



ON
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ICE

A CLIMATE COMMONS IN ILULISSAT

Charlotte Lin Pedersen 5729 & Elaina Clare Keppler 5821

“All roads in the global ocean-circulation system
lead to the Arctic.”

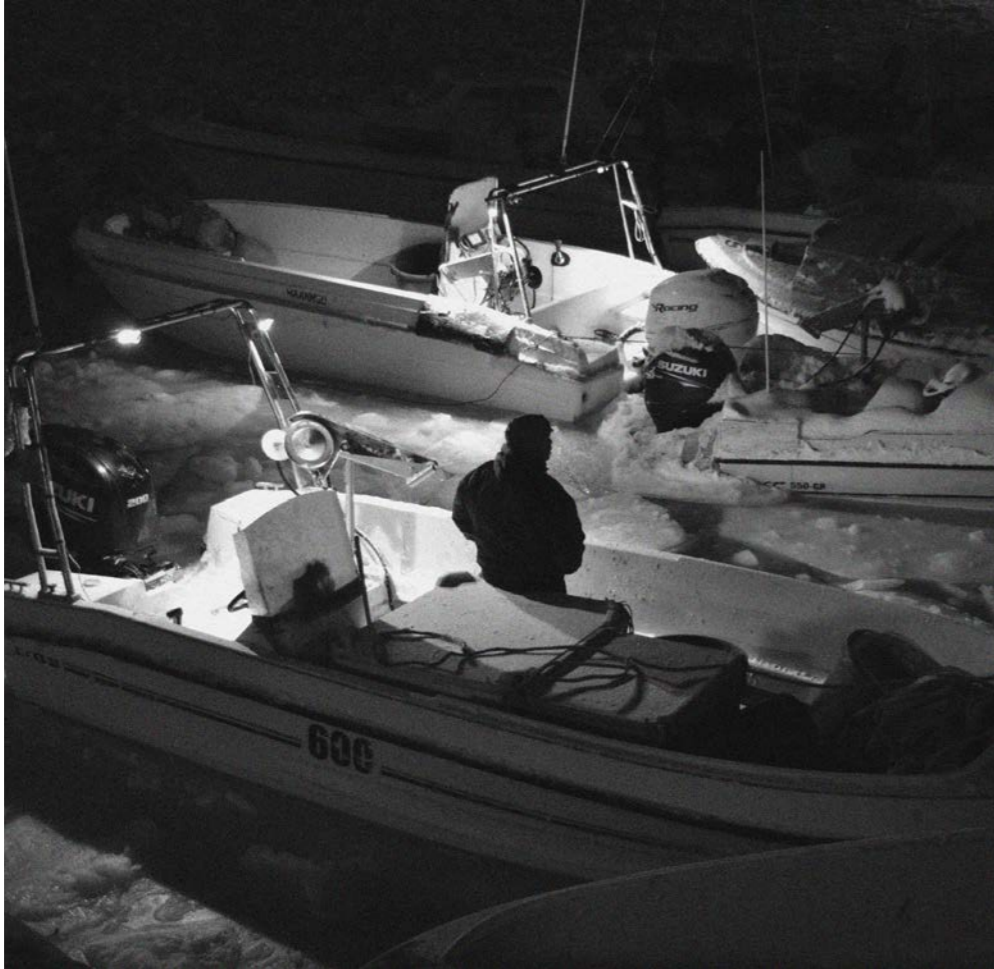
- Karen Frey

TABLE OF CONTENTS

INTRODUCTION	4
PART 1 // THEMATICS	
GLOBAL CONTEXT	8
LOCAL CONTEXT	10
PART 2 // SITE	
LOCATION	13
CHALLENGES + OPPORTUNITIES	16
SITE PLACEMENT + ANALYSIS	17
INTERVENTION AREA	19
PART 3 // PROGRAM	
THE CLIMATE COMMONS	24
MATERIAL PRACTICES AS SPATIAL POTENTIAL	26
SUGGESTED PROGRAM	27
DELIVERABLES	28
SOURCES	31
CURRICULUM VITAE	33
POSTSCRIPT	35



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Local fisherman waiting to go out in the morning, Ilulissat Harbour, January 2019
Photo by authors

INTRODUCTION

In October 2018, the UN Intergovernmental Panel on Climate Change [IPCC], issued their most dire report to date. The report states that unless nations drastically reduce their greenhouse gas emissions over the next decade, ecosystems and human civilization will be under severe threat. To avoid the most serious damage would require rapidly transforming the world economy, infrastructure, and our way of life within the next few years. In the current Greenlandic context however, the melting sea ice is opening up new opportunities and access to natural resources, creating a fascinating duality between preserving the environment versus promoting economic growth through resource exploitation.

With its rapidly melting glaciers, Ilulissat, Greenland, is a visible manifestation of climate change. Yet for most, our personal exposure to the impacts of climate change is largely experienced on a distanced, colossal scale – threats and images of the melting ice caps, apocalyptic storms and raging wildfires saturate the media. The overwhelming magnitude of these ‘hyperobjects’¹ (Morton, 2013) is nearly beyond our comprehension, and thus leads to a collective inertia. The narrative needs to be reframed in order to avoid further symptoms of climate change fatigue. Could architecture be used to help convey the impact of climate change on a more human scale and thereby shift our collective perspective towards advocating for positive planetary change?

