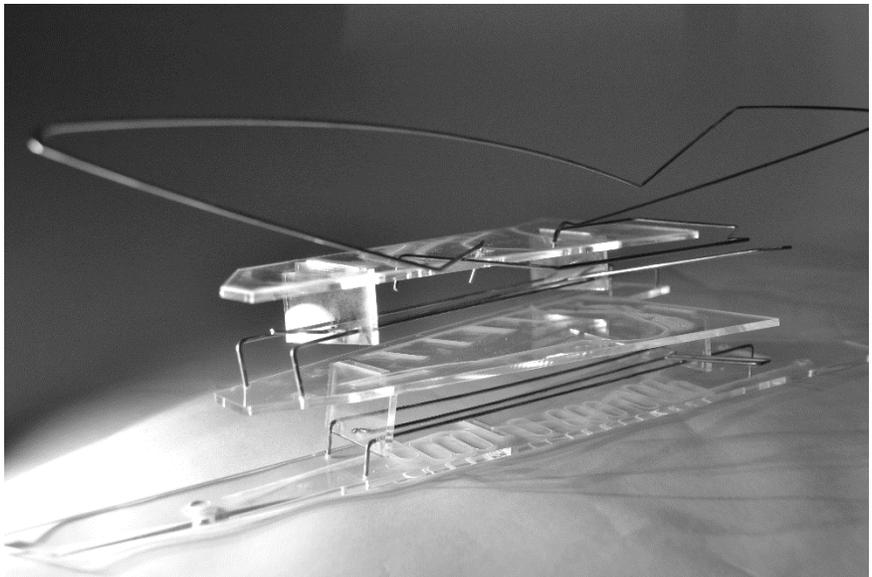
a voice in a national and global conversation on arctic tourism, industry and sovereignty?

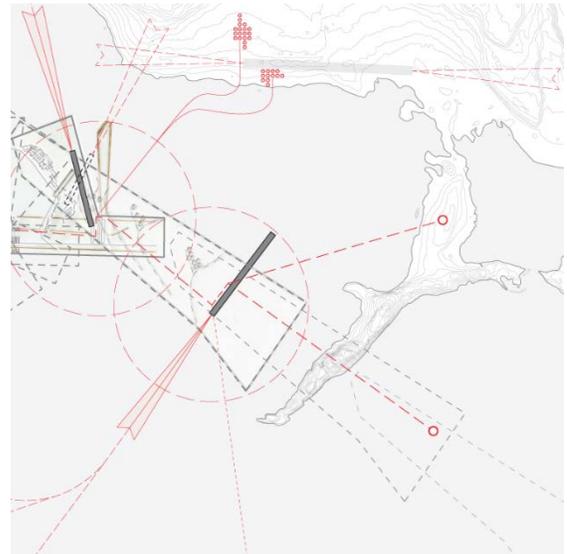
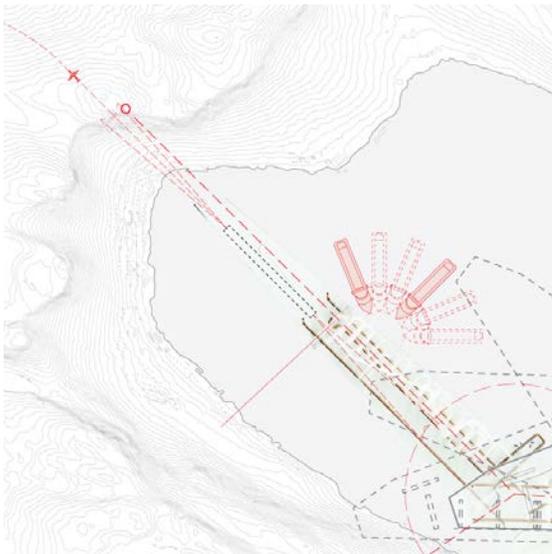
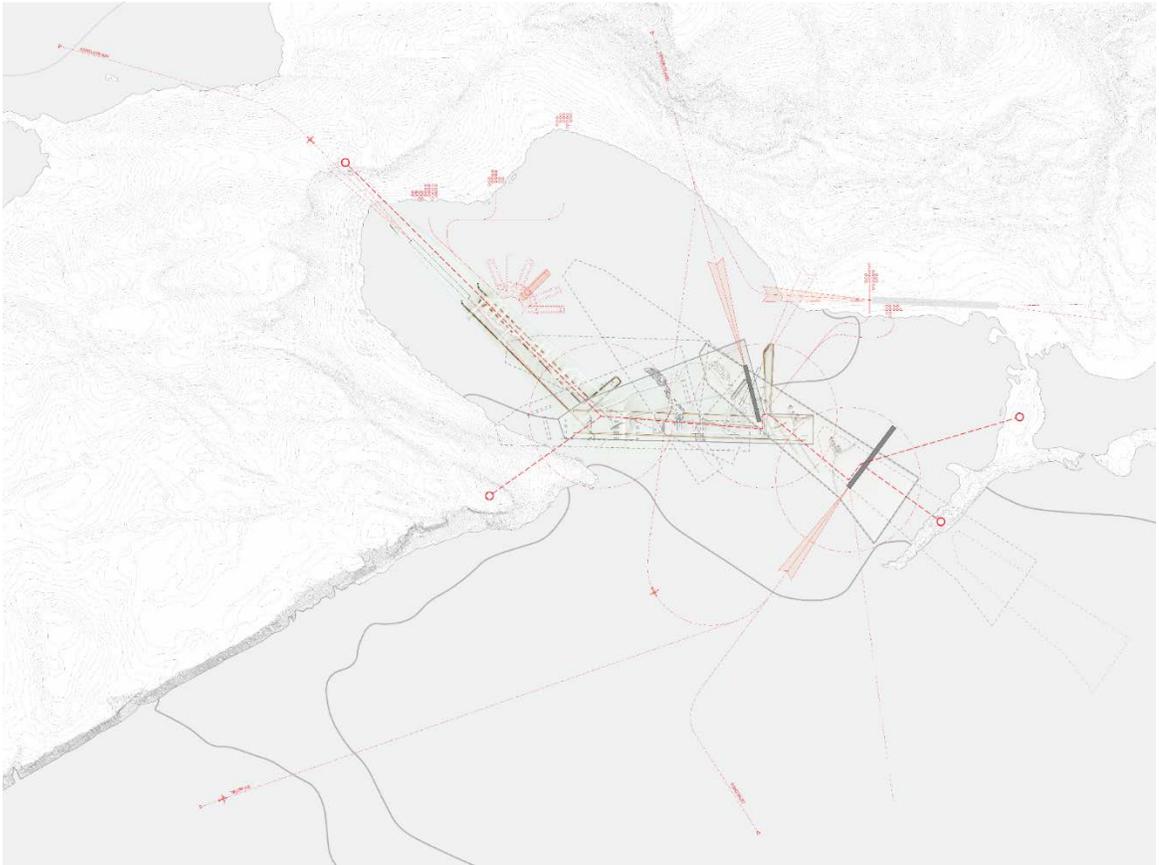
These questions lead to a series of models and drawings that attempted to explore the different actions, and scales of these actions, in synchronicity – a speculative *landscape and seascape instrument* for the Anthropocene era. What started out as a study through drawings, quickly morphed into the development of a drawing instrument which reflected the infrastructures that exist in the north; both the seen (mining, extraction), unseen (air routes, shipping navigation) and interstitial (the Inuit use of land as infrastructure).

**Figure 03-D // Scalar Sketches - Sketchbook**  
*Sketchbook explorations of the various infrastructure elements (both physical and navigational).*



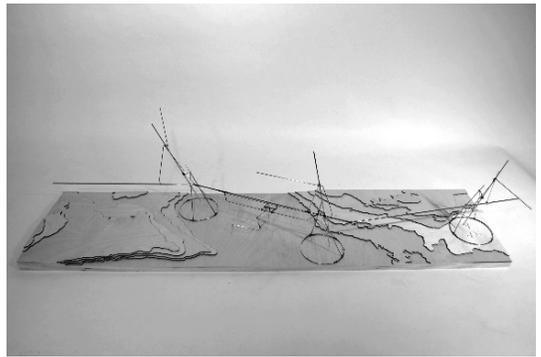
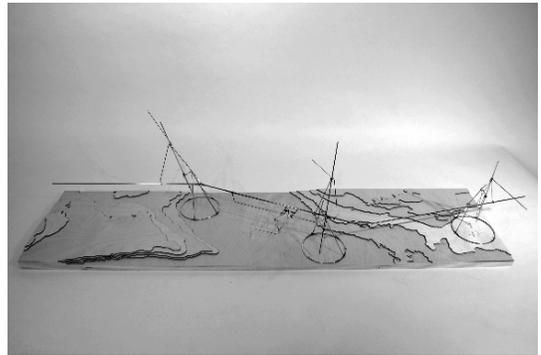
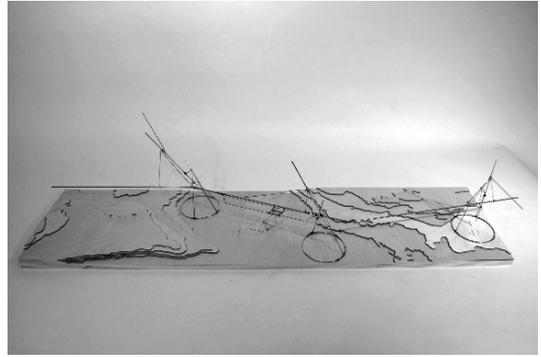
**Figure 03-E // Drawing Instrument**  
*Transfer of the information from the sketch into a drawing instrument - using the landscape to mark the landscape + seascape*





