





Present day Iqaluit, Nunavut



Ralph Erskine proposal for Resolute Bay, Nunavut, 1976

## 1.2 Melting Routes

In particular, Canada's North is critically poised for development with the imminent opening of the Northwest Passage. The Northwest Passage is a sea route that connects the Atlantic and Pacific Oceans through the Canadian Arctic Archipelago.

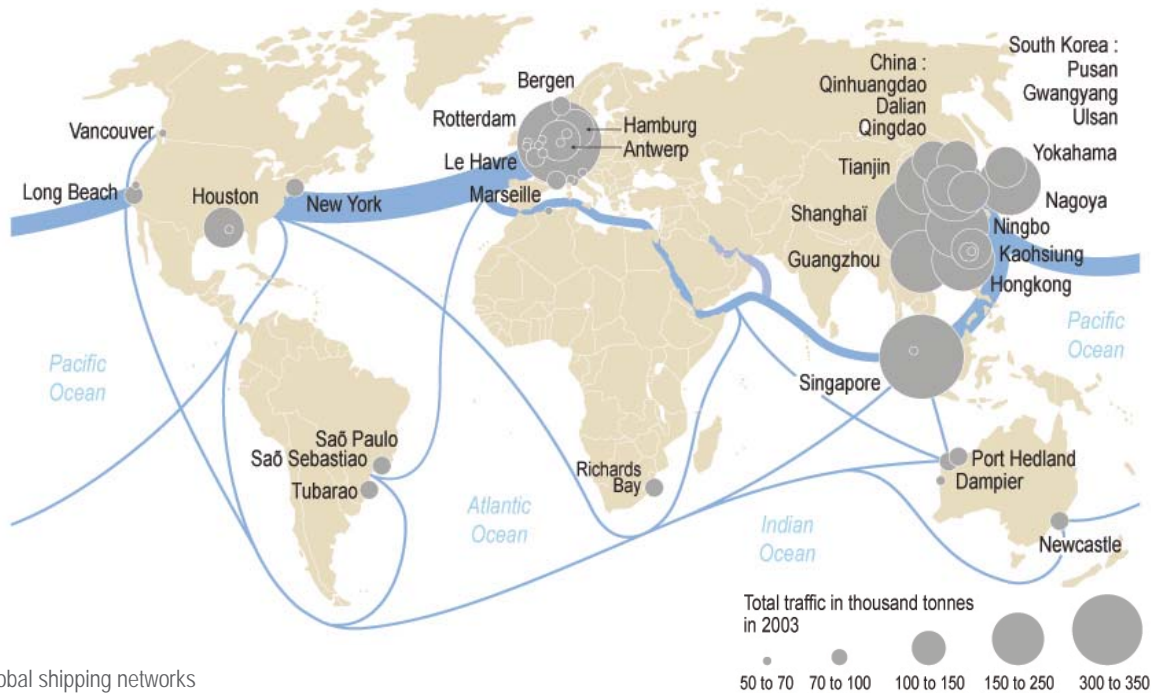
Until recently, the Northwest (NW) passage has been impassable due to year round ice. New satellite monitoring is revealing that the Arctic ice is declining, making this passage a critical logistics route for future transport. In September 2006, satellite images confirmed that the Arctic Ocean was clear enough to sail directly to the North Pole from Northern Europe. Further, current predictions state that the NW Passage will be open for a large part of the summer as early as 2015. The ironic benefits triggered by global warming are paramount: not only would shipping routes between Europe and Asia be reduced by 4000 kilometers (about 1 week of shipping time), resources in Canada's arctic would be easier to transport.

The changes to Canada's North would be profound, should the Northwest Passage become a viable shipping route. This seemingly barren territory would become a key economic and military possession. The NW Passage will potentially be the panama canal of future transport. Within this framework, it will not only be a central node in international shipping, it has the ability to transform how ports and shipping logistics operate.

## 1.3 Arctic Urbanism and Infrastructure

18,500 Canadians live above the Arctic Circle in approximately 24 settlements. In the longer term, as the effects of global warming take on their full impact, scientists predict that northern countries and regions will see the greatest migration patterns. Indeed already today Iqaluit is the fastest growing city in the country. The Canadian North has also seen a rapid increase in ambient technologies monitoring weather, ice, shipping, and fishing conditions, among others.

As Canada's arctic ports and settlements become part of a global network of resource flows, they are set to expand, altering the infrastructure, settlements, and landscape around them. There is a unique opportunity to question how to develop in such climatic and cultural conditions. While considerable transformations inevitable, what is the future of urbanism, infrastructure, ecologies, and resources in this evolving unique cultural geography?