To synthesize an informed approach, **this proposal envisions a climate commons: a built intervention in Ilulissat’s harbour that responds to the challenges and opportunities of a changing climate, Greenland’s unique geography and its global positioning.** The architecture seeks to foster the development of regional political frameworks and local micro-economies to support a resilient Arctic. The program will consist of a headquarters for the Arctic Council and a combination of common programs for the local fishermen and community. In addition, the structure aims to explore the physicality and representation of a changing climate, through materiality, integration with the landscape and socio-cultural engagement.

¹ Hyperobjects: entities of such vast temporal and spatial dimensions that they defeat traditional ideas about what a ‘thing’ is in the first place.

[THEMATICS]



Ilulissat harbour and energy plant, January 2019
Photo by authors



Who Owns Greenland?
Illustration by authors.

GLOBAL CONTEXT

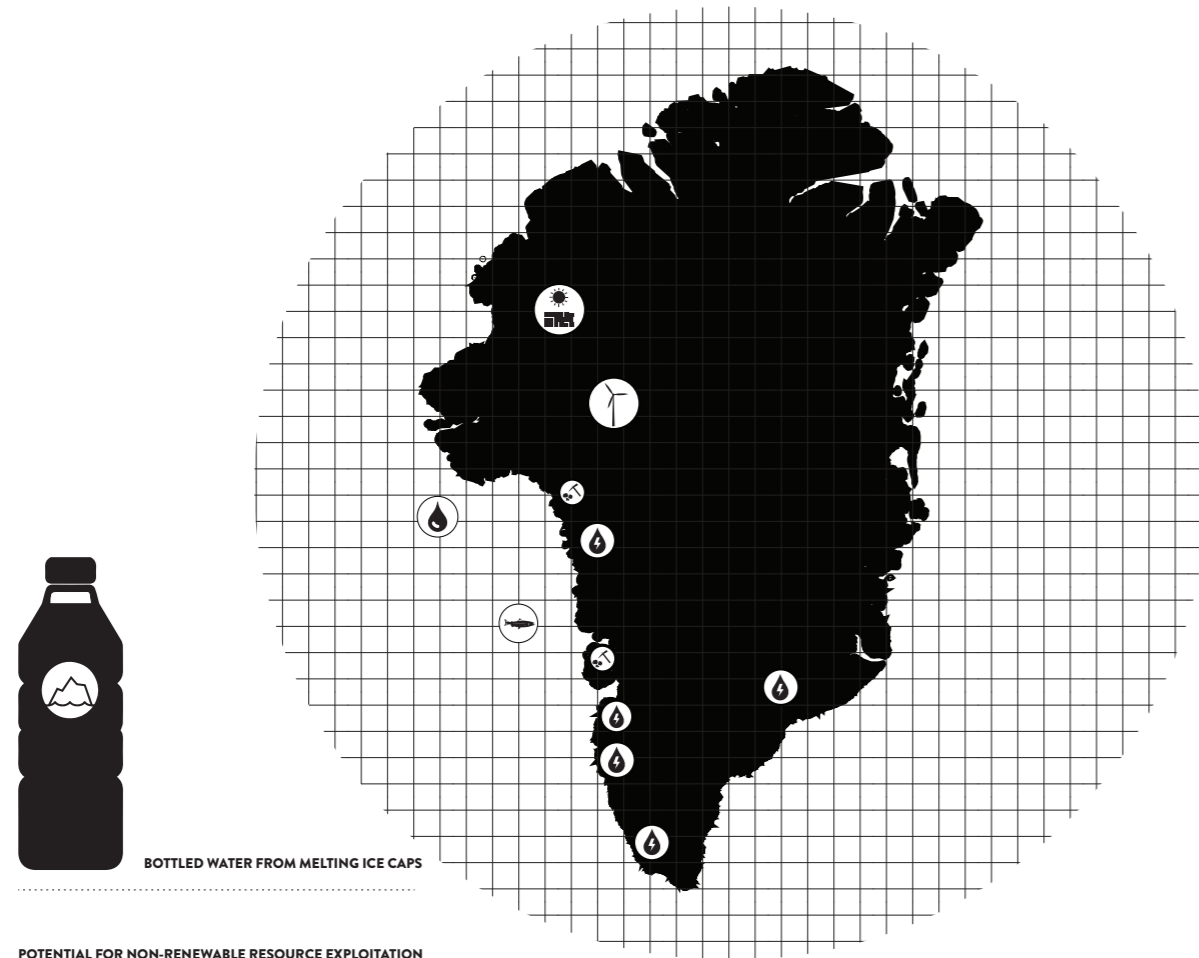
A Changing Geopolitical Climate

With Arctic air temperatures currently rising at twice the global average rate, the Greenland ice sheet - covering 80% of the island - is critical to the global population. In the warming sea, southern fish stocks are migrating north as oceans warm and sea levels rise. On land, the melting ice is revealing a wealth of zinc, iron, uranium, gold, and rare earth elements. Access to new ocean transport routes are emerging. These changes mean that despite the massive challenges that climate change brings, the melting sea ice in Greenland is opening up access to new opportunities in the tourism, mining, energy, and shipping sectors.¹

At the same time, the global demand for natural resources is increasing as the rate of population continues to accelerate. Intensive resource demand is leading to several territorial claims and investment interest in Greenland from other nations, specifically Denmark, Canada, the US, Russia and China. Due to Greenland's increasingly strategically important position, the country is vulnerable to neo-colonialism,² which could manifest in socio-economic dependency on global oil and mining companies.