**Figure 03-F // Speculative Scalar Drawing**

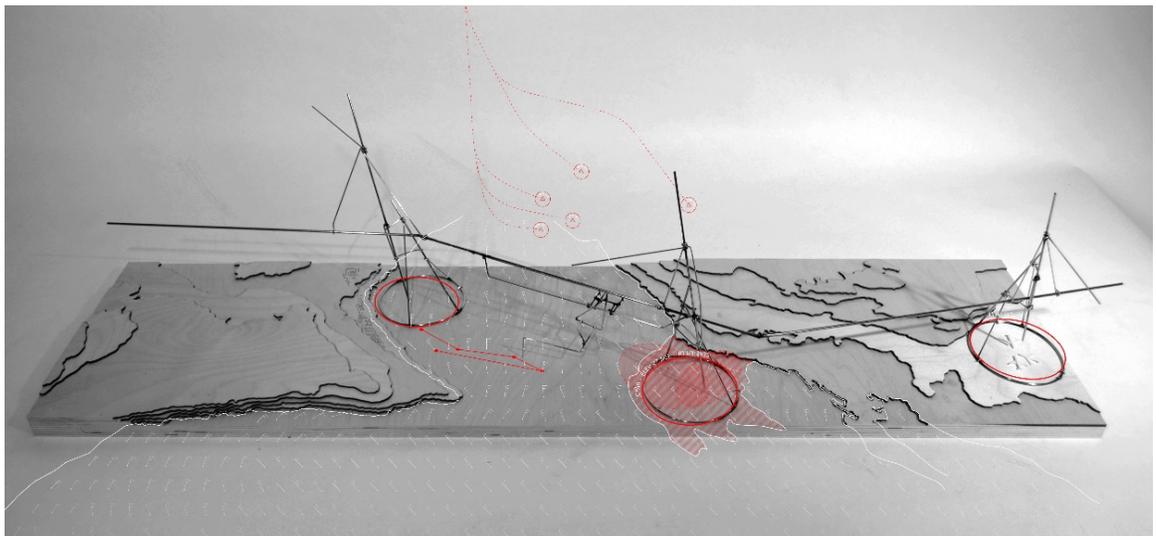
*It became imperative to catalogue the various scales, the changes in those scales, as well as the seen and unseen infrastructure vectors that were being drawn over, on and below the landscape + seascape. As such, a series of speculative scalar drawings were developed to explore and identify the modes of infrastructure and their effects on one another. These drawings produced from the drawing instrument (Figure 03-E)*



**Right: Figure 03-G // Speculative Scalar Model Sequence**

Sequence shots of the scalar model below in movement.

**Below: Figure 03-H // Speculative Scalar Model**  
Another scalar and movement tracing exploration, this time in the form of a kinetic landscape instrument. An attempt at exploring the movement of different modes of infrastructure and their interaction with one another and the tracings/inscriptions that they produced on the landscape + seascape.



## **4.0 – A SOUTHERN WAY OF INFRASTRUCTURE: FIRST TEST SITE**

### **4.1**

**A TEST CASE: ATTEMPTED RESOLUTION OF THE MINE SITE AT NANISIVIK**

### **4.2**

**REFLECTING ON A SOUTHERN WAY OF BUILDING IN THE NORTH**

#### 4.1 – A TEST CASE: ATTEMPTED RESOLUTION OF THE MINE SITE AT NANISIVIK

With the above as context, the thesis developed as a test of a new method of infrastructural development, one that would react to the landscape, and inscribe upon it. This began as a series of pylons that could be laid across the landscape and seascape to intersect communities, industries and other points of interest and necessity – an infrastructural connector that would link sparse landscape elements. The purpose of these infrastructural connectors was two-fold: (1) to provide the necessities to sustain life and various activities (the mining operation, but also other programs such as the airport, the cruise ship and the town) in a very harsh environment and (2) to activate the interstitial space between them.

The research began by taking the mine and reimagining the infrastructure which would be required for the site to function, and how that infrastructure could be informed by the previous explorations: changes in scale, demarcation, interaction with the sea and the land. The research focused on three major programs for the site; the mining operation, the processing facility, and a port facility to export and supply those operations. Linking these together would be a new reimagining of infrastructural connectors that would build on the idea of the *utilidor*. These connectors would neither be roads, nor could they be links by air or sea - they had to be something in-between.

The *utilidor* is a concept that was developed in the hamlet community of Inuvik to address the lack of basic utilities in an urban setting. In its most basic form, it is a utility corridor that rests on the land which initially started out as a heated corridor in which water, sewage and electricity were passed from house to house.<sup>22</sup> Due to

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<sup>22</sup> Sheppard, Lola, and Mason White. *Many Norths: Spatial Practice in a Polar Territory* (New York, NY: Actar Publishers, 2017), 125.

the permafrost in Nunavut, it is impractical to route these services underground, and due to the freezing temperatures, the corridors must be heated to keep the sewage and water pipes from freezing in the often sub-zero temperatures. To accomplish this, utilidoros are either completely contained in a heated space or are routed through intermittent warming stations that are powered by natural gas or liquid petroleum and use a series of heating coils to reheat the contents of the pipes before being passed along the corridor to the next station. This condition has only been expanded to a handful of other communities in the arctic, and while the system has worked well for Inuvik, it isn't without its shortcomings.

**Figure 04-A // Utilidor**  
*The utilidor, seen here in Inuvik, is a local servicing corridor that routes water, sewage and power from house to house.*

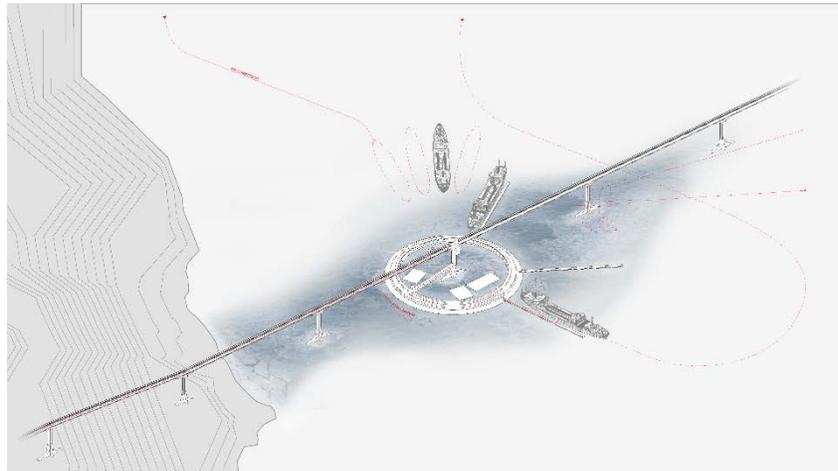


As of now, the majority of communities, industry sites and infrastructure (e.g.: airports) in Nunavut (and the arctic in general) are serviced by vehicular means – water and gas is trucked in/shipped in, and sewage and refuse is trucked out/shipped out. While the utilidor seeks to resolve this issue by providing centralized services, they are prone to mechanical breakdown, and are limited to the confines of the community or site which they service, ultimately relying on the same outside connections as other communities. In looking at this method of connecting the mining site elements,

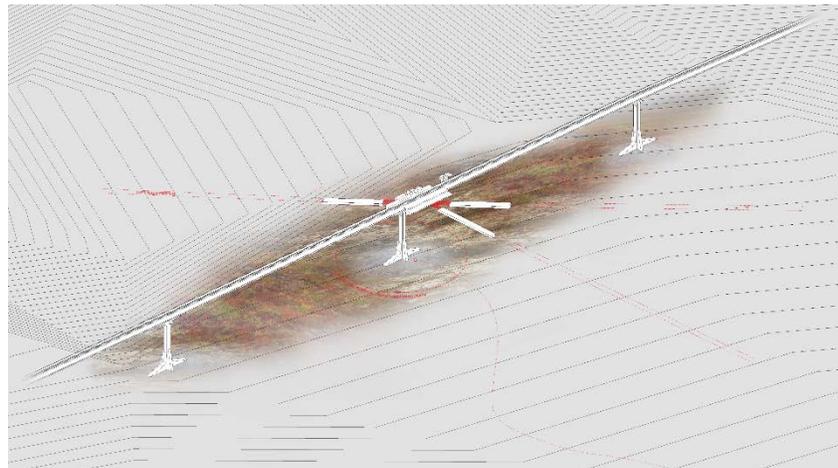
accommodating these services became a central component of the design research.

