Inclusivity and Adaptation: Designing Recreational Space for Individuals with Intellectual Disability

by

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Contents

Abstract

This thesis studies Intellectual Disability (ID), and the built environment designed for individuals with ID. It argues that this architecture must be approached strategically and holistically and should be informed by the psychology around ID. Throughout history to the present, architecture has been assigned for people with ID but has not been designed to suit the needs of the group or individual. This architecture should be informed by the psychology around ID. A common element of this psychology is adaptable behavior and by studying this, architectural elements can be translated. This design method looks at adaptive behavior and how designed space can accommodate people that are less able to adjust to their environment. This theory is tested through a recreational camp in Alberta.

Acknowledgements

I would like to thank my supervisor Christine Macy and advisor Benjie Nycum for your guidance, expertise and support through this thesis project. I have truly enjoyed learning from you both.

To the Dalhousie Architecture Faculty - thank you for this invaluable education and experience.

To my studio friends - this education and thesis have been enriched by experiencing it together.

Thank you to my family for your care, constant encouragement, willingness to listen and sage advise.

And to Camp L.G. Barnes which exemplifies the power of place, the strength of community and the wealth of acceptance.

Chapter 1: Introduction

This thesis explores the built environment specifically for people with Intellectual Disabilities (ID). This exploration challenges the lack of architectural design methods for this user group and develops a method that is based on the translation of the psychological theory of Adaptive Behavior into architectural elements. This method is applied to a recreational camp facility for people with ID.

This study looks at people with ID which covers traditional developmental disabilities, Spectrum Disorder, environmentally-produced intellectual disability, and psychological disorders. There is a higher frequency of comorbidity with these disorders, meaning that they co-occur (APA 2013, 31) and generally people with specific, individual disabilities do not exist alone. Socially, domestic and community living is inclusive of all type of disorders. This thesis is then focused on people living in group homes settings who cannot live independently. The current model of group home living is based off of severity of disability rather than type which is why this topic does not focus on a specific disability but rather looks at a commonality between functionality of a larger user group. This study focuses on adult in domestic and community settings but, if successful in its intent, this design method could be applied to other types of settings and inclusive of youth.

Since the 19th century, people with ID have been housed in purpose-built institutions or residences, yet these have not been designed for people with ID, nor have domestic or community settings. Because of the lack of architectural research about designing for people with ID, this thesis turns to the psychology of adaptive behavior in relation to

ID. This theory can be translated into architectural elements to improve the experience of the user and efficiency of the space.

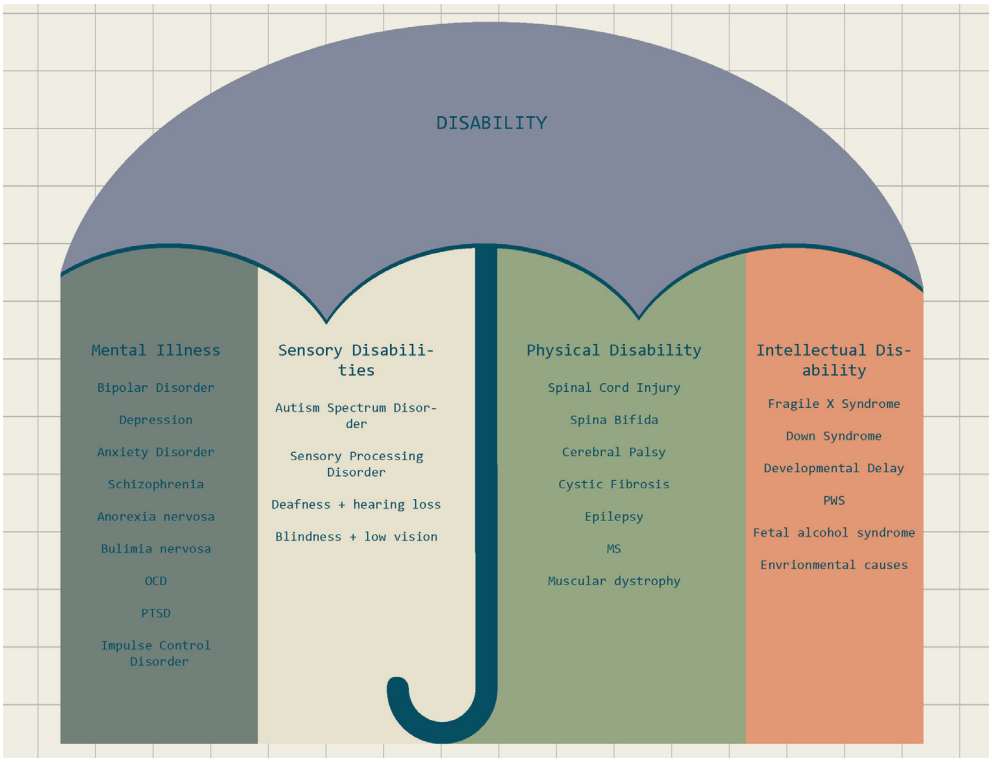
Overview

Chapter one addresses the history of ID and the architecture that is associated with it. I look at the national level of response and move towards the regional response. I also look at the current model of housing for people with ID and where the field could go. Though there is a lack of design research in this area, analogous design fields are emerging and presenting new ways of designing space for people who are neurodivergent. In chapter three I explore these fields, including Magda Mofasa's work with Autism Spectrum Disorder (ASD) and architecture, Jos Boys and Selwyn Goldsmith's work with physical disability and architecture, and Yvonne van Amerongen and Jannette Spiering's work in dementia and architecture. In chapter four, I introduce a new design method for people with ID. I present three design principles: sensory cue consciousness, rhythmanalysis, and user-driven design. Chapter five looks at how this design method could be applied to a recreational camp design based on an existing camp for people with ID.

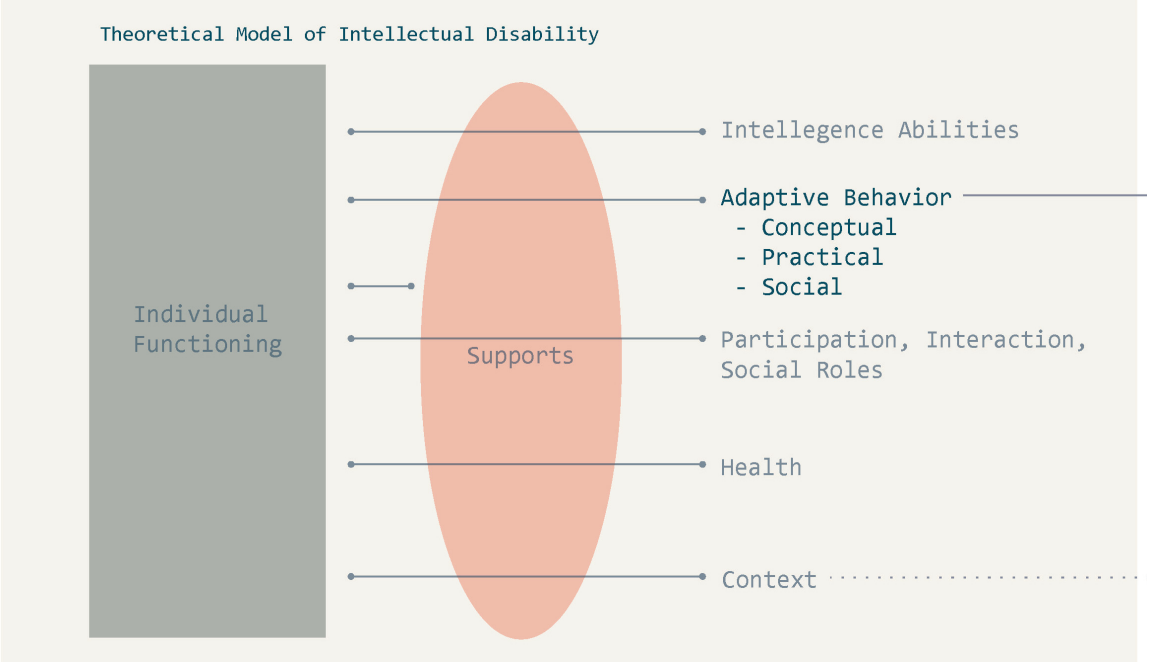
Defining the Psychology

The current definition of Intellectual Disability set by the American Association of Intellectual Disability is "a disability characterized by significant limitations both in intellectual functioning and in adaptive behavior as expressed in conceptual, social, and practical adaptive skills. This disability originates before age 18" (AAIDD 2010, 8). Throughout history, this definition has changed and shifted

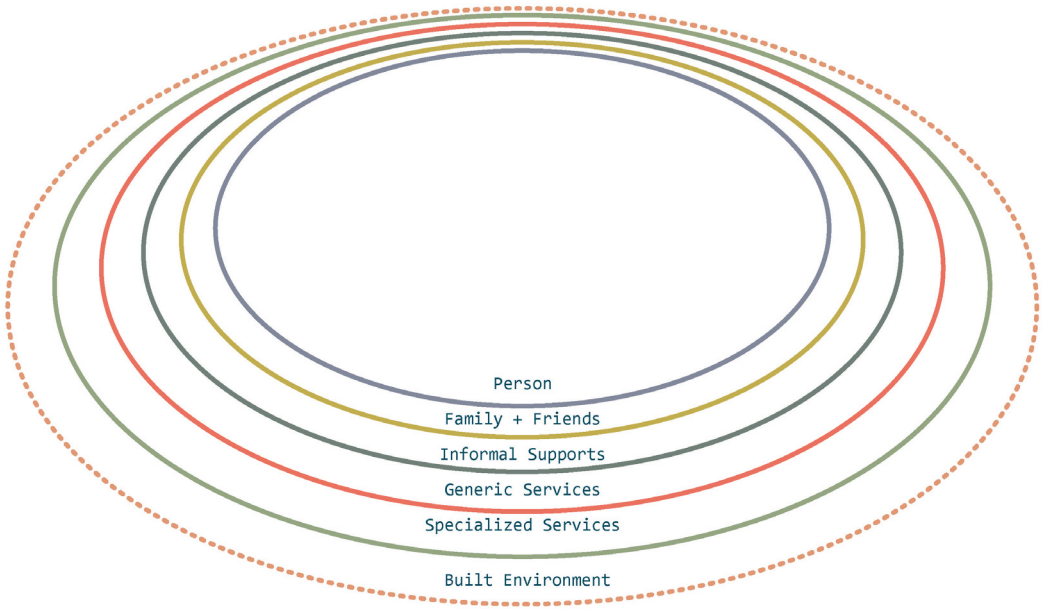
as well as the terminology to describe this community (AAIDD 2010, 8). The current theoretical model of ID is ecologically based, meaning that ID is based on several factors and is multi-dimensional (AAIDD 2010, 7) The model addresses intellectual abilities, adaptive behavior, participation/interaction/social roles, health and context in order to understand ID in a holistic way (AAIDD 2010, 10). These elements influence individual functioning. Supports are also included in the theoretical model of ID and are variables that also impact individual functioning as positive influences. This includes different services and influences (AAIDD 2010, 85). Notably, environmental factors do not fall into the support category. This thesis theorizes that the built environment could be considered a support for people with ID because it could positively benefit the individual in daily functioning as well as provide agency.