This past autumn the IPCC delivered their four-alarm warning whilst climate negotiators struggled to finalize the policies needed to turn the Paris Agreement into an operational reality. The critical elements which are necessary for climate solutions that are in short supply are not technical but human factors; namely, political will and the rapidly evolving norms and attitudes about climate change that could help generate political will. Could the strengthening of an Arctic political position on climate change contribute to a protection of common resources and also advance a shift in the nature of our public discourse on these issues?

1. AMAP, 2018. Adaptation Actions for a Changing Arctic: Perspectives from the Baffin Bay/Davis Strait Region. Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway
2. Conditions, Terroir & Brorman Jensen, B. Possible Greenland, 2012.



BOTTLED WATER FROM MELTING ICE CAPS

POTENTIAL FOR NON-RENEWABLE RESOURCE EXPLOITATION

OIL EXTRACTION 

MINING
Gold, iron-ore, rubies, uranium,
fluoride, thorium, & rare-earth minerals 

POTENTIAL FOR RENEWABLE RESOURCE EXPLOITATION

HYDROPOWER 

WIND ENERGY 

SOLAR ENERGY 

FISHING 

Potential Greenlandic Resources

Sources: Possible Greenland, Climate Greenland. Illustration by authors.

LOCAL CONTEXT

Economy of Ecologies

In the Greenlandic context, climate change is not an abstract, graphical representation of a future scenario but a phenomena currently experienced spatially in everyday life. Due to the thinning sea ice, traditional hunters are now giving up their dog sledding teams and becoming tour guides to the growing influx of people arriving by cruise ship, who are hungry to see the impressive glaciers before the warming temperatures melt them away completely.¹

This tension between economy and ecology is especially fraught in Greenland. According to government-operated Climate Greenland, the current government plans to invest in large-scale industrial projects and mining as a means of improving the national economy and independent political position. Can Greenland successfully adapt to Western economic growth ideologies, despite the disastrous repercussions and scarred landscapes that industrialization has caused elsewhere? Industrialization will undoubtedly change the Greenlandic landscape - both the natural landscape and the cultural identity that is intertwined with landscape.

What if Greenland instead used climate change as an opportunity to choose a different trajectory and exported ideas and policies for environmental and social sustainability in lieu of raw materials? This direction could pioneer a new, truly future-oriented framework for supporting human and non-human ecologies (Latour 2017), while maintaining common global resources and the interests of local communities.

1. Minor, K.R., Greenlandic Perspectives Survey, Copenhagen University, February 2019

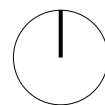
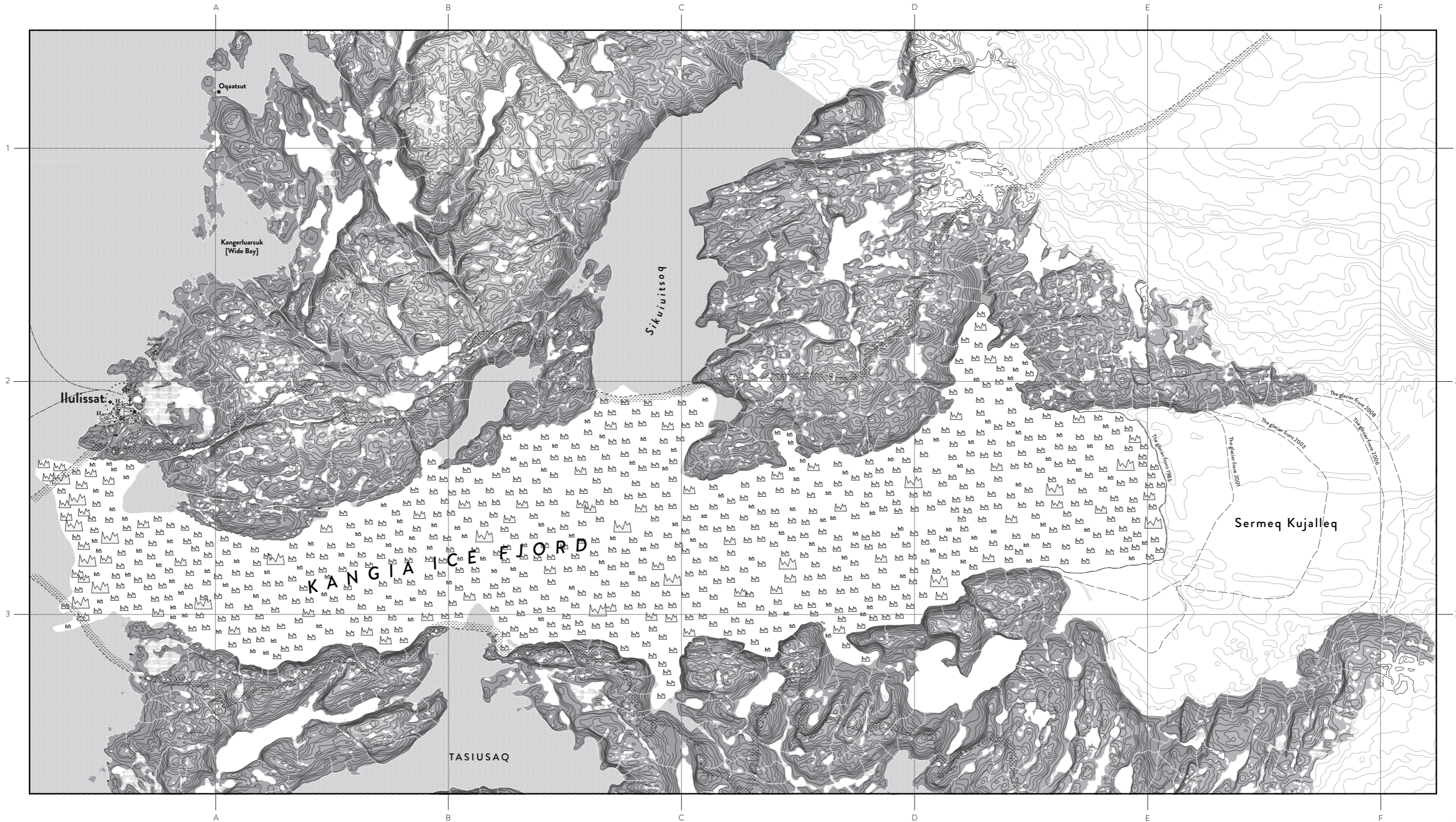