The utilidor was an intriguing case study for the mine site, one that could be built and expanded upon. How did it address the issue of long distances (fluctuation)? How could it create or define space (deposition)? How might it re-tool the landscape and or seascape (extraction)? How did other outside factors like the movement of people, vessels, animals become impeded? How could those actions be enhanced?

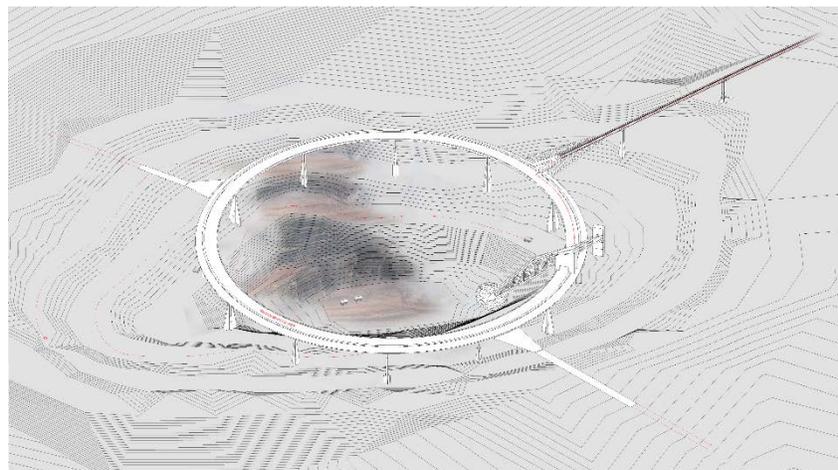
**Figure 04-B // Port**  
*Sea connection vital to mine functioning developed around the base of an infrastructural pylon.*



**Figure 04-C // Processing**  
*A reconfigurable processing armature to connect to outlying nodes while producing concentrate from mine materials.*



**Figure 04-D // Mining**  
*A speculative mining machine connectable to other points of infrastructural connectors.*



## 4.2 – REFLECTING ON A SOUTHERN WAY OF BUILDING IN THE NORTH

In the design of a test case, and in the testing of that prototype at the mine site, the southern bias of the architecture became increasingly clear. This was, in part, due to the site itself – the mine and its operation – and intervention of the landscape in this fashion; a representation of almost everything that is status quo in the arctic, and the past and present relationship that Canada as a nation has had with the arctic region. This current relationship is based heavily on resource extraction for the benefit of the south; the extraction of mineral resources to fuel a southern economy, as well as the accepted degradation of the landscape and seascape in pursuit of economical and sovereign gains. This was also in no small part due to the inherent biases of me as a southern designer, and the recognition that fixed infrastructure in the north was only furthering a reliance on the south.

This proved to be a major inflection point in the thesis. While difficult to realize the inadvertent bias in the early work it also provided an opportunity to re-tool the process, and to apply a new type of authorship to the research – a recognition that whatever was going to be contributed to the north, would ultimately have to be taken out of the hands of the south to have any relevance to the land, the sea and the Inuit. The conversation that this infrastructure had with the land had to be *of* the north, not of the south, otherwise the expansion of this system across the land and sea would amount to nothing more than a new form of colonialism. It then became critical to think about the method of deployment and the various states of the elements in use, in abandonment, in reserve, and in decay).

This prompted a return to the question stated at the beginning of the thesis:

*This thesis asks what role infrastructure can play in present-day Nunavut, how it can improve the lives of the Inuit through the provision of the basic necessities of an urban living condition, while supporting contemporary realities of economy and industry. It also questions the agency of that provision and intervention, the intention and role of Canada's relationship with the north, and how an infrastructure can be tailored to the unique circumstances that exist in the communities of Nunavut today.*

This would lead me into the next study of the project; the development of a new *infrastructural connector*, one that could mediate the problems that face northern communities today – basic infrastructure such as water and electricity – but also address the new realities of globalization, industry and climate change in the arctic, while reactivating the whole of the landscape and seascape.

## **5.0 – A SPARSE ARCHITECTURE: INFRASTRUCTURAL CONNECTIONS**

### **5.1**

**ON DEVELOPING A NEW INFRASTRUCTURAL CONNECTOR THAT IS OF THE NORTH**

### **5.2**

**THE EXPERIENCE OF CONTAINMENT: INHABITATION OF THE SURFACE THROUGH INSTRUMENT**

### **5.3**

**THE PALLET: SNOW FENCING + WINTER SHELTER**

### **5.4**

**THE PARACHUTE: SUMMER SHELTER + BUDY + BEACON**

### **5.5**

**THE SOURCE OF DEPLOYMENT**

### **5.6**

**SUMMARY**

## 5.1 – ON DEVELOPING A NEW INFRASTRUCTURAL CONNECTOR THAT IS OF THE NORTH

In the context of the development of an *infrastructural connector*, Robert Kronenburg in *Spirit of the Machine* ascertains that “[technology] is now a term generally associated with innovative, new, advanced... - the obscure; it frequently identifies some object or process not capable of being fully understood by everyone”<sup>23</sup>. The southern consensus could be surmised thusly: the Inuit have no way of grappling with southern technology and therefore it is impractical to expect a society and people who, relative to the south, have undergone a monumental shift in technological intervention. However, ironically, southern technology has no way of grappling with the north and so what might have seemed a failing of the north, is actually a failing of southern intervention. Paradoxically, the very thing that defeats Inuit use of southern technology and southern implementation of that technology, is the very thing that both are trying to overcome – the climate.

For many southern Canadians, including myself, it is easy to fetishize the idea of the north – cold, harsh, a puritan vision of living off the land and sea – as somehow part of a Canadian identity. However, in addressing the lack of basic infrastructure (water, power, communications) for both industrial and human activities, this thesis has taken the position that irrespective of the fraught history of the north, there is no desire expressed by the Inuit to return to a nomadic existence.

The purview of the exploration and response shifted, as a result, to a focus on adaptation. As they have done for thousands of years, the Inuit have proven their resilience and adapted to their

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<sup>23</sup> Kronenburg, Robert, *Spirit of the Machine: Technology as an Inspiration in Architectural Design* (Hoboken, NJ: Wiley-Academy, 2001), 9.

current conditions, either by peremptory means or not. When it came to addressing questions of a deployable infrastructure, this notion of adaptation became a key component. How could an infrastructure that is fundamentally *of* the south be adapted by the north, and conversely, how could the north readapt that resultant infrastructure in a particular response? Much in the same way that the infrastructure would support the traditional values of the Inuit, it would also support the new realities of the arctic – one that the Inuit themselves have and continue to adapt to.



## 5.2 – THE EXPERIENCE OF CONTAINMENT: INHABITATION OF THE SURFACE THROUGH INSTRUMENT

Architecture is often concerned with volumes - the creating of space through a series of surfaces that form an enclosure. While not exclusive to a western way of describing and practicing architecture, the way in which spatial practice is envisioned and executed differs around the world, as it does in the north. In its most basic form, architecture is a means of protection from the elements, i.e.: Laugier's *Primitive Hut*. Laugier posited that architecture comprises three basic elements: the column, the entablature (the horizontal elements that form the cornice and tie the columns together), and the pediment (the end-cap).<sup>24</sup> These base elements are used in conjunction with their related components to form the basis for architectural enclosure *on* the land. In the north however, surface is also viewed as an opportunity for inhabitation, occupation.

In the development of an infrastructural connector for the mine site at Nanisivik, the idea of inhabiting the infrastructure was only explored at a cursory level. For the most part, the idea of inhabitation was at node points: the mine, the processing site, and the port facility. However, as is the case with the utilidor and the connector pieces at the mine site, the necessities of life in the arctic climate have been provided by the connector. This presented an opportunity to also decentralize the living conditions from the specific nodes that are the settlements of today (either by necessity or to provide superfluous living conditions that exist beyond the hamlet community) – it suggests a reoccupation by the Inuit of the space between the hamlet communities.

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<sup>24</sup> Laugier, Marc-Antoine, *An Essay on Architecture* (Los Angeles, CA: Hennessey & Ingalls, 2009) - English translation by Annie Herrmann

The experience of containment by means beyond conventional architecture: the wall and the roof – is most often thought of as being on top of a surface. However, historical means of habitation in the arctic have included the occupation of the surface itself (i.e.: living within and on the snow and ice that is now considered interstitial space between settlements). Newer means - the containment by *technological* devices – are rapidly changing our experience of what it means to inhabit the world. In many ways, as Tim Ingold posits, “We treat the landscape as a view, and imagine that we see the world in pictures, optically projected into our minds...”<sup>25</sup>, that is, we inhabit the world as a series of surfaces, forgetful of the often-multilayer complexity that exists beyond the surface. Furthermore, our ancestors had an entirely different way of thinking about the earth and what it meant to live *in*, rather than *on* it. For the Inuit, the surface of the landscape and the seascape presented opportunities beyond occupation or shelter – it is a way of knowing the land, living with a cosmology of time, name, memory and their connections. In thinking of a mode of infrastructure, this idea became key to the development of the connector instrument. By decentralizing the *necessity* of existence within the hamlet community (as has been imposed by the south), the connector could potentially activate the interstitial spaces between the hamlet communities as viable living conditions as a way to reconnect the people to the land and sea.

