

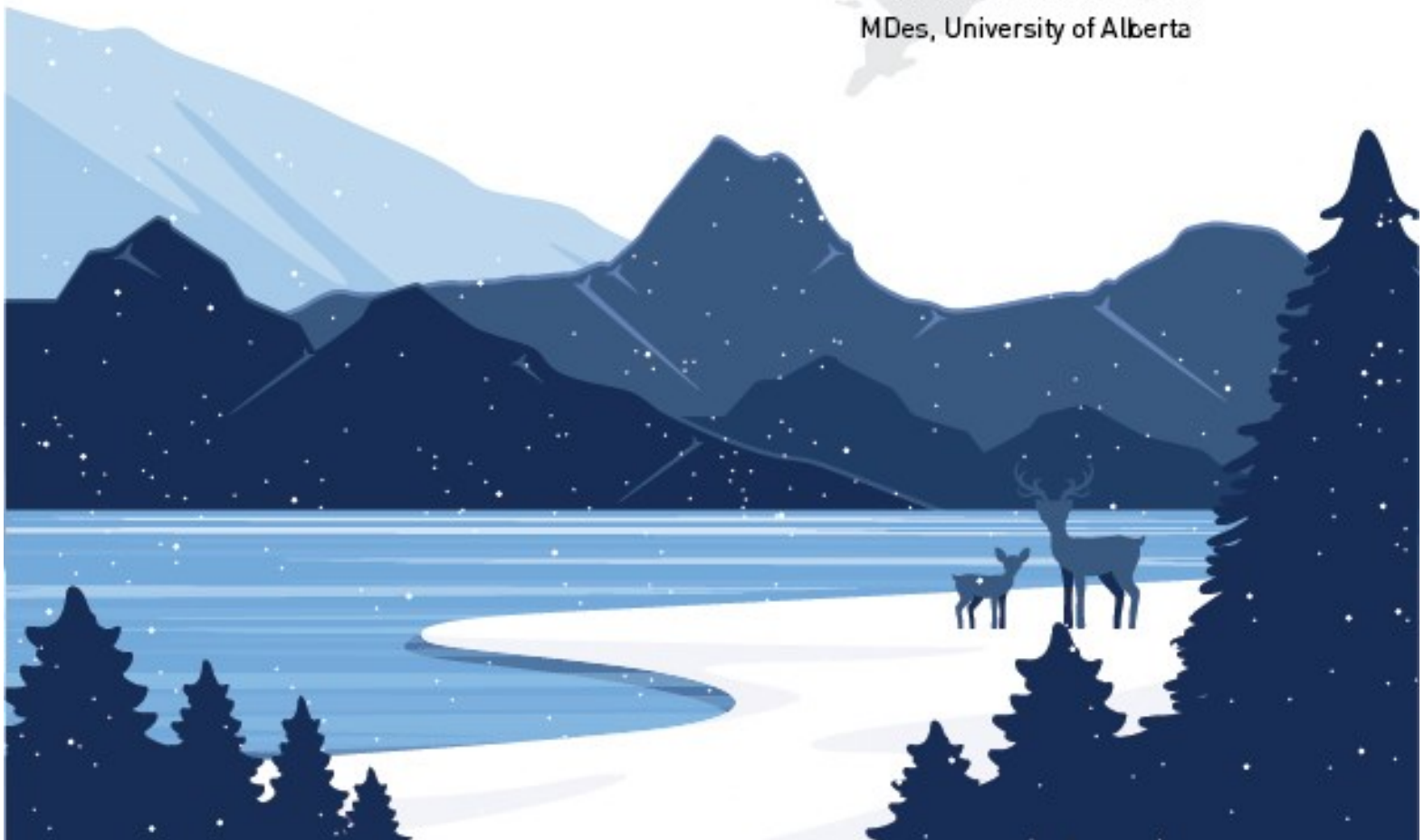


Making A House **A Home**

Northwest Territories

Bringing a New Life to the Northern
Houses: An experiment in the Redefining
of Home

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Bringing a New Life to the Northern Houses: An experiment in the Redefining of Home

by

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Abstract

This project will examine the role of design and technology in home spaces in the Northern part of Canada. It will explore the reciprocal relationship between mental health and Interior design. Recent research has demonstrated that individuals' well-being remains constant when both physical and psychological factors are at an equal level of satisfaction. The effective factors for this level of satisfaction are intimately related to culture, kinship beliefs, entertainment, and economic situations. This satisfaction could eventually affect the overall life quality of an individual, the essential factor to consider when having technology and design focus. Climate change has a significant influence on the Northern lifestyle; regarding the past studies, following the harsh cold climate, 90% of individuals spend their lives indoors in Northern lands. "Home" as an environment that most Northern lands occupants spend most of their time in, affects the well-being of its inhabitants remarkably; as Porteous states, "A home is more than a territorial core." Sociologists demonstrate that occupants define the meaning of "home." Roderik J. Lawrence (1987) also described home as: "A home is a complex entity that defines and is defined by cultural, sociodemographic, psychological, political and economic factors."

Keywords:

Well-being, mental health, interior design, home, psychology, Northern habitation, mnemonic design, enclosed spaces.

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1 Chapter One

1.1 Introduction

This project's research timeline collided with the 2020 virus outbreak and pandemic. Travelling to the North was restricted due to Covid-19, despite being invited I could not visit communities in the Northwest Territories (NWT). This project is therefore purely propositional and, for now, will hopefully instigate future discussion. The primary purpose of this thesis is adapting existing housing stock towards creating living environments that can facilitate better mental health and wellbeing of Northerner's. The housing corporation in the NWT and government regulation presently limits the ability to adapt social housing, I consider this a major issue - and restriction. My thesis is providing propositional solutions to improve the potential adaptability of governmental housing.

1.1.1. The North

Defined in many terms, "North" is often described as cold and freezing or a never-ending winter. According to Julie Decker, adhering to one single definition to "North" is inaccurate. She states the North could be relatively referred to as anything opposing the south. Furthermore, the North could be defined as a place surrounded by ice and snow. Then she refers to it from the geographical perspective. *The North is defined as the area constituting the circumpolar North, which, if looked at from the top of the globe is the Arctic Ocean surrounded almost completely by a ring of land* (Decker 2010). From a different perspective, Norman Pressman separates the geographical meaning of the North from its psychological one. To highlight, he describes the "Actual North" an area defined by natural boundaries and environmental variables. While on the other hand, from the psychological point of view, the North is an isolated area from other existing populations with its own established cultures, historical traditions, and intellect of occupants (Pressman 1939).

The definition of North and its spirit is not comparable with other parts of the world, Northern habitation, survival and enduring all together are a different story. During the harsh weather of mid-winter, the Northern land occupants tend to remain indoors and contribute to planned indoor activities such as sports, cottage-crafts, cultural events, and work.

Pressman demonstrates two main behavioral adaptations in the north, which relates to the amount of willingness to be protected during the winter. Concerning adjustment to the harsh weather, the Northern nations have developed two diverse strategies (Pressman 1939).

1. Do not overprotect people from nature:

This view suggests that people living in these areas must adapt to the harsh climate; otherwise, depending on the technology to survive will cost them their strength to live in this environment.

2. Offer as much protection as possible:

On the other hand, this idea suggests that people living in these areas need to be protected from the harsh cold with as many shelters as the urban structure can support.

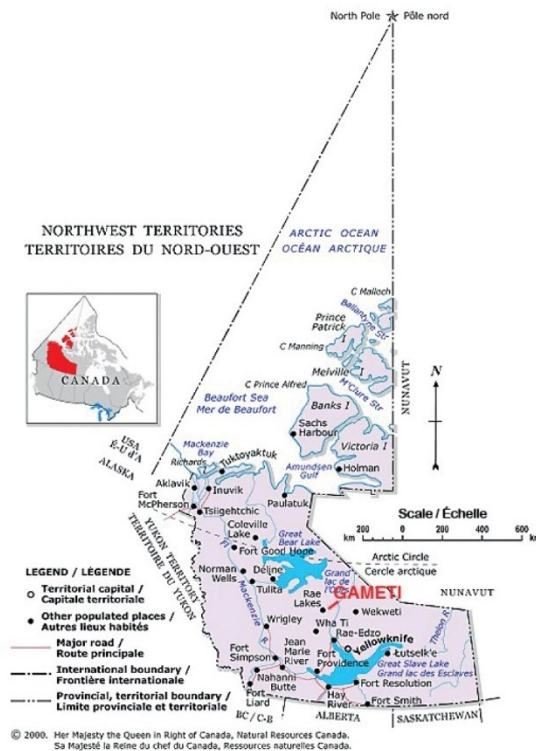


Figure 1, Northwest Territories (G. Renwick, *The Land We Live on is Our Home* 2005)

This project focuses on the Northwest Territories residence. The Northern land with 44,469 population as of 2016 and covers 1,171,918 square kilometers in Canada. For more information on health and social statics, Figure 87, NWT, population, (NWT Health Status Profile 2020).

1.1.2 The Home

The Gameti Ko project defines “home” as a safe place for its occupants filled with memories, stories, knowledge, and lessons to live by. Home for the people of the Northern lands is an environment to share their stories and knowledge; on the other hand, a place where they acknowledge the traditional Dogrib and modern ways to learn and follow. *Prototype that evolves out of their traditional knowledge, Linking modern home, their homeland, and their traditional ways* (G. Renwick, *The Land We Live on is Our Home* 2005).

This place is more than a structure for them as they create a peaceful, supportive environment for their families, elders, and children. The community sees the house as a safe environment to talk and solve the problems they encounter. For them, this is important that their children and the next generations be surrounded by the Dogrib knowledge and skills, to hear the language and stories even when they are not listening to it (G. Renwick, *The Land We Live on is Our Home* 2005).

Northern land communities believe in building the relationship and sharing, and consider it as a key factor for every action and project, furthermore, Home, as it discussed above is a safe place for communication and building the relationships. William Semple, a recent doctoral student at the University of Alberta, also states the importance of relationship to improve family’s wellbeing (Semple 2020).



Figure 2, House and Tepee, Behchok'o (Rae-Edzo) (G. Renwick, *The Land We Live on is Our Home* 2005)



Figure 3, House and Tepee, Gameti (Rae Lakes) (G. Renwick, *The Land We Live on is Our Home* 2005)

“Home” is a large box that separates outdoors from indoor spaces. And “Territory” the following aspect is defined by this idea. Albeit, in a broad view, the idea of “home” depends on more fundamental factors than a shape. It is mostly about cultural beliefs, psychological attachments and individual's experiences, as Roderick says, *Home is more than just “a Territorial Core” (Porteous, 1976) and not just “an ordering principle in space” (Dovey, 1978), but a complex entity that defines and is defined by cultural, sociodemographic, psychological, political and economic factors* (Roderick n.d.).

“Home” based on cultural diversity and experiences would be defined in a variety of meanings. It could be called a place to rest, to reunite with family, to work or study; “home” generally can be divided into two main definitions; Psychological and Physical. Psychologically home refers to a place where memories and beliefs shape in, a place where individuals could feel comfort and peace in, where they can learn and share, on the other hand physically, “home” is a place to prepare food, a place to sleep and rest, a place for hygiene purposes. These two can never be separated, comfort can never be possible with no food or rest, learning would never be possible with no place to share ideas. The proper balance between these two defines home.

The early housing concepts for Northern Canada

In late 1950, the Early Government Housing presented Matchbox Houses under the Eskimo Housing Loan program from 1959 to 1965. The units, also known as Plan 370 Unit, were premade wooden panel houses in a one-room shape with minimal heating and plumbing systems. In various sizes from 288 square feet to the largest three-bedroom units at 720 square feet, these units were

two-by-four with the ceilings, walls, and floors having a high insulation rating of R-12. The Rigid-Frame Houses supplied by the Department of Northern Affairs and National Resources were also premade with the stressed-skin plywood floors, walls, and roof. To make an insulated box on a gravel pad, the plywood formed stiff beams were fastened together (Many Norths 2019).

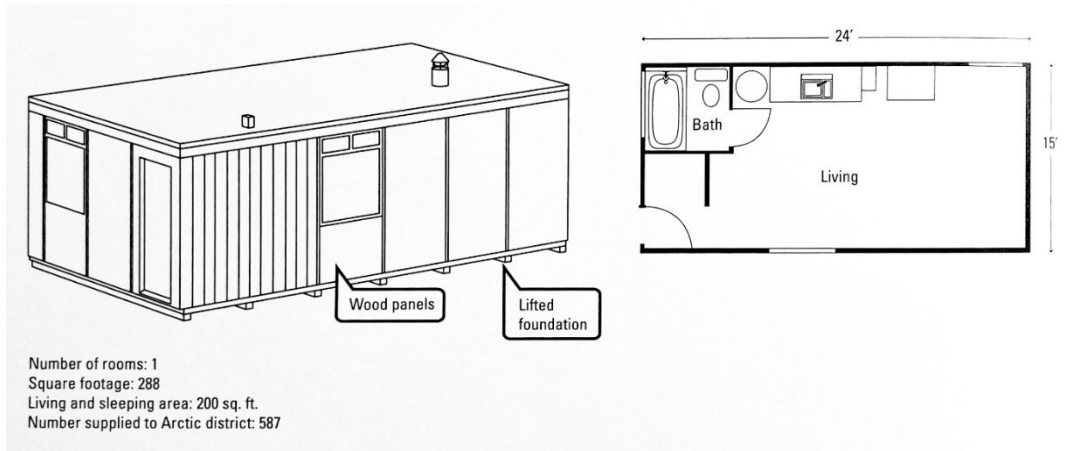


Figure 4, Early Government Housing, Late 1950s (Many Norths 2019)



Figure 5, Matchbox 370A, February 1987, Photograph by Richard S. Bushell (Many Norths 2019)



Figure 6, Rigid-Frame House, Apex, East of Iqaluit, NU, September 2013, Photograph by Mason White (Many Norths 2019)

Considering the government's view of Northern lands society as disorganized, these housings were trying to alter the lifestyle of these people implicitly and bring their definition of order into the Northern domestic sphere. With the forced separation of home space from both public and workplace targeting females, the new rules would internalize the domestic seclusion of female life from their established role in traditional hunting economy while denying the importance of "home work" (G. T. Renwick 2020).

Given that the new housing system was neglectful to Inuit life activities and culture, the housing system was hardly discussed with the occupants; therefore, in the long term, the occupants would redefine the functions of spaces to multi-purpose rooms for food preparation, cultural activities, repairs and maintenance, and sleeping (Many Norths 2019). As William Semple on his article, "Decolonizing Architecture: Stories from the Canadian North" states, the government mostly focused on building the houses, and overlooked the local cultures (Semple 2020). Furthermore, the infusion of western culture into the Northern lifestyle is perfectly evident in these units. The units' interior, prefabricated in south, had a confined and arranged space and was brought to the north as part of the domestic package from furniture to westerns eating utensils (G. T. Renwick 2020).



Figure 7, Repurposed Spaces (Many Norths 2019)

The article *Acculturation by Design* states *Initial houses provided by the federal government had very little internal spatial segregation and therefore provided an ironically appropriate and adaptable, albeit unsophisticated, space. The interior was largely open plan 'to allow for the preparation of game and organisation of hunting and trapping equipment'. However, in the mid-1960s spatial divisions began to appear with the introduction of separate bedrooms and living areas. After the creation of the NWT HC in 1974 the 'housing product began to conform to Southern standards' in size, style, and layout, with an 'equality' of living and ancillary spaces achieved soon thereafter. As a result, the planned alteration of the hunter's lifestyle and relationship to home was part of adaptation to the new culture.*



Figure 8, Government Housing in newly created Pond Inlet (G. T. Renwick 2020)



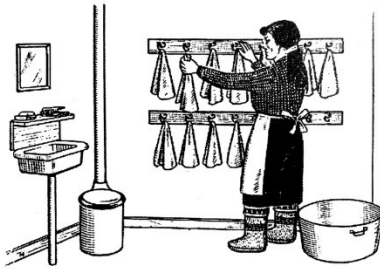
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Getting food ready.



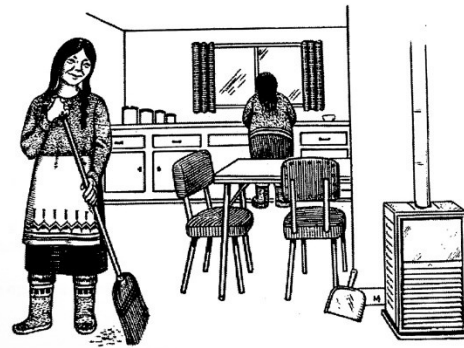
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A tidy cupboard



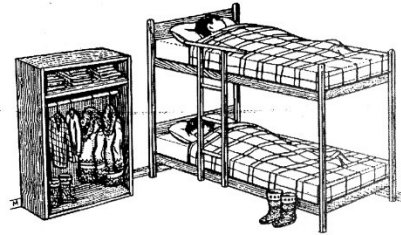
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Towels for everyone.



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A tidy kitchen



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Children need more rest than adults.



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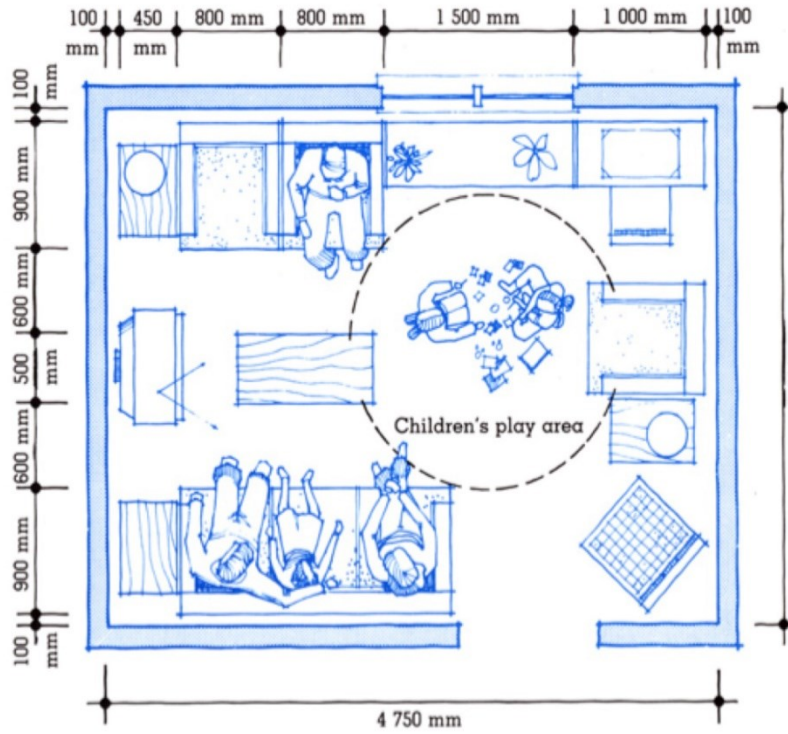
Beginning the day right.