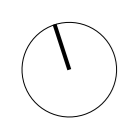
[SITE]

ILULISSAT



Satellite image of West Greenland
Source: SDFE. Illustration and editing by authors.





BAFFIN BAY

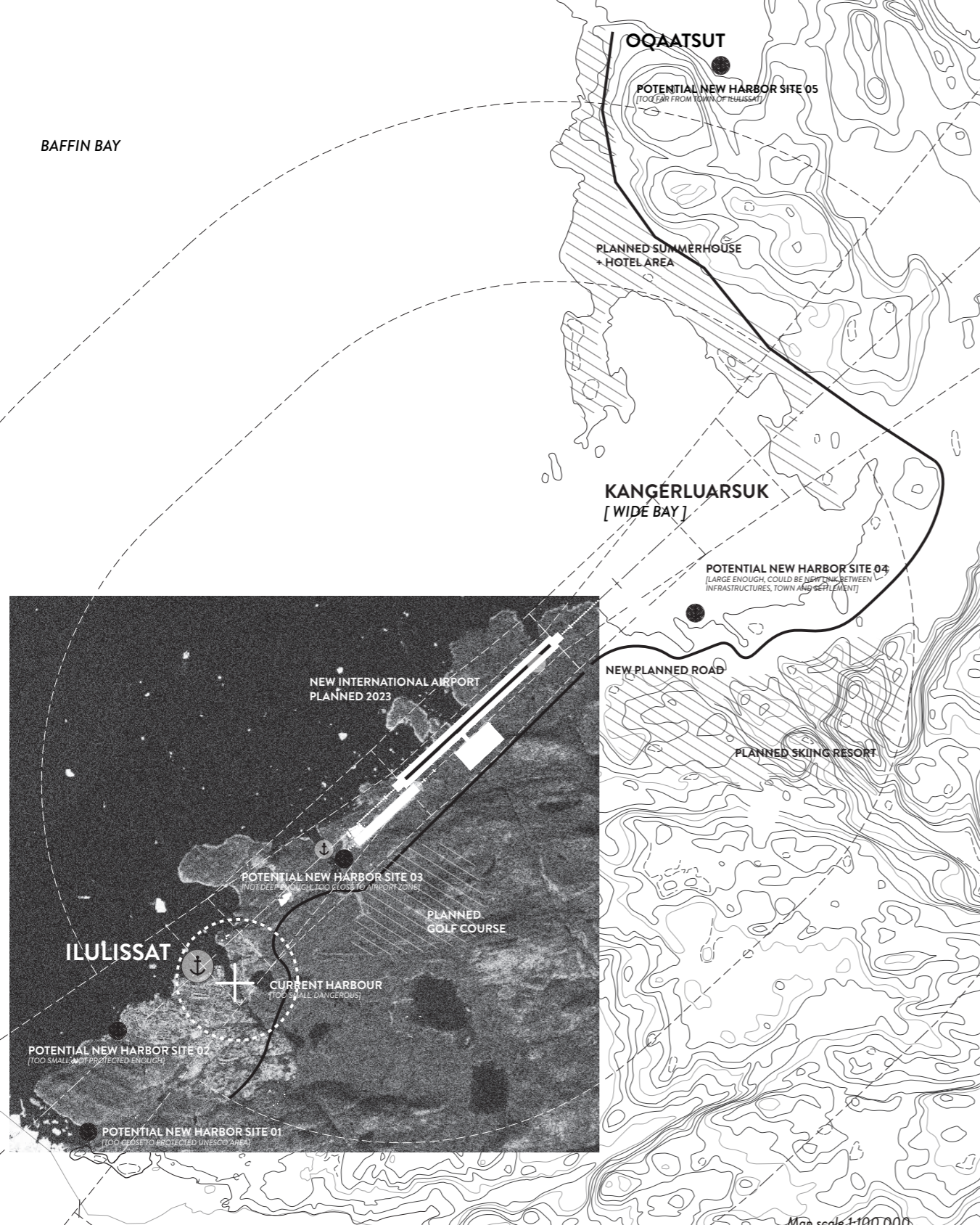
PART TWO SITE

CHALLENGES + OPPORTUNITIES

In many ways, Ilulissat is a striking example of climate change. Situated in Western Greenland and with a population of 5,000, Ilulissat is the third largest town in the country. Ilulissat is currently expanding at a fast rate, with the main industries of tourism and fishing growing rapidly and evolving due to climate change. These industries are projected to develop even more with a new international airport planned for 2023.¹ Ilulissat's current harbour is too small to accommodate the town's current needs and coming changes related to fishing, shipping and tourism. As the harbours are the hearts of the settlements and towns in Greenland and fishing is the lifeblood of the country's economy, it will be critical to think of a new strategy which incorporates the future complexities the area is facing.