Umbrella of socially understood disability organization



The theoretical model of intellectual disability and supports



Circle of supports with the addition of the built environment

Chapter 2: A History of Intellectual Disability

From Institution to Group Home

Architecture and ID have a long history. Since the 19th century, people with ID have been housed in purpose-built institutions or residences. This history explains why ID is often seen as marginal today, as well as how group housing is the current model for domestic living. This chapter focuses on the connection between architecture, ID and the socio/cultural norms which have changed several times of the course of this history. This chapter looks at the national approaches to ID, such as the institution and disability rights activism- as well as a regional case study - the Alberta Training School- which mirrored a larger pattern of institutionalization in the 20th century. Throughout this history, the architecture has reflected the ideology surrounding ID and presents a better understanding of ID today.

During the 19th century, institutions were built to house people with ID as well as people with mental health illness. It began as an optimistic venture, designed to train or educate individuals and release them back into society (Rembris et al 2018, 2). These institutional buildings were designed as large, imposing buildings meant to protect society from inhabitants as well as inhabitants from society (Rembris et al. 2018, 1) They reflected a perceived need for isolation (Rembris et al. 2018, 5). This also reflected a medical approach with the professional opinion that 'feeble-mindedness' was curable and that this cure would be found (Rembris et al. 2018, 5).

This paradigm shifted slightly the early 20th century. The 20th

century attempted to apply Social Darwinism to institutions. If there was not a cure, ID could be bred out of society through eugenics and forced sterilization.

The Provincial Training Centre (Red Deer Archives Collection,1931)

The Michener Centre

In Canada, institutions were built in areas far removed from mainstream society. One such was the Provincial Training School and Deerhome in Red Deer, Alberta (later renamed the Michener Centre) which offers a representative account of the Canadian institution in the 20th century. This institution was the largest in Alberta (ASS 1983, 1) throughout the century. After its short life as a girl's dormitory and a hospital for soldiers suffering from PTSD of World War I, the buildings and 360 acres of land were bought by the Alberta government and assigned to be a training school for people with ID with the aim they would re-enter mainstream community (ASS 1983, 2). This was mainly unsuccessful and soon coupled with the ascendent theory of Social Darwinism and its corollary, eugenics and forced sterilization, starting in 1928 (ASS 1983, 5). This was based on the scientific notion, of the time, that ID was hereditary and that individuals could still be trained and reenter the community (ASS 1983, 5). Sterilization continued in Canada until 1972 (ASS 1983, 5).

Michener's first group home, 1969; (Alberta Social Services 1983, 12)

Through the 20th century, the Provincial Training School and Deer Home (for older residents) was isolated from the surrounding area by the extensive grounds and its height on a hill (Sobsey 2005, 16). The buildings face inward and the architecture, like the 19th century institution, was imposing. However, the model of domestic living was changing and the first group home was established under the Michener Centre umbrella in 1968. It was purchased and founded by

the Parent Organization (an official organization founded by the friends and families of residents) which, throughout Michener's history, promoted special projects for the well-being of their children, siblings and friends that lived at the Michener Centre (ASS 1983, 12).

Group housing was a part of a new paradigm surrounding ID. After World War II, grassroots activist groups formed around disability rights. In 1948, the United Nations released the Declaration of Human Rights which brought disability to the forefront (Sobsey 2005, 15). This was done in part because of the large number of World War II soldiers rejoining the workforce with disabilities. During the 1950s, these groups worked together under national organizations. In the 1960s, these groups were joined internationally. During the activism of this decade, ID rights were partnered with the rights of physically-disabled persons and this activism reached its height with the United Nation's Year of the Disabled Persons in 1981. The UN called for a new plan of action at all scales in order to create equality for all abilities. The paradigm began to shift and disability rights began to be introduced in legislation, though mainly focused on physical disability. However, institutions were under scrutiny and there was more urgency and funding for new types of living.

Centralized housing concept to decentralized and dispersed into the community

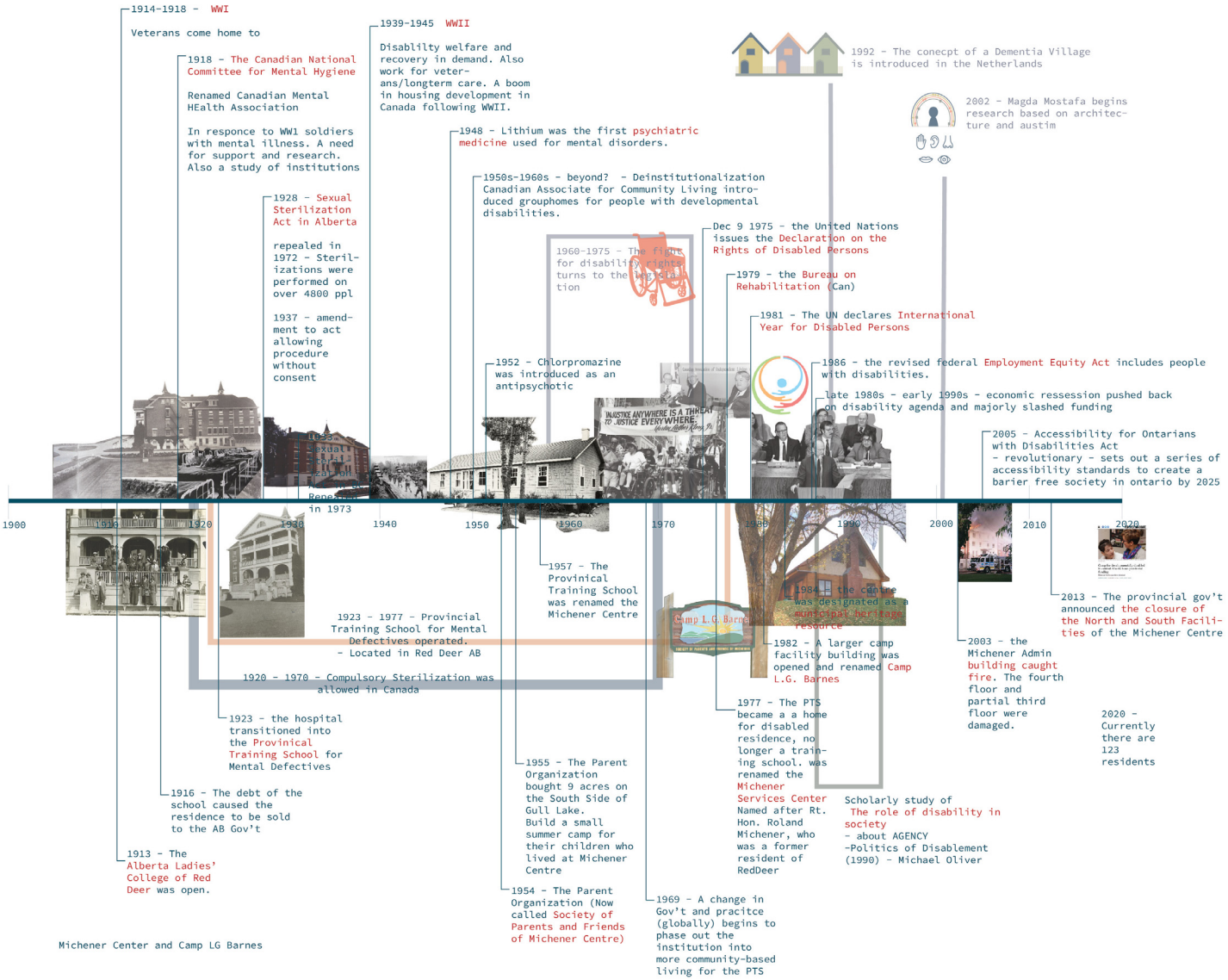
At the Michener Centre's height in 1969, it housed 2200 people (Alberta Health Services 2013, 5). Yet, studies began to report that its buildings were not meeting the needs of the users, several critical reports were released and the institutions across Canada and the United States were closing (ASS 1983, 19). In 2013, only 228 individuals were still living in the main buildings of the Michener Centre. Today

people live in Michener group homes which are located in neighborhoods close to the original site. Community-based living was intended to create a home environment that integrated people with ID into society.

A New Paradigm

The history of ID has revealed a pattern of exclusion from mainstream society. But, large strides have been made in attempt to rectify this. There is still a long way to go and though group housing can still isolate individuals, there are groups and activities that invite integration and community. Disability activism has shown how different groups come together to fight for the rights to agency and inclusion. Because of this desire for building an inclusive society, there is value in designing architecture specific to people with ID, rather than simply assigning space that then must be modified.