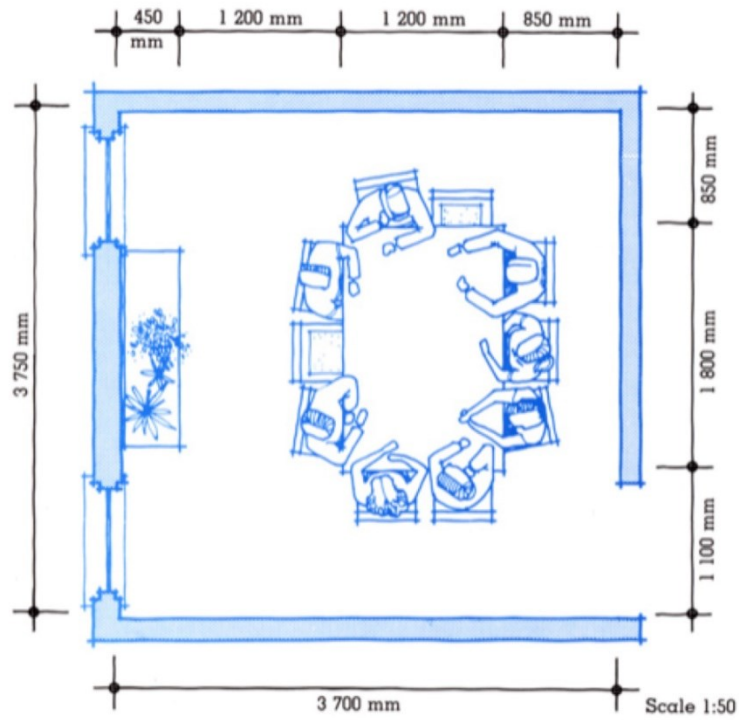
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Children need a place to study.

Figure 9, Living in the New Houses, (G. Renwick 1999)



Six-person household. Recommended net area 17.57 m²



Eight-person household. Recommended net area 13.87 m²

Figure 10, Internal Spaces of the dwelling, From a federal advisory document (G. T. Renwick 2020).

1.1.3. Northern Land

Acculturation impacts both social and psychological well-being (Oxford Languages n.d.);

For Northern land inhabitants, a home is more than a place. For them, anything in their surroundings is connected to their past and future. Every substance, regardless of its shape, is alive, follows law and speaks language. There is an unbreakable relation between everything; therefore, everything is loved, desired, and cared for (Kwaymullina 2005). In other words, considering time and space, Indigenous homeland can be defined by an established activity, a mythical or experienced event. This, in fact, is the difference between the Indigenous and Euro-Canadian values that raises conflicts by suggesting two diverse perspectives: one having established rules and definitive and the other, conflicted (G. T. Renwick 2020). Forcing the southern culture and lifestyle into Northern land that has lived for centuries within its own established commands results in a low social and psychological well-being and affects the generations to come.

1.1.4. Winter

Laura Neilson Bonikowsky in her article “Winter” describes winter as a crucial and most effective occurrence in the north by articulating the importance of its existence and how it impacts the Northern lifestyle. *Winter occurs as the Earth's axis tilts away from the sun during the planet's annual rotation. The portion of the Earth that is furthest from the sun experiences winter, with weather that is colder than the other seasons. In the Northern Hemisphere, winter officially begins with the winter solstice, around December 21s, and ends at the spring equinox, around Marc 21st. Winter figures largely in Canada's climate, cultural experience, and mythology. Every aspect of life in Canada is affected by winter, whether by heavy rains on the West Coast, isolation during the long Arctic winters, raging blizzards across the prairies or huge snowfalls in eastern Canada. Winter is reflected in Canadian art, literature, music, fashion, pastimes, and attitudes* (Bonikowsky 2012).

Researches show that winter in North America used to be warmer compared to the last two decades. The article **Northern Hemisphere Winter Air Temperature Patterns and Their Associated Atmospheric and Ocean Conditions** demonstrates that the harsh winter is caused by the recent Arctic warming and sea ice loss (Deng, Dai and Chyi 2020). Laura Neilson Bonikowsky in her article **Winter** indicated the coldest temperature of Northern Canada during the winter reported as -63 Celsius on February 3rd, 1974 (Bonikowsky 2012). The article **Northern forest**

winters have lost cold, snowy conditions that are important for ecosystems and human communities articulates the importance of the cold winter and how it affects the socio-ecological systems of northeastern North American forests. *Timber harvesting on wet sites and bottomlands often occurs in winter when soils are either snow covered or frozen, which minimizes soil disturbance. Maple sugaring depends on sufficiently cold winters that permit below-freezing nights followed by above-freezing days; if temperatures are not cold enough, the quantity of sap is reduced* (Contosta, et al. 2019).

Pressman describes the Northern winter in five elements, which are familiar for anyone who experienced winter (Pressman 1939).

1. Commonly below freezing temperature
2. Precipitation normally in the form of snow.
3. Limited hours of sunshine and daylight.
4. Continued periods of the first three components mentioned above.
5. Seasonal change.

He describes Northern winter as a never-ending journey with slight changes regarding the seasons. *One thing is certain, as Finnish author and poet, Toivo Pekkanen, has suggested (Pekkanen, 1962, p.61): Winter is the true season of the North, Spring is only a promise that something great is about to happen; summer is only an illusion of what people, during some hot days or weeks, at the most, believe to be true; Autumn means death, it is the dark grave of the promises of the Spring and of the illusions of the summer. But Winter is something that really exists. It always comes back* (Pressman 1939).

Pressman believes the entire civilization in Canada depended on acquiring survival techniques in the harsh climate. He states that initiation of life in this cold land was connected to enduring in the never-ending winter, surviving in it, and adapting to it (Pressman 1939). From a psychological point of view, to survive and adapt to a challenging environment, it is essential to have a clear and peaceful mind. Therefore, maintaining a balance between physiological and psychological aspects of life during the severe cold season plays a key role in surviving it.

According to him, science lacks the necessary practical knowledge to assist inhabitants in these lands. That said, most research covering this matter is conducted in a laboratory environment and

focuses on maintaining indoor comfort while underestimating the values that outdoor activities have for its inhabitants. This approach is incapable of understanding these people's actual needs and, therefore, overlooks their essential demands. *The research assessing indoor comfort has shown that it is difficult to separate physiological from psychological factors since comfort is related to subjective experience* (Pressman 1939).

In her book, Neilson articulates the adaptation to winter and how aboriginals adjust themselves to the cold winter. According to her, the Indigenous people acquired their essential survival skills and devices from observing the animals during the winter. Toboggan, Kayak, and snowshoes were among the many adaptation devices the natives accomplished to build. Most importantly, among these was gaining knowledge to build Igloos out of the snow developed by the Inuit, the earliest people in this region. Inuit snow houses would serve as a house during the cold season or a temporary stay when travelling (Bonikowsky 2012).



Figure 11, Inuit children on the sledge, photo by Charles Gimpel, courtesy Library and Archives Canada/e002394517, (Bonikowsky 2012)



Figure 12, Inuit Snow House, (Bonikowsky 2012)



Figure 6, Teepee, Art Gallery of Alberta, Edmonton, Preliminary Investigation

Pressman acknowledges culture as the main character in enduring the winter and surviving. According to him, the Inuit culture focused on family, friendship, collaboration and sharing; in other words, the culture that endured the harsh winter recognizes the necessity of these factors in survival (Pressman 1939).

As Neilson states, the winter is attached to the Arctic culture; for people living in this region to survive the cold season, it is necessary to acknowledge it as part of the Northern culture. Therefore, the winter festivals begin to emerge during this season; in her book, she mentions some of the famous festivals in the Northern lands such as *the Snowking's Winter Festival in Yellowknife, with its castle carved from snow; the Yellowknife Long John Jamboree featuring dogsled derbies; the K'amba Carnival and Polar Pond Hockey Tournament in Hay River, Northwest Territories; and the Top of the World Ski Loppet in Inuvik, Northwest Territories.* (Bonikowsky 2012) According to Michelle Filice, The Arctic Winter Games were founded in 1970 to give the Northern athletes the chance to learn and compete in such sports (Filice 2011).

Keeping warm during the cold season is a matter of survival for the Northern land people. Therefore, houses are designed with an extensive focus on maintaining the warm temperature and isolating it from the freezing cold; for instance, the window frames are smaller, and the houses are structured to have only one entrance. However, the houses built based on the Canada Mortgage and Housing Corporation's (CMHC) regulative guidelines are inclined to follow the standards designed for the southern region's weather and demographics. Therefore, southern culture begins to force its lifestyle into the Northern world and cause fundamental alterations in their communities (G. T. Renwick 2020).

The least appreciated part of the mentioned houses is the healthy spirit after a healthy body. Below zero temperature during winter makes it difficult for people to remain outdoors for an extended time, therefore, they tend to stay indoors, which is a struggle itself. Considering limited, short daylights and the small structured windows to bring the sunlight in, it becomes challenging to maintain mental health in these regions. Pressman states, majority of people in the Northern latitude areas annually spend a minimum of 70%, rising to 90%, of their time indoors during the long winter months (Pressman 1939). The extended wintertime results in limited access to greenery and less vegetation; therefore, planting and gardening become almost impossible at

freezing temperatures. Infrequent outdoor times, unlimited isolation, and scarcity of indoor activities often cause depression during these long and cold months.

1.1.5. SAD (Seasonal Affective Disorder):

SAD or Seasonal Affective Disorder refers to a certain type of depression that occurs every year throughout the same season. Studies indicate that a lack of exposure to sunlight might cause the symptoms. Some treatments, such as light therapy as the most effective one, therapy sessions, and medications, have been evident in improving the symptoms (seasonal affective disorder n.d.).

Pressman highlights the impacts the environment has on its occupants. That said, the physical environment affects the culture and behaviour of people living in it. Given that the Northern lands are under harsh climate conditions and experience long, dark winter months, it is reasonable to assume that the SAD has been frequent in these regions. *Northern latitude communities, such as Reykjavik, Tromsø, or Yellowknife, suffer from a lack of daylight especially during the period of mid-winter* (Pressman 1939).

SAD Causations:

Based on theories, it is apparent that the amount of sunlight triggers SAD. The data suggests, the change in light might cause the followings:

- disturb peoples' biological clock
- interrupt neurotransmitters (e.g., serotonin, dopamine) functionality

Studies show that women, people living in the far north or far south, youngsters, and people with a family history of depressive disorder are more likely to be diagnosed with SAD (seasonal affective disorder n.d.).

In his book, Pressman draws a connection between social behaviour and climate change; that said, the people living in the north are often described as “cold,” while on the other hand, the people living in the south with the hot climate are referred to as “fiery.” The stereotyping approach has described Northern people in the United States and Europe as earnest, hard-working, active, realistic, and sophisticated while the southern inhabitants as optimistic, spontaneous, hospitable, lazy, and carefree. As a result, these characteristics are referred to culture and climate (Pressman 1939). Swedish Artist, Richard Bergh, in 1902 wrote: *It is not so important that all small nations*

make immediate and astonishing contributions to the great culture ... it is, on the contrary, of major importance that they develop independently and logically form their own roots, working with subjects which especially suit them - in order little by little, and in an original way, to grow part of the larger organism, and address its variety from and original vital perspective (cited in Nasgaard, 1984, p.158) (Pressman 1939).

Regarding the physical environmental effects on social behaviour, Pressman brings three conclusions. One says, as winter comes, people tend to less use public indoor and outdoor spaces. The other suggests that people involved in public life are more likely to appreciate extraordinary weather conditions, e.g. snowfalls. And the third refers to the use of public places as its designed function.

1.1.6. The Nature

Nature Impacts Health and Improves Psychological Well-Being.

Northern culture believes in a deep connection between nature and humans. That said, humans' well-being and healthiness are in line with the quality of this spiritual connection. Therefore, spirituality is considered in their activities, decision making, and fabrication. This project focuses on improving Northern land inhabitants' mental health and well-being by considering their spiritual connection with nature in the home design process. Studies show the more people are exposed to nature as in greenery and mountains, the more they feel at ease and calm. In other words, people exposed to pure nature are significantly happier than those living in urban areas. Research conducted in 2019 explores the impacts nature has on people and how it benefits them; for instance, it mentions when children are in nature, their level of concentration increases, regardless of their love for nature (The gradual development of the preference for natural environments 2019). Moreover, the effects of nature in reducing road accidents by producing a calming environment are evident; in better words, studies show that individuals driving along natural scenery are less likely to be stressed out in the road than the ones driving in urban areas filled with billboards and buildings. It is also apparent that nature has a significant impact on hospital patients' recovery time; that said, the ones with a natural scenery window view are more likely to recover faster than those with an industrious brick wall view (Aronson 2003).

The article **the positive effects of nature on your mental well-being** highlights the beneficial impacts of nature on human mental and physical health. *Forest bathing* or *Shinrin-yoku* (Japanese), is an act of spending time in nature, it is an example of practices that boost the body's immune system and develops in a well-balanced heart condition. ... *the Forest Bathing research also suggested that by stimulating the production of anti-cancer proteins, frequent walks or trips into the wilderness help patients in fighting terminal diseases. Although this is an ongoing research and firmer evidence are awaited, this suggestion is strong enough to prove the benefits of being outdoors* (Chowdhury n.d.). The research argues the positive effects nature has on depressive disorders. Studies have shown that the patients exposed to nature experienced significant improvement in their mental health and were more encouraged to heal and return to a healthy life.

Spiritual Enhancement

- Environmental psychology argues that humans are more appreciative of their surroundings when exposed to nature. Therefore, they tend to protect it more.
- Breathing in nature boosts humans' sense of awareness. E.g. they hear, smell, and feel clear (Howell, et al. 2011).

Research shows how the connection between nature and humans can improve their lifestyle and create a perfect situation for them to enjoy their lives. Considering climate change and its influence on the Northern lifestyle, the chance of spending time outdoors and being exposed to nature decreases remarkably. Given the amount of time Northern people spend indoors this project's main objective is to create a domestic ecological threshold, to bring nature into occupants' living environment.

Windbreaks

Another important consideration is to create an open-air environment that protects Northern people from strong winds or harsh cold climatic conditions while generating the option for people to remain outdoors (Pressman 1939). The followings are the important factors to consider when designing windbreaks and shelterbelts. Installation, Altitude, Weight, Length and Width and Shape.

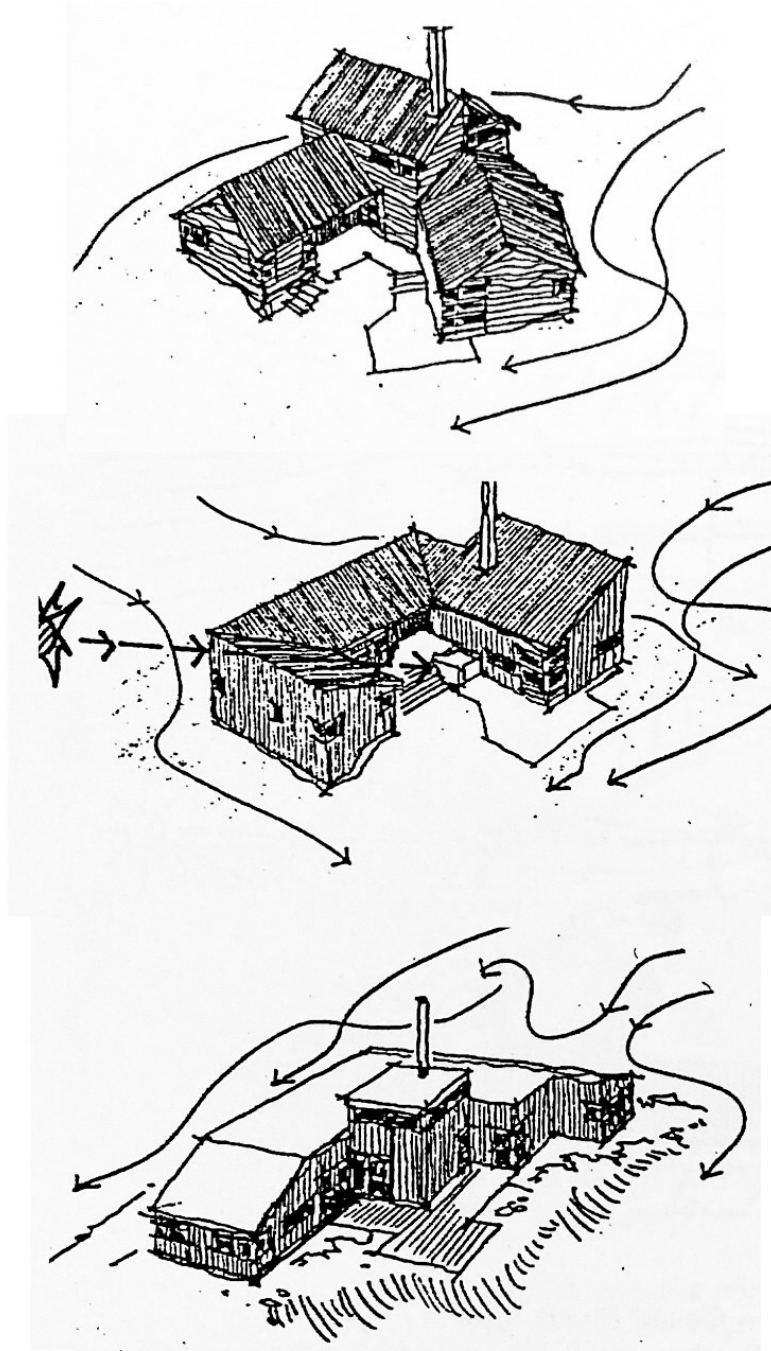


Figure 13, Housing Designs Exhibiting Climate-Responsive Principles. Top: Traditional forms in which the house protects the outdoor area against winds from the east; Middle: High walls offer shelter against winds from the east and north. The outdoor area is bathed in sunshine; Bottom: High walls face the south to catch the sun. Entrance wall is exposed to the wind for assistance with snow clearing (Pressman 1939).

Vegetation as windbreaker

Using vegetation as a windbreaker can be efficient and cost effective. A 'green barrier' can deflect strong wind over and around the house. In addition to windbreakers, the heat absorbent materials are also useful in creating a localized microclimate environment; one idea is to absorb the sunlight and create outdoor heat reflectors during the cold season that can be effective in extending outdoor activities.

To create such environment the following factors are essential to consider (Pressman 1939).