Based on the logic of the airport as a catalyst for urban development, the municipality is planning a large scale project that includes a new industrial harbour, massive hotels, a ski resort, a golf course, and the corresponding infrastructures.² At the same time, there is a seemingly conflicting desire for an environmental strategy that would allow Ilulissat to be CO2-neutral in the future. Could architecture spatially support the creation of the necessary political and planning frameworks for sustainable development in the region? And could these frameworks further strengthen cooperation and communication across the Greenlandic settlements as well as other Arctic nations facing similar systemic challenges?

Infrastructure deeply affects the daily way of life in Greenland. With a small and scattered population, the extreme geography and effects of climatic change render infrastructure particularly pertinent at the national and local level. The current fragmentation arguably calls for a strengthening of the infrastructural connections, particularly the transportation links between the communities, harbours and new airport. As the city begins to develop northwards, the site at the current harbour will become a vital link between the existing community in Ilulissat, the future trajectory of the town, and the dynamic landscape that connects them.



Map scale 1:100,000

Sources: SDFE, NIRAS, Avannaata Kommunia. Map illustration by authors.

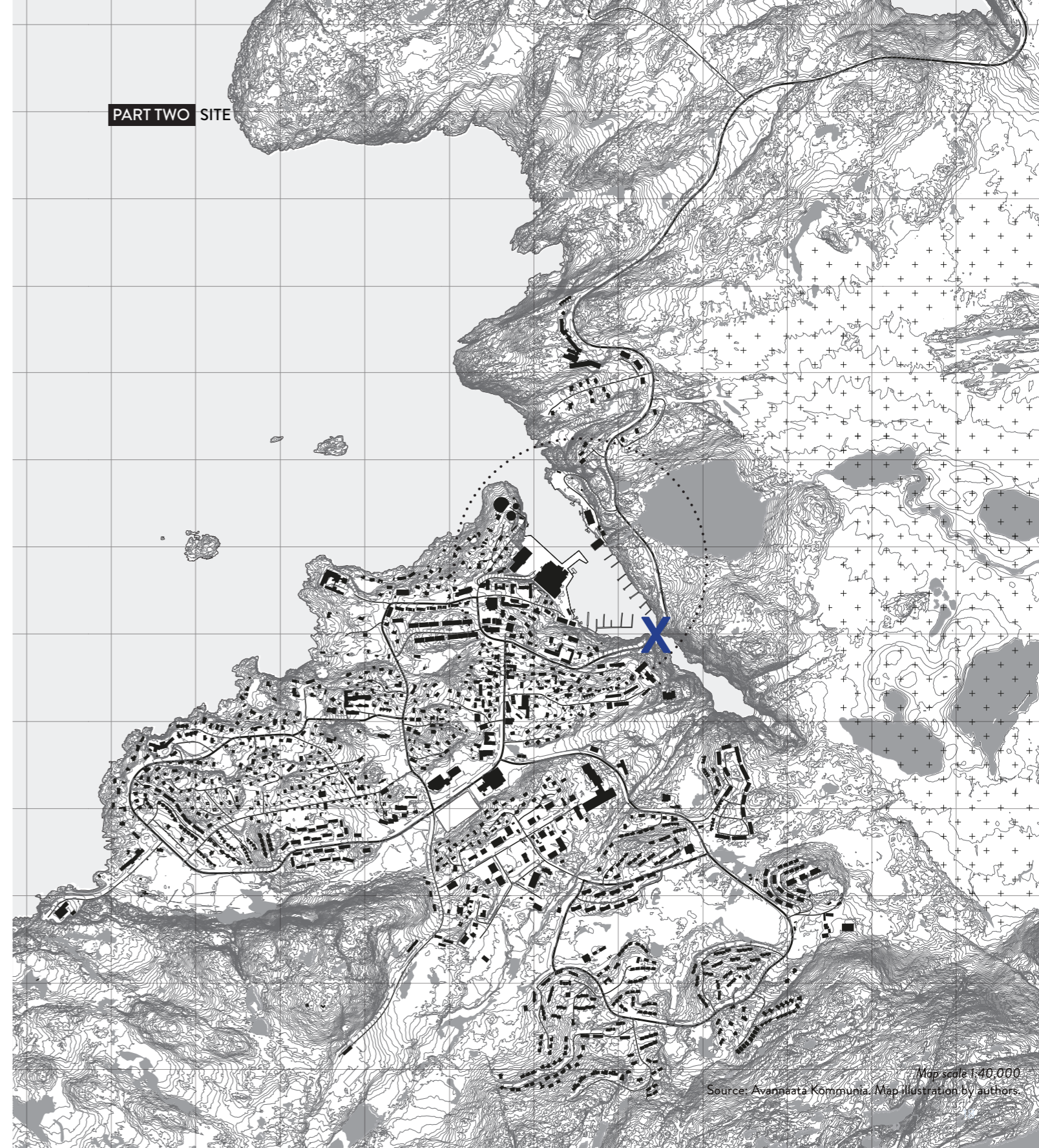
1. Knudsen, A.K., personal communication, January 9th, 2019
2. Holm, H. personal communication, January 15th, 2019

SITE PLACEMENT + ANALYSIS



Current Town Harbour, Ilulissat
Source: SDFE. Edited by authors.