#### 1.4 Port as Node

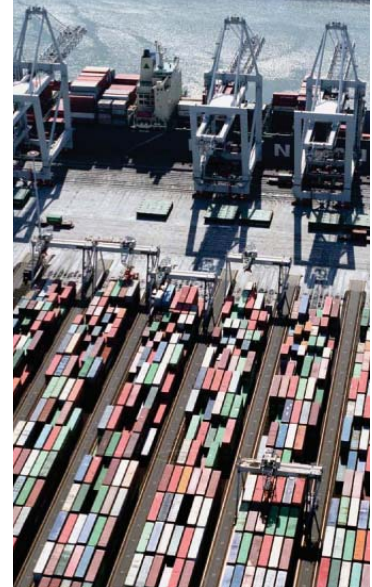
Key to the North's development will be mobility infrastructure – roads, airports, freight access and most significantly the presence of deep sea ports. Most cities in history owe their development to their strategic geographic location and the development of mobility infrastructure. Cities such as Rotterdam, Amsterdam, Genoa, Shanghai, Boston, flourished as their ports allowed them to become critical nodes along transport networks, and provided a distribution system for goods produced in their hinterland. In this sense, ports have always acted as gateways for the transmission of people, resources and culture.

Shipping container ports proliferated around the world after World War II, in an acknowledgement that standardization and efficient logistics would keep shipping competitive in the cargo transport industry. Standardized containers that emerged during the 1970s, coupled with nascent free-trade agreements made shipping both practical and lucrative. Presently armed with homogeneous containers, massive container ships, portainer cranes and digital tracking, shipping ports have evolved into logistical landscapes that operate at both a global and local scale. These ports mark the unique transition between network and node; between urban and periphery; between sea and land; between formalized law and informal process, and between production and consumption. While seemingly invisible due to their liminal siting, these ports have grown into vast landscapes linked to transport hubs and storage warehouses. Fueled by an advanced age of capitalism, these shipping ports have become efficient urban machines – processing goods and information with great precision and scale. At the same time, recent global shifts in the world economy have resulted in lower traffic and use of shipping ports, articulating a deeper crisis within port design – their sheer dependence and vulnerability to economic cycles. Perhaps driven by the capitalist dream of ever increasing supply and demand, it is the utter mono-programmatic nature of these ports that has rendered them susceptible to an instable world economy. Beyond programmatic homogeneity, megaports are consuming increasing amounts of land and altering ecologies.

The unique case of the Canadian north allows one to question the very idea, typology and functioning of ports. Because the NW passage would only be open for part of the year, this new port should question how the ports could be coupled with other programs to remain economically and socially productive throughout all seasons.



North West Passage



Port infrastructure

## 2.0 Design Project

Through the studio, students are asked to re-evaluate, rethink and reinvent the relationship between ports, cities, program and landscape. Taking the radical landscape of the North and the highly charged program of the port as a starting point, students are asked to imagine nascent forms of urbanism, radical buildings, morphing landscapes which respond to climatic, environmental and economic exigencies.

The studio begins with a three-week research exercise to understand, digest and catalogue both the operation of ports and the northern landscape. Taking the broadest definition of port as infrastructural gateway, node, and place of exchange, students will be asked to design a port for 2040 – when the crisis of water levels is no longer deniable. Port 2040 should question the future of logistics - from product manufacturing to consumption. The primary function of the design project is to question the role, location, and possibilities of port cities. This new port should address the following:

- Reconfigure the logistics of port operation
- Introduce new (public) program/ participation into the port
- Examine how port infrastructure can be productive to the ecological environment of water/ land
- Introduce the notion of a 'port city' into the idea of a 'city'.

### 2.1 Site

The site for the studio will be the controversial Northwest Passage. All routes through the Northwest Passage must pass between the Canadian Arctic Archipelago, inciting Canada to claim the land as "Canadian Internal Waters." Under the UN Law of the Sea Convention, coastal countries can extend their sovereignty beyond the standard 200 nautical mile limit (which is recognized in International Law), if the seabed is an extension of the continental shelf. Canadian scientists are currently mapping the ocean floor in an attempt to provide evidence by 2013, that this is indeed the case. Despite this, the United States has sent military ships through the passage without notification or permission from Canada, citing that the passage as International Waters. Other disputes over the resource rich Lomonosov Ridge have started between Russia and Canada/ Greenland. While it is still unclear who will gain the rights of ownership to the NW Passage, what is of interest here is the political ambiguity. Currently this passage is owned by no one – and therefore by everyone. Students are asked to start by first developing a political position/ strategy/ speculation with regards to how ownership should function over the NW Passage.



Northern penguin habitats



Diavik diamond mine near Yellowknife, Yukon

### 3.0 Studio Structure

This studio will operate as a design research laboratory, in which the collective research of the studio will allow each student to formulate a thesis question centered around the studio's premise, select a site and develop the program. In this sense, the studio treated as training for the Masters' thesis.