1. Creating an environment sheltered from the wind
2. Adjusting the building concerning the sun position
3. Reducing the number of the natural/human-made objects that cast shadow on the buildings
4. Using materials that have high heat absorbent rate.
5. Preventing the cold microclimate air pockets
6. Preparing objects or vegetation to form as a windscreen
7. Creating a south-facing environment
8. Creating sheltered pathways for primary pedestrian areas

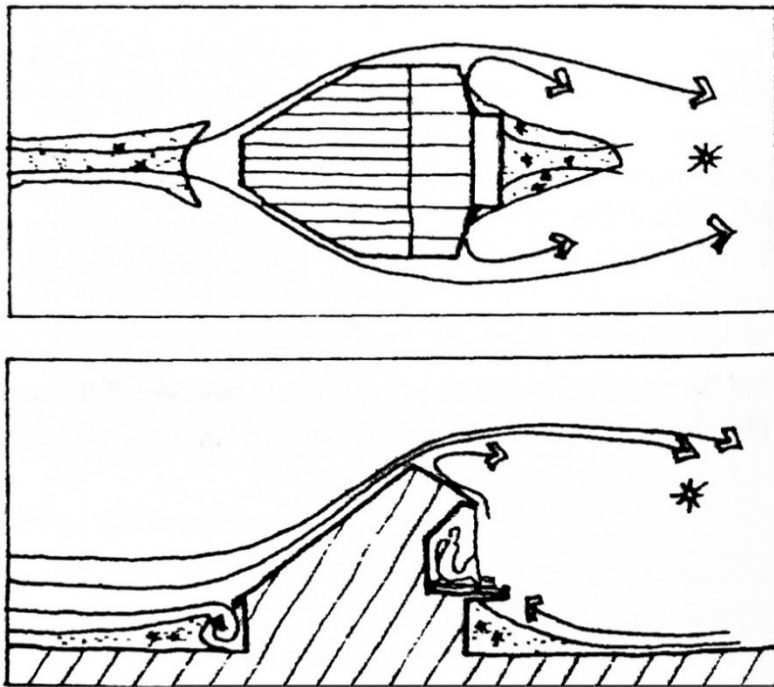


Figure 14, A house can have its back to the wind and weather with low walls which guide and direct the wind. A protective overhang shelters the warm, sunny side. Storage and hallways are situated on the cold side while recreation rooms face the sunny direction (Pressman 1939).

Sustainable Design

There is an unbreakable bond between humans and nature. For centuries, humans have depended on nature for their economic, cultural, and social needs. Sustainable design works by bringing balance to this dependency, reducing possible harm to nature while addressing the humans' needs and improving their life quality. However, sustainable design becomes quite challenging when it comes to the North and its harsh weather conditions. In order to achieve sustainable development in the long term, there are factors that need to be considered (Pressman 1939).

Land: Humans depend on the environment for their economic development, growing food, and different uses. The land as a non-renewable resource must be protected from over-exploitation.

Northern ecosystem: Regarding the sensitive ecosystem in the north, there must be a considerable balance between development and keeping the environment as intact as possible.

Regulations: People must be regulated on the use of environmental resources and acknowledge the importance of keeping it unharmed for future generations. Furthermore, certain approaches should be taken to prevent misuse of these resources and promote responsible behavior from people towards the environment.

Promoting creativity: The government should acknowledge the new ideas and methods in preserving the environment. Certain steps should be taken to develop those ideas into reliable solutions suitable for other areas as well. On the other hand, it is important to acknowledge the traditional ways of maintaining the environment while not excluding modern technological solutions.

Regional identity: Architectural design for the Northern lands should be more inclined to the regional character; the application of North American or European style should be limited or dismissed.

Promoting sustainable development is essential as the natural environment's effects on people's well-being and quality of life are evident. Studies showed that nature has been effective in reducing discomfort such as nervousness or irritation and elevating the happy feelings. That said, being in nature is not only efficient in physical health but also known to promote psychological well-being. Referring to the bond between humans and nature in addition to nature's physical and

psychological impact on humans, the older people get, the more they prefer to spend their time in a natural environment (Meidenbauer, et al. 2019).

Healing environment

According to Huelat, it is the memories that give value to a place. That said, the place becomes a feeling rather than a structure. People create memories in the places they visit throughout their lives; these memories evoke feelings that, depending on their importance, linger in mind for a long time. Given that these memories have positive or negative impacts on the psychological mind, it is essential to acknowledge that the positive experiences that lead to positive memories promote mental health. The healing environment refers to a place that puts its occupants at ease and brings them comfort regarding their mind, spirit, and body. That said, creating experiences that produce positive feelings becomes one of the main characteristics of a healing environment with little to do with its structure. Today's knowledge has been efficient in proving the influences the environment has on humans' mental health and well-being. Referring to the spiritual beliefs of the North, as discussed earlier, the Northern people believe a healing environment involves a spiritual journey (Huelat 2007).

1.1.7. Design

Visual environment; use of high contrast colors

For Northern lands, I am suggesting the use of colors with higher contrast levels. Regarding the long period of snow season in these areas, the lands are covered with bright snow; use of bold colors can bring lively characteristics to the environment, particularly colors that are known to create the illusion of a warm environment; for instance, it is common to create artificial fireplaces to create heat illusions during the cold season. Planting certain types of warm color vegetation is also one of the recommended means in producing these characteristics in Northern lands (Pressman 1939).

Space planning

Considering the duration of winter in Northern territories it is essential to position the building toward the sun to absorb as much heat as possible. Further to this, it is recommended that the windows and entrance doors be placed on the side of the house that faces the sun (Pressman 1939).

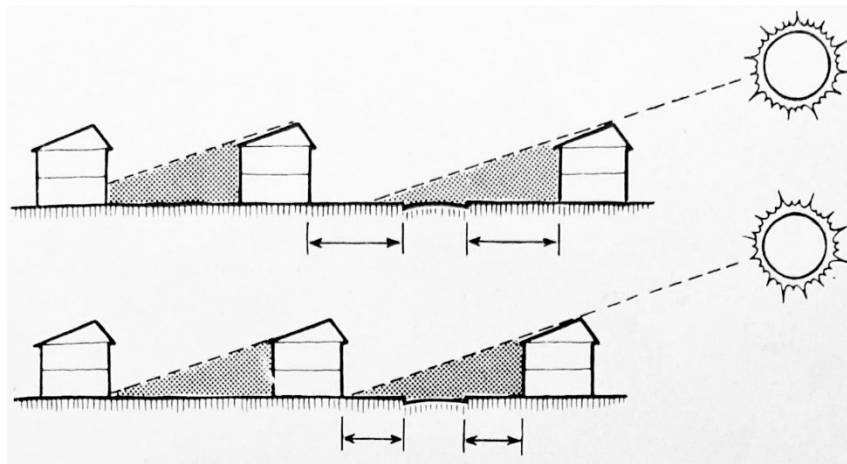


Figure 15, Section through typical residential street. A reduction in front yard setbacks may improve solar access opportunities - applying zoning by-laws (Pressman 1939).

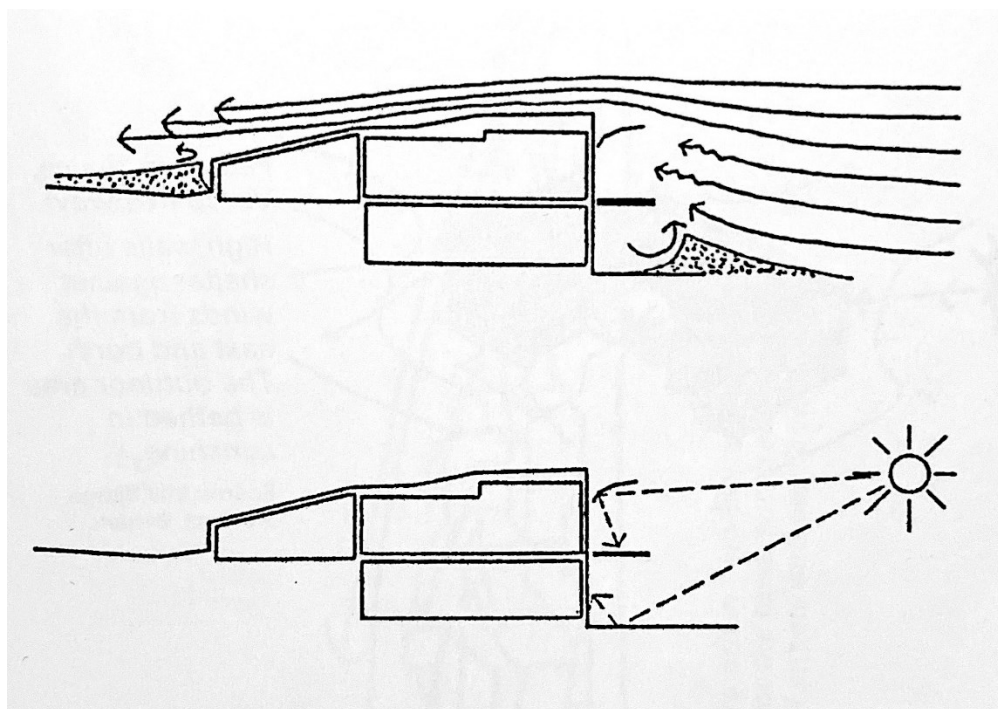


Figure 16, Snow, Sun, and wind conditions, including aerodynamic concepts, influence design. The forms enable buildings to stand out in a landscape covered with drifting snow (Pressman 1939).

1.2. Previous experiments on houses in the North:

Adding spaces and rooms to existing houses through additional structures that are easy to build for Northern habitation is the approach I followed. There are various precedents for this. Other than the work being undertaken by researcher-designers like my supervisor Gavin Renwick, one of the most inspiring I found was Rural Studio.



Figure 17, Dr. Gavin Renwick, Associate Professor in Design Studies, working in the FAB Gallery on Counterpoint: The Aesthetics of Post-Colonialism (People n.d.)

1.3. Existing redesigned houses by Rural Studio rural West Alabama:

Rural Studio founded in the early 1990s by Samuel Mockbee, an American architect who won MacArthur Fellowship, for his social consciousness and unconventional design. While American architecture was under the influence of new technologies and styles which would drive architects to design *audacious* constructions, Mockbee and his group focused on designing satisfactory and creative buildings for people of low-income families. Mockbee believes that architecture should improve living situation of in need people and modify the social changes. As he asserts, the architecture should be expanded from paper to make the new structures to serve the community (Mockbee and Decency 2002) (Our Story:The Road to Newbern n.d.).



Figure 18Figure 16, Goat House, 1998 (Mockbee and Decency 2002)



Figure 19, Goat House, 1998 (Mockbee and Decency 2002)



Figure 20, Goat House, 1998 (Mockbee and Decency 2002)



Figure 21, Hero Children's Center, 1999 (Mockbee and Decency 2002)



Figure 22, Hero Children's Center, 1999 (Mockbee and Decency 2002)



Figure 23, Harris (Butterfly) Houses, 1997 (Mockbee and Decency 2002)



Figure 24, Harris (Butterfly) Houses, 1997 (Mockbee and Decency 2002)



Figure 25, Harris (Butterfly) Houses, 1997 (Mockbee and Decency 2002)



Figure 26, Harris (Butterfly) Houses, 1997 (Mockbee and Decency 2002)



Figure 27, Mason's Bend Community Center, 2000 (Mockbee and Decency 2002)



Figure 28, Mason's Bend Community Center, 2000 (Mockbee and Decency 2002)

1.4 Research Methodology

In this thesis, research conducted in three specific methodologies, Literature reviews focusing on the academic and professional papers and books I gathered from libraries of UOA, Dr. Gavin Renwick and the internet; Secondary research focused on the previous information and research collected and conducted on northern housing by my supervisor and the other researchers cited; and Mind Mapping as a thinking tool that helped me with breaking down the current situation on the Northern houses, people, and available solutions.

1.4.1 Literature Reviews and Secondary Research

This research focused on the documents and literatures on the Northern land housing systems; the history of houses, the culture relevant to these structures and the influences the European lifestyle had on the Northern land's residents' life. Moreover, as discussed earlier, the primary connection between the cold season and northern life have been reviewed to build a profound connection with the presented concept and the climatic conditions. Because of my inability to travel to the NWT as intended through the restrictions imposed by Covid 19 I had to rely on established interviews with Northern land residents.

1.4.3 Mind Mapping

The Mind map designed for this research focused on the lifestyle in the Northern territories, the residents' culture, personalities, and needs. Moreover, the housing systems have been studied in addition to achieving a better understanding of the weather conditions in these territories. The overall structure of the mind map focused on reviewing the household, the main roles in the house and construction. Furthermore, the location, the current condition of the housing systems, the seasonal climate impacts on the housing, winter night hours and short exposure time to the sun, and the importance of redefining existing housing were considered.

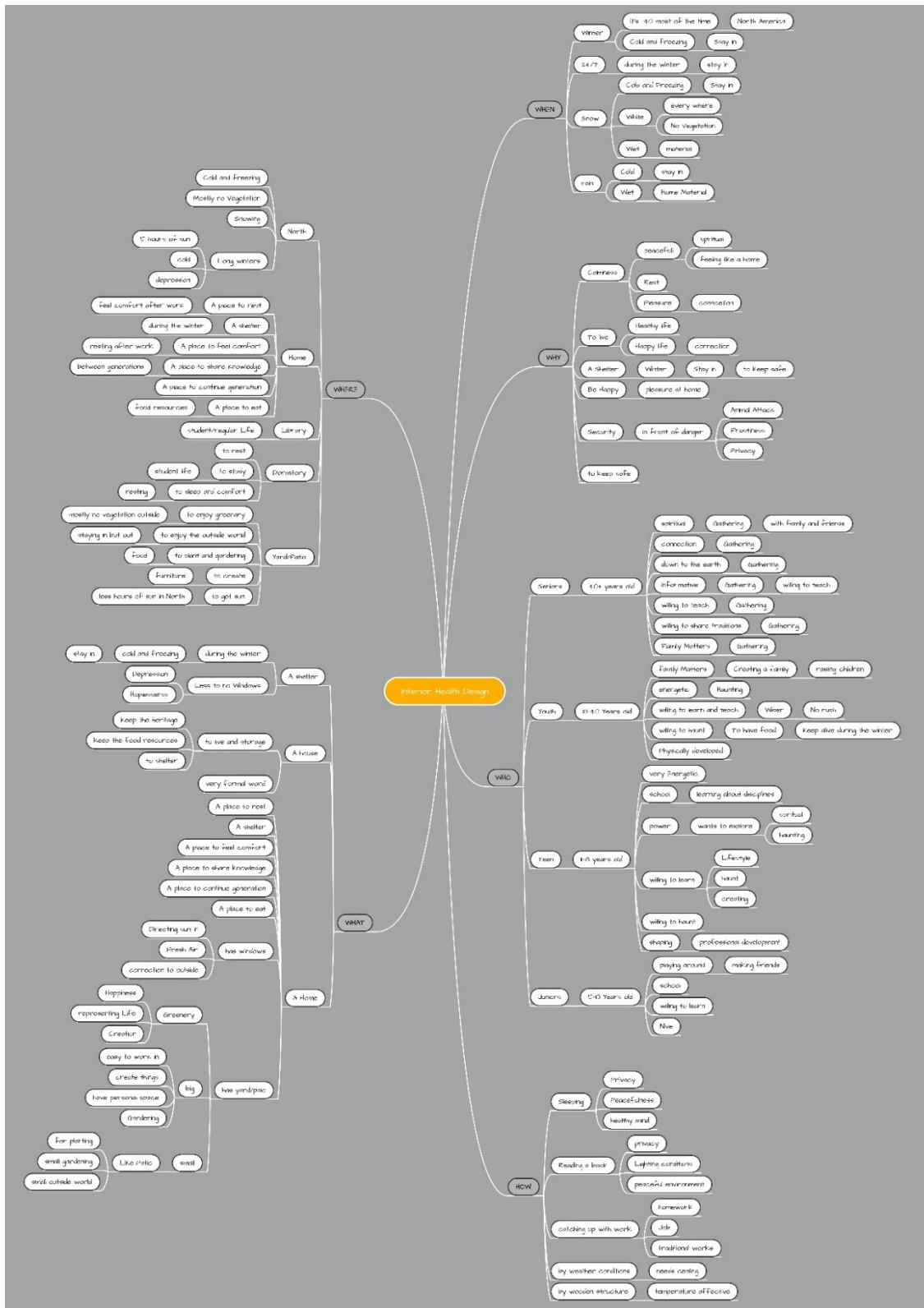


Figure 29, Mind Mapping, Larger view click on the [link](#).

2 Chapter Two

2.1 Ideation:

2.1.1 Patio and Natural elements

Regarding studies and researches on the positive impact of vegetation and greenery on mental health (Pressman 1939) (Chowdhury n.d.), providing an area around the house or inside the house is critical. Given that Northern land is covered with snow for large parts of the year and has a short summer, outdoor greenery is almost impossible. In consideration of this having a covered or indoor patio, a threshold between inside and out would, I argue, work best. Furthermore, I have considered using natural elements and natural materials to keep and balance the connection between nature and interior space.

2.1.2 Socializing Environment

Socializing, as discussed, is one of the other issues of winter season, considering a place for household and elders of the community to share their thoughts and lessons with others is one of the other ideas for boosting the mental health and wellbeing.

2.1.3 Light Tube

The lack of sunlight during the winter season also not requiring the appropriate quantity of windows for houses causes lack of natural light in the interior further enhancing depression and sadness. To resolve that issue, finding alternative ways to bring sun inside the house without using other windows or applying so many changes on the house's structure is required. Solar and Light Tubes are new invention that transmits and distributes natural lightings inside the covered environment.



Figure 30, Light/Solar tubes installed to the roof, (Tucker 2020)

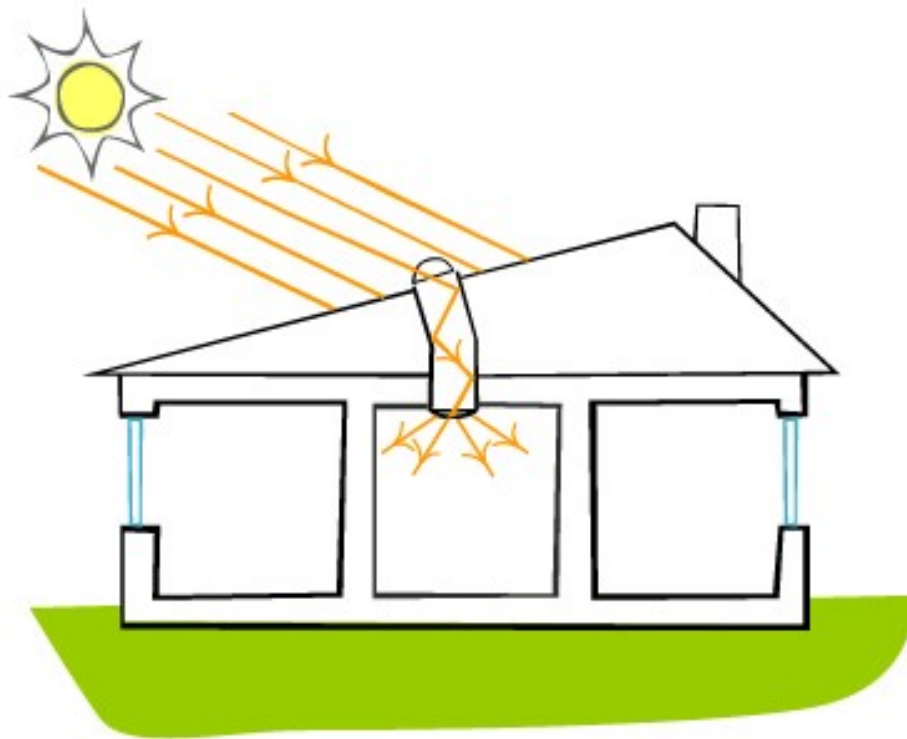


Figure 31, Light tube (Light tubes n.d.)