The primary spatial concept present at the site that the project will be investigating is that of **duality**. There is the duality of the 'old' and 'new' Ilulissat, the fixed and fluid elements of the surrounding landscape and the challenges of the global versus the local interests - all being continually shaped, restructured and repackaged by climate change. There is also a duality in use which is experienced in Greenland - in a place traditionally viewed as scarce in resources, everything must fulfill more than one function, working in a network rather than as individual elements. This is, for example, seen in the expense and difficulty of implementing infrastructure in Greenland. Building and planning should therefore take the unique Greenlandic situation and relationship to climate into account. Yet historical practice has been focused on importing ill-suited European materials and methods throughout the Danish colonial and post-colonial periods. The proposal seeks to challenge this precedent by exploring new forms of spatial representation which embrace the topography of contrasts and tensions while anchoring into the existing community and creating a bridge towards the future.



Map scale 1:40,000
Source: Avannaata Kommunia. Map illustration by authors.

INTERVENTION AREA

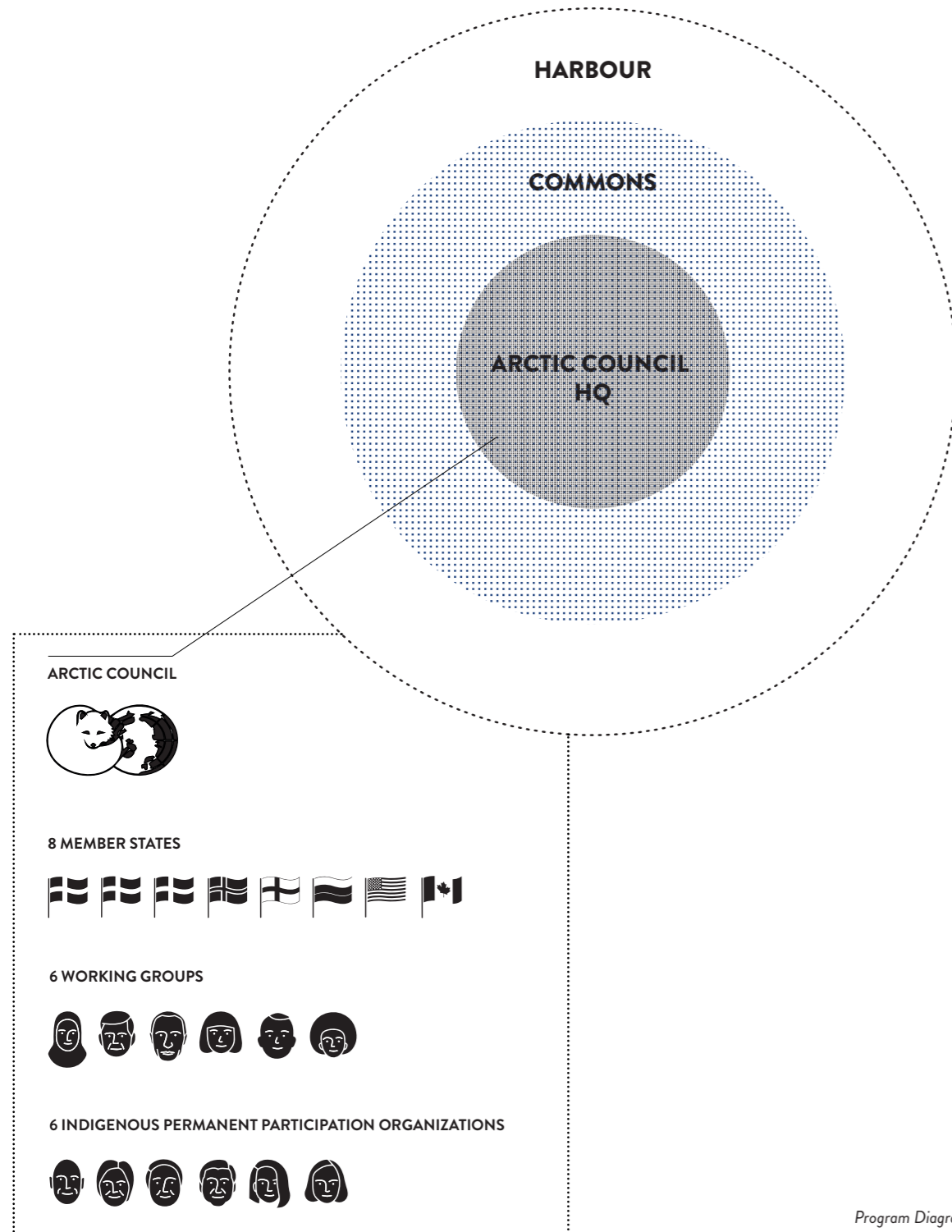
PART TWO SITE



View into Ilulissat Harbour, January 2019
Photo by authors



Day's Catch, Ilulissat Harbour, January 2019
Photo by authors



Program Diagram + Arctic Council Organisation
Illustrations by authors.

THE CLIMATE COMMONS

The program will explore the spatial and political implications of climate change in Greenland through a built intervention in Ilulissat Harbour. The intervention is envisioned to be part landscape infrastructure and part building with an overlapping dual program focus. The programs are physically and conceptually linked by the connection to the water as a critical element and representation of climate change.

COUNCIL HEADQUARTERS

The structure will contain a new headquarters for the Arctic Council, supporting the necessary policies towards environmental and social sustainability, serving as a vital and catalysing regional presence. The headquarters would provide space for the Council's various ministerial and working group meetings to take place, as well as sustain administrative capacity, enhance communication and promote outreach. How can the effects of climate change in the daily life of Ilulissat and in the larger ecological scale be experienced spatially in order to emphasize the importance of proactive policy-making in creating a resilient Arctic future?