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<sup>25</sup> Ingold, Tim, *The Life of Lines* (Milton Park, Abingdon, Oxon: Routledge, 2015), 41.

*Figure 05-B // Qamutiik's  
Lined Up on The Ice*



Inhabiting a sparse landscape requires that every element brought to that landscape or contained within it, has profound importance and utility. In a landscape as harsh as the Arctic, what little is provided or carried must often have multiple uses. The *Qamutiik*<sup>26</sup> is a sled that is widely used by Inuit and other high-arctic peoples. Reconfigurable and lashed together with wood components, the *Qamutiik* is a means of fast travel for hunting, transport, shelter and ultimately, survival. Its basic structure continues to be used today – traditionally pulled by sled dogs or people – with modern means of transport such as snowmobiles. The design is highly adaptable, able to be quickly reconfigured and readily accessible. Inspired in part by the *Qamutiik's* multiple functionality, the connector infrastructure was designed to likewise be a multi-faceted interface; an infrastructural multi-tool of the landscape and seascape.

The fundamentals of this simple sled formed the basis for a *multitool* like function – an infrastructure that could provide multiple uses (benefiting both the north and south) and be readily readapted on the landscape by the Inuit and others.

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<sup>26</sup> Inuktitut syllabics: ᑭᓄᓂᓂᓂ; translation: *sled*

### 5.3 – THE PALLET: SNOW FENCING + WINTER SHELTER

As has been previously discussed, Canada's arctic region lacks some of the most basic forms of infrastructure. The shipment of basic supplies and means for living form critical connections to some of the most remote communities in the world. Always present in the movement of these critical supplies is the humble wooden shipping pallet. The sheer abundance of materials that are exported by sea and air to the various communities around the territory means that there also exists an abundance of pallets in various configurations and materials – whether they be simple wooden construction or more complex air freight mobile metal pallets. The ubiquitous pallet has come to symbolize a way of life in the north, supporting life and activities that are indelibly tied to southern replenishment.

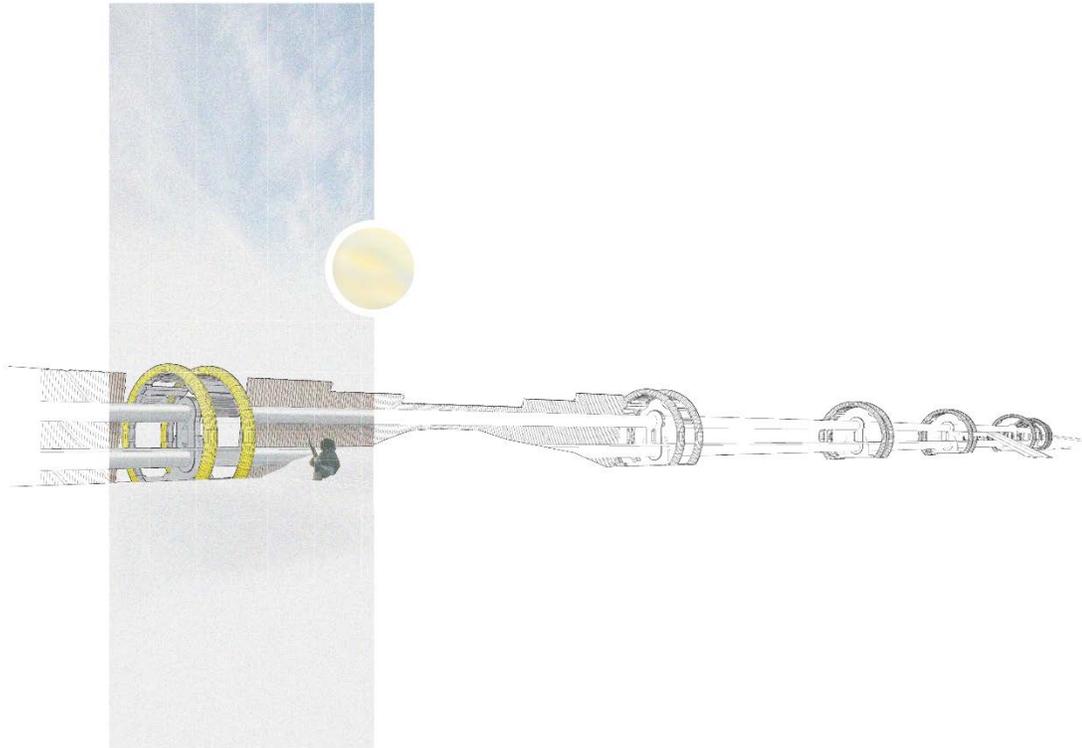
The pallet is a necessary component of the infrastructural connector, both to move its components across large distances as well as in their deployment. Bundled connector units shipped from the south or produced in the north could be deployed in multiple ways utilizing air, marine and individual resources to provide quick and easy deployment over long distances. Strings of connectors could be dropped by air from the back of low-flying cargo planes, deployed while at sea from the backs of ships as they traverse the routes between the hamlet communities, or even by individuals pulling *Qamutiik's* with snowmobiles across sea-ice or land.

Ever present in the arctic during the winter months, the wind is a constant consideration. Arctic Bay regularly experiences wind speeds in excess of 60km/h<sup>27</sup> during the winter months and has even seen sustained wind speeds as high as 80km/h for extended periods. In conjunction with the large open landscapes of the arctic region and

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<sup>27</sup> Government of Canada, *Historical Data – Arctic Bay, NU*, (Environment and Climate Change Canada. January 11, 2018), Accessed March 04, 2018. <http://climate.weather.gc.ca/>.

lack of vegetation, blowing snow and its effects on buildings, infrastructure and travel are a key consideration in any architectural or infrastructural proposal. In keeping with the theme of multifunctionality, even the pallet has been considered as an opportunity to mediate this issue.



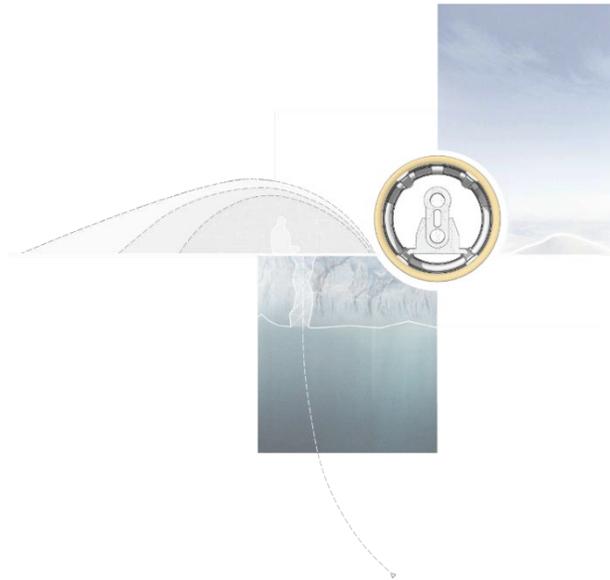
**Figure 05-C // Arctic Infrastructural  
Connector – Pallet Design**

*The pallet has been designed to throw snow in specific patterns to form gathering space, snow and wind protection for settlements and infrastructure, and to provide readily available snow build up for the construction of dug-out winter shelters.*

Utilizing findings by the *Strategic Highway Research Study*, the pallet configuration has been designed to cast snow beyond the fence in specific *pack patterns*,<sup>28</sup> that during the winter, could be used to form supplementary shelter along the windward side of the connector fence. This shelter would be created naturally by the wind and would be cyclical in nature; forming during the winter months and thawing during the summer. In this way, the connector aims to provide passive solutions to shelter beyond the bounds of the community while offering a viable means of snow fencing for communities.