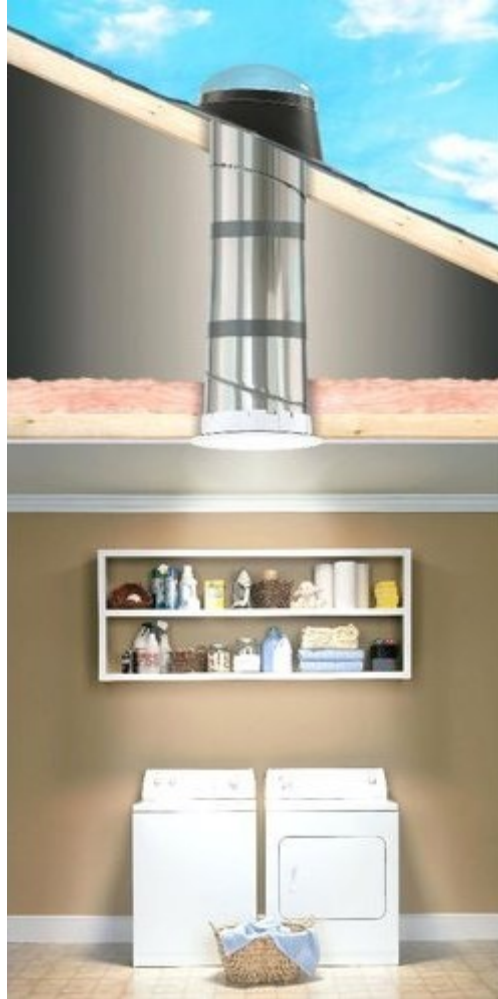


Figure 32, Light tube, (Light Tube Daylighting System n.d.)

2.1.4 Hydroponic System

Gardening is one of the remedies for promoting mental health; it represents growth and caring with greenery. Given that gardening during the cold season in a freezing climate is almost impossible, the covered space is required for such activities. Hydroponic system, without soil and by only using water and nutrients would make the planting and gardening feasible in every season (Woodard 2016).



Figure 33, Hydroponic System Lifting, (international 2020)

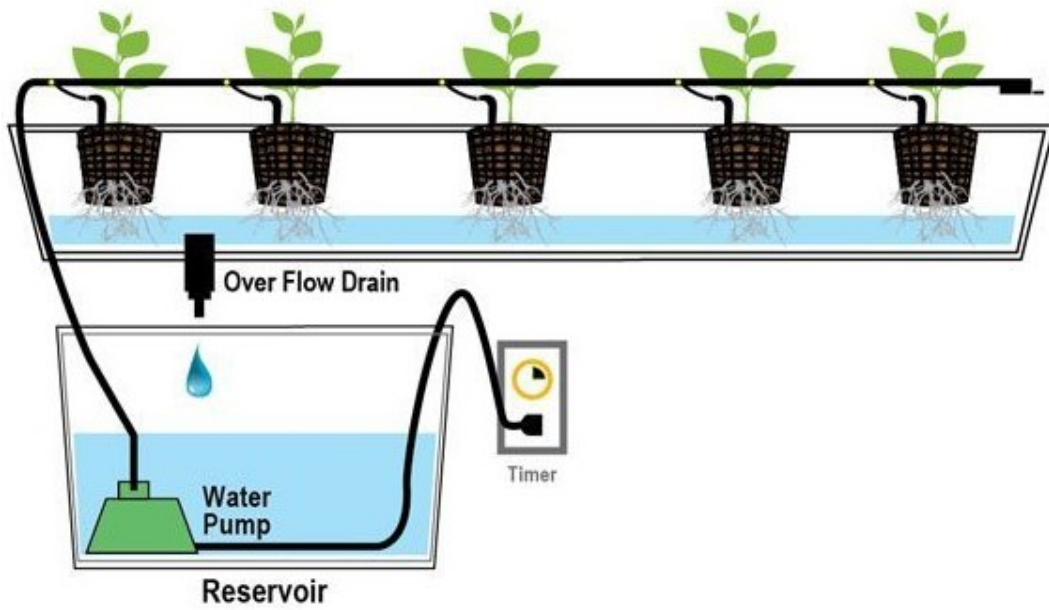


Figure 34, Hydroponic Systems, How They Work and How to Build Your Own (Pesce n.d.)

2.1.5 Solar Energy

Solar panels are known for their climate compatibility, inexpensiveness, and environmentally friendly features and are used to provide heat and electricity from the natural resources for the building (Edmonton n.d.).



Figure 35, Evaluating efficiency of new technologies in a remote Northern community, (G. T. Renwick 2020)



Figure 36, Solar Panel, (14kW Solar Panel Installation in Duncan BC n.d.)

2.1.6 Parasite Architecture

The Parasite Architecture is a new trend in architecture and refers to the addition of elements to existing buildings (Bardzinska-Bonenberg 2018). Parasite architecture is an alternative and low-cost way for existing buildings to have additional synergetic spaces.



Figure 37, These parasitic pods were designed for homeless individuals. James Furzer, Parasite Architecture, (*Why are designers creating parasite architecture?* 2017)



Figure 38, They provide much-needed affordable inner-city housing in the French capital. Stéphane Malka Architecture, Parasite Architecture, (*Why are designers creating parasite architecture?* 2017)



Figure 39, This extension can be attached to any home, and has been installed in Leipzig, Cologne and Bamberg in Germany. 2004 Stefan Eberstadt, Germany, Parasite Architecture, (Why are designers creating parasite architecture? 2017)



Figure 40, Manifest Destiny! by Mark Reigelman and Jenny Chapman, Parasite Architecture, (Carter 2017)

2.2 Mood Boards



Figure 41, Mood Board 1



Figure 42, Mood Board 2



Figure 43, Mood Board 3

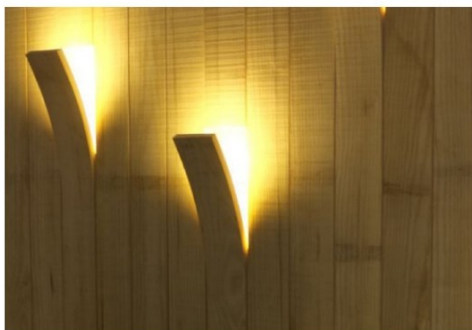
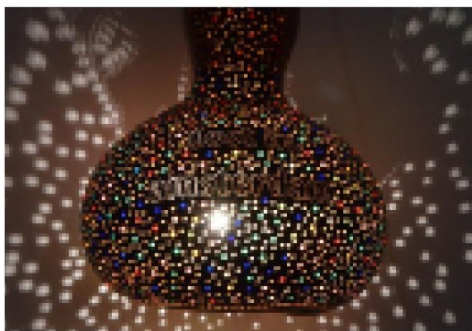


Figure 44, Mood Board 4

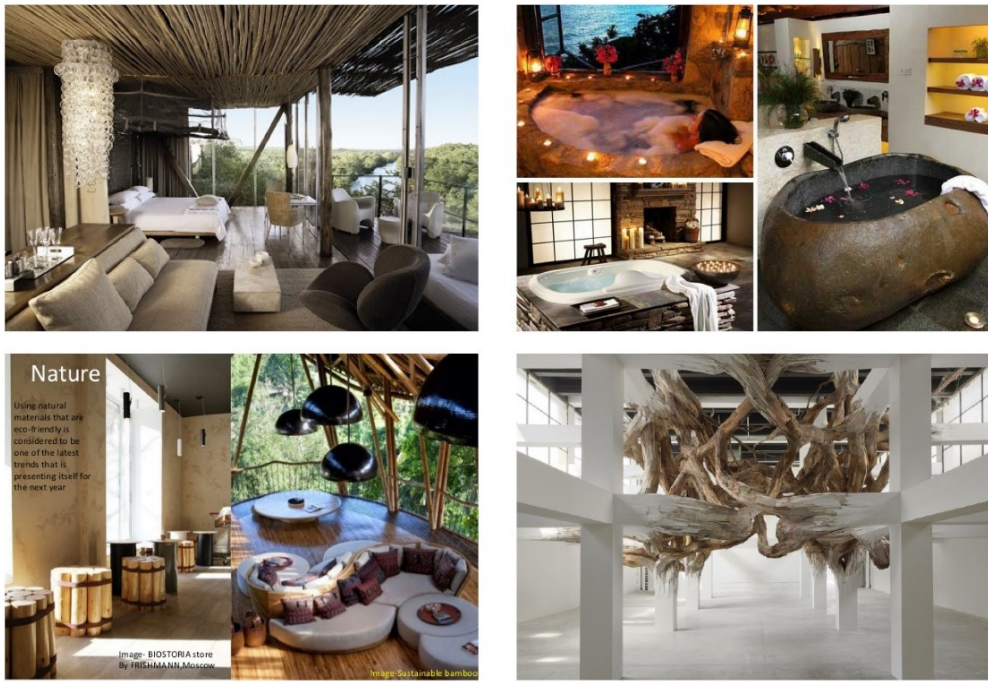


Figure 45, Mood Board 5

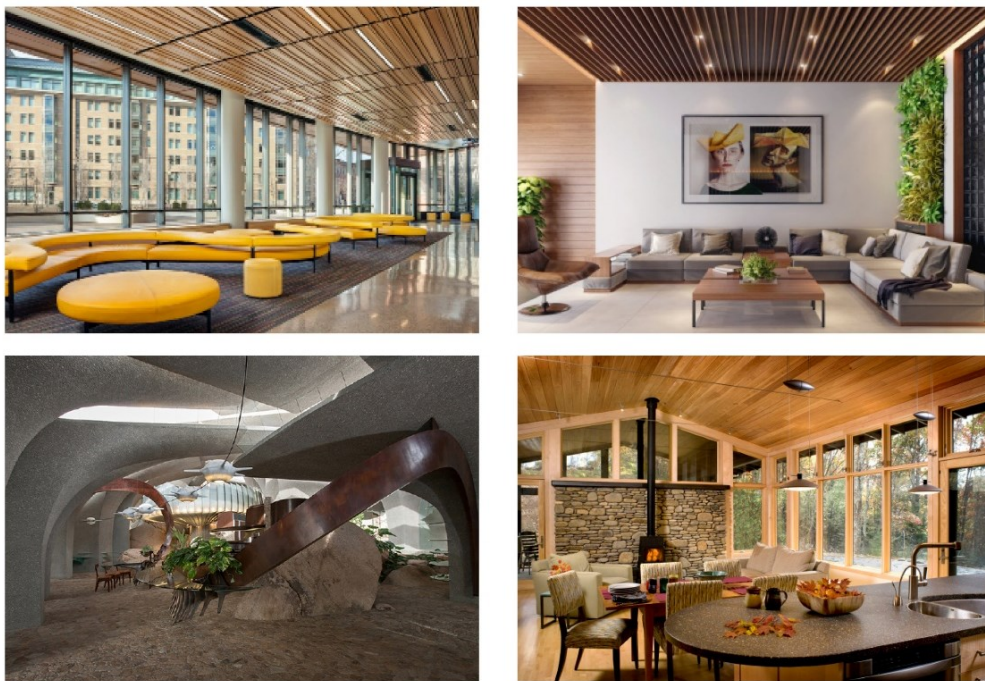


Figure 46, Mood Board 6

2.3. ‘What if’ questions (Conceptual scenarios):

- What if we could bring the sun inside the house?
- What if we could turn the house to the flower, i.e. a building that responds to season?
- What if we could remove the walls when we need nature
- What if we could bring vegetation into the house?
- What if we could make the house colourful?
- What if we could use natural elements like rocks and greenery inside the house?
- What if individuals would be able to make the changes by themselves?

2.4. Feasible ideas:

- Parasite Architecture
- Colorful windows to make the house playful.
- Installing reflective surfaces to ‘bounce’ the sun indoors.
- Installing greenhouses to buildings without massive structural interventions to the house.
- Installing solar tubes to the roof/ceiling to transit the sunlight into the house
- Installing low wattage decoration lighting inside and outside of the home.

2.5. Sketches

2.5.1 Experimental Designs

My very early concepts were designed based on the criteria of enhancing socializing opportunity and using vegetation for boosting mental health and well-being of households, in addition to the representing communities' traditions and beliefs. These were not intended as realistic ideas that could be used, merely ways to initially understand the issues through design practice.

- Circular formation for representing the family/friends/community gatherings.
- Adding Vegetation [Uncovered] as a place for socializing and relaxation.
- Using full wall windows for leading more sunlight into the building.
- Organic shape to represent nature.

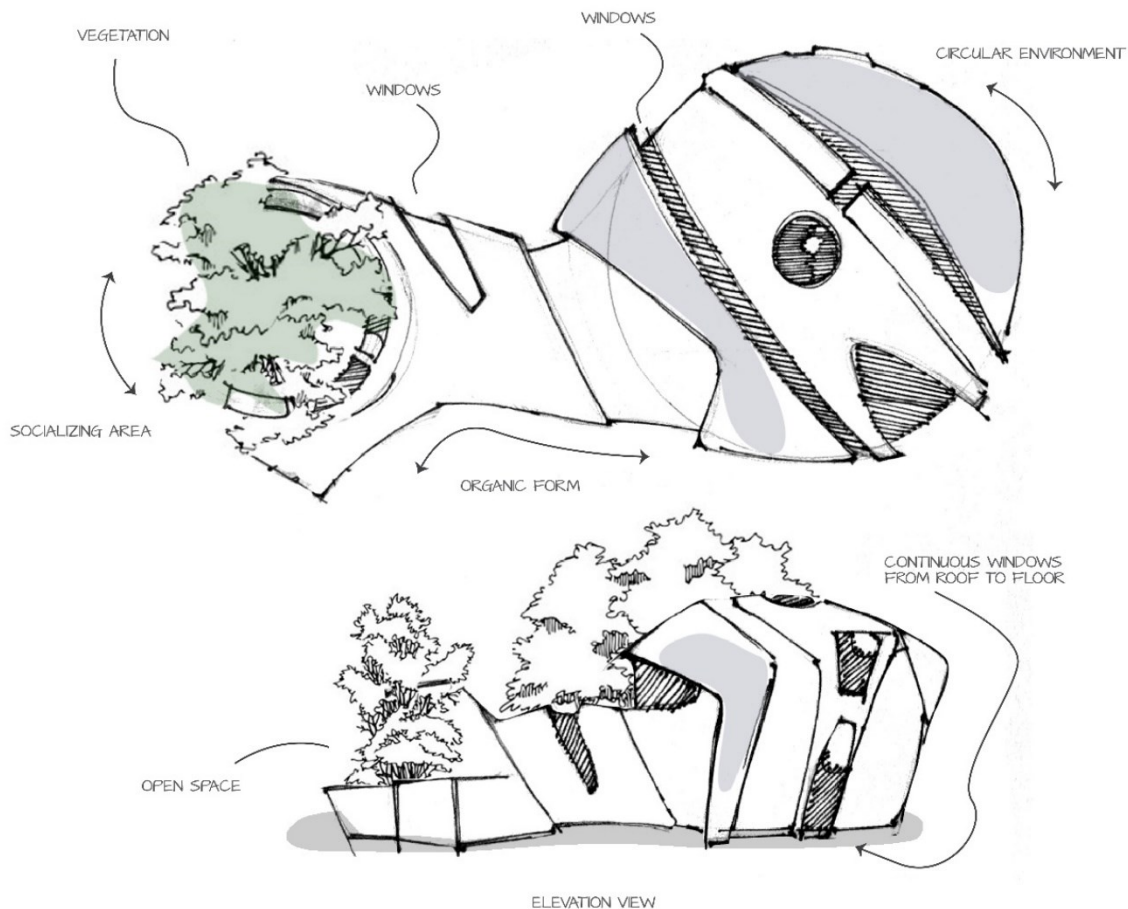


Figure 47, Non practical concepts, concept 1

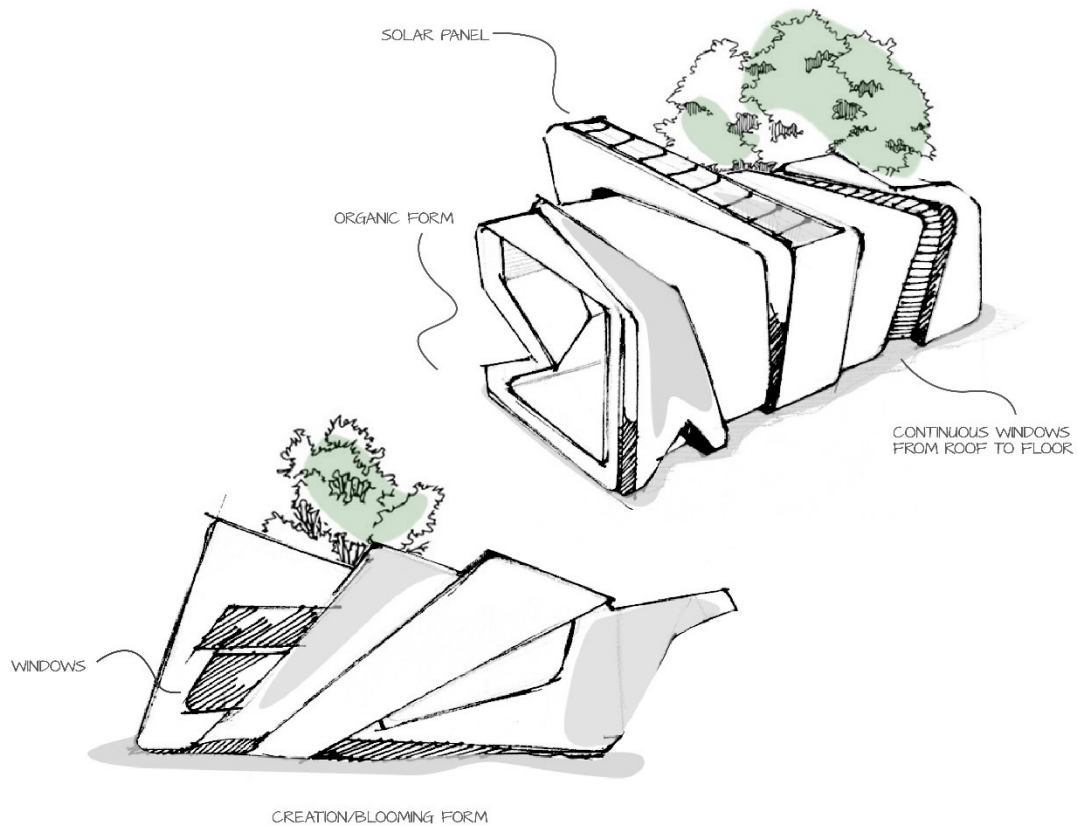


Figure 48, Non practical concepts, concept 2

- Using solar panel to develop household's electricity with no limitation
- Combining organic and industrious formation to represent a new version of life
- Adding Roof windows to direct more natural light into the house