Another reason to design for people with ID is that the scales of severity that categorize this population extend beyond what would be considered 'intellectual disability'. People considered to be mainstream can identify themselves on these scales. Many people have some type of physical disability, mental illness or disorder that is disabling. In 2017, twenty-two percent of Canadians have a disability of some kind (Morris et al. 2018, 4). Because of this reality, design needs to be more inclusive for everyone. Another argument for designing for ID today is that architecture is an element that goes beyond its physical properties and this type of architecture can benefit ‘mainstream’ spaces and offer comfort to all users. And finally, since architecture has been assigned to people with ID throughout history and continues to do so, architecture should be designed *for* the user group.



Timeline for ID

Chapter 3: Designing for Intellectual Disability Today

Introduction

Presently, there is no architectural design method or format for buildings specifically for ID. There are several theories of why this occurs, and the history of ID plays a large role in this. However, there are areas of research that are in proximity to ID that suggest give new possibilities for designing for this marginalized group and lend critical research to a new design method for ID. By reviewing the research of dementia housing, autism and architecture and universal design theory, this thesis argues that it is possible to design good architecture for people with ID.

This research lays the groundwork for further study and is partnered with extensive psychology research in the field of ID and intelligence.

A Lack of Precedents?

Disability activism and rights are still relatively new, but research and design methods concerning architecture that meets the needs of physically disabled people have gained ground since the activism of the 1960s and '70s. Yet for people with ID, residential, teaching and therapeutic environments are usually modified retroactively to fit their needs, yet even here, there are no universal guidelines or considerations for that design.

I theorize that there are several compounded reasons for this. First, this group of people is considered a “surplus population" (Sobsey 2005, 13) which means “definable groups that are not capable of, or not included in economic

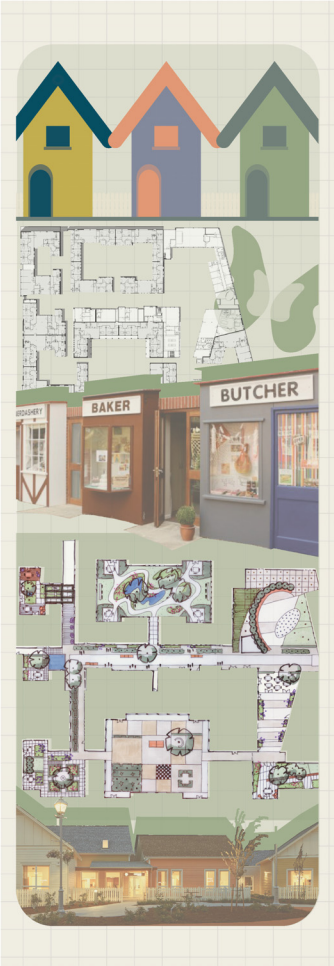
production of the society as a whole" (Farber 1968). Western society assigns value based on economic means and because of a lack of this *particular* value, people with ID are not prioritized. As well, funding tends to be limited for this population that already depends heavily on the taxpayer (Alberta Treasury Board and Finance 2020,13). A final reason for the lack of research is the reality that activism that pushed the rights of ID forward are not usually the individuals themselves, but rather the friends, family and caretakers that are fighting for the rights and political/social attention (Pelka 2012, 131). Activism for physical disability was largely spearheaded by individuals who have a physical disability and can actively represent the community and the needs of the community in an academic or political capacity, as demonstrated by Ed Roberts at Berkeley in the 1960s (Goldsmith 1997, 54).

The Three Analogous Areas of Research

The three following fields focus on different forms of disability and present information that can be applied to a new design method. There are key elements from each area that offer new approaches to creating a design method for people with ID. This chapter looks at dementia and planning, Autism Spectrum Disorder (ASD) and architecture and a physical disability theory approach to design.

Dementia and Planning

The concept for De Hogeweyk Dementia Village began in the 1992 by Yvonne van Amerongen and Jannette Spiering who wanted to create a type of nursing home specific to people with dementia (BetheCareConcept.com, 2020). Dementia is an term used to “describe symptoms that are caused by disorders affecting the brain" (Alzheimer Society, 2020)



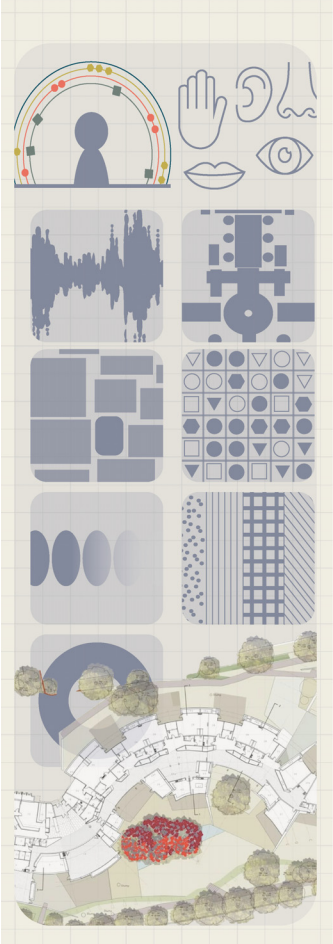
Emblematic collage of Dementia Villages

and it is considered a neurocognitive disorder according to the APA (APA 2013, 38). It generally involves cognitive impairment that is progressive (which is why it differs from ID)(APA 2013, 38). It affects memory, behavior, and inhibits the individuals ability for daily activities (APA 2013, 38).

Amerongen and Spiering worked in geriatrics when they devised a new type of group home. De Hogeweyk Dementia Village opened in 2009. It was designed by Molenaar&Bol&VanDillen Architects and is sponsored in part by the Netherlands Government (Verderber 2018, 227). This form of architecture is based on nine intentions: (1) To live life as usual, (2) to live with others, (3) to live life with freedom, (4) to live with professional support, (5) to live with safety, (6) to live a social life, (7) to live with family, (8) to be a part of society, (9) to enjoy outside life (BetheCareConcept.com 2020). These foundations address the direction of care in the facility. The care centre is designed as a small village with twenty-three houses that are personalized to the lifestyle of the inhabitants (Verderber 2018, 227). The overall layout is a series of courtyards that are surrounded by buildings. Access to different buildings and courtyards is open to inhabitants who roam but does not lead out of the village itself (Verderber 2018, 230). This creates a safe environment that does not restrict the users. Other design priorities for the village are the natural environment and transparency (Verderber 2018, 232). These two elements were emphasized because of their therapeutic benefits, often lacking in a traditional nursing home.

Dementia Villages are becoming more common across the globe. This concept is widely received as successful in creating safe space and comfortable living (BetherCareConcept.com 2020). The innovation lies with the overall planning of the

site and how this provides for agency for everyone. The village concept also provides community for inhabitants in each house and in community spaces in the village.

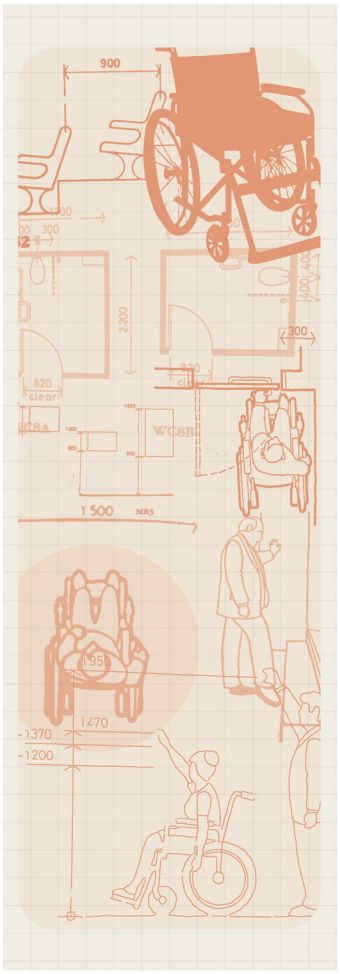


Emblematic collage of ASPECTSS

Autism Spectrum Disorder and Architecture

The next area of research is Autism Spectrum Disorder and design methods that support individuals with ASD. ASD is a developmental disorder that is characterized by “deficits in social-emotional reciprocity… deficits in nondermal communicative behaviors… and deficits in developing, maintaining and understanding relationships."(APA 2013, 50). In terms of severity, the autism spectrum is quite broad and looks different in each individual. Magda Mostafa is the leading researcher/designer for architecture specific to ASD. Her research pursuit began in 2002 with a commission to design an education centre for children with ASD. Because of the lack of information on designing for ASD, Mostafa focused her PhD on a design framework for the disorder. Since then, her framework, ASPECTSS has been used around the world for buildings for people with ASD. ASPECTSS stands for: acoustics, spatial sequencing, escape space, compartmentalization, transitions, sensory zoning, and safety (Das et al. 2020, 482). These seven elements focus on sensory stimuli in the environment and creating space that is comfortable for the user with ASD (Das et al. 2020, 483). This framework is based on a different set of values. Space and organization of space is measured on the sensory experience of the user, which itself is valued beyond the organizational grid of walls, floors and ceilings. ASPECTSS is now well-regarded by both the architectural community and the ASD community as successful in providing space suited to people with ASD (Bozikovic 2015) however, the criticism is that this research still stands alone

in its field and the quantitative data is limited to one study.