**Figure 05-D // Arctic Infrastructural Connector – Snow Fence/Winter Shelter**

*Use of the pallet for construction of a snow fence to passively form winter shelters and snow fences.*



## 5.4 – THE PARACHUTE: SUMMER SHELTER + BUOY + BEACON

Recent events such as the arrival of the *Crystal Serenity* cruise ship pose new logistical challenges not only for the northern communities on the frontier, but also for the Government of Canada. Issues such as a cruise ship sinking or running aground, while rare, are

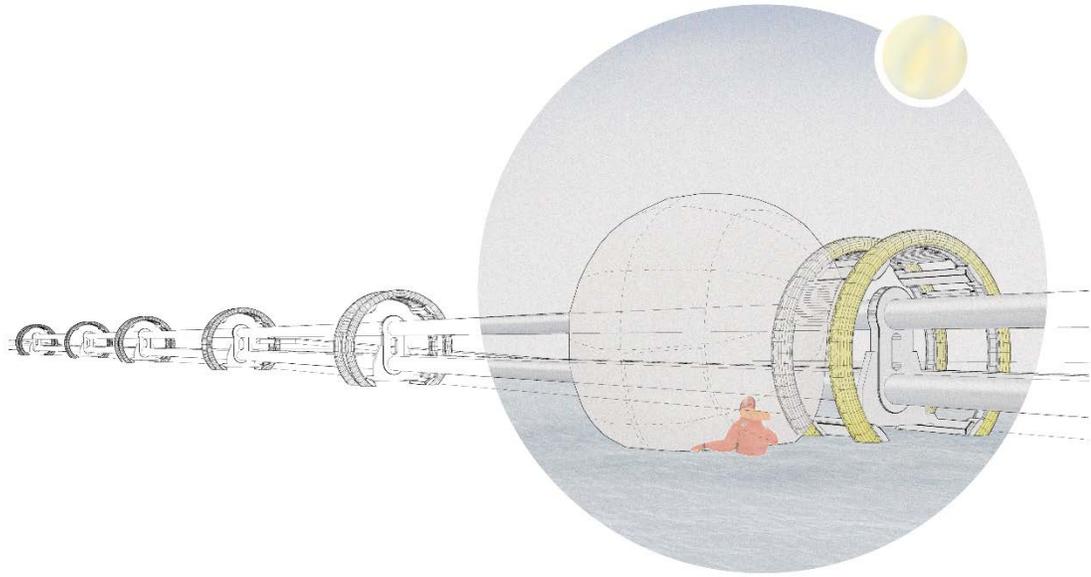
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<sup>28</sup> Tabler, Ronald D. *United States National Research Council Snow Fence Guide*, (Washington, DC: Strategic Highway Research Program, 1991).

catastrophic emergencies in well traversed waterways and in close proximity to major population centers – in a territory that does not have immediate strategic and emergency capabilities to contend with such a circumstance, the result could be disastrous. Canada’s Arctic Archipelago brings with it, its own disaster response and navigational issues, that the region is ill-prepared to respond to.

While Nanisivik’s port on the northern shores of the Borden Peninsula, less than 10km north of Arctic Bay, has been reactivated by the Canadian Coast Guard in recent years as a refueling depot, it is not a permanently manned outstation. In fact, the nearest permanently manned coast guard station is over 1200km away in Iqaluit. While planes could reach the community in a matter of hours, housing a population more than three times larger than Arctic Bay’s permanent population would be nearly impossible. The preferred method of sending a coast guard cutter to respond to an incident such as a grounding or sinking in one of the Northwest Passages shallow and uncharted waterways would take nearly five days of sailing from Iqaluit, assuming that ice conditions permitted the transit.

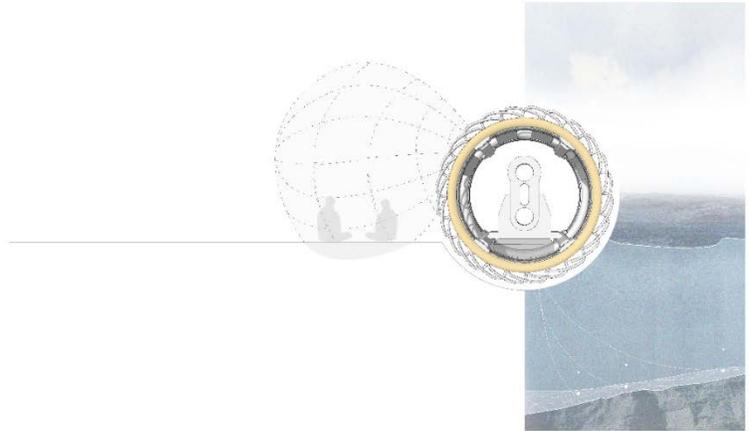
In this way, having a self-contained infrastructure already placed across the landscape could provide readily available disaster response, overcoming the time delays associated with having to deploy over thousands of kilometers. Here, the parachute used in deployment, has been considered as a potential emergency inhabitation capsule – a series of lifeboats strung across the seascape. In terms of navigational infrastructure, the connector has also been designed as a readily available platform for marine navigation beacons – a lighted buoy. It’s floating structure and lashing surfaces have been designed for the affixing of marine elements.



**Figure 05-E // Arctic Infrastructural Connector  
– Emergency Shelter**

*Use of the parachute as a ready-made emergency shelter along the length of the connector. The shelter could also be used by Inuit hunters to traverse the waters between the islands of the Arctic Archipelagos.*

**Figure 05-F // Arctic Infrastructural Connector – Summer Shelter**  
Use of the parachute in air deployment as an emergency shelter on the seascape.



**Figure 05-G // Arctic Infrastructural Connector – Marine Infrastructure Floating Pier**  
A speculative floating pier formed from multiple connector units.

## 5.5 – THE SOURCE OF DEPLOYMENT

Like many architectural and spatial interventions in the arctic, *who* enables the intervention and their reason for it matters just as much as the actual intervention itself – so too in this the case when it comes to the development of a potential infrastructural connector; a kind of technology<sup>29</sup> for the landscape. The way that we introduce these new elements to the landscape and seascape reflects how we interface with the land but also how we (the south) and the land (in whatever altered form it is at present) interface with the cultural and societal values that are present in these locations. The connector, a form of technology which is being enacted on the landscape prompts a discussion – “technology is a discourse between societies and their natural environments...”<sup>30</sup> as architectural professor Peter McCleary states. Technological interventions can be viewed as either a mediator or a separator between foreign objects (the connector to the community or the land/sea in this case). This calls into question the intention of deployment as well as the end use case of the deployed.

As has been the case for hundreds of years, since the early days of arctic exploration by Martin Frobisher in the late sixteenth-century<sup>31</sup>, the implementation of technology in the arctic landscape and in contact with the Inuit has been colored by the underlying theme of sovereignty and colonialism. Searching for the Northwest Passage, Frobisher’s use of technology was shaped by colonialism in

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<sup>29</sup> In the context of the infrastructural connector, Robert Kronenburg’s in *Spirit of the Machine* ascertains that “[technology] is now a term generally associated with innovative, new, advanced ... being fully understood by everyone”(1). So to does this *technology* that is being introduced need to be universally understood – it cannot be above or below an individual’s utilitarian need. In this case, *technology* is assumed to be a new part of the landscape, at the scales of the body and machine.

<sup>30</sup> McCleary, Peter. An Interpretation of Technology. *Journal of Architectural Education* 37, no. 2 (1983): 2-4.

<sup>31</sup> Best, George, Vilhjalmur Stefansson, Eloise McCaskill, and Wilberforce Eame.,. *The Three Voyages of Martin Frobisher: In Search of a Passage to Cathay and India By The North-West* (Amsterdam, DK: Israel A.D. 1576-8., 1971)

both the purpose of the expedition as well as the implementation - “...technology is both the doing and the thinking about doing”<sup>32</sup>. In the same way, the *intentionality* of tracing over the arctic cannot be attempted irrespective of the fraught history of the region – and in response this thesis has taken the position of duality– a passive (as much as is possible) and reactive infrastructure able to be deployed and used by all.



**Figure 05-H // Deployment - Air**  
Utilizing existing infrastructure for deployment initially.

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<sup>32</sup> McCleary, Peter, *An Interpretation of Technology*. (Journal of Architectural Education 37, no. 2. 1983), 2-4.

## 5.6 – SUMMARY

In the development of a deployable infrastructure, I realize that, initially, it would not be feasible to expect small hamlet communities to build, supply and develop their own infrastructure, much less deploy it across vast distances. This meant taking advantage of existing means, such as the already well-developed air transport network, and existing shipping capabilities.

While the initial phases of the project would see deployment and of course benefit by southerners, the main goal of the connector is to reactivate the interstitial spaces that exist between the hamlets to (1) provide the Inuit with the agency to expand beyond the bounds of the community, while (2) passively providing the necessities of life – the ability to survive, exist and prosper - for everyone that exists in these interstices.

## **6.0 – THE RESPONSE: RETRACING THE NORTH**

### **6.1 – A SPECULATIVE FUTURE FOR ARCTIC BAY**

The *Canadian Arctic Sovereignty Document*, prepared in 2006, defines Canada's domestic policy in the north. Under this document, the Government of Canada outlines the challenges, policy issues and strategic implications as well as responsibilities with regards to the peoples, Inuit and all landmass and bodies of water above the 66<sup>th</sup> parallel.

Listed in this document are some of Canada's key intentions with regards to maintaining sovereignty; issues such as climate change and the Northwest Passage, resource development, infrastructure development and strategic defense. Under the government of Stephen Harper, this document has been put into action and now governs Canada's current Arctic policy.<sup>33</sup> This document however fails to take into account an Inuit viewpoint of the Arctic, one that has adapted to the fixed settlement of the hamlet, but one that is also still deeply connected to the interstitial space between them: a connection to the landscape and seascape.