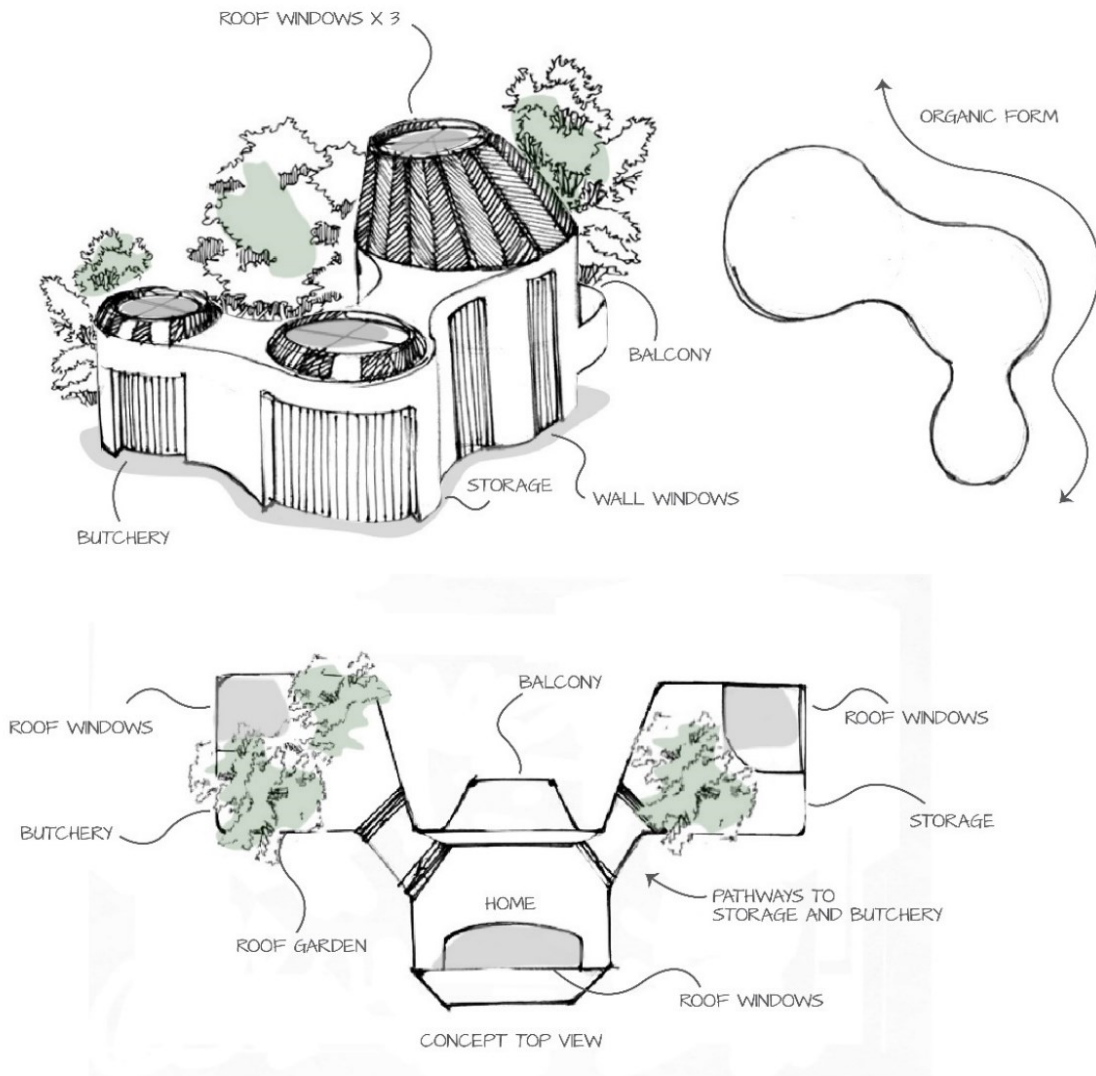


Figure 49, Non practical concepts, concept 3(top) and 4(bottom)

Regarding the studies on existence houses in North, two critical spaces for household's use are overlooked, storage (to keep tools, skidoo's etc.) and a butchery for further preparing animal parts brought back from hunting out with of the existing household (which is how it is presently done). In these two concepts, the focus was on providing two external spaces to the house which are linked to each other by pathways.

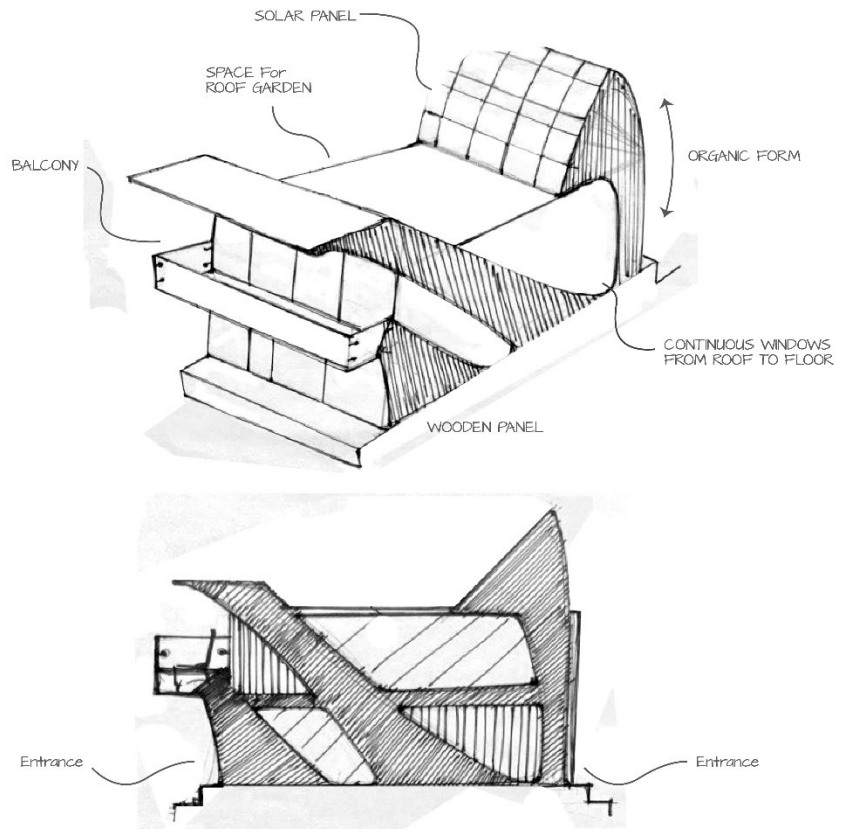


Figure 50, Non practical concepts, concept 5

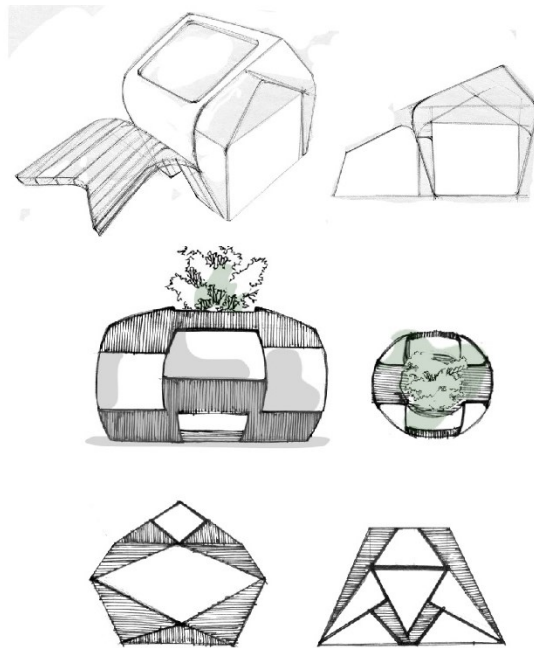


Figure 51 Non practical concepts, concept 6

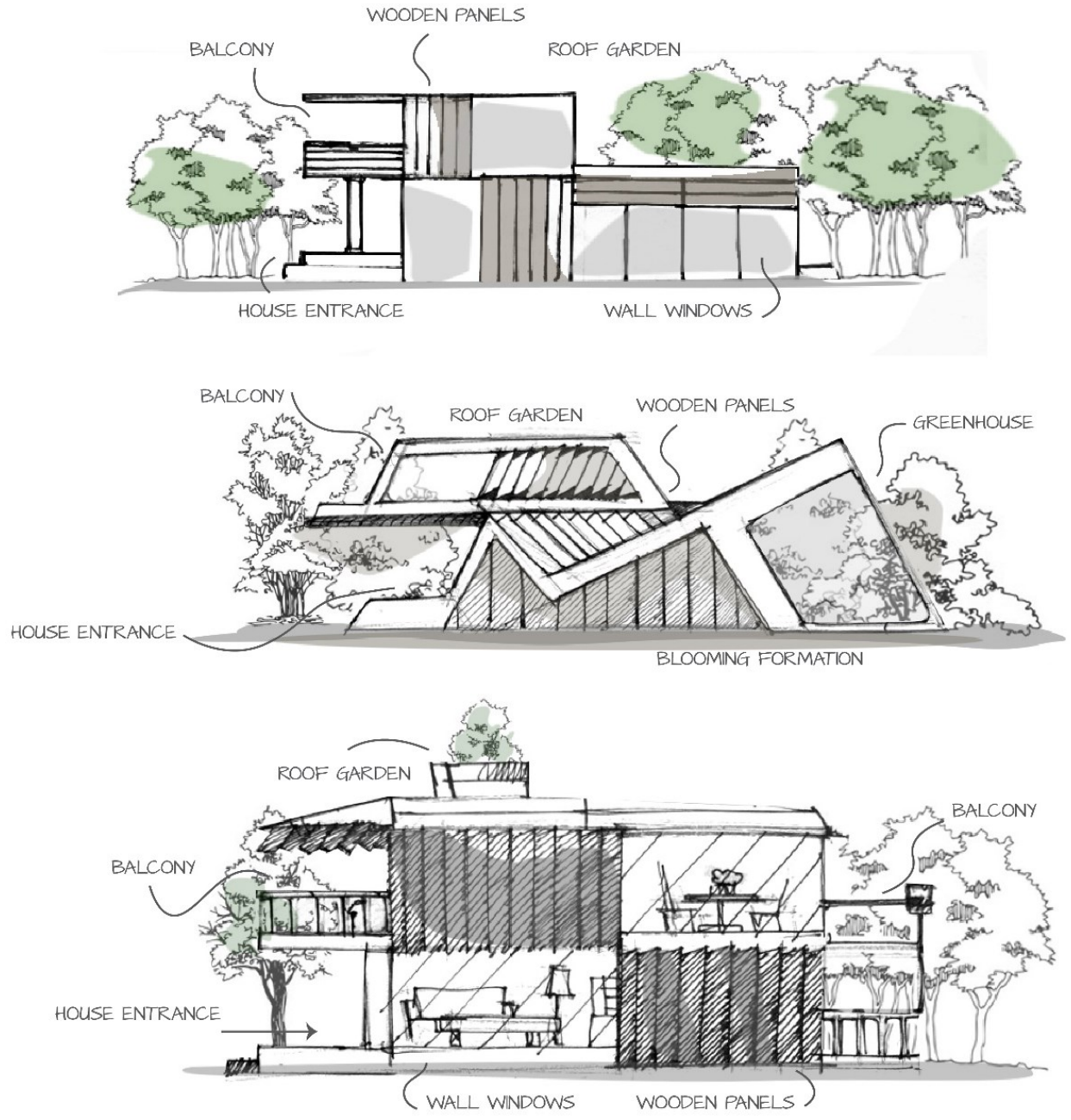


Figure 52, Non practical concepts, concepts 7(top), 8(center), 9(bottom)

Respecting the concept of blooming house with the capability of opening and closing the house walls like a flower. Removeable wooden panels to represent this concept.

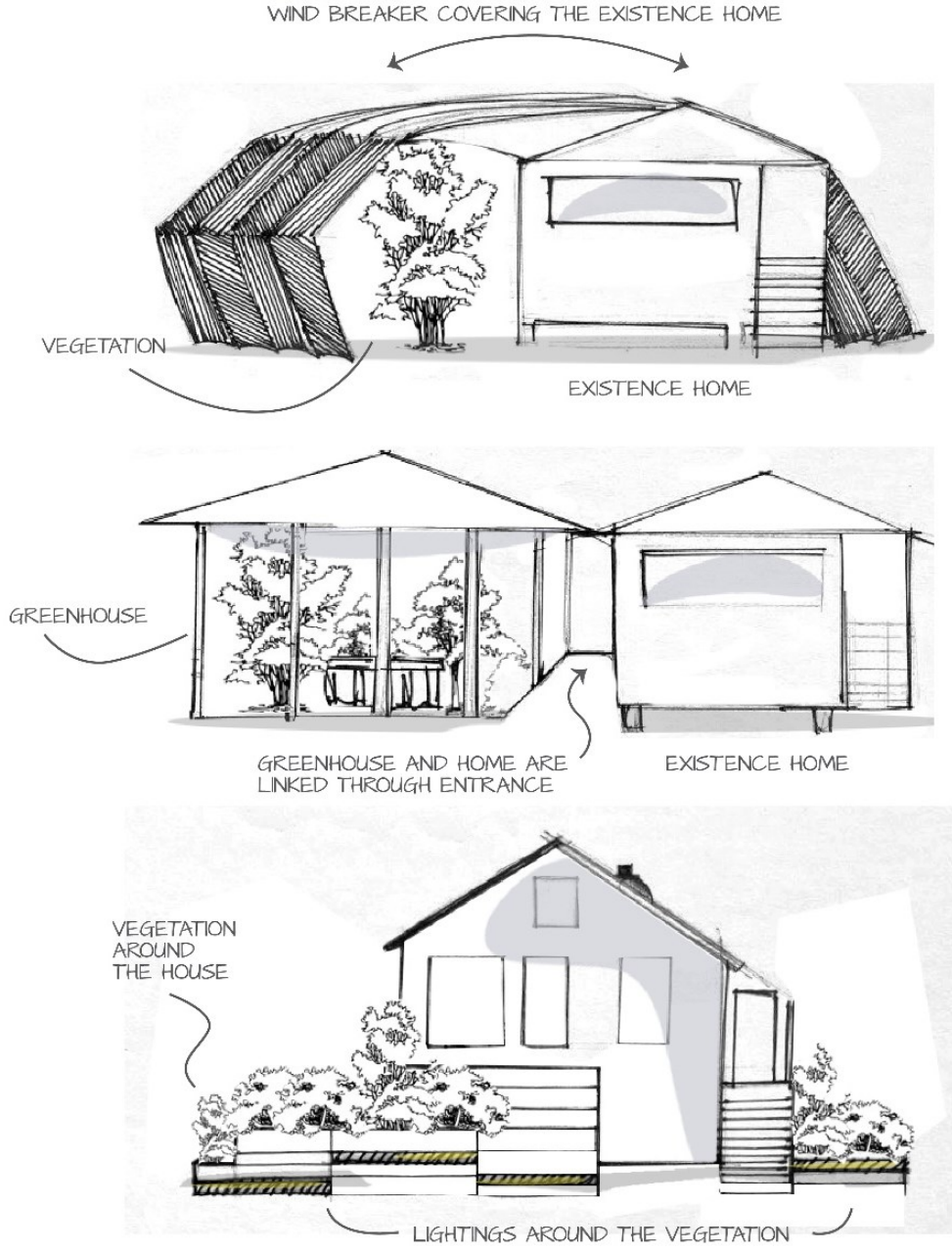


Figure 53, Non practical concepts, concepts 10(top), 11(center), 12(bottom)

Keeping the house intact, adding windbreakers and a greenhouse next to the building.

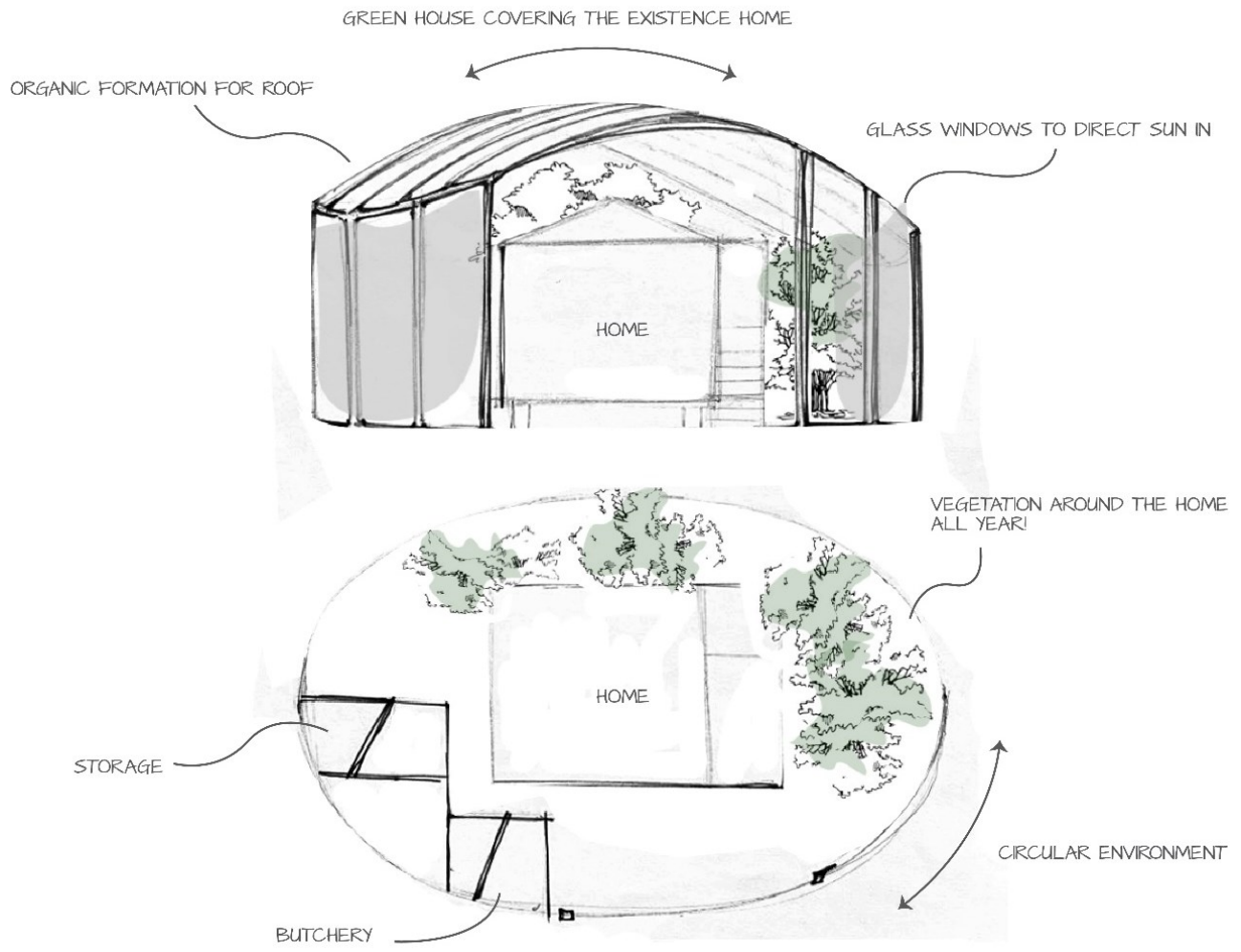


Figure 54, Non practical concepts, concepts 13 (Tyrnauer, et al. 2020)

2.5.2 Practical Designs

Concepts are designed based on function, construction, and costing.

- Keeping the house's structure untouched.
- Adding external spaces as green house.
- Using different frames for windows to help the natural light inside.
- Using vegetation inside and outside of the house but in respect of the climate condition.