Emblematic collage of Universal Design Theory

Physical Disability and Architectural Theory

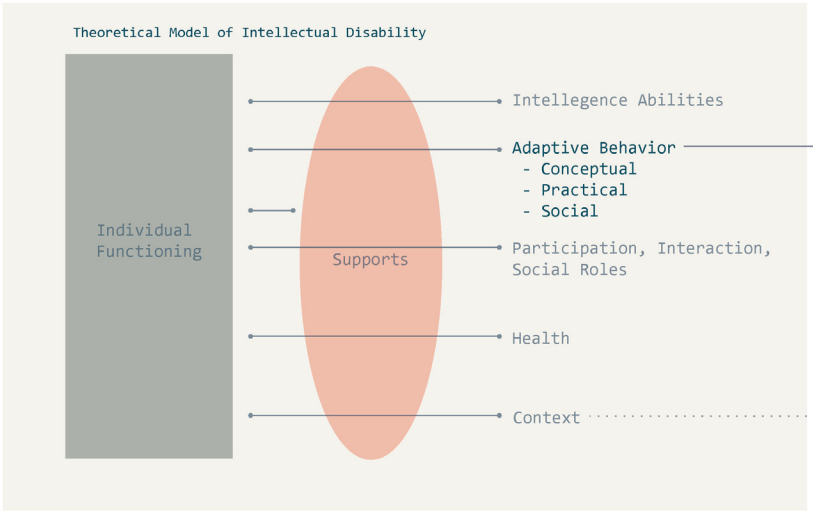
Physical disability and architecture became a popular topic in the 1960s and continued through to the eighties which was declared the 'Decade of the Disabled' by the United Nations (Department of Economic and Social Affairs Disability 2020). This topic was spearheaded by people such as Selwyn Goldsmith, Tim Nugent and Ed Roberts who were well-educated and disabled. Since the 1940s, disability rights have been passed into legislation and, specifically to architecture, introduced into Building Codes globally. As Selwyn Goldsmith points out in his book *Designing for the Disabled: A New Paradigm*, early British and American approaches to disability rights in architecture (the pioneers in this field) were vastly different as well as disjointed in their unfolding (1997). This led to new forms of research and advocacy that question how we currently approach universal design and how we should rethink the universal design paradigm. A large criticism of the current system is that architecture still caters to able-bodied people and makes inadequate modifications to adhere to building code (Boys 2017, 9). Another criticism that Goldsmith makes is that most people are architecturally disabled (Goldsmith 1997, 151)- meaning that even able-bodied people are, to an extent, disabled by common architectural practice, such as the number of washrooms provided for men vs. women. While it is proven that women need more stalls than men to meet input-output ratios, extra stalls are almost never included in the design (Goldsmith 1997, 152).

This is an important area of research and activism because of its inference that the user is not adequately considered

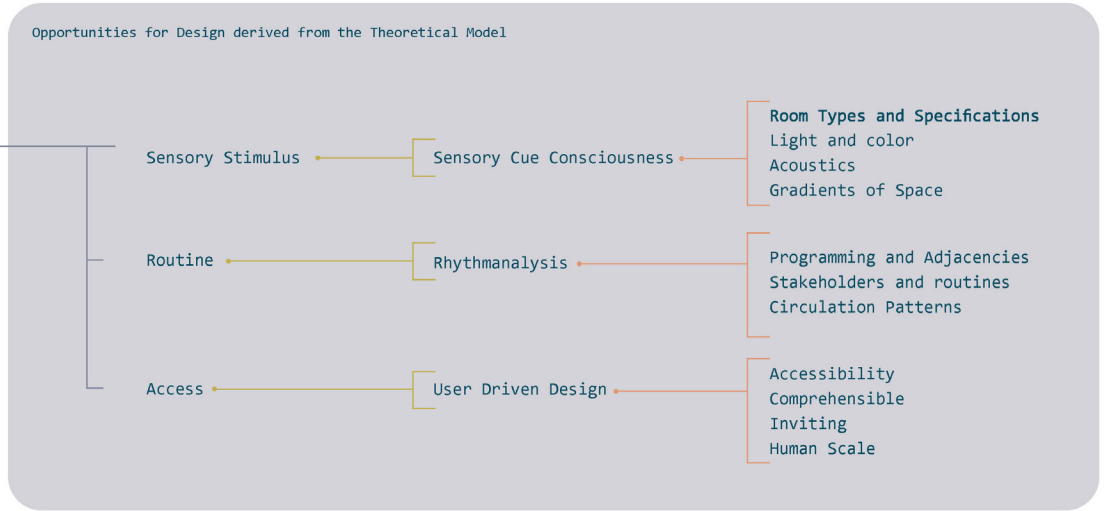
in the architectural design process. These writers raise questions about the social and cultural norms used in building design, the outdated paradigms and theory that do not marginalize people(Boys 2017, 32).

Adaptive Behavior as a Theoretical Foundation for a New Design Method

Adaptive behavior, as mentioned in the first chapter is one element in the definition of ID. It addresses an individual's ability to adjust to variables in daily life (AAIDD 2010, 73). The three categories of testing are social, personal and cognitive. People with neurodevelopmental disorders test low on adaptive skills. This commonality within the community offers opportunity to address communal and domestic spaces in a new way and for everyone. Adaptive behavior can be translated into design principles that are focused on space that adjusts for the user, rather than the user adjusting fully to the space. In this way, architecture focused on addressing adaptive behavior is about creating space that will allow easier transition of adaptation to the environment. By selecting variables and strategically designing them to suit the psychological needs of the inhabitant, the architecture can address adaptive behavior.



Theoretical Model of ID and Supports, Intellecgtual Disability: Definition, Classificiation, and Systems of Support, 10th ed.



"Adaptive Behavior in terms of Individual performance in relation to person-environment interactions and include social skills and peer acceptance as a components of social competence"

- American Psychological Association

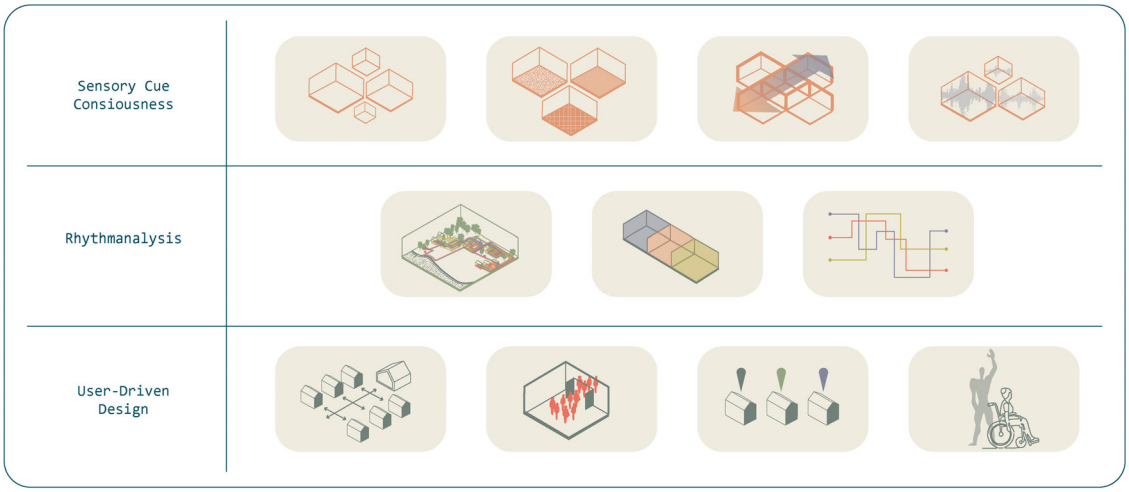
"Context refers to the interrelated conditions within which people live and their everyday lives, including the immediate social setting, community settings and the overarching patterns **of cultural and socio political influences that** determine normative behavior."
- 2007 Handbook of Developmental and Intellectual Disabilities

The Theoretical Model of Intellectual Disability related to a the new design method for people with ID

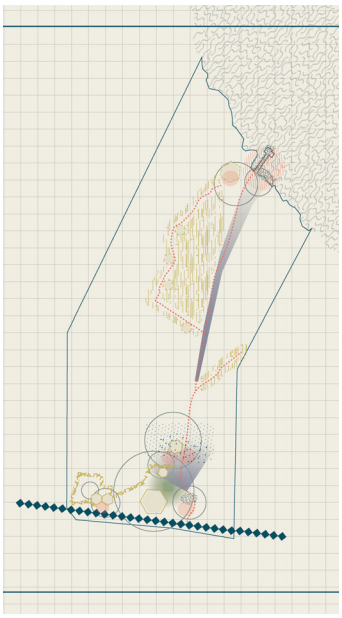
Chapter 4: A New Design Method

Introduction

This design method aims to create a comfortable space for people with ID by controlling certain variables in the environment. Working from the concept of adaptive behavior, it proposes design principles that enable people with ID to have control over their ease of access, spatial routine, and sensory stimulation - all of these are important factors in the ever-day environment of people with ID. To be effective, this method must be employed at all scales of a project (e.g. site, building and furniture), and with the understanding that compound layers work together to meet the needs of each person. While each of these design variables - Sensory Cue Consciousness, Rhythmanaylsis, and User-Driven Design- studies the environment through its own lens, when employed together, they offer a holistic design strategy to provide a comfortable and stable space for people with ID.