This project therefore seeks to explore a sustainable speculative future for Arctic Bay; a retracing of the town, its industry, and its peoples in the face of environmental, economic and infrastructural change while proposing a new method for activating the interstices that exist between it and other arctic communities – the temporal metropolis re-envisioned. This led to a series of

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<sup>33</sup> Canada, Political and Social Affairs Division, Library of Parliament, *Canadian Arctic Sovereignty*, by Matthew Carnaghan and Allison Goody (Ottawa: Parliamentary Information and Research Service, 2006).

drawings, models, and landscape and seascape instruments that, yes, support industrial and economic activities that are in the interest of southern Canada and current government policies, but also explore a means to re-envision that infrastructure in the time scale, temporality and seasonality that the Inuit were once familiar with before their settlement into the hamlet communities.

The resultant speculative project proposes the use of mine substrates transported along the connector, as well as from dredging, to provide the depositor a means to create a deep-water port in Arctic Bay's shallow cove, as well as a gravel airstrip that is better oriented to seasonal winds. This is accomplished through the use of a depositor device, a reimagining of the mechanic scale of the mine in the context of the community.

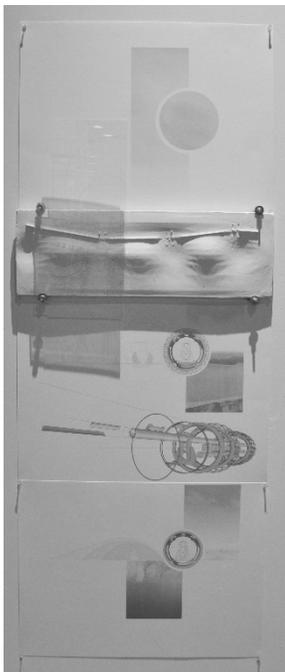
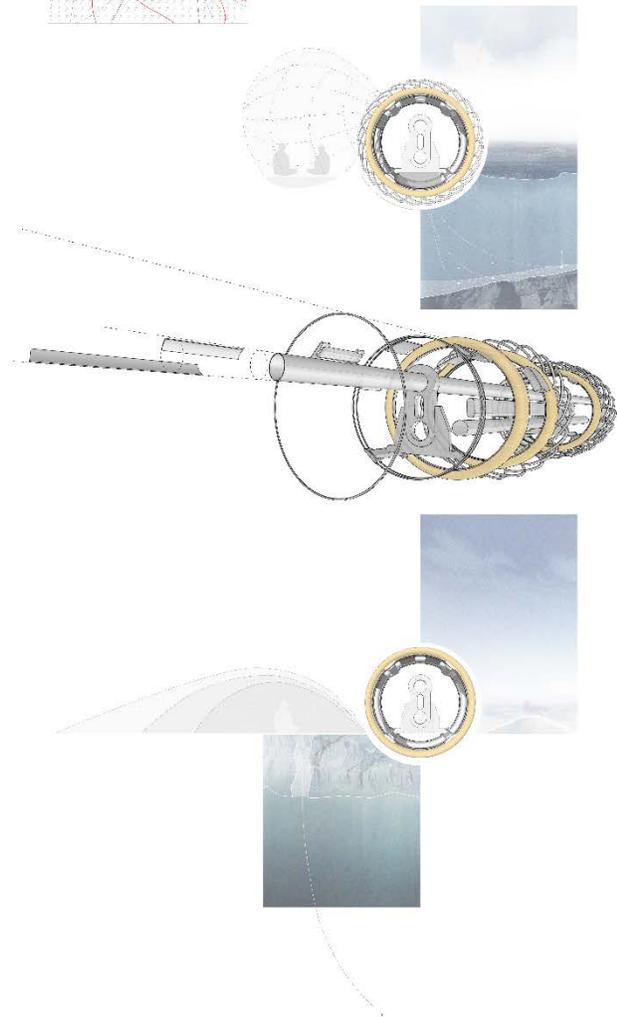
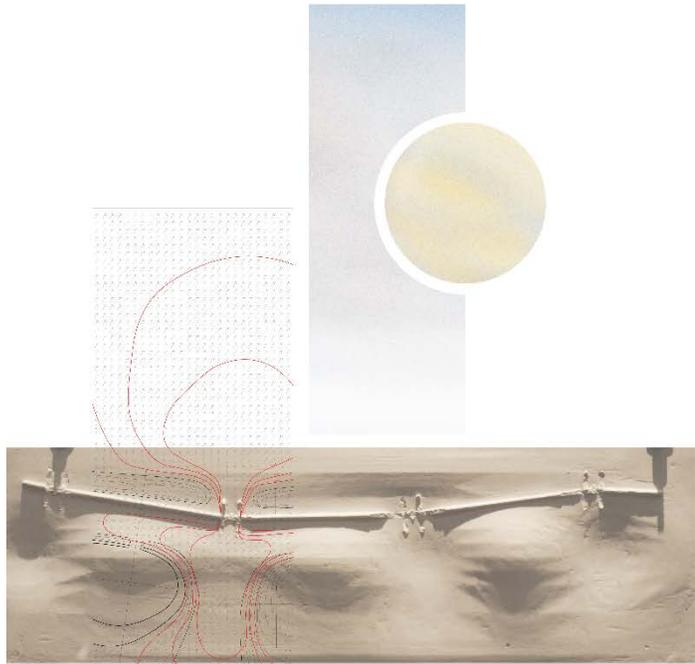
While the resulting breakwaters and depositions present significant alteration of the land and sea, they are envisioned as temporary, able to be washed out by the spring current: a temporary landscape/seascape that exists as needed, where needed, by the south, or the north, either intentional or unintentional – it embraces the natural oscillations of the temporal landscape and seascape that it occupies.

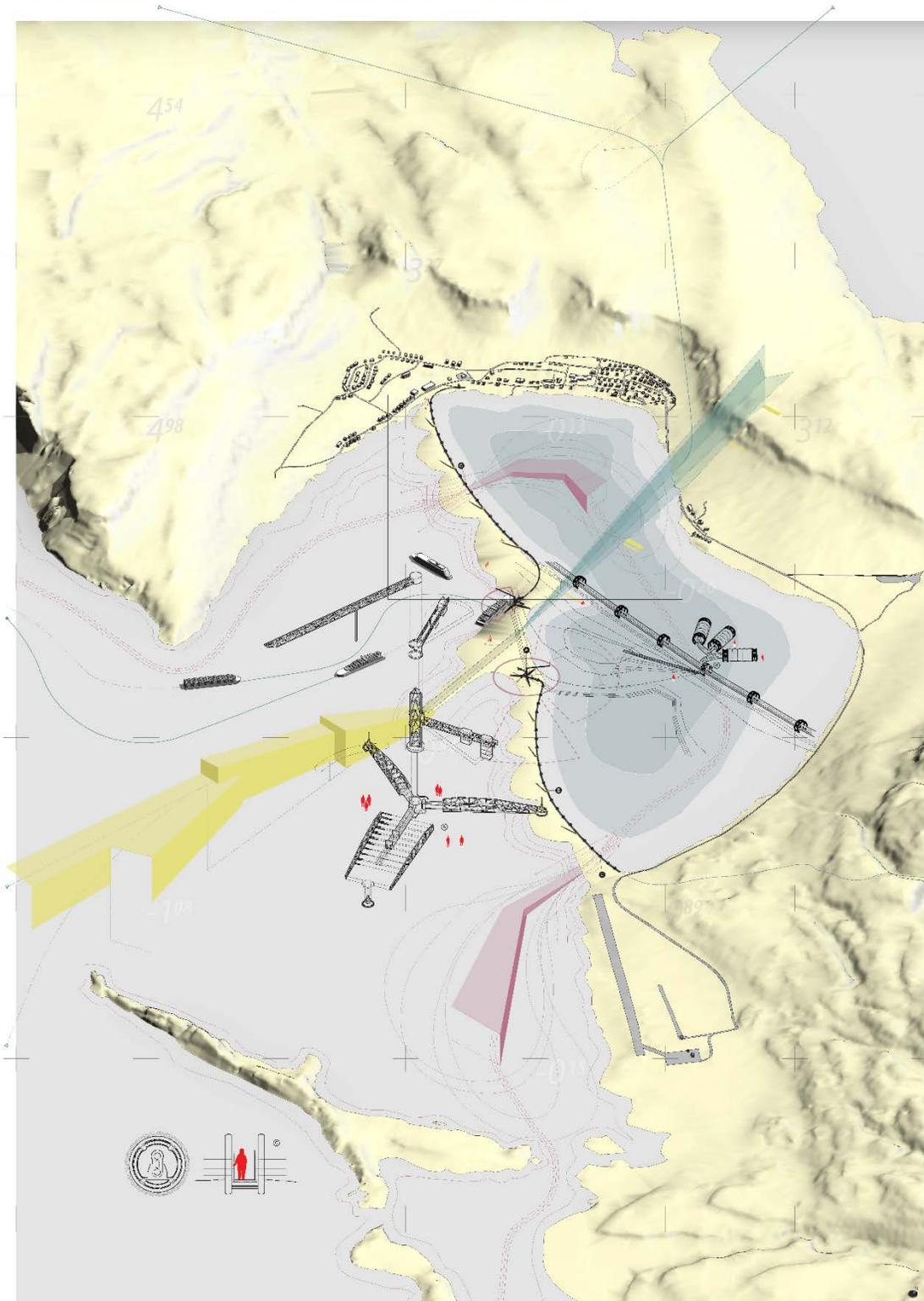
**Right: Figure 06-A // Infrastructural Connector Mixed Drawing**

While the connector was an infrastructural instrument that provided utilities in the form of power and water, it also explored the idea of inhabiting an infrastructure. This manifested in both an active form: the parachute used for deployment being used as an emergency summer shelter, as well as a passive form, a wind fence that is designed to shape snow-throws on the windward side that provided snow pack suitable for igloo cutting or a simple wind-break. This large mixed media drawing speaks to these attributes, as well as the ideas of southern and northern representation: a mix of experiential and technical information. The snow build-ups from the snow fence are primarily only read from the perspective of the horizon, so plaster casting has been used in the middle section to take advantage of light and shadow, while an acrylic overlay pressure gradient map conveys the technical data that has driven the design.