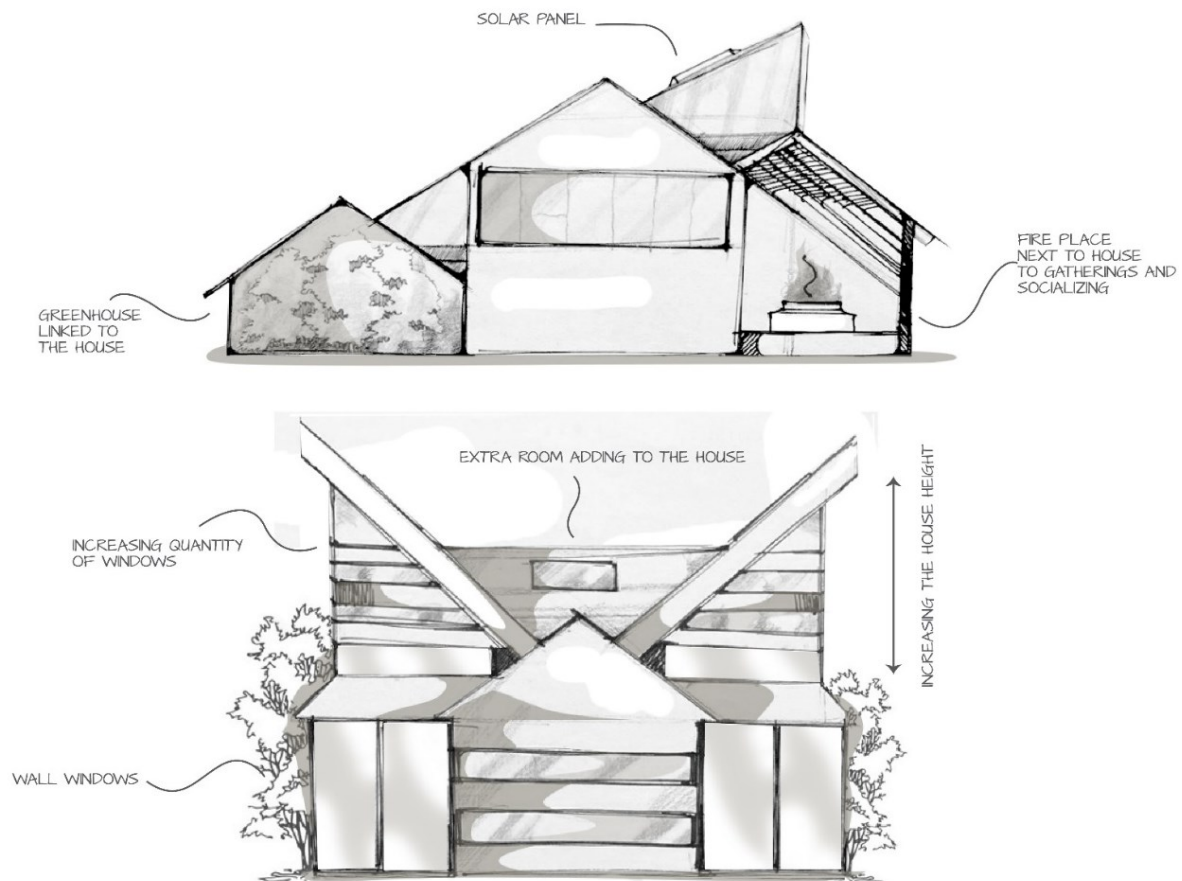


Figure 55, Practical designs, concept 1(Top) and 2(Bottom)

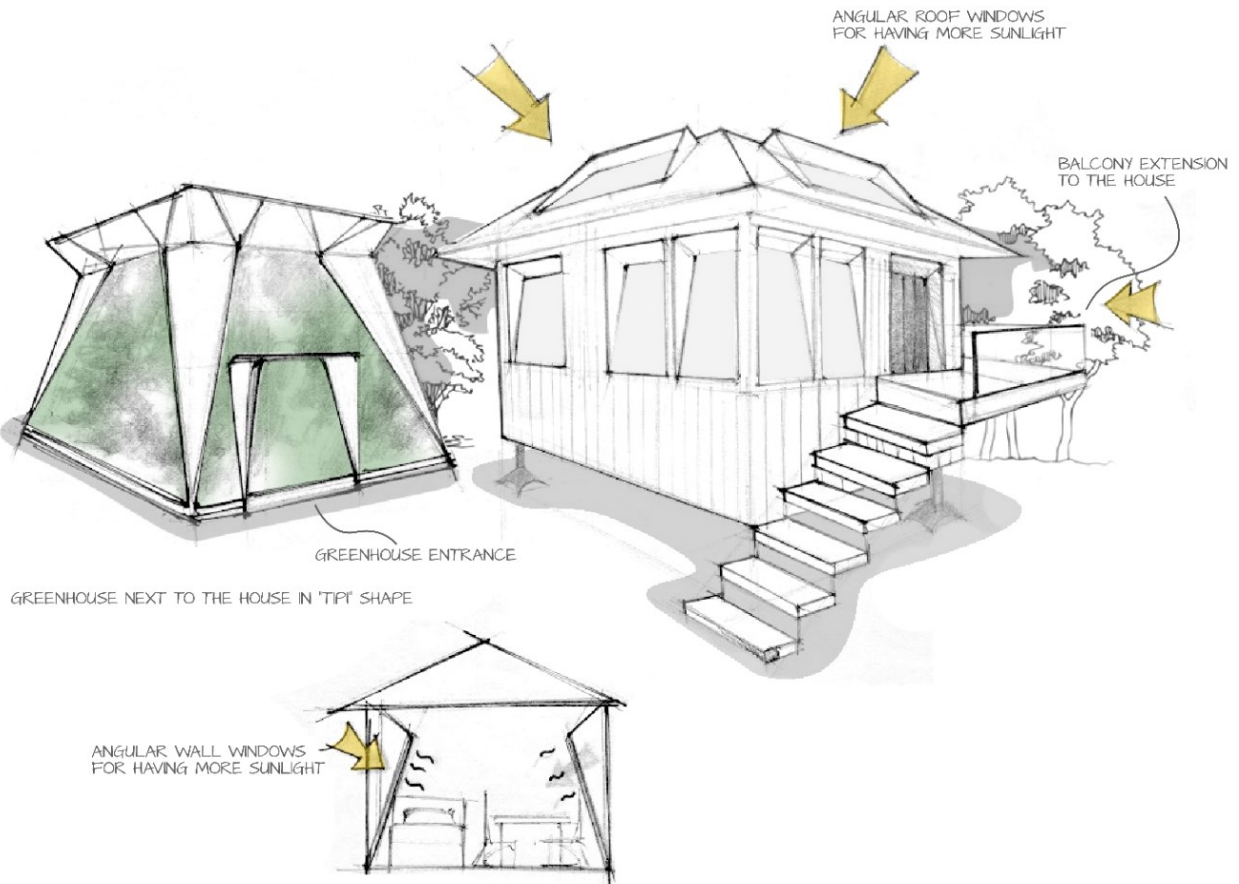


Figure 56, Practical designs, concept 2

- Using angular windows on the roof to let the natural light in.
- Using angular wall windows all over the house to let the natural light in.
- Adding greenhouse next to the house in shape of “Teepee”.

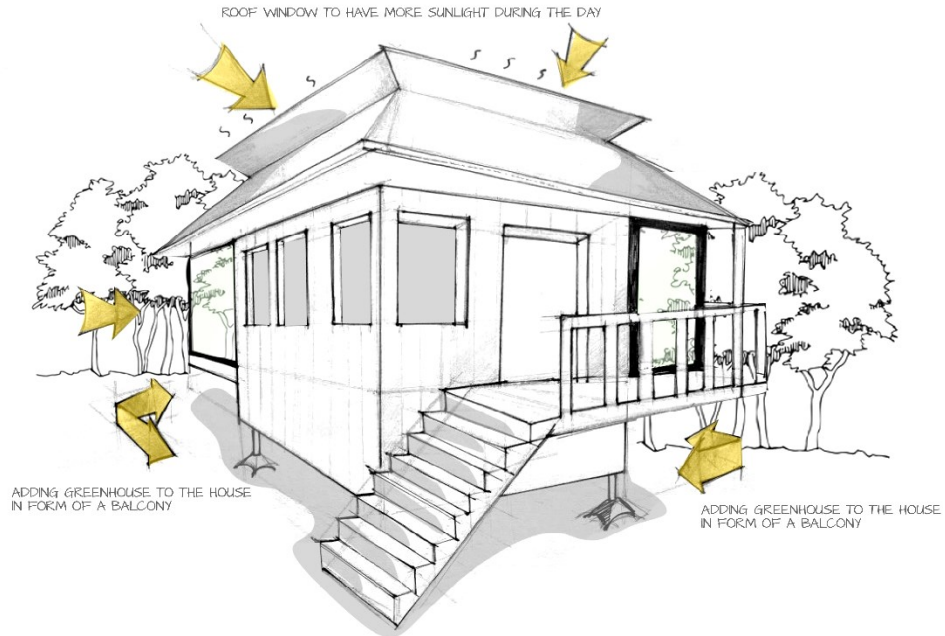


Figure 57, Practical designs, concept 3

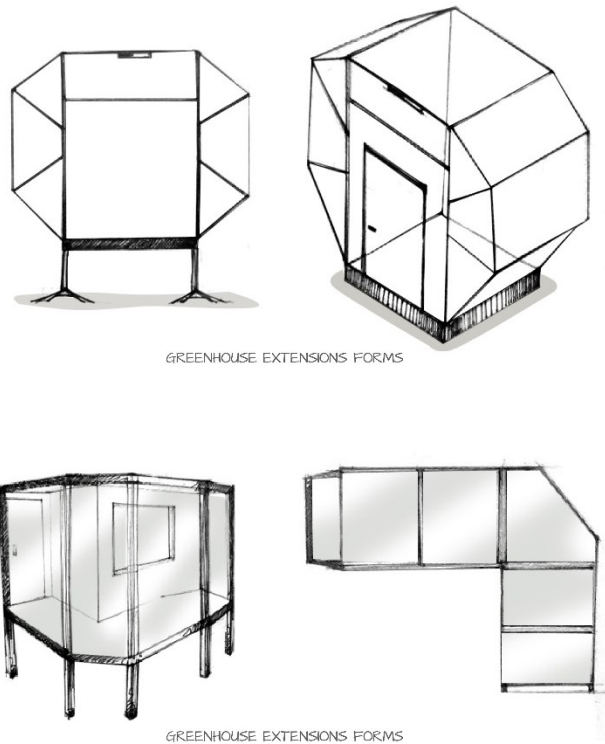


Figure 58, Practical designs, concept 4(Top) and 5(Bottom) Greenhouse Concepts

- Using roof windows to let the natural light in.
- Adding a covered balcony/Patio to use as green house during the winter.
- Adding an open balcony to the house to give it an open interior.

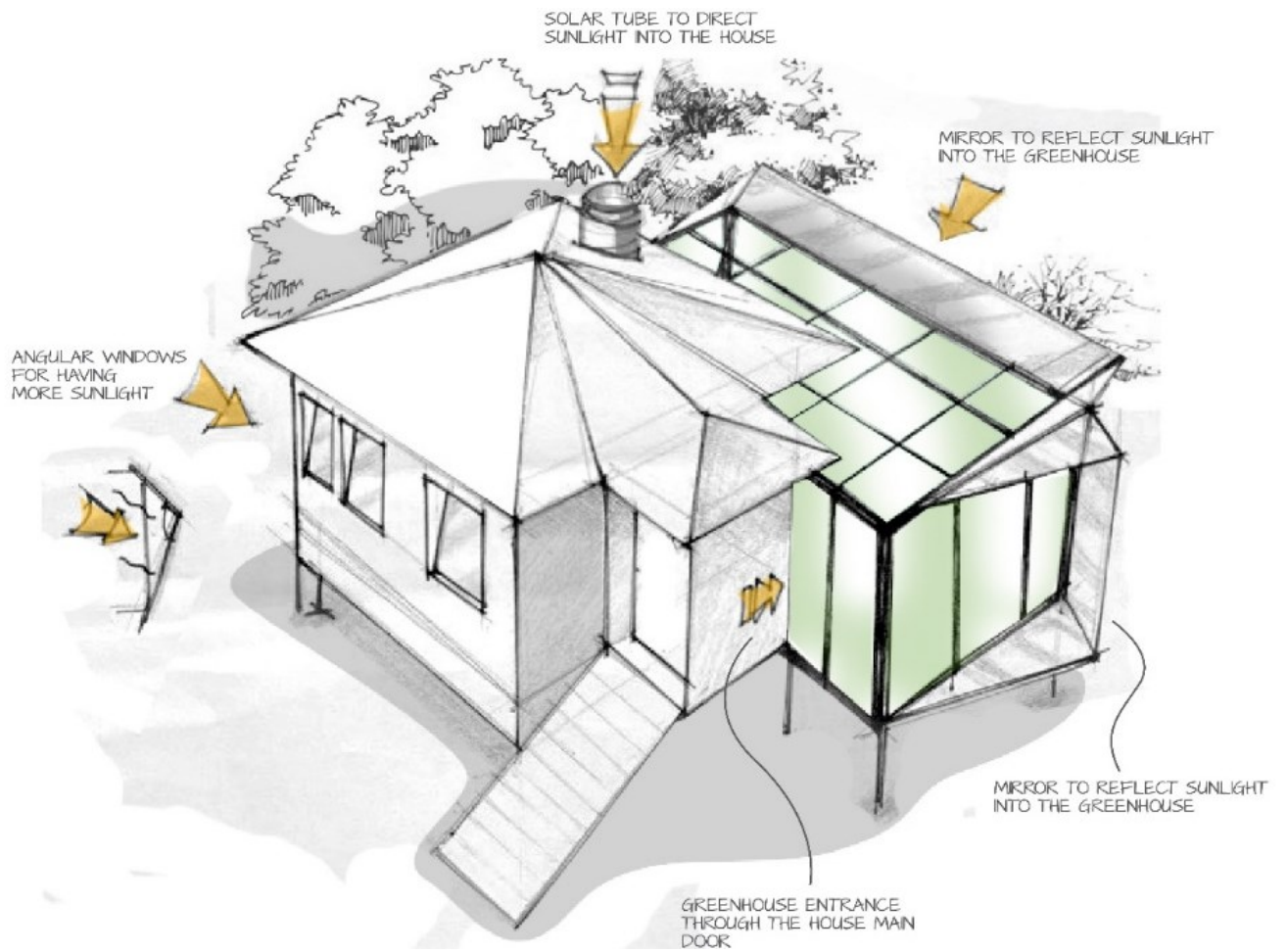


Figure 59, Practical designs, concept 5

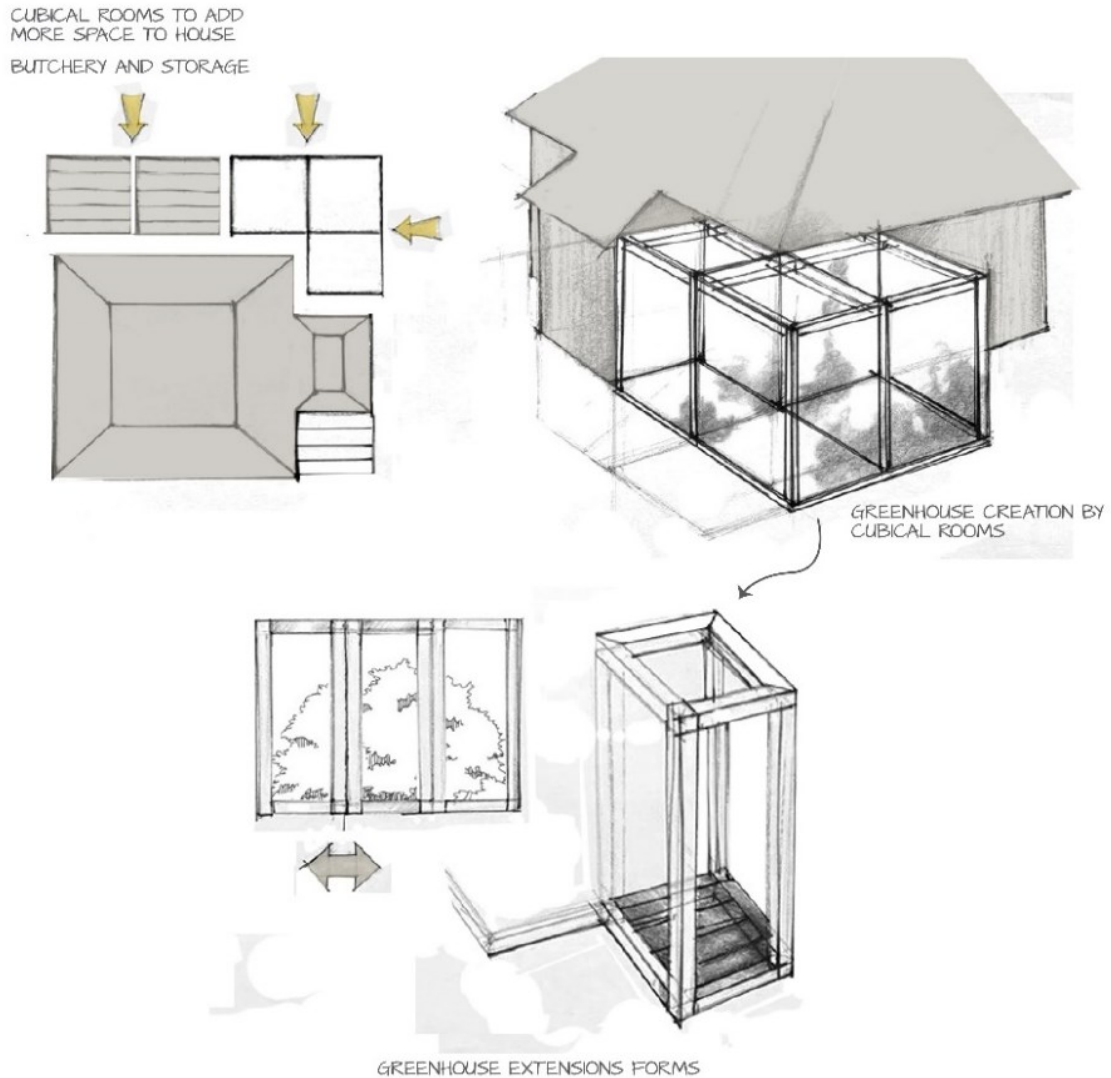


Figure 60, Practical designs, concept 6 the Greenhouse extension

- Using Solar Tube to let the natural light in with the least touch to the roof.
- Using cubical structure which can be multiplied and subtracted.
- These cubical structures can be used as multipurpose rooms. As storage, butchery, and greenhouse.
- Using Mirror attached to the cubical structure to reflect sunlight into the greenhouse.