COMMONS

The existing dynamism and collective traditions of Greenlandic harbours provides an opportunity to to bring together a combination of common programs. With the coming changes to the harbour industries and the moving of industrial functions to Kangerluarsuk, there is an opportunity to mix many of the council functions with programs for the local independent fishermen who will remain working in Ilulissat harbour and for the town's community. Could the shared program and multi-use spaces work to amplify the micro-economies and informal politics that encourage agency and adaptability in the community?

How can these connections between the global and the local be spatialised in order to strengthen and inform both positions in relation to climate change?

1.0 PRACTICE OF POLYSYNTHETICITY Using a mix of sources rather than a single solution



VISIBLE INFRASTRUCTURES



2.0 PRACTICE OF ADJUSTABILITY Using what is at hand as resource



MODULARITY



SEASONALITY

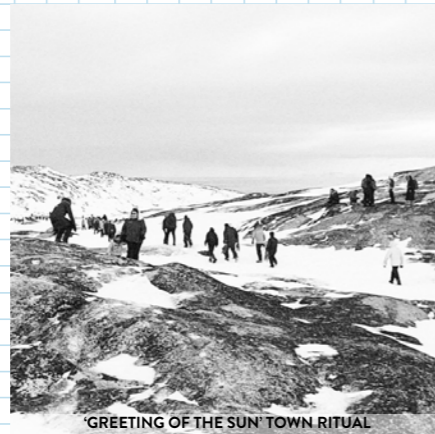


BRICOLAGE

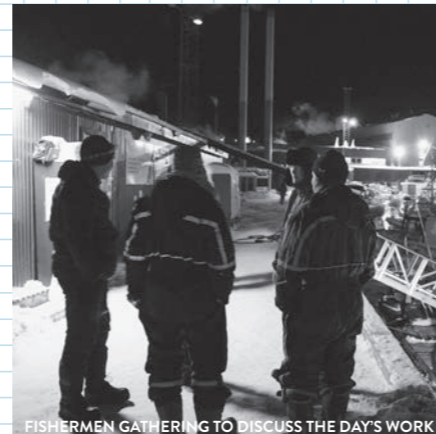
3.0 PRACTICE OF COMMONING Sharing responsibilities and benefits



COMMUNAL SALE OF FISH AND HUNT



'GREETING OF THE SUN' TOWN RITUAL



FISHERMEN GATHERING TO DISCUSS THE DAY'S WORK

PART THREE PROGRAM

MATERIAL PRACTICES AS SPATIAL POTENTIAL

The project intends to translate thematic introduced in this program – geopolitical, climatic, spatial and programmatic – into architecture through an iterative design process informed by context. The doctoral dissertation, *'Infrastructural Urbanism That Learns From Place: Operationalising Meta Material Practices to Guide Renewable Energy Planning in Greenland'* [Carruth, 2015], outlines several Greenlandic material practices. These material practices provide invaluable experiential learning and will be incorporated as design vocabulary in the project.

The aim of the project is not only to explore architecture's role in the representation of climate change but also to investigate architecture's active capacity to affect the political and social link between organization and individual. To approach these questions, the architectural development of the project will address an array of interconnected problematics. Using Carruth's material practices as a starting point, a synthesized analysis of the practices observed and experienced firsthand in situ will constitute three key concepts which will be used to inform the project's spatial response:

1.0 Polysyntheticity¹ lends a greater degree of transparency to how infrastructures function and how they can be bundled together, increasing awareness of energy and ecology systems as a whole.

2.0 Adjustability connotes a response to emergent, unexpected, shifting and temporal conditions as a measure of resilience. Working with notions such as modularity, seasonality and bricolage as spatiomaterial responses to changing states.

3.0 Commoning (Stavrides, 2016), is the social act of establishing and maintaining common resources, which references back to the long-standing practice of collectivity in Greenland.

1. Polysyntheticity is derived from linguistic terminology describing languages in which words are composed of many parts combined to create a new word. The Greenlandic language is largely polysynthetic, as are most Inuit languages.

SUGGESTED PROGRAM

ARCTIC COUNCIL HEADQUARTERS

Offices - 48 m²

SHARED BETWEEN AC HQ + COMMONS

Debating Chamber // Auditorium - 100m²

Meeting rooms [2-3] - 30m²

Library // Work space - 60m²

Reception + wardrobe - 25m²

Common kitchen - 60m²

Café - 25m²

Storage [+ cold storage] - 20m²

Washroom - 10m²

COMMONS

Collectively run shop - 15m²

Workshops - 57m²

Wash house - 15m²

Kayak storage - 35m²

Exterior space

TOTAL - 500m² + exterior space

DELIVERABLES

ARCHITECTURAL SCALE

Situation plan 1:10,000

Site plan 1:500

Plan, section and elevation 1:200

Models, diagrams, drawings, photographs and visualisations in the scale that is necessary to understand the project.

We reserve the right to deviate from the above if deemed necessary.



Glacier in Ilulissat Icefjord, January 2018
Photo by authors

SOURCES

BOOKS

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Bratton, B. H. *The Stack: On Software and Sovereignty*. MIT Press, 2016.

Byers, M. *Who Owns the Arctic?: Understanding Sovereignty Disputes in the North*. Douglas and McIntyre, 2010.