The three principles of the design method

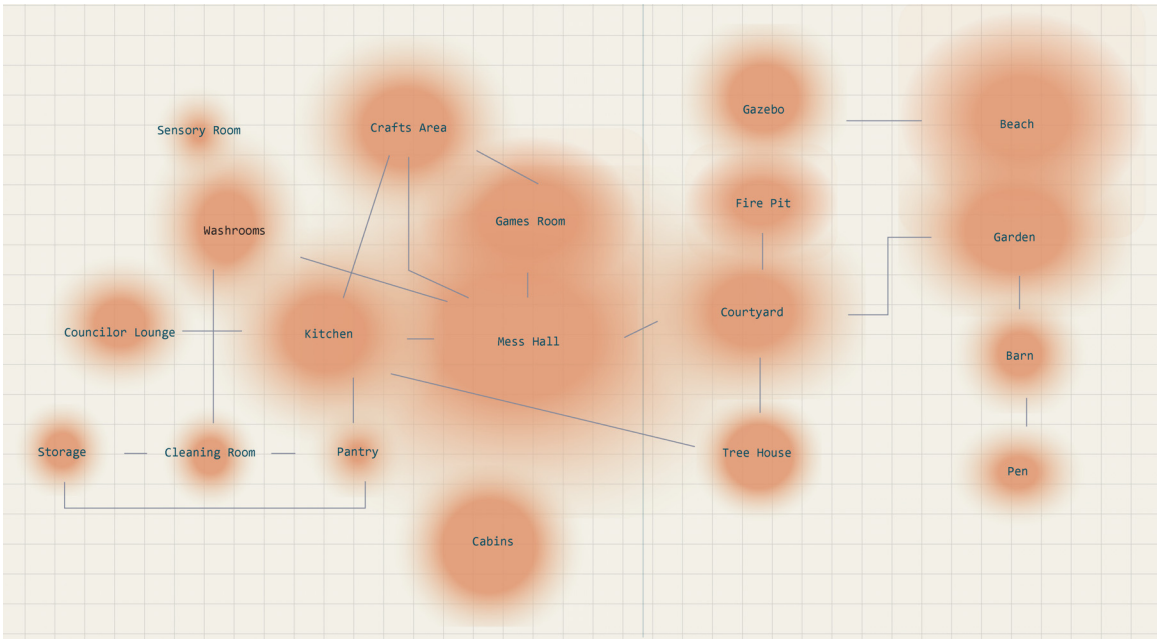


Sensory Map of site

Sensory Cue Consciousness

This design principle looks at how architectural elements that provide sensory stimulation can be controlled to create a comfortable environment for the user. People with ASD and ID have difficulty with sensory processing (AAIDD 2010, 50). Research on ASD commonly refers to controlled sensory stimuli and sensory therapies such as a Multi-Sensory Environments (MSE) that address the calming effects of specific sensory experiences(Fava and Strauss 2010, 161). While the built environment cannot be as wholly controlled as a MSE, there are different design elements that can be considered to create spaces where the inhabitant can be comfortable and not distracted by stimuli that is unpleasant.

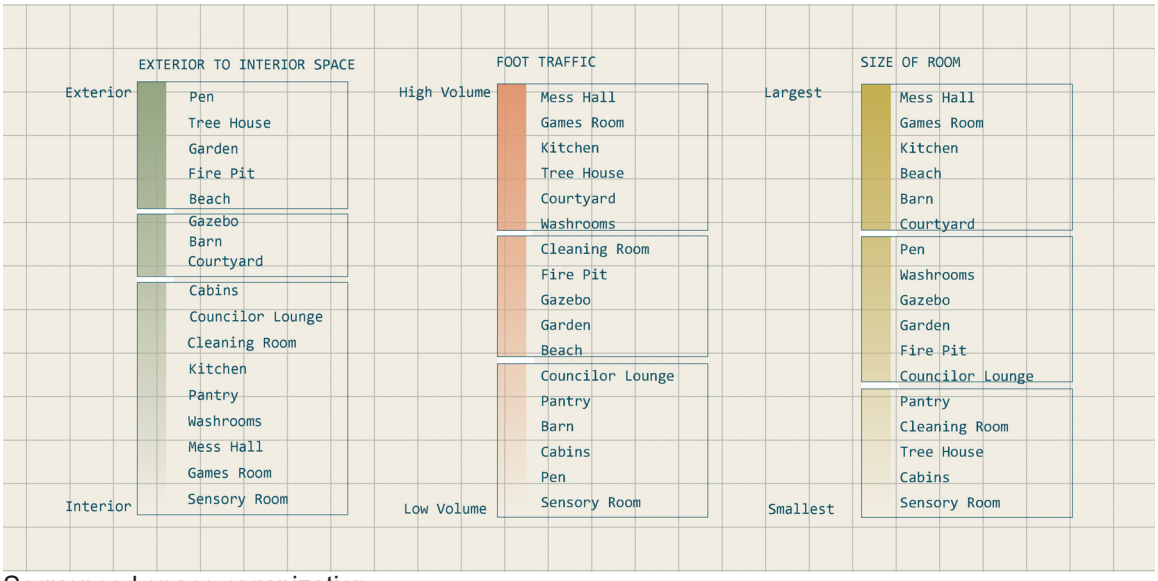
At the room scale, the size and use of space can indicate what types of sensory cues are present. By designing based on size of room or activity, the architecture can accommodate for sensory cues that are inherently present because of the



Rooms based on noise levels

size and activity. In large, community rooms with constant activity, there are higher levels of noise volume, and light. In small, private rooms the sensory cues must be less severe because the room is comparatively smaller and is designed for less activity.

A lighting strategy can be implemented in a similar way. Natural and artificial light need to work together but have different applications. Windows allow views to the outside, but they can also be used for visual access into rooms (which is sometimes essential). But other times, visual access needs to be controlled, providing opportunity for moving panels or even curtains to block direct light and allowing for different amounts and qualities of light. Artificial light should always be indirect, allowing for softer lighting sources and avoiding intense glare which can be uncomfortable. Artificial light should always be indirect, allowing for softer lighting sources. This is to avoid intense glares which can be uncomfortable. Artificial lighting should also include dimmers, which can be used to calm individuals



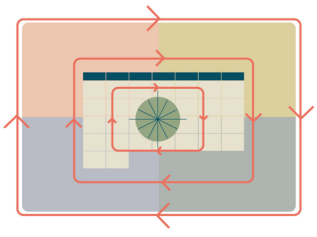
Sequenced space organization

down through different lighting settings.

Acoustics requires similar attention, because sound commotion can disrupt inhabitants and cause discomfort. Large reverberant spaces or crowded one must employ strategies to diffuse and absorb sound — such as textured paneling and different textiles — as well as a configuration that scatters and diffuses sound.

Spatial sequence can also inform the transition between different types of spaces, such as moving from inside to outside or vice-versa, from shared to spaces, and from facilitator to inhabitant spaces (often called "service" to "served". These pairs are binary, but "spatial sequencing" inserts a gradient, or attenuated threshold, between these spaces. Exterior-to-interior gradients for example, might include microclimates and different courtyard opportunities that regulate external cues and provide shelter from the elements while still providing fresh air. Community-to-private gradients might include a buffering zone which facilitates a gradual change in activity level. Facilitator-to-inhabitant space requires that certain rooms be hidden from residents for safety reasons, such as cleaning chemicals storage room. Such spatial gradients offers a hierarchy of spaces in different variations to provide different types of support to the user groups.

Rhythmanalysis

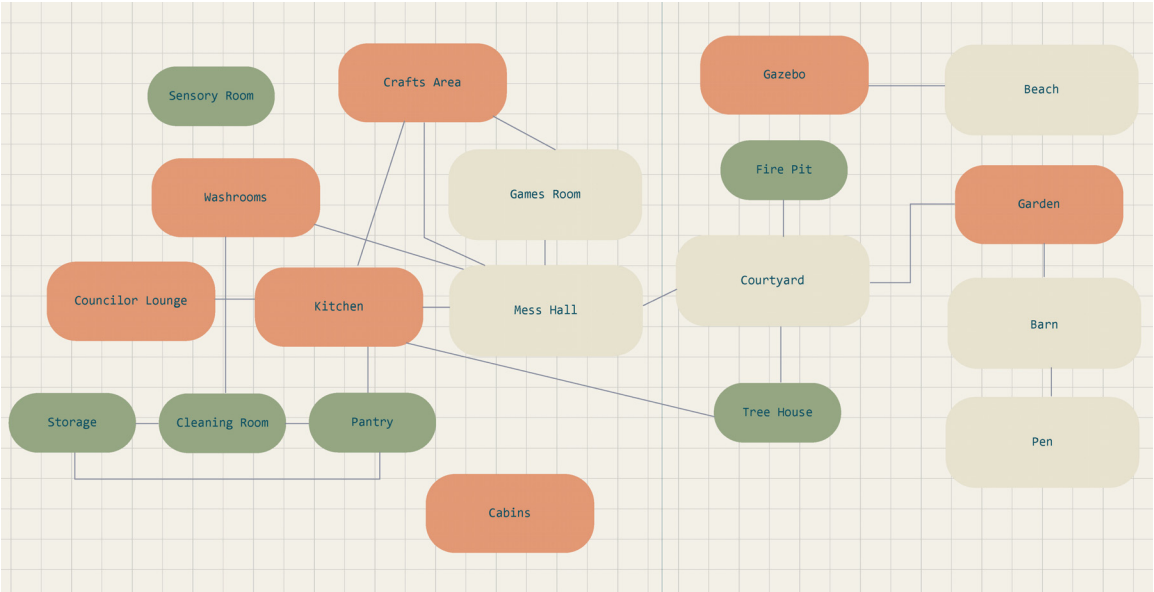


Studying how different cycles behave with each other

Rhythmanalysis is a concept created by Henri Lefebvre in a series of essays that address patterns and circulation in urban environments to determine efficiency and success of space (Lefebvre 2004, 5). In this design method, I use Lefebvre's study approach to explore how design and planning influences the daily and seasonal routines of people

with ID as well as those of the caretakers and facilitators who share the space. When caretakers and facilitators can carry out their work in efficient patterns, routines and cycles, they have less burnout and fatigue, and take better care of people with intellectual disability (Hatton et al. 2001, 258). Greater structure in the architecture makes it easier for everyone to maintain routine for people with ID.

Spatial organization requires consideration of appropriate programming and adjacencies, depending on the type of activity and its intensity. Rooms that host high volume, high foot traffic activities should be clustered together, while and rooms that are designated as quiet areas or places for de-escalating activities, need to be located separately, to avoid noise pollution and unwanted visual stimulation This is equally applicable to for inhabitants and those for caretakers/ facilitators. By organizing space that is for meals, cleaning, storage and even a break room which are facilitator-based, planning can be more efficient for caretakers and facilitators.