**Below: Figure 06-B // Infrastructural Connector Mixed Drawing in Situ**

The drawing and casting on display.

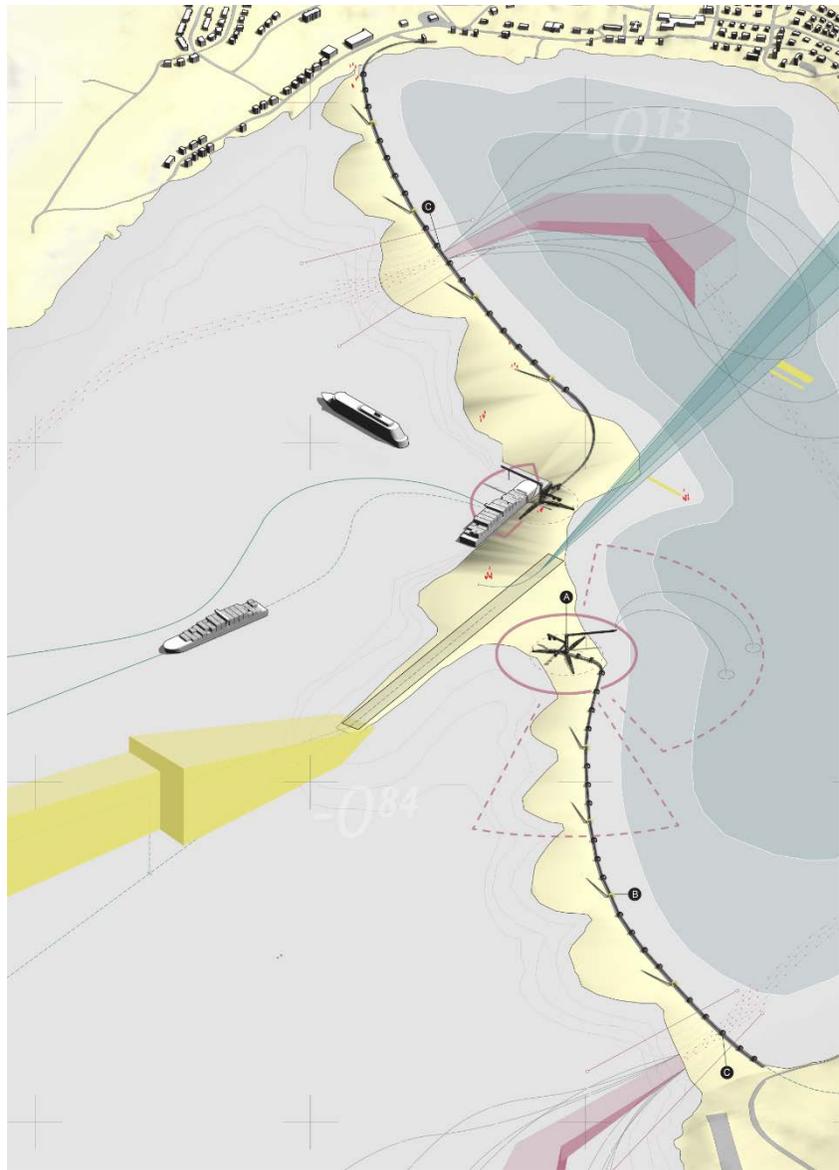




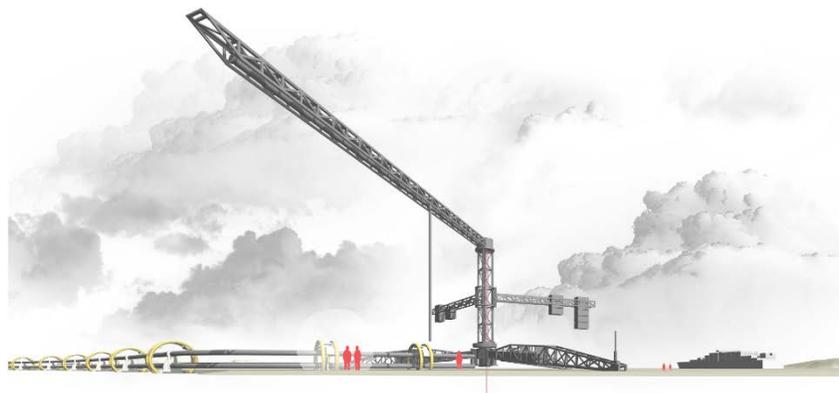
**Figure 06-C // Speculative Future Drawing**

*A speculative drawing that explores a new contemporary condition for Arctic Bay at all scales and incorporating temporality and seasonality, this drawing illustrates a temporary port facility that is intended to be made of mine tailings and washed out seasonally.*

**Figure 06-D // Speculative Future Drawing – Detail 1**  
 A close up view of the causeway infrastructure deposited by the connector units, the runway that is oriented better to accommodate seasonal winds, the pier facility located in deep water and the current annotations of predicted 'wash-out' and re-deposition of the causeway after sea-lift season.

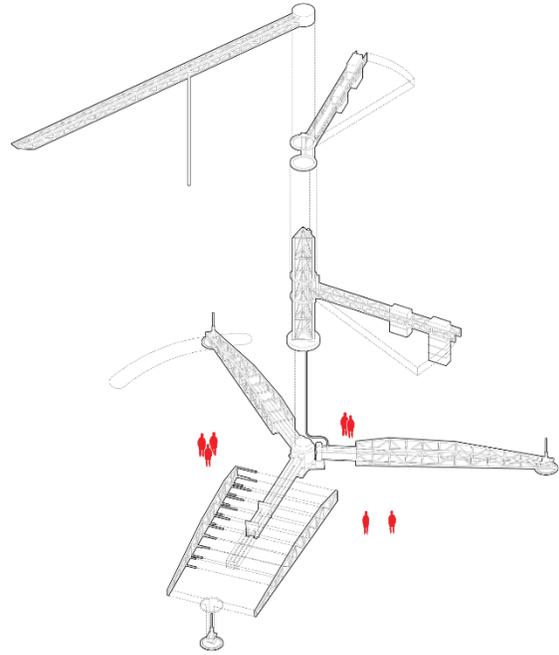


**Figure 06-E // Speculative Future Perspective**  
 Perspective view of the depositor infrastructure at ground level.



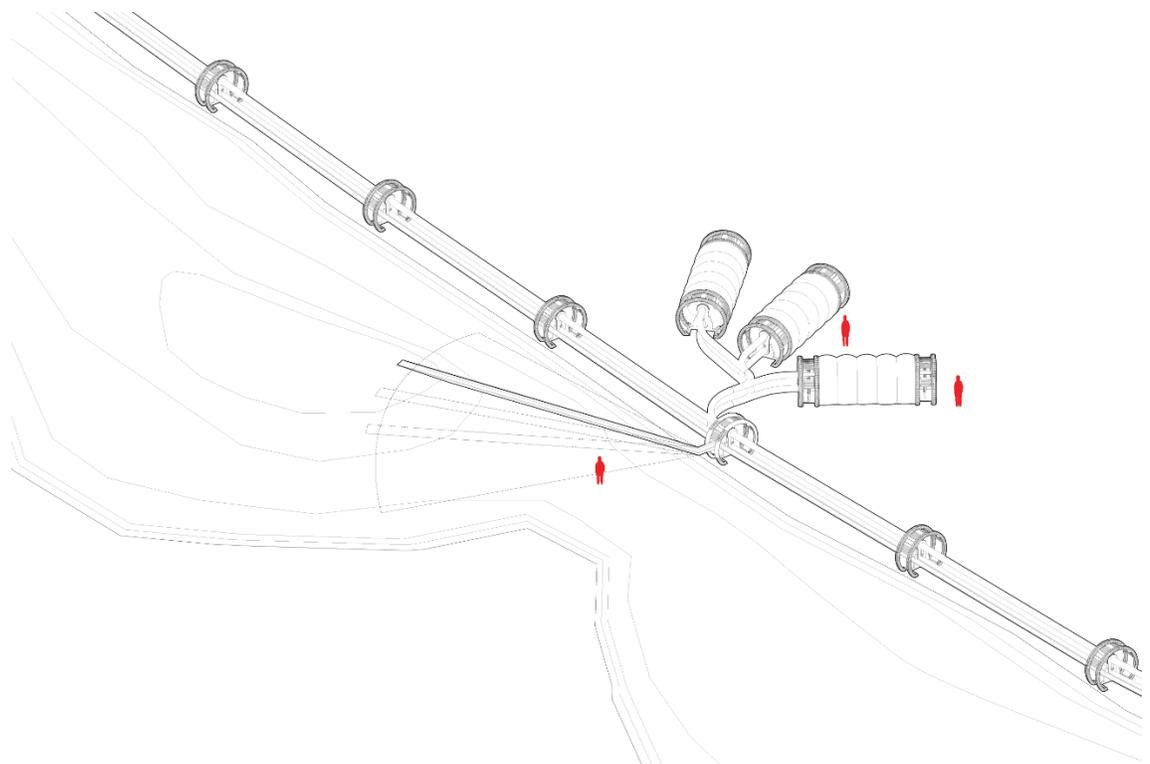
**Right: Figure 06-F // Dredge Depositor**

