URBANIZED ARCTIC LANDSCAPES: CRITIQUES AND POTENTIALS FROM A DESIGN PERSPECTIVE

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ARCTIC LANDSCAPES
Situating urbanization in the arctic, one must first dissect, digest and reframe various prevailing conceptions of the arctic landscape. Despite the dominant belief, it is clear that the arctic is far from being an isolated, anachronistic, pristine, empty and authentic place. Instead, it is a dynamic, transnational, connected and contested region where natures, identities, histories, and politics all intersect [Maier & Ray, 2013]. In describing arctic landscape from a landscape architectural viewpoint, I do not mean to refer to simply the eerie and sublime nature, as in vast tundra, frozen oceans, deep permafrost and sunless winters. Neither do I want to limit the use of the term landscape to habitat patches, nature reserves or marine parks. Instead, I refer to the all-encompassing ground-plane of the arctic cities and towns, the multiscale network of surfaces that embrace and catalyze functioning urban systems - including buildings, winter roads, utilidors, open spaces, hunting trails, lagoons, snow fences, neighborhoods, and industrial complexes. This is the ground structure that organizes and sustains a broad range of activities in the arctic, and the one that will dictate the future transformations of northern cities and their operations. Examining the contemporary metropolis, Alex Wall, an architect and urbanist, noted that it is the processes of urbanization rather than forms that are increasingly defining the direction of landscape architecture and urban design today [Wall, 1999]. In this light, urbanization in the arctic must take into account the varied facets of exchange, flows, and regimes that have propagated settlements, and the potential in which these arctic-specific metabolisms can engender renewed and diverse urban morphologies.

DOMINANT APPROACHES
Concerns often associated with the arctic – melting icebergs, oil/gas development, and territorial disputes – are overwhelmingly approached from perspectives of natural science regarding warming climate and the validity of continental shelf extents, and of the cost-benefits of natural resource extraction [Fig. 1]. While these efforts are critical for the formulation of international policies and commerce, they render the arctic as a highly vulnerable and exploited medium. Contemporary engagement of the arctic can be categorized into the following main trends:

Climatic Apocalypse – Deterministic Landscape. The fact that the arctic is now warming twice as fast as the global average has brought a plethora of scientific studies that emphasizes the loss of its characteristic conditions that once defined the region [Astill, 2012]. For instance, a dramatic reduction in sea ice, rising sea levels due to melting ice caps, glaciers and thermal expansion of the oceans [Cazenave and Llovel, 2010]; re-orientation of weather patterns [Li, et al., 2012]; release of methane gas due to thawing permafrost [Schaefer, 2012]; and extraordinary migration and extinction of species are only a few examples of the changes that have already begun accelerating [Chen, et al., 2009]. Because of their implications in both local and global context, the impact of climate change in the arctic has raised concerns worldwide. Rarely discussed in detail however, at least in popular media and design

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practice, is the new optimistic opportunities the warming temperatures might bring to the region, for instance the northern migration of arable lands and plant growth, and the global shipping routes gravitating towards the melting, navigable Arctic Ocean [Astill, 2012]. This apocalyptic view presupposes that the arctic landscape operates on principles of stability and permanence, truncating its resilient and adaptive potential in light of its transformation. This implicates a kind of urbanistic task predicated on defense that resists inherent dynamism.

Fig. 1 Overview of economic, political, environmental, and settlement factors that are shaping the arctic. Like a giant game of risk, the arctic nations are jockeying for territory and development of the arctic with these boundaries and zones marking an ever-shifting transition in the landscape³.

Treasure Trove – Commodified Landscape. Despite the technical challenges, the arctic exploration for undiscovered natural resources such as petroleum is now at the forefront of major global energy industry. That the arctic holds 13% of the remaining undiscovered petroleum, 30% of undiscovered gas and large swathes of rocks rich in minerals is no longer news [Gautier, et al., 2009]. Diamonds and nickel are

³ Map by authors; Sources [CAFF, 2010a; CAFF, 2010b; Ellis & Brigham, 2009; Government of Canada…,2012; Protected Areas Assessments, 2012].
plentiful, the waters are rich with fish, and the region is bordered by the vast boreal forest belt, which holds one-third of global forests and perhaps 40% of economic forest resources [Kullerud, 2011]. Such vast untapped resources have the potential for major global economic impact and are the root of current and emerging urbanisms in the arctic. Timber from Igarka and ores from Norilsk and Yakutsk in the Russian Siberian arctic, for example, have propelled a rich lineage of urban histories. Like other supermajors, the Royal Dutch Shell continues to bet billions to drill for oil in Alaska’s outer continental shelf near Barrow – a city transformed by petro-dollars since the 1970s is again at the center of swelled attention [Birger, 2012]. Such enterprises backed by scientific research and intranational policies are one of the most potent catalytic forces for arctic urbanization. Admittedly, the modern history of the arctic is a history of interactions between advanced industrial metropolises located in the south and resource-rich hinterlands located to the north. While it is not surprising that discussion of domestic and international economic and political relationships dominate most accounts of contemporary arctic affairs, the arctic is overwhelmingly positioned as a landscape ‘to-be-mined’ for prosperity elsewhere. The question is how the merging of landscape design and industrial imperatives can create local prosperity in the arctic.