Different adjacencies according to size and foot traffic

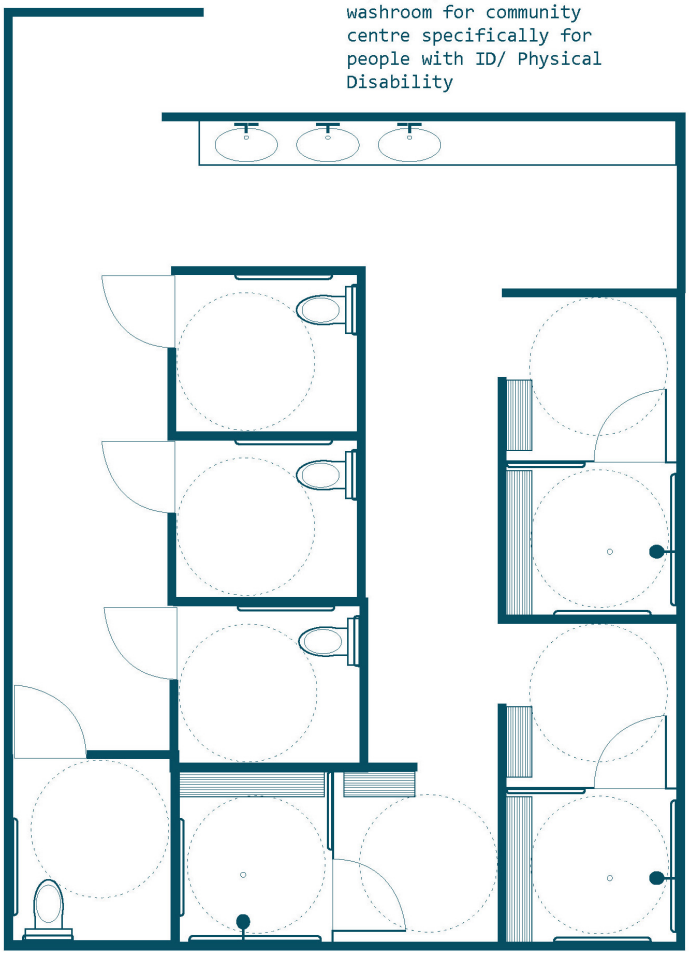
In tandem with adjacencies, it is important to study the stakeholder groups and their routines in the space. In this way, the design can provide support for the daily routines across the site. Cleaning routines are often a bi daily occurrence; meal preparation and clean-up happens three times a day; and distributing medicine can occur several times in a day. For people with ID, routines help to regulate behavior and support an individual's adaptive skills. For caretakers, routines reduce exertion and burnout (Hatton et al. 2002, 258). In both instances, daily routines should benefit from optimal mobility, efficiency, and pleasing settings.

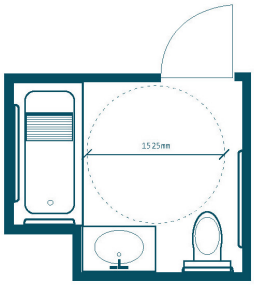
In addition, circulation patterns must be included the design process. Circulation spaces are important to the organization of space and should to be addressed based on the user and the spaces that need to be connected. Hourly routines, daily routines, and even weekly or seasonal routines require different circulation patterns. By mapping out probable patterns, the design can address these circulation routes to create efficient design

User-Driven Design

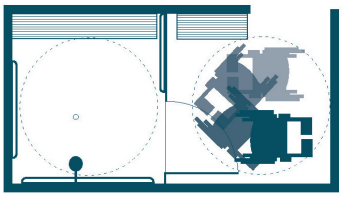
User-driven design recognizes that people have varying degrees of ability to manipulate, interact with, and experience an environment. In organizational models of living, intellectual disability is categorized by severity of disability and the consequent need for assistance or care which also correlates to adaptive behaviour (APA 2013, 33). Because user-driven design is focused on each individual's ability, it must be inclusive of the greatest severity of disability. Profound severity means that there is a heavy reliance on caretakers for everyday activities (APA 2013, 36) and

Layout option for
washroom for community
centre specifically for
people with ID/ Physical
Disability





Universal Design
options for washrooms



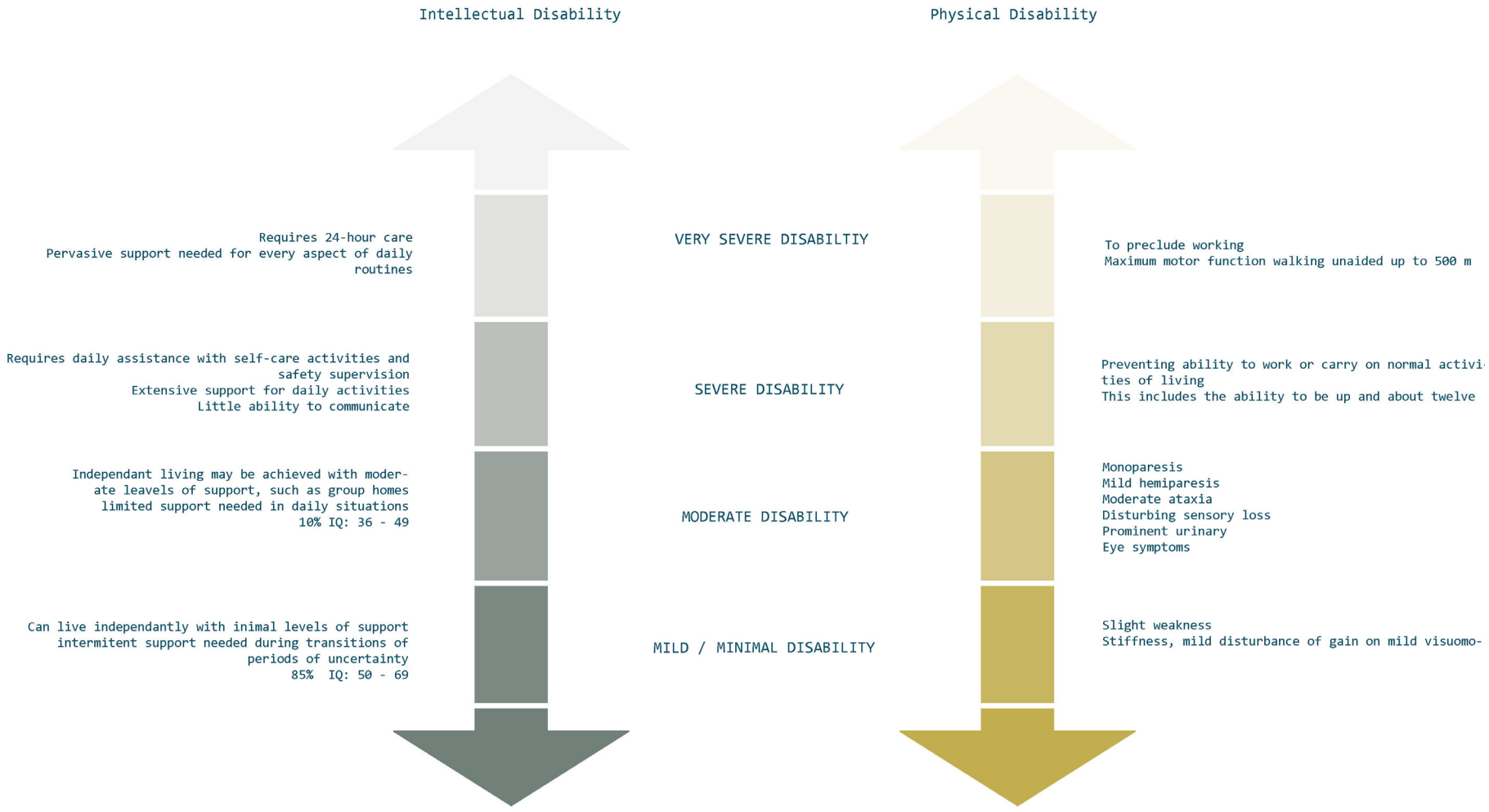
Washroom layout design options and aggregate that are based off User-Driven Design Principles.

generally, confinement to a wheelchair or low mobility. The active participation of the caretaker in everyday life means that the caretaker is also a user. However, this design principle mainly addresses accessibility for people with physical disabilities – for people with ID, there is a higher frequency of co-occurring disability (APA 2013, 31) and how architecture can engage the user by making it welcoming, comprehensible and properly scaled.

Comprehensive design is when space is easily understood by the user — for example, the architecture has provided transition spaces into rooms; there are obvious indicators letting people know where they are in a building or on a site; and users can see into spaces before they entering them, reducing the likelihood of surprising or jarring encounters, or unwanted run-ins with other users. Alan Dunlop Architect uses these techniques in his Hazelwood School for a student population with ASD (Dunlop 2016). Using curved walls covered in cork, his design is easy to grasp and allows each person to have agency in how they choose to experience space, move through it and explore it.

In addition to being comprehensive, design should be welcoming and inclusive, such as ample thresholds and transition spaces which invite people to gather. Green space is also welcoming, and vegetation is known to be therapeutic and calming (Lee 2010, 1971). Garden spaces are not always designed for people with limited mobility — the design must consider the full range of garden activities, from viewing to watering, planting to smelling, harvesting to weeding. Only then, is the design successful.

To be welcoming and engaging, design must be based on the human scale. This is not Le Corbusier’s Modulor man,



The Scale of Severity used to categorized intellectual and physical disability

whose stature and ableness only speaks to a select user (Boys 2017, 26). Rather, designers need to acknowledge the diversity of the human form and design space that celebrates it, so the user feels comfortable in a space and able to participate in the activities taking place there.

Conclusion

What is the human scale?