The research and design work of the studio will form the basis of a publication and exhibition.

#### 3.1 Site + Systems Research

Each student will be responsible for pursuing, presenting and formatting a research chapter on one of the topics listed below. This research will be a shared resource for the studio and provide the foundations for the design project.

##### ARCTIC:: Frozen Islands

- History and evolution of Northwest Passage
- Location of existing northern ports, airports infrastructure
- Location of military outpost and infrastructure
- Location of research outposts and infrastructure
- Northern tourism
- Location of urban settlements North of 60o
- Typologies of northern settlements – built & unbuilt
- Freeze-thaw patterns of ice in NWP
- Ecologies of arctic
- Geology of arctic
- Location of major natural resources
- Northern construction + building technology
- New materials technology

##### PORTS:: Liquid Networks

- Major Global Ports
- Major Passages: Suez Canal, Panama Canal, xxx?
- Projected Northern trade routes
- Trade Routes, scales of ports, deep water ports, vs. inland ports
- Specialization – if any – of ports in the transport of certain goods
- Typologies of ports
- Mapping economy/ money and its affects on ports

### **Extra-State**

- How does jurisdiction, policing, control, etc.. work
- How does port security operate?

### **Urbanization**

- How ports grew/shifted within the city
- Programs associated with ports

### **Climate Change + Ecology**

- Rising sea levels, flood protection
- Pollution/Toxicity
- Alien ecology/ affects of ecology due to Ports

### **Technology**

- Port Technology and infrastructure
- How ports are organized
- Loading/unloading
- How multi-modal transfers work
- How does tracking work?

### **Design Precedents**

#### **3.2 Site +Type Strategy**

Students will be encouraged, though not required, to work in teams to select a site, develop siting strategies, political and economic scenarios, and programmatic strategies for their port. Ideally teams will be composed of students bringing together expertise on arctic and port issues.

Possible scenarios or catalytic issues include:

- How might housing couple with the port to form emerging northern communities?
- How might research pair with the port outposts to allow new modes of research/
- How might recreation couple with the port to allow new ways of engaging the landscape or tourism in the region?
- How might the port address changing climatic and water conditions
- How might the port address or capitalize on its off-shore/ apolitical status?
- How might the port help encourage, remediate or even manufacture ecologies?
- How might the port help new northern settlements achieve food or energy self-sufficiency?

Many more scenarios will emerge from the Stage 1 research.

#### **3.3 Building / Landscape Design**

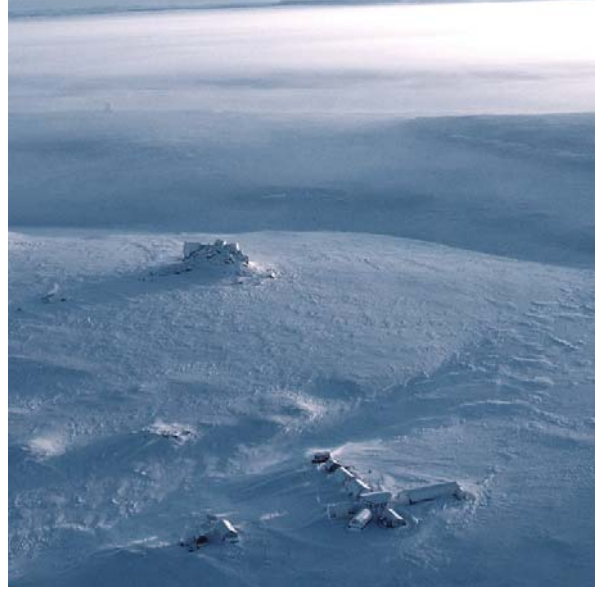
This represents the last and longest phase of the studio. Students may work in teams or individually, and will develop designs based on the work of the first two phases of the project. Taking the site strategies and issues developed in part 2, students will be asked to develop specific building or landscape proposals for the port and/or its attendant landscape. Projects will vary in scale and size based on the issues being addressed, and will be addressed or resolved at larger scales such as 1:200, and more detailed tectonic scales. Students are encouraged to investigate innovative new material and technology developments to develop the more detailed resolution of the project.

#### **3.4 Design Research**

This studio is positioned and organized such that research and design constantly feedback on each other. Because of the radical speculations required in such a studio, students will undoubtedly go back a various stages of the project's evolution, and do rapid research on a specific issue, in order to develop the thesis and design further. The studio encourages broad speculations, independent thinking, and the positioning of architecture and landscape design within a much broader social, cultural, political, and economic context.



Nunavut



Northern landscape

## 4.0 Studio Trip

A studio trip is planned to visit a significant port city in North America for the fourth week of studio. More information on the trip will be provided later in the summer.