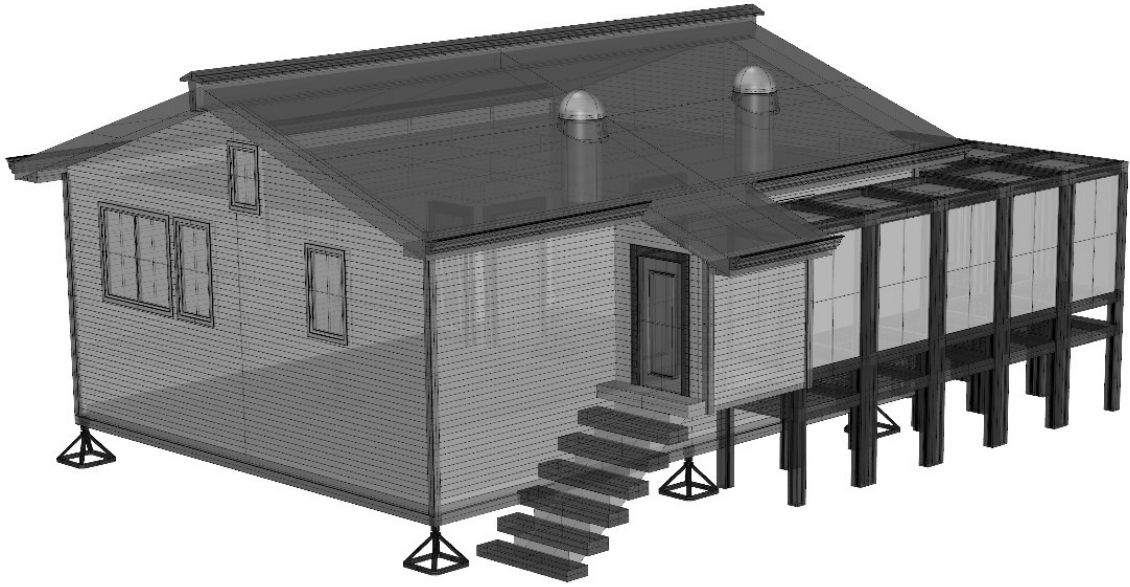


Figure 61, Practical design, Green house and Solar Tubes, Initial Modelling.

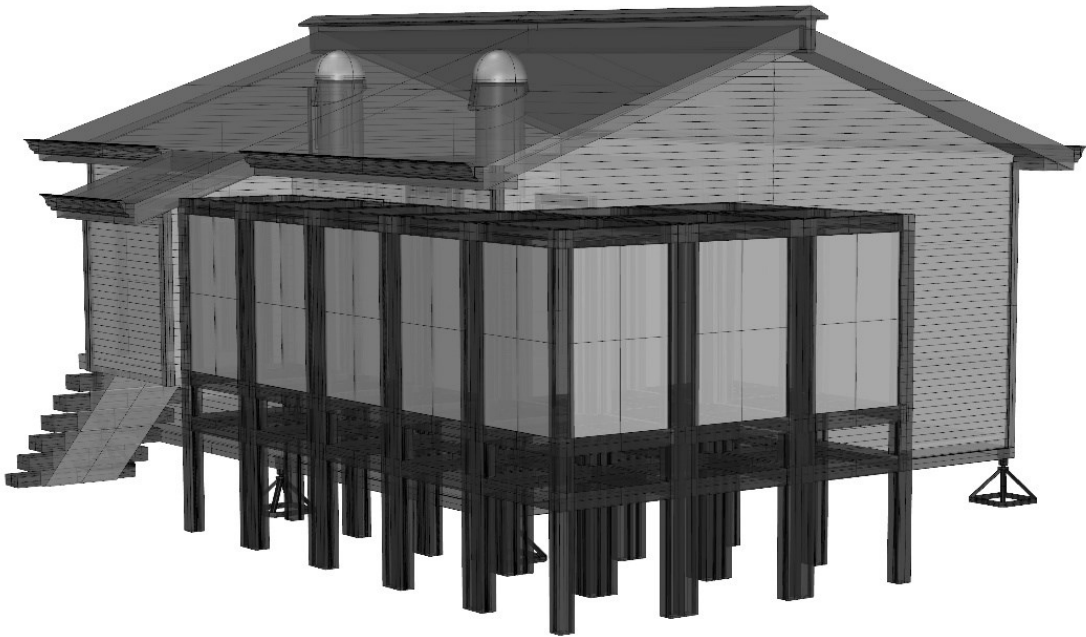


Figure 62, Practical design, Green house and Solar Tubes, initial Modelling

2.6. Interior Design

2.6.1 Using Hydroponic Gardening system inside the house

Hydroponic Gardening system discussed earlier

2.1.4 Hydroponic System, is the way of planting with no need of soil. Plant's roots are directly exposed to water and the dissolved nutrients in it. They grow much faster and surprisingly fresh. This system can be used specially for edible plants, and household can have fresh plants all the time throughout the year. One of this system's convenient feature's is its simplicity in building it at home and no need to purchase it. It only needs reservoir and a place to hold the plant's roots (What Is Hydroponic Gardening? n.d.).



Figure 63, Practical designs, Interior Design concepts, Hydroponic Gardening system

2.6.2 Colorful glasses for windows to make the indoor environment alive.

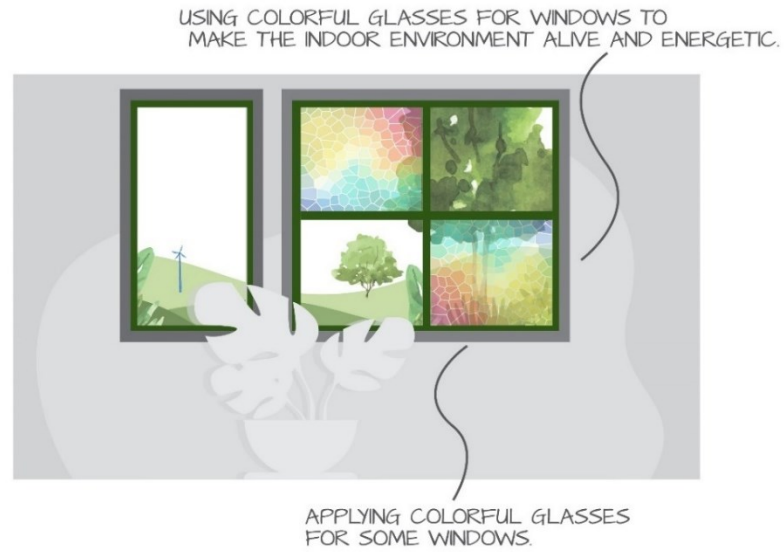


Figure 64, Practical designs, Interior Design concepts, Colorful windows

2.6.3 Installing natural and organic room dividers



Figure 65, Interior Design concepts, natural room dividers: Left (Natural Room Dividers n.d.), Right (Team 2017)



Figure 66, Interior Design concepts, natural room dividers and vegetation, (victoria 2012)

2.6.4 Home Decoration

Northern culture believes in a deep connection between nature and humans, this connection has an absolute impact on human's well-being and mental health which are in-line with a spiritual connection to the land. Here are examples of combination of rock walls, wooden materials and vegetations that represent how nature can be brought inside the home:



Figure 67, Home Interior, Natural Elements, Rock and wood wall (33 Exceptional Interior Stone Wall Ideas to Add Extra Charm Your Home n.d.)



Figure 68 Home Interior, Natural Elements, Vegetation, and light colors (Casa Joshua Tree / Peaceful and Artistic near the Park n.d.)



Figure 69, Home Interior, indigenous art on textiles and rugs, (15 Fair Trade Home Decor Brands For The Conscious Home n.d.)



Figure 70, Home Interior, greenery and vegetation inside the house (5 Effective Ways to Make Your Home Feel More Relaxing n.d.)



Figure 71, Home Interior, Mix of Natural Colors, vegetation, organic shapes, and wood (11 Minimalist Travel Themed Home Decor Ideas You'll Love n.d.)



Figure 72, Home Interior, Mix of natural elements, organic arts, and modernism (Natural stone wall cladding FOXFIELD BLEND® n.d.)

2.4.7 Aboriginal Art in home decoration

As part of cultural connections, indigenous art could be considered as a relevant idea to decorate the home interior with, it presents both culture and beauty at the same time:



Figure 73, Home interior, Aboriginal Arts in home decoration (Lange 2018)



Figure 74, Home interior, Aboriginal Arts in home decoration (Lange 2018)

2.7. Concepts Modeling and Rendering

Watch the concept's presentation video [here](#).



Figure 75, The Rendered House, Northern Lights, Front

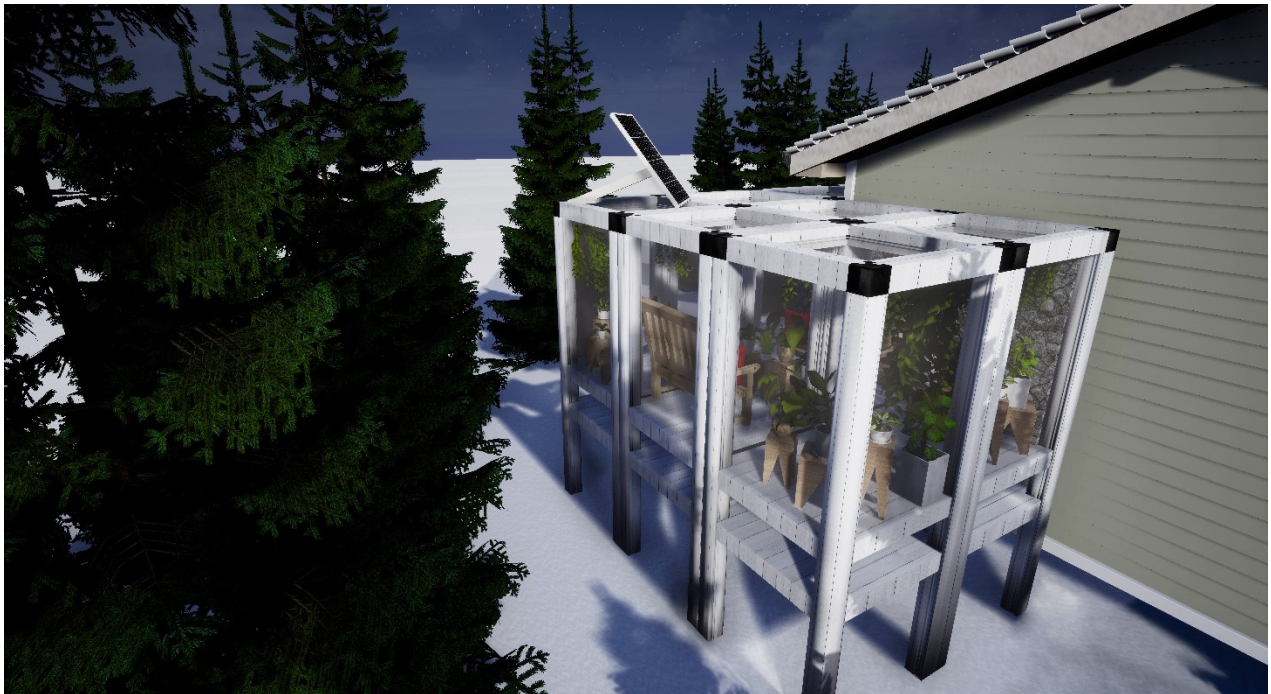


Figure 76, Cubical Structure Concept added to the house, green house, Back of the house



Figure 77, Cubical Structure Concept added to the house, green house, and Solar panel.



Figure 78, Cubical Structure Concept added to the house, green house interior, socializing environment



Figure 79, Cubical structure concept added to the house, green house interior, socializing environment

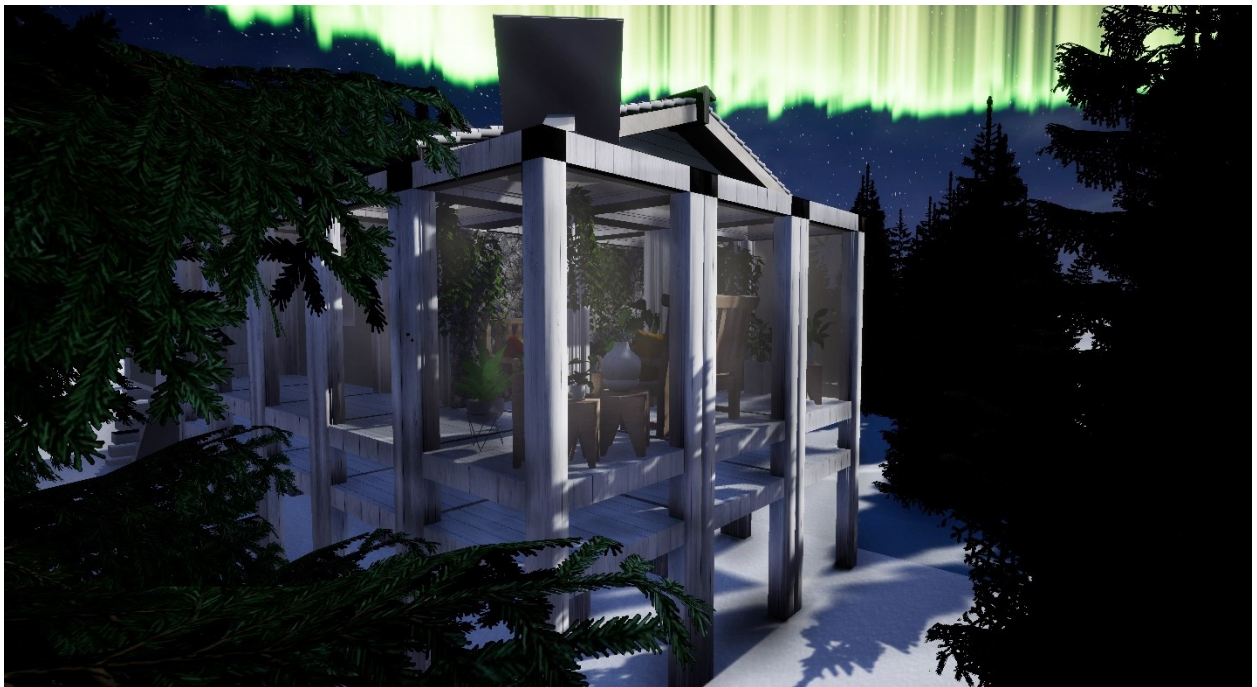


Figure 80, Cubical structure concept added to the house, green house

As discussed earlier, Northern sun, in winter, lasts for only a few hours of a day. Given that the cubical structure (greenhouse) is located on the north side of the house, it is rarely exposed with sun light. The energy efficient grow light stands would be a convenient solution to provide plants with light.



Figure 81, Energy efficient grow light stands. (Gardening Under Lights n.d.)



Figure 82, Energy efficient grow lightings, (Want to Garden Like a Pro? Here's a Simple and Affordable Indoor Grow Light Setup n.d.)



Figure 83, House Interior, living room attached to kitchen, using natural room divider, bamboo lightings and vegetation around the house.



Figure 84, House Interior, living room, Rock wall, using natural colors, lightings, and vegetation around the house.



Figure 85, House Interior, Bedroom, using bamboo lightings and vegetation, Rock wall, exotic and bright colors to enhance the lightness of the environment.



Figure 86, House Interior, Bedroom, using bamboo lightings and vegetation, exotic and bright colors to enhance the lightness of the environment.

3 Chapter Three

Conclusion

The significance of this Project is enhancing Northwest Territories residents' ability to adapt governmental housing while improving their wellbeing and mental health. My propositional design solutions are synergetic to the existing generic housing stock. In the beginning of this thesis I presumed I would be designing a new housing model based on culture, kinship beliefs, and tradition. However, given my inability to travel north I focused on adapting exiting housing. partly based on consideration of the local economic situation. I therefore decided to work with the prevalent government house and focus on adding structures to existing buildings.

In conclusion, this project focused on different meanings of home spaces and the role of psychology in redefining use of home. Research showed that making designed environments that can enhance relationships and socializing between individuals, be exposed to the natural environment and greenery and facilitate cultural engagement can create “living” environments that have positive impacts on mental health and well-being. Adaptation to the climate is the other important factor which must be considered (while avoiding overprotection). To keep the balance between individual's home comfort, while not denying context, is crucial.

To achieve the main goal of this project, improving household's wellbeing and mental health during the winter, these criteria are considered:

- Creating an interior social environment that can improve communication.
- Employing greenery and vegetation.
- Keeping the house untouched as possible and lowering the cost of applying new changes to the existing housing stock.
- Using bright colors.
- Bringing sunlight into the house while minimizing structural intervention.

The final concepts are as follows:

- Using an attached cubical structure, inspired by ‘parasite architecture’ for a variety of purposes.
- A greenhouse inside the cubical structure, for growing plants through a hydroponic system

- A storage and butchery place inside the cubical structure.
- Adding solar tubes to direct the sunlight into interior environment during the daytime.
- Adding solar panels to produce the electricity of the house.
- Using natural elements and natural material to decorate.

Based on my research on Northern houses and the importance of culture, connections, and safety, I hope these ideas will be helpful in improving living conditions of the people residing in the North. At the very least I hope they could generate further discussion on the adaptability of existing housing stock.

Future objectives:

Due to Covid19 Pandemic, the project's limited timeline, and 2020 travelling restrictions my trip to the north was canceled; therefore, it is planned to travel to the Northwest Territories after the Covid-19 restrictions are revoked by the territorial government. This proposed trip will focus on meeting and collaborating with Northern residents' regarding furthering and refining my propositional designs. Furthermore, it is necessary to gather in-person observational data and interview tenants regarding their potential ability to adapt existing government houses. Such collaboration is necessary to better reflect suitable furniture and culturally appropriate decoration. Consulting with engineers and expert architects with northern experience is also necessary.

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Appendix



Population OF THE NORTHWEST TERRITORIES

44,469

What is the population of the NWT?

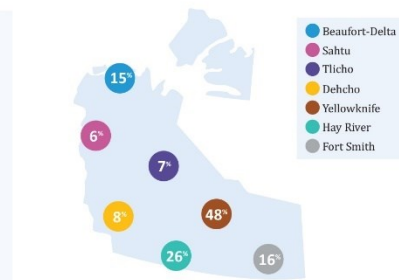
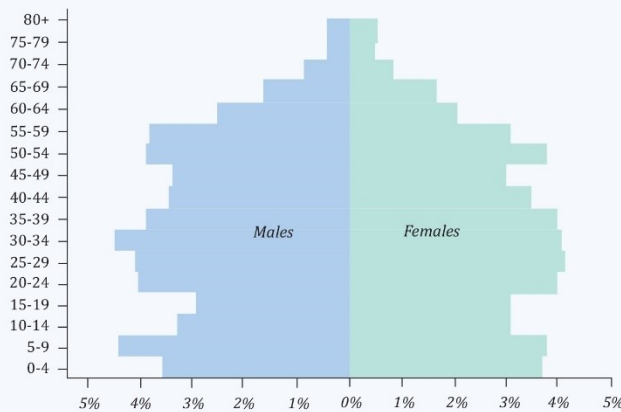
In 2016, the NWT was home to approximately 44,469 people. This accounts for about 0.12% of the total population of Canada (36,286,425).

people lived in the NWT in 2016.