These design principles outline the considerations needed to design architecture that will support people with intellectual disabilities. While the principles have been presented separately, they should be used in unison and with nuance and subtlety to inflect a design to create an overall comfortable experience. What is the human scale? 27 If any one or more of these principles are used too rigidly, or strictly, or with undue intensity, the design may suffer from unevenness, which will detract from the general experience. For example, if undue emphasis is placed on efficiency through a focus on Rhythmanalysis, the result may inadvertently create a clinical or institutional-feeling space. A heavy focus on sequencing and spatial types, learned from Sensory Cue Consciousness could lead to complicated layouts with awkward circulation. These design principles also vary with the type of program — by properly understanding the needs and focus of each program, the appropriate design principles can be evaluated through the lens of the project and then be integrated into the architecture and planning.

The rules of the project cannot be so rigid that they become a prescriptive absolute. If this happens, the architecture will become confusing or unbalanced and, consequently, the population that this was built for, will be affected. Therefore these design principles must be adaptive to their projects

in order to create space that is adaptive to the individual. This will also help in creating a balance between the design principles for adaptive behavior and the design principles of the project’s program.

Chapter 5: The Project

The design method in the previous chapter will be tested on a recreational camp facility. This is based off an existing camp in Central Alberta and uses its site and operational model. The original camp's facilities are used as a case study, which will look at the current architectural elements, and this will provide information on important spaces for the camp's activities as well as areas that could be readdressed to best suit the needs of the campers. The project, after this analysis, will be a re-imagined design on the existing site that supports the same amenities but follows the design method outlined in chapter four. Through the examination of an existing camp for people with ID, there is a greater understanding of the necessary elements of a camp design.

A Camp Programme

Why test the principles of good design for people with ID in a summer camp? There are four reasons for this decision:

1) A recreational camp is designed for short stays. The campers arrive on site, are introduced to the camp facilities, their cabin, and the camp experience begins. This sudden shift in environment, from familiar home and bedroom to unfamiliar site and cabin, could be jarring. But design principles that address adaptive behavior could provide comfort and stability in this shift. A camper can become familiar with camp facilities more quickly, personalize their bunk and re-establish familiar routines outside of a familiar setting. As well, the architecture can reinforce the community spaces to allow campers to come together.

2) Outdoor retreats are not usually accessible for people with disabilities. Uneven paths and multi-level lodges can inhibit movement; camp kitchens lacking specialized equipment cannot accommodate dietary restrictions; it is often too hard for an person with disabilities to negotiate the environment on their own terms. All too often, such conditions make recreational camps uncomfortable for people with limited adaptive behavior.

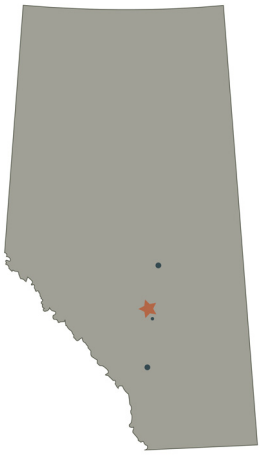
3) Outdoor retreats introduce a new, natural environment. Because this may be an out-of-the-ordinary experience for people with intellectual disability, camp design must forge a connection between the camper and this new environment, so it feels gradual and comfortable. This means pulling at different types of experience and allowing the camper to choose how they interact with the natural environment.

4) Nature retreats are a part of the Michener Centre community, dating back to the 1940s, when able-bodied residents enjoyed day trips to other part of the extensive grounds of the Michener Centre (ASS 1983, 8). These day trips were intended for the residents to leave their normal routine for exercise, fresh air, and a change of scenery. In the 1950s, the Parent Organization (of the Michener Centre's residents) recognized a need for a nature retreat off the grounds. They purchased a plot of land on a nearby lake for the more active residents and caretakers to visit. Camp L.G. Barnes became a vacation destination for the residents of the institution. This camp site is in use today as a camp for people with intellectual disability and is the site of this camp design.

Camp L.G. Barnes in 1948, www.lgbarnes.org

The Camp and the Site

Camp L.G. Barnes is located on the south side of Gull Lake in Central Alberta. Today it functions as a camp that hosts group homes from all over Alberta and British Columbia. The camp began with two buildings: a kitchen hut and a small bunk cabin – which could hold 10 people in total including caretakers and (able-bodied) people with intellectual disability. In 1982, the Parent Organization built a large lodge on the site to house more campers and staff and provide more space for indoor activity (ASS 1983, 8). Two more cabins have been built in the early 2000s that provide full amenities to support campers.



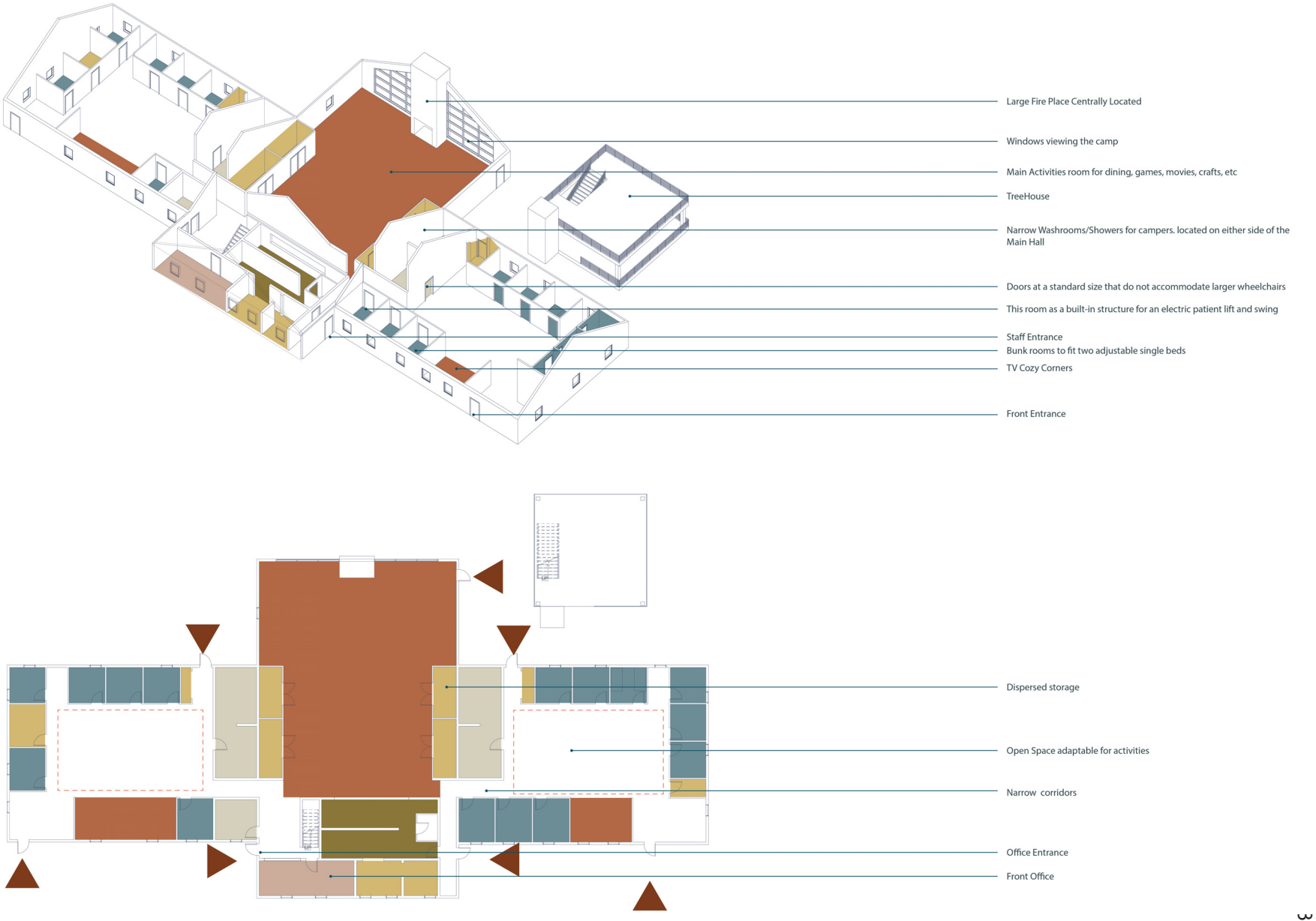
Location of the camp site in Alberta

As the Michener Centre disbanded as an institution, the camp opened its doors to a larger population of people with intellectual disability. Grouphomes from Alberta and BC were invited to come to camp. The camp structure is organized based around hosting group homes which are primarily (if not exclusively) adults with a broad range of disabilities.

By using a site with a current camp for people with ID, this provides a framework of operation as well as features for the camp. The existing camp shows that camp for this

Boundary of Camp Site with existing building footprints

Photographs of the current camp site



Existing Camp Lodge Layout

population is successful and the work is important. The camp demonstrates that these spaces are important in building community through recreation. However, further study of the current camp architecture indicated that there is opportunity for space to better facilitate this community and connection to nature.

The existing lodge prioritizes the open spaces that are adaptable for group activities. The central space is tall, adjacent to the kitchen and features a fireplace at the far end of the room. Smaller activity spaces are located in the center of the two wings, allowing for smaller gatherings. At the periphery of the wings are the bunk rooms. These each host two bunks with limited space for movement or personal belongings.

Corridors between the wings and the main space are small and the building is disorienting because of the two identical wings. There is no main entrance to the building which also is cause for confusion with new campers.

The planning of the site is based on the road. The buildings are closely connected to the driveway and the small parking lot that is positioned just off the main road. This, in theory, allows for easier movement of people and luggage from the bus or van to the buildings. However, both the driveway and the parking lot are small and surrounded by obstacles that make vehicular movement strained. As well, because the buildings are close to the road, they are far from the lake. The site is 430 m long and campers and caretakes must walk most of that distance to arrive at the waterfront from the

lodge. This poses even more of a problem when the grade change of about four meters on the south side of the site is factored in. This is a difficult procession for people with low mobility and for the caretakers who push wheelchairs. Between the lodge and the lake is mostly unused space. The barn sits at the bottom of the elevation change and there is a narrow boardwalk path through a grove of trees.