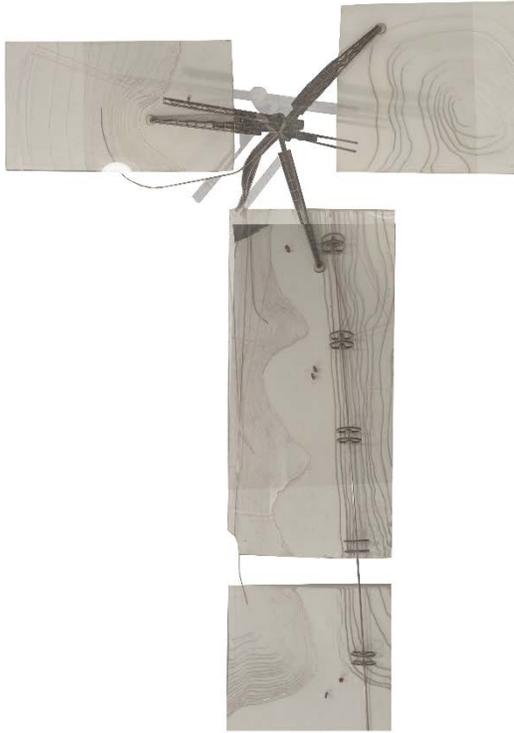
*Detail of the dredge depositor – readapting the scale of the mine to work at the scale of the individual and the scale of the regional.*



**Below: Figure 06-G // Connector Greenhouses and Deposition**

*Detail of connectors along the length of the causeway – utilizing the shallow lagoon created by the artificial causeway to desalinate and develop temporary hydroponic greenhouse facilities.*





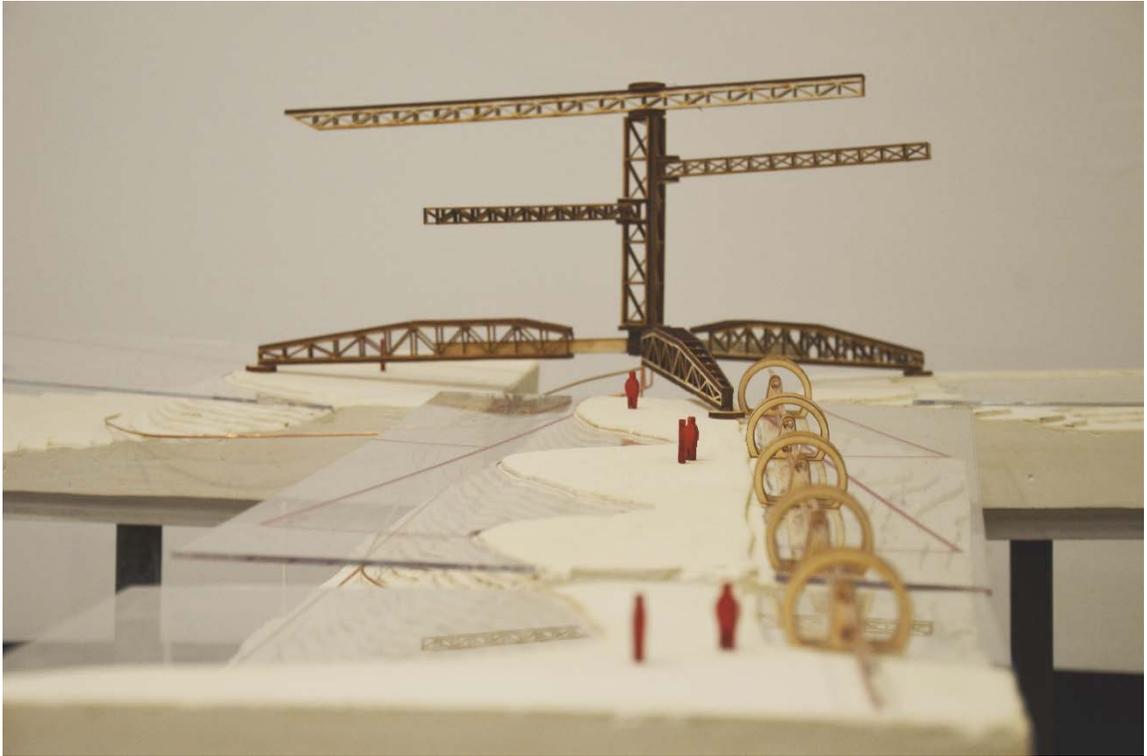
**Left: Figure 06-H // Dredge Depositor and Bathymetry Model - Top**

*Top view of physical model showing the Dredge Depositor top centre.*

**Below: Figure 06-I // Dredge Depositor and Bathymetry Model**

*Using plaster castings to show the existing and artificial bathymetry of the site, as well as the method of deposition by the dredge. Plexiglass overlays show the annotative deposition vectors of the device and the oscillating nature of the deposition and wash-out from season to season.*





**Figure 06-J // Dredge Depositor and Bathymetry Model – Details**  
Detail views of the physical models.

## 7.0 – POST SCRIPT

The thesis project that is *Landscape + Seascape Instruments* has sought to use architecture and design for its fundamental purpose of improving the natural and built environment for all peoples. While it has suggested both tenable and speculative solutions to problems, it represents only a cursory exploration of a wider discussion on southern Canada's relationship with the north. The design project presented here has used the lens of infrastructure, a vital yet fragile and fraught component that supports and maintains life in the north, to explore a future for the Inuit and northern communities.

From the outset of this thesis, the project has progressed with the assertion that there have been, are, and will continue to be a multitude of societal, governmental and economic problems affiliated to southern Canada's relationship with the North. The reality of western activity in the North is that it has been colonized, reorganized and exploited for hundreds of years – since first contact with Europeans – and continues to be today. Even now, considering the recent steps by the Government of Canada to recognize our failings with regards to our activities in the north, the region is still suffering at the furtherance of an agenda based on economic and sovereign benefit for the south.

In recent years, initiatives such as the Truth and Reconciliation Commission have begun the long process towards recognizing and repairing our relationship as a nation with Indigenous and First Nations peoples. While these programs are a minimal step in the right direction, they represent a response to a very small portion of a much more problematic past and present that all Canadians will

have to recognize and reconcile with. In pursuit of this reconciliation, this thesis has tried to bring dialogues about sovereignty and agency into the scope of basic infrastructure, calling into question what it means to create communal living conditions, traverse landscapes and seascapes, build on and occupy space, and how the history of these communities and the north can progress into the future without losing sight of the past.

Having had the opportunity to travel to the north following the defense of this thesis, I was able to see firsthand the scale of the land, the harsh cold, and fierce winds that define this extreme landscape. However, I was also fortunate enough to experience the generous hospitality of a warm, welcoming, knowledgeable and humble people. While the north may be remote, and at times, difficult to get to, it is becoming more and more accessible to outsiders such as myself. Becoming part of the global community is an aspiration shared by many in Nunavut, however, there still exists a great deal of anxiety about how to join that community without losing sight of themselves, their rich culture and traditions, and their knowledge of the land.

This thesis has tried to incorporate these aspirations for an Inuit driven north into the supply of the modern, basic, necessities of life; water, power, communication and shelter. Throughout this process, the scope of work has shifted from one of prescriptive methods, to a mediation of existing conditions and developing ones, to finally, a realization that the research and design was in support of a body of work that would eventually need to be authored by the north itself. What became important was the understanding that no meaningful resolution was within a tenable scope; rather, the purpose of the connector, the speculative proposal, and the associated text was to provide a catalyst for an ongoing conversation, one that has been started and should be continued by all Canadians. While the preceding investigations and interventions have been made

with the best of intentions, at the end of the day, real solutions to these problems will not come from an architect living in the south, but one who is from and of the north – until then, work such as this must support the pursuit of that future.

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