## 5.0 Schedule

### 1.0 PORT RESEARCH

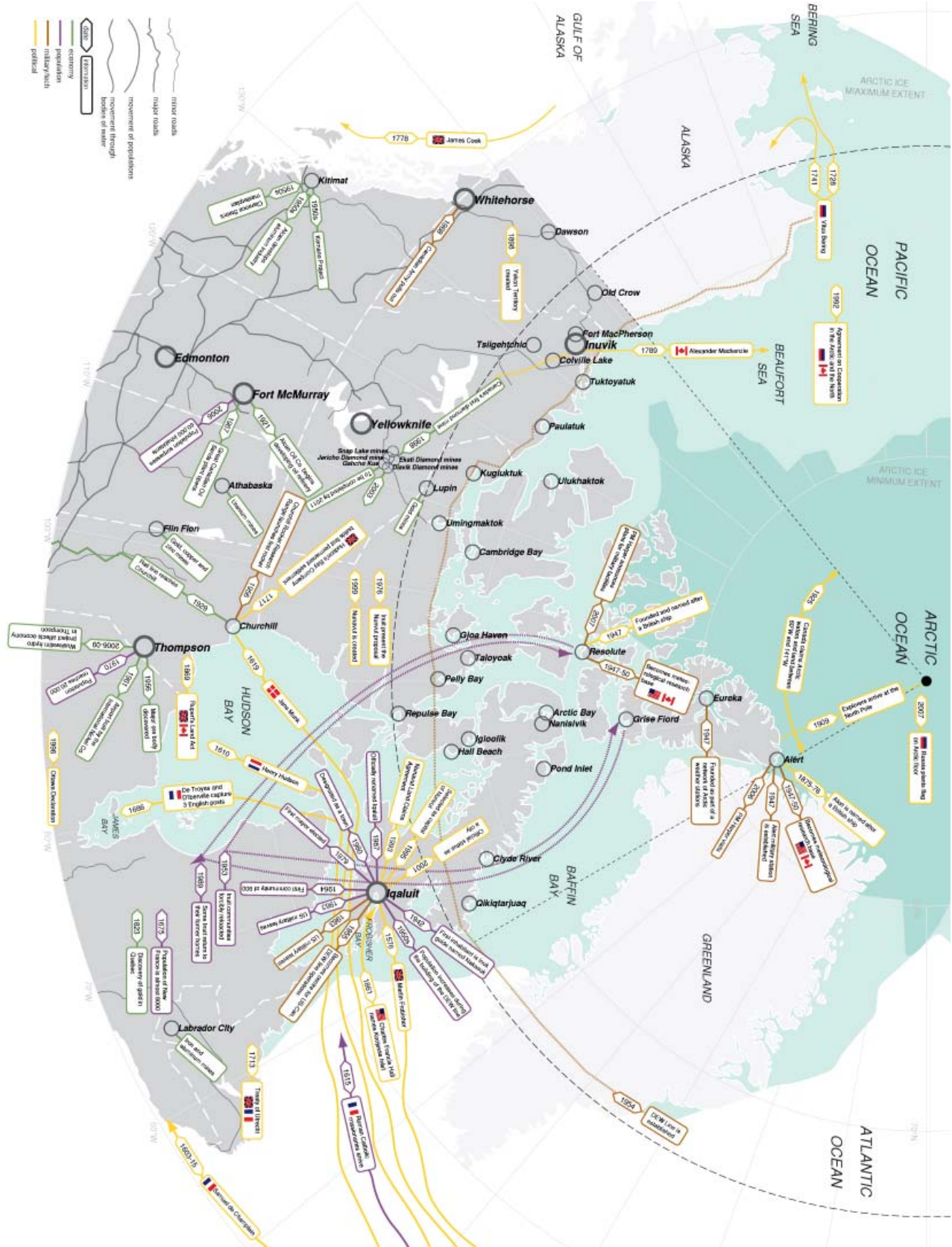
- WK 1: Defining research topic and start research
- WK 2: Developing research and graphics – mappings, timelines, graphs and figures
- WK 3: Developing research and graphics
- WK 4: Research Pin-up + TRIP?

### 2.0 REGIONAL/ PORT CONFIGURATION

- WK 5: Site Selection and design Charrette - Pin-up
- WK 6: Development of site masterplan
- WK 7: Pin-up (Mid review)

### 3.0 'BUILDING' DESIGN

- WK 8: Project development: siting and program
- WK 9: Project development: systems and structure
- WK 10: Project development:
- WK 11: Project development + Pin-up
- WK 12: Project dev't @ 1:50
- WK 13: Presentation drawings and models.
- WK 14: Final Review



Frozen Cities Liquid Networks