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DOCTORIAL DISSERTATION

Carruth, S. J. *Infrastructural Urbanism That Learns From Place: Operationalising Meta Material Practices to Guide Renewable Energy Planning in Greenland*. Aarhus School of Architecture.

EXHIBITION CATALOGUES

Conditions, Terroir & Brorman Jensen, B. *Possible Greenland*, 2012.

REPORTS

Arctic Monitoring and Assessment Programme (AMAP), 2018. *Adaptation Actions for a Changing Arctic: Perspectives from the Baffin Bay/Davis Strait Region*. Oslo, Norway.

KIPCC, 2018: IPCC Special Report on Global Warming of 1.5°C I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Myles Allen, Heleen de Coninck, Sarah Connors, et. al., Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

International Monetary Fund, September 2018, *World Economic Outlook: Seeking Sustainable Growth—Short-Term Recovery, Long-Term Challenge*, Washington, D.C.

Minor, K.R., *Greenlandic Perspectives Survey*, Copenhagen University, February 2018

Wilson, E. *Energy and minerals in Greenland: governance, corporate responsibility and social resilience report 2015*, International Institute for Environment and Development, London.

INTERVIEWS // ADVISORSORY PANEL

Anne Meldgaard, Chief Advisor, Ministry of Foreign Affairs, Arctic Council representative

Aviaaja Karlshøj Knudsen, Project leader, Kalaallit Airports

Boris Brorman Jensen, Architect, Associate Professor at KADK, Curator of *Possible Greenland*

David Christopher Pedersen, Architect, TNT Nuuk

Hanne Holm Andersen, Senior Planner, Avannaata Kommunia

Jens Gottlieb, Senior Cartographer at Asiaq, Greenland Survey

Kelton Ray Minor, Ph.d, founder of Greenlandic Perspectives

Snorre Bochsén Westh, Geographer, Avannaata Kommunia

Susan Jayne Carruth, Architect, Ph.d, GXN

+ A big thank you to the Ilulissat fishermen for talking with us and allowing us to observe and photograph their work.

CURRICULUM VITAE // Charlotte Lin Pedersen

EDUCATION

- 2018 - 2019** Masters in Architecture at the Royal Danish Academy of Fine Arts, School of Architecture
Program: Urbanism and Societal Change, Institute for Architecture, Urbanism and Landscape
- 2017 - 2018** Masters in Architecture at the Architectural Association [AA] School of Architecture
Program: Housing & Urbanism [MA]
- 2013 - 2016** Bachelor in Architecture at the Royal Danish Academy of Fine Arts, School of Architecture
Program: Complexity Handling in Practice, Institute for Architecture, Urbanism and Landscape
- 2010 - 2013** Rungsted Gymnasium, Global Society Class

COURSES

- SUMMER 2012** Oxford Royal Academy
- SUMMER 2011** Goethe Institut, Hannover, Germany

WORK EXPERIENCE

- 2016 - 2017** Architectural intern at Schmidt Hammer Lassen Architects
- 2015 - 2016** Student worker at Gottlieb Paludan Architects
- 2015** Architectural worker at Icopal Prisen
- 2015** Architectural worker at KADK, exhibition

EXHIBITIONS

- 2018** Year Review 2018, Architectural Association (AA) School of Architecture, program coordinator, Housing and Urbanism, London, UK
- 2013** Exhibition of paintings in Højdevangskirken, Amager, DK
- 2012** Exhibition of painting at Hørsholm Midtpunkt, DK
- 2011** Exhibition of painting at the Hørsholm exhibition, DK

CURRICULUM VITAE // Elaina Clare Keppler

EDUCATION

- 2016 - 2019** Masters in Architecture at the Royal Danish Academy of Fine Arts, School of Architecture
Program: Urbanism and Societal Change Institute for Architecture, Urbanism and Landscape
- 2013 - 2016** Bachelor in Architecture at the Royal Danish Academy of Fine Arts, School of Architecture
Program: Complexity Handling in Practice Institute for Architecture, Urbanism and Landscape
- 2007 - 2010** Bachelor of Arts, Honours, in Art History at the University of Victoria, Canada
- 2004 - 2006** International Baccalaureate Diploma, Birkerød Gymnasium

COURSES

- SUMMER 2014** ANARK + Spacon & X
- FALL 2013** ANARK intensive course in architecture
- 2012 - 2013** VERA School for Art & Design, højskole –post-secondary course in architecture and design

WORK EXPERIENCE

- SUMMER 2018** Student worker at BIG, Bjarke Ingels Group
- 2017** Architectural intern at Tredje Natur
- 2011 - 2013** Freelance writer, various online and printed publications
- 2010 - 2011** Curatorial intern at IMO Projects
- 2009 - 2010** Curatorial assistant at the Maltwood Museum and Legacy Gallery

EXHIBITIONS

- 2018** BIG Art, Charlottenborg, Copenhagen, Denmark
- 2018** Urban Dialogue, Danish Cultural Center, Beijing Design Week, Beijing, China

POSTSCRIPT

UN Sustainable Development Goals



This project seeks to question the dichotomy and interconnectedness between the UNSD goals, especially the tension between N° 8 'Decent Work and Economic Growth' and N° 13 'Climate Action' as they are currently oppositional to each other in Greenland. Through the proposed relocation of the Arctic Council headquarters to Ilulissat, the project further challenges the inherent inequality present amongst the Arctic states. In the general climate discourse, the countries that stand to be most affected by climate change have contributed the least to it and also, have the fewest resources available for adaptation.