POPULATION BY

ACROSS THE NWT

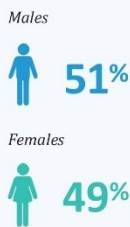
AGE & SEX



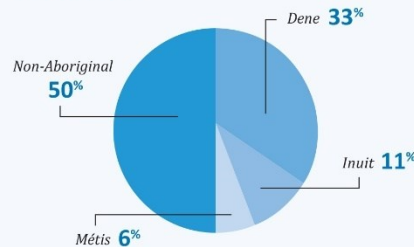
% OF POPULATION

	NWT	CANADA
Under 15	22%	16%
60+	12%	23%

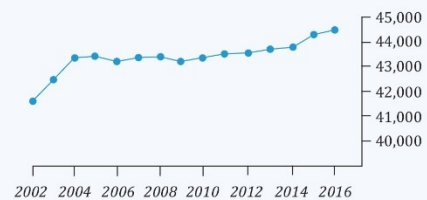
SEX



ETHNICITY



CHANGE IN POPULATION



INDICATOR SOURCE: 2016 Canadian data: Quarterly Population Estimates, Statistics Canada; 2016 NWT data: Quarterly Population Estimates, Statistics Canada prepared by NWT Bureau of Statistics. INDICATOR DEFINITION: Population figures are estimates of the number of people living in the NWT as of July 1, 2016.

Government of Northwest Territories

Figure 87, NWT, population, (NWT Health Status Profile 2020)



Satisfaction with Life

IN THE NORTHWEST TERRITORIES

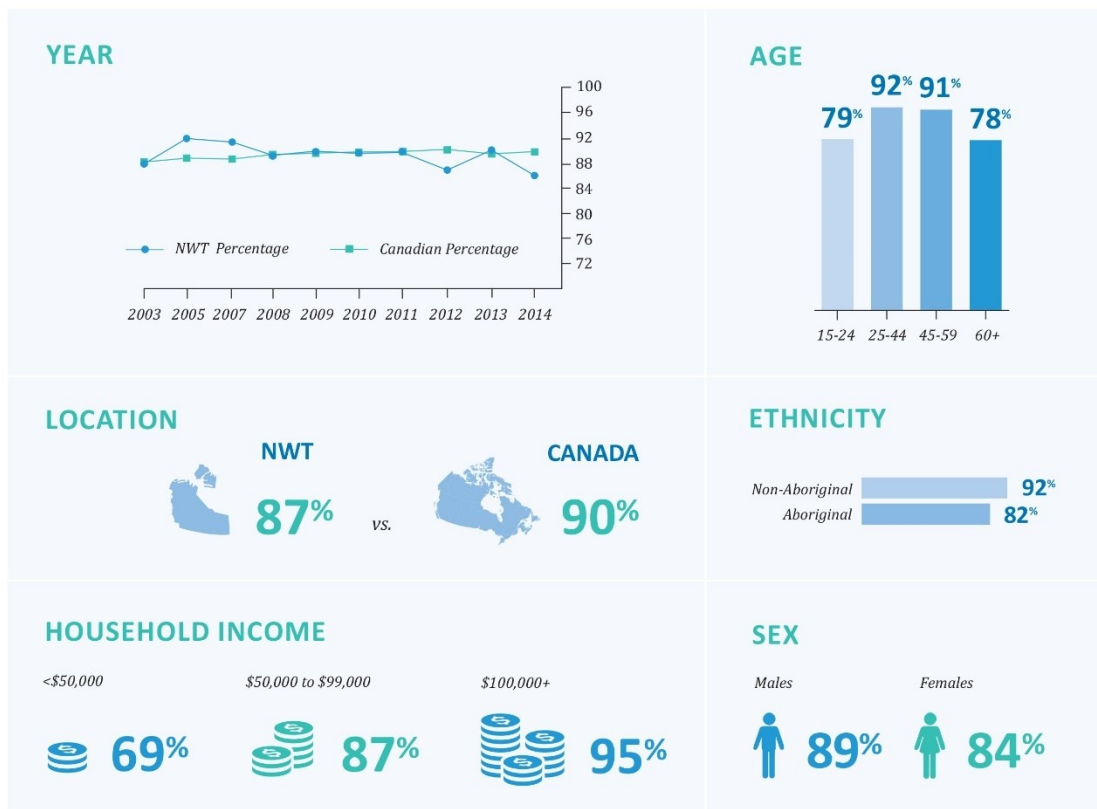
What does satisfaction with life mean?

Life satisfaction is a measure of an individual's perceived level of well-being and happiness and has been shown to be positively correlated with health status.

IN 2014,
87%

of people in the NWT over the age of 15 reported feeling satisfied or very satisfied with their life in general

SATISFACTION WITH LIFE BY



INDICATOR SOURCE: 2014 Canadian Community Health Survey, Statistics Canada prepared by the NWT Bureau of Statistics. **INDICATOR DEFINITION:** The life satisfaction indicator is the proportion of individuals over the age of 15 who reported being either 'Satisfied' or 'Very Satisfied' with their lives.

Government of Northwest Territories

Figure 88, NWT, Satisfaction with Life, (NWT Health Status Profile 2020)



Self-Perceived Health IN THE NORTHWEST TERRITORIES

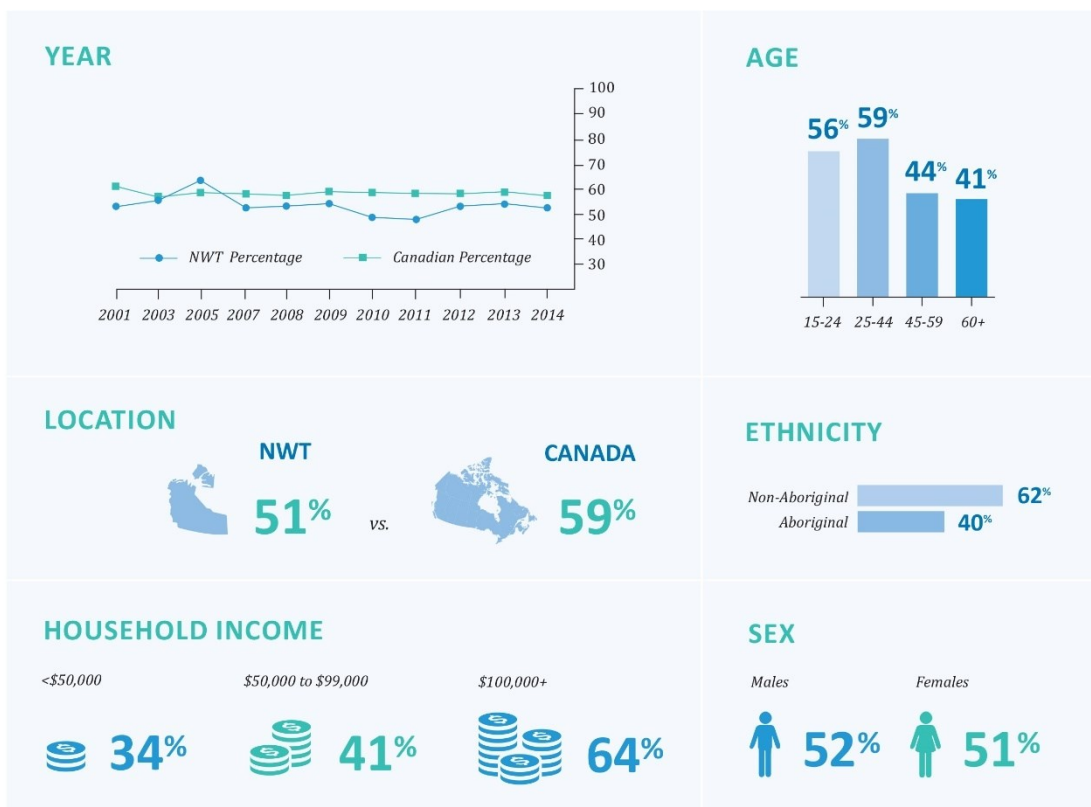
IN 2014,
51%

of people in the NWT over the age of 15 reported very good or excellent self-perceived health.

What does self-perceived health mean?

Self-perceived health refers to the perception of a person's health in general. Health means not only the absence of disease or injury but also physical, mental and social well-being.

SELF-PERCEIVED HEALTH BY



INDICATOR SOURCE: 2014 Canadian Community Health Survey, Statistics Canada prepared by the NWT Bureau of Statistics. **INDICATOR DEFINITION:** The self-perceived health indicator is the proportion of individuals over the age of 15 who reported perceiving their own health status as being either very good or excellent in 2014.

Government of
Northwest Territories

Figure 89, NWT, self-perceived health, (NWT Health Status Profile 2020)



Sense of Community Belonging IN THE NORTHWEST TERRITORIES

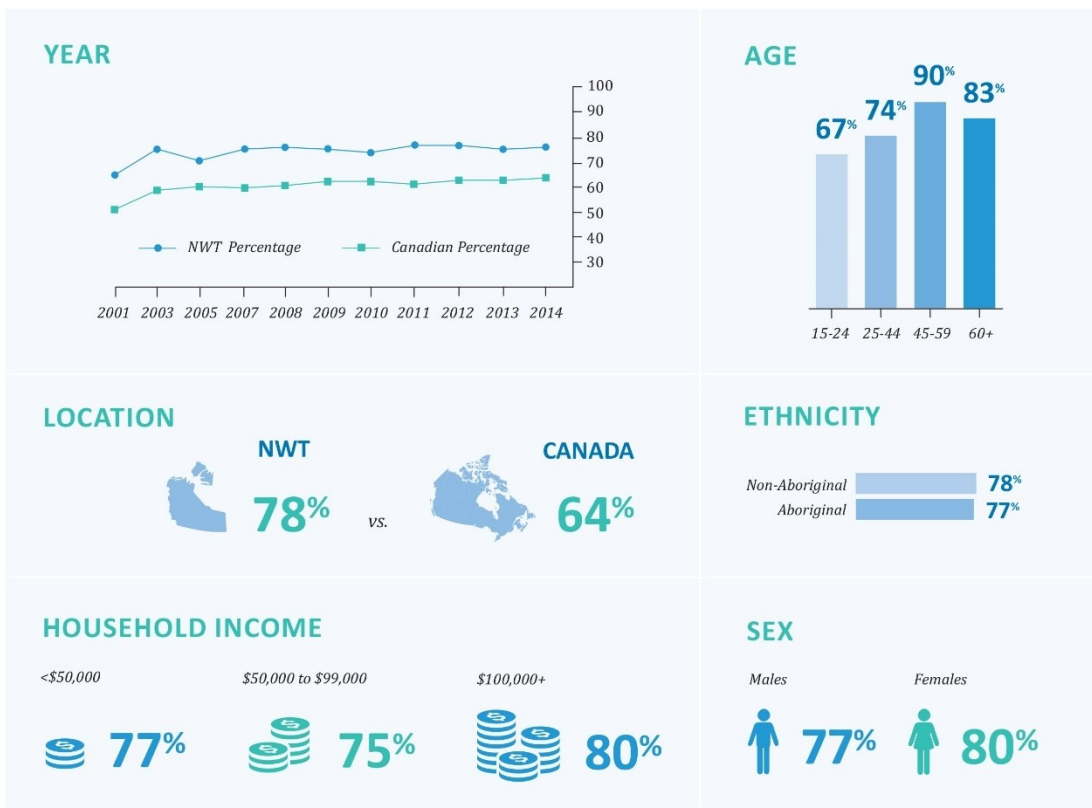
IN 2014,
78%

of people of in the NWT over the age of 15 felt a somewhat strong or very strong sense of community belonging.

What does sense of community belonging mean?

Sense of community belonging embodies the social attachment of individuals and reflects social engagement and participation within communities. This type of indicator supports an “upstream” approach to preventing illness and promoting health.

SENSE OF COMMUNITY BELONGING BY



INDICATOR SOURCE: 2014 Canadian Community Health Survey, Statistics Canada prepared by the NWT Bureau of Statistics. **INDICATOR DEFINITION:** The sense of community belonging indicator is the proportion of individuals over the age of 15 who rated their sense of belonging to their local community as either very strong or somewhat strong.

Government of
Northwest Territories

Figure 90, NWT, Sense of community belonging, (NWT Health Status Profile 2020)

This project examines the role of design and technology in home spaces in the Northern part of Canada. It explores the reciprocal relationship between mental health and interior design.

Recent research has demonstrated that individuals' well-being remains constant when both physical and psychological factors are at an equal level of satisfaction. The effective factors for this level of satisfaction are intimately related to culture, kinship beliefs, entertainment, and economic situations.

This satisfaction could eventually affect the overall life quality of an individual; the essential factor to consider when having technology and design focus. Climate change has a significant influence on the northern lifestyle. As studies show, following the harsh cold climate, 90% of individuals spend their lives indoors in northern lands. "Home" as an environment that most northern lands occupants spend most of their time in, affects the well-being of its inhabitants remarkably; as Porteous states, "A home is more than a territorial core." Sociologists demonstrate that occupants define the meaning of "home."

Roderik J. Lawrence (1987) also described home as: "A home is a complex entity that defines and is defined by cultural, sociodemographic, psychological, political and economic factors."

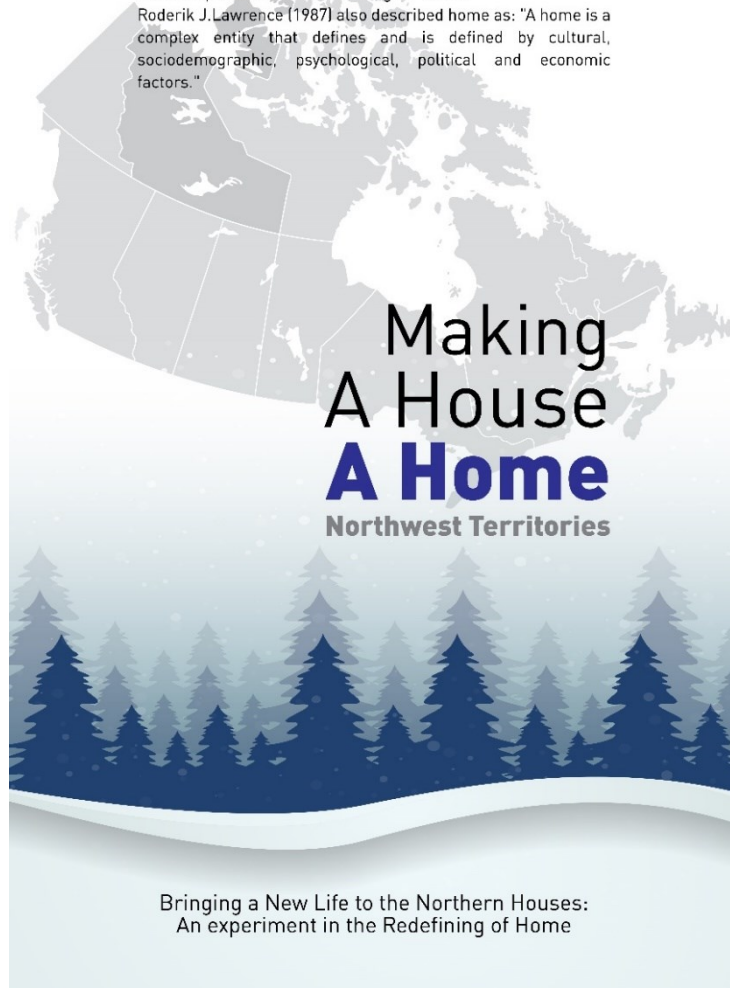


Figure 91, Presentation Posters, Cover, Larger view click on the [link](#)



Figure 92, Presentation Posters, Research Methodology, Larger view click on the [link](#)



Figure 93, Presentation Posters, the Home, Larger view click on the [link](#)

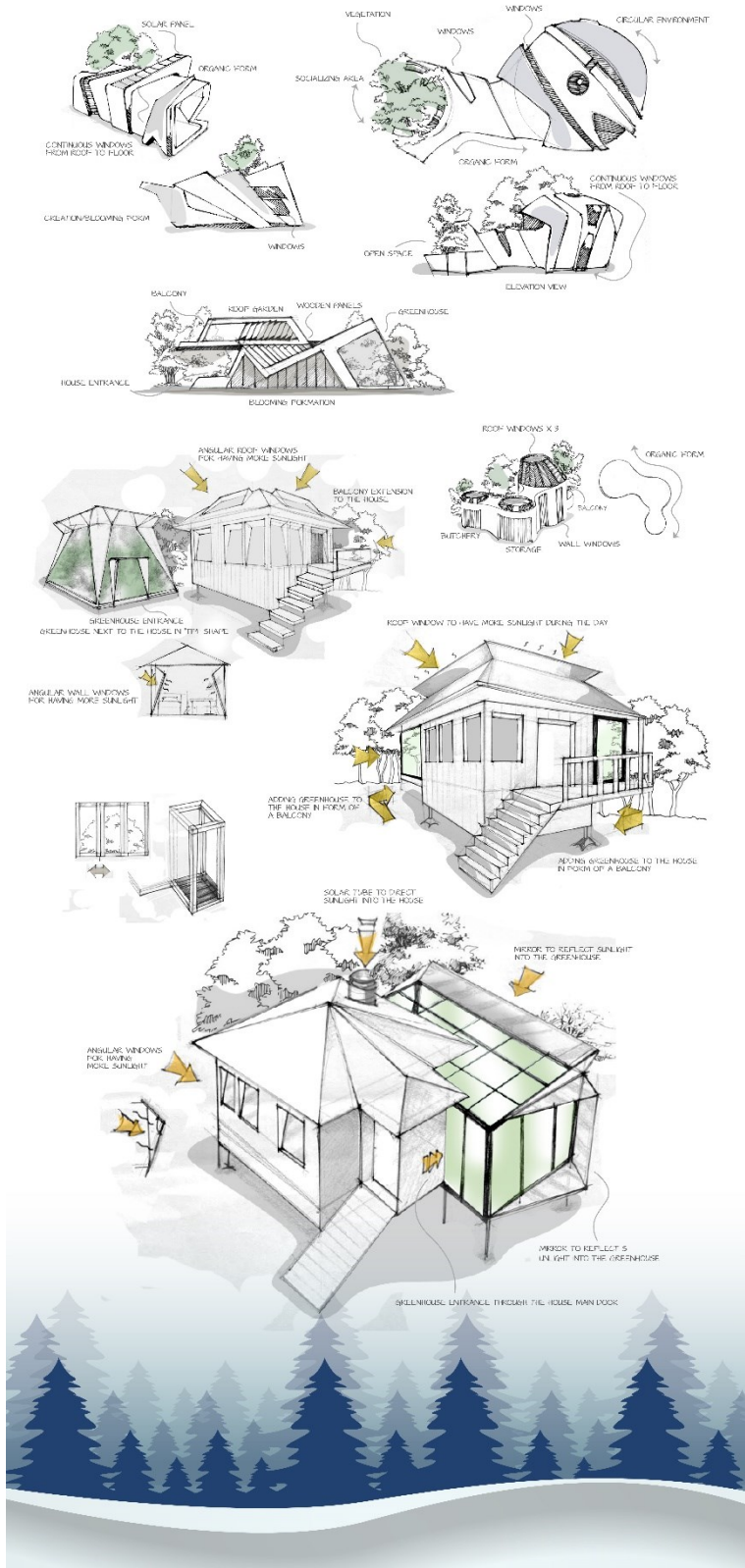


Figure 94, Presentation Posters, Ideation 1, Larger view click on the [link](#)



Figure 95, Figure 92 Presentation Posters, Ideation 2, Larger view click on the [link](#)



Figure 96, Presentation Posters, Ideation 3, Larger view click on the [link](#)

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