Territorial Conquest – Vied Landscape. The geopolitical race to a new frontier is intimately interwoven with the resource promise of the arctic. The five arctic nations – Canada, Denmark, Norway, Russia and the U.S. – as well as non-arctic nations such as China and South Korea are jockeying for position to lay claim to – and monitor – as much land and maritime territory as possible. The territorial tussles under international law range from areas disputed between two states, to areas claimed by only one state, to areas considered no man’s land. For example, Canada and the U.S. still disagree on the setting of the boundaries in the Beaufort Sea – an area of intense interest to oil drillers; ownership of Hans Island is highly contested by Canada and Denmark; and the planting of a Russian flag on the seafloor of the North Pole has triggered media-frenzy anxiety in the past several years [Macalister, 2011]. Exercising sovereignty is inevitable and necessary for future management of the region and not all of it is purely territorial, evident in the efforts to increase search-and-rescue and accident clean-up capacity. However, the modes in which the region is unfolding resemble much of the expansionist tactics, rendering the region as a battleground for ownership. Managing urban ecologies that flow and fluctuate across multiple jurisdictions and borders, for instance, might present a challenge should the land-grab mentality continue without considering its impact on the continuity of arctic landscape.

DYNAMIC URBANISM
The three dominant lenses outlined above through which the arctic can be viewed, interpreted and mobilized pose limitations and potentials for the design and planning of landscape in the arctic. The commercial and political consequences of global warming will undoubtedly ebb and flow over time. History further hints that a massive fluctuation of population across arctic settlements – mostly due to climate, job availability and policy change – will be repeated in future, particularly if arctic development occurs from a singular perspective. Such principles have already spawned a haphazard constellation of expanding or shrinking arctic urban centers, and have largely left the discourse on quality and sustainment of northern life, e.g. safety, cultural dynamism, affordable housing, public transportation, architectural quality, clean air, and outdoor public space, in the interstices. An important reference in this regard is the concurrent development of Dubai in terms of city and landscape as a financial and leisure hub in order to shift away from a mono-industry economy. The future of sustainable arctic development requires resiliency in urban form and programming that is adaptive to the current and future flux inherent in the region, as well as a re-positioning of the arctic landscape as a productive, robust and dynamic
foreground through which development occurs. Shifting ecologies, undulating grounds, expanding infrastructures and emerging public landscapes in the arctic offer an opportunity for the urban field itself, shaping “the organization of urban settlement and its inevitably indeterminate economic, political and social futures” [Fig. 2a & Fig. 2b; Waldheim, 2006].

Fig. 2a Design-research on Trans-Alaska Pipeline. By harnessing and redirecting excess heat from the oil pipeline, the pipeline network intentionally warms the ground and extends the plant growing season.

4 The sketch design shown in Fig. 2a and 2b was produced by Katie Jenkins (M.L.A. ’13) and Parker Sutton (M.Arch. ’13) for Cho’s Arctic research seminar at the School of Architecture, University of Virginia in spring 2013.
Fig. 2b While remaining entirely speculative, this project prescribes new performity to the existing pipeline infrastructure and the communal space around them. The new ground along the corridor creates desirable couplings for the arctic oil communities, wildlife and native and emergent ecologies.

The discussions generated by recent work\(^5\) seed a multiplicity of ordering mechanisms for arctic cities – that are beyond the forms of administrative centers and single-industry cities – toward a creative production of socially dynamic, ecologically symbiotic, and aesthetically diverse live-work environments. The following are key topics of landscape architecture that can catalyze future development and renovation of the arctic\(^6\):

1. Recreational and outdoor public spaces – Design of cold-climate oriented outdoor amenities, festival grounds, mobility network, and open space systems;
2. Reclamation and restoration – Land reclamation and ecological restoration of contaminated sites such as mining fields and impaired streams;
3. Local food network – Development and protection of local ‘food-shed’, sustainable food production and healthy community;
4. Tourism development & preservation – Strategic planning and design of cultural landscapes and biophysical habitats;
5. Ecological urbanism - Synergetic spatial configuration of industry and ecology in regional, city, and district-levels;
6. Strategic vision planning – Macro-level vision study and speculative design studies.

\(^5\) Much of the recent design-research in the arctic experiments with the new role of design and landscape – most notably the Emerging Arctic Landscape design studio at the Bergen School of Architecture and a new landscape architecture graduate program with an arctic focus at the Oslo School of Architecture and Design in Norway [Loken, Haggårde, & Berge, 2011; Williams, 2013]; the Danish efforts on strategic reconfiguration of the Greenlandic arctic at the 2012 Venice Architecture Biennale and the upcoming northern focus by the Canadian counterpart for the 2014 edition [Rosing, 2012; Jull & Cho, 2012; Kilpatrick, 2013]; public space design and research on Russia’s Far North at the Strelka Institute [Archive Research Themes, 2013]; and a number of design competitions such as Kent State University’s ‘Coldscapes’ aiming to revitalize cold weather cities as well as the increasing evidence of arctic awareness within design communities at large [Center for Outdoor Living Design, 2013; Slessor, 2011].

\(^6\) Several design examples will be shown at the paper presentation.
REFERENCES


Williams, K. (2013, April). For This MLA, Pack A Parka: Study the Arctic - In the Arctic. Landscape Architecture Magazine, 103(4), 26.