

Drift House

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With insufficient core populations to support public structures, indigenous dwelling typologies have attained the highest level of refinement within the Canadian Arctic's unique climate. Pre-WWII indigenous Inuit housing types had embedded connections to the local landscape, its orientation, materials and fabrication, while embracing the nomadic Inuit lifestyle. With zero ecological footprint, these temporal dwellings employed opportunities from the landscape and atmosphere to form a complex shelter that negotiated thermal performance, local materials, soft construction techniques, program and cultural values.

Permanent architecture—in the form of prefabricated Government housing—was employed in an effort to assert a first wave of Arctic Sovereignty during the Cold War era by the Canadian Government. Despite instilling new notions of comfort and durability, this new housing neglected the cultural and sustainable intelligence of traditional dwellings. Importing a 'southern' model of dwelling, these hermetic containers were highly contingent on imported materials, energy consumption, labor, and transport costs, while forcing a transformation to the Inuit lifestyle that severed a connection to the dynamic landscape. These typologies have formed the template for Arctic shelter and settlements in Canada that still persists today. Northern Canada is currently undergoing a housing crisis due to decadent shipping, construction, and energy costs, and the corresponding ramifications on overcrowding and deprivation. The Drift House aims to hybridize the intelligence of tradition and technology of both housing systems to offer direction on future constructions in the Arctic.

The Drift House is in fact parasitic to the construction of new snow fences in the Canadian North. An increasing number of extraction outposts have prompted the investigation of new road infrastructures in the North, which are protected from snowdrifts by snow fences. The Drift House manipulates the porosity and height of these snow fences in select areas to calibrate a specific pattern of snow accumulation. By understanding a malleable system, such as snowdrift, architecture can be formed in response to the landscape — calibrating, mitigating and using once 'problematic' environments in an opportunistic manner.

The house is comprised of 3 surfaces formed of ETFE panels that create three separated zones and courtyards in the summer months. ETFE panels were employed because of their highly insulative properties (primarily using an airspace) as well as their ability to pack 'flat' and be shipped to the Arctic in a cost effective manner. As snow accumulates behind the fence, it effectively tips the house into a second state to create a singular enclosure made up of three nested thermal environments to protect the house during the winter months. The accumulated snow passively 'builds' part of the dwelling, while also serving as a counterweight to the light cantilevered structure. The nested thermal environments produce a series of thermal zones related to the interior program and traditional lifestyles. By using snow as a material, structural counterweight, and enclosure, the Drift House is able to passively accumulate a responsive shelter through the manipulation of a generic technology (the snow fence) to form new a typology of dwelling.



- Drift House, 720ft²
- SFD stick house, 2250ft²
- SP House, 2900ft²
- N+C Ice-pike, 750ft²

DRIFT HOUSE

With insufficient care expenditure to support public structures, indigenous housing typologies have attained the highest level of refinement within the Arctic's unique climate. The WWI, built housing types not only withstand the intense heat (10°C), but with their ecological features, their design logic employed approaches from the landscape and atmosphere to have a certain ability that we pursued thermal performance, local materials, soft construction techniques, program, and cultural values. Permanent institutions, in the form of institutional housing, was employed by the Canadian Government during the Cold War in an effort to assist Arctic Development. Despite building these regions of capital and durability, the government housing implemented the culture and sustainability in-telligence of traditional dwellings, supporting a 'hardcore' model of dwelling, the housing took the form of hermetic containers, which were highly contingent on imported materials, energy consumption, labor, and transport costs. These government housing typologies have formed the template for Arctic design in Canada that still persists today. Housing in the North is currently undergoing a re-evaluation to facilitate construction and energy costs, and the corresponding modifications in ownership and maintenance. The Drift House indicates the resurgence of traditional architecture in both of the above housing systems to provide a possible direction for future constructions in the Arctic.

The Drift House is possible to use stone frame construction, a typically static infrastructure that is used to protect structures from snow accumulation. These forces are counteracted with differential heat openings (porosity) and height to produce a precise pattern of passive snow accumulation from the direction of winds. The Drift House is composed of three stacked, framed-type EPS panels to cover a series of enclosed areas related in relation to accumulated snowfall. During the summer, these enclosed areas with cutouts form a stronger connection with the surrounding landscape. During the winter, accumulated snowfall covers the facade, essentially tipping the three units into a single, thermally sealed space. Not only does the snow passively 'build' part of the dwelling, it also serves as an environment to the partitioned structure, insulation for the envelope, and a source of water for the inhabitants — effectively reducing energy, transportation, and maintenance. By understanding a variable system, such as snowfall, architecture can be formed in response to the landscape — calculating, integrating and using open 'predefined' environments in an opportunistic manner.