The New Design

Based on the previous analysis of the site, my project reimagines a new camp design on the same site and is influenced by the existing conditions and model of operation

Concept Image for the camp project

while also including the design principles of chapter four.

By designing and planning a new camp, this design focuses on the experience of the camper. It intends on enabling the interaction of camper to natural environment as well as camper to camp community. This camp focuses on facilitating these relationships through design intervention.

Building community around the campfire

The Experience of Camp

The camp design is based on the thematic elements of the campfire. The campfire was the original gathering space for outdoor retreats. The warmth of the fire creates an area of comfort for gathering. In the same way, the camp design focuses on creating spaces that are comfortable for people to gather. This approach looks different in different areas and activities of the camp but the overall intent is bringing community together in a place of comfort in nature.

Based on the campfire analogy, the camp programme has three main intentions: connection to community, interaction with the natural environment, and comfort for campers with ID.

Community connection is supported through the use of "nested centers" in the organization of the camp at every level. This means all buildings are clustered around a communal space, and all community spaces are surrounded by more "private" areas. This strategy supports collective experience while offering a sequenced transition to smaller, more private areas for retreat. This design strategy creates inclusive activity spaces for campers to participate but at

Camp Site with old building footprints and proposed building footprints

The New Design in axonometric view

their own comfort level.

For example at the site scale, the lodge is the centre of the camp and the cabins stand at the periphery. Both provide the camp experience but at different levels of engagement. Throughout the buildings and activity zones, the nested centres are present to provide comfort for all campers.

The second intention for the camp is the connection to nature. This seems obvious in a nature retreat but for campers with ID, this connection must be varied, depending on the comfort level of the camper, and the connection must be controlled. The camp experience looks different for each individual. Some campers do not want to go outdoors, so the camp landscape must be brought to them through rooms with views to the natural environment. Some campers are comfortable being fully immersed in the environment and

The Site with nested centers

can hike through the gardens and swim in the open lake. This must also be an option. No matter the activity, this camp design must provide different degrees of immersion to cater to individuals and their comfort level. In this way, the camp can meet campers where they are at, and provide space that is inclusive for the whole group.

The final intention of the camp is to create appropriate comfort levels for campers. Since the camp is a new environment and new experience for campers, it must be adaptable to the camper for it to be successful. This is done throughout the camp and each building with sensory cue consciousness, rhythmanalysis and user driven design.

Overall, these considerations provide a strong framework for the camp design.

Site Planning and Organization

The new design uses several different strategies to create a camp that would be cohesive, understandable and user-friendly at the site scale. First, the camp is brought closer to the water and is now situated between the natural boundaries of the lake and the hill on the south side of the site. By adhering to the natural boundaries, the camp becomes safer for campers who wander. The new site is also on a flat area so movement around the camp is accessible for all campers and caretakers pushing wheelchairs.

In addition, there is an increase in pedestrian paths within the camp that either bring the camper to an activity zone or are designed to be connected loops. This network of paths is centered by the lodge. The paths are designed to

Circulation paths. Vehicular in red, pedestrian in yellow

The four zones of the camp

be easy to understand and easy to navigate. On the main paths, the four zones are easily recognizable because of the positioning of the buildings as well as the openness of the buildings. The vehicular access is rerouted to the west side of the site on an existing service road. A new road routes back to the main road behind the lodge. This allows for ease of delivery to the camp as well as a clear circulation strategy without invading the camp area.

The final planning strategy is organizing the four activity stations into zones on the site. These are the Lodge, the Garden, the Barn and the Waterfront. These zones correspond to each other and are positioned along the main pathway.

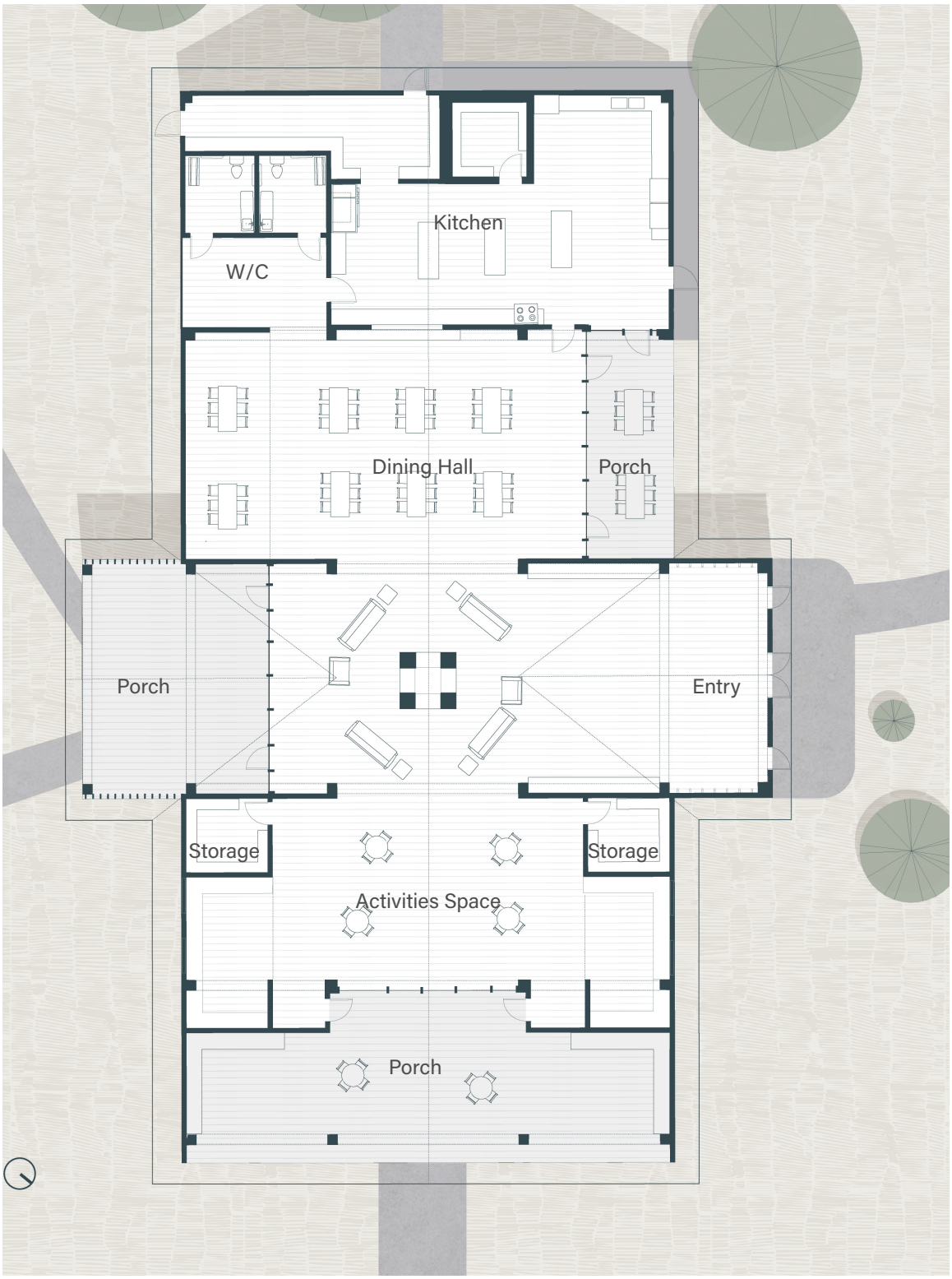
View of the lodge from the main entrance

Lodge as Community

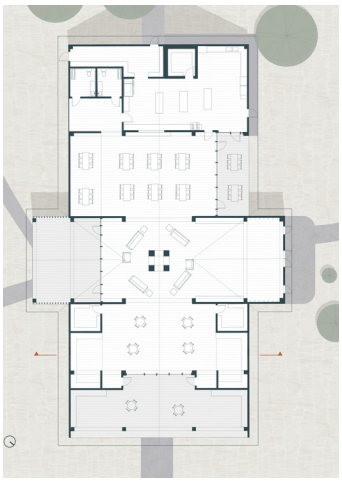
As mentioned, the lodge serves as the central point to the camp site. The lodge building is the main centre of activities. It houses the dining room, kitchen, fire place, adaptable activity spaces and protected porches. Every day, campers gather in the lodge, and especially on rainy days, the lodge becomes vital in maintaining a connection to nature and the community at camp. For some campers, this may be as close as they are willing to get to the natural environment so it is important to be able to see beyond the building and into the landscape. The lodge is sequenced along a central axis. Each bay is a different activity but the lodge is a cohesive

whole and everyone is a part of a collective experience. But the design also features smaller spaces for different groups and their needs. On the sides, the spaces are more to the human scale, with the ceiling dropped, to provide security and refuge for the camper while still being a part of the larger room.

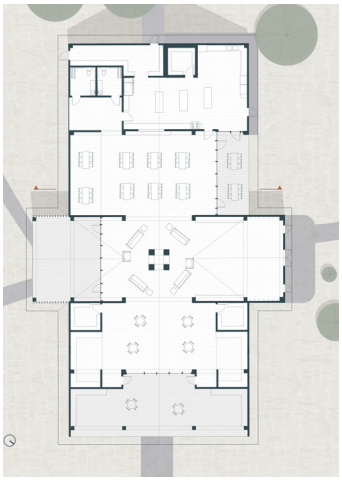
Plan of the lodge, the gatehouse and the utilities building on site



Plan of Lodge

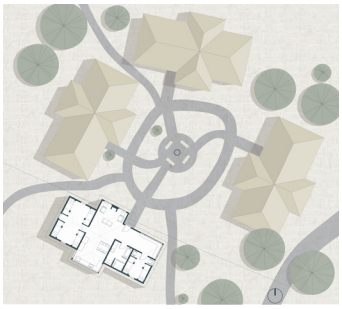


Section of activities space in the lodge with dropped ceilings to make smaller, more comfortable spaces



Section of dining space in the lodge with dropped ceilings to make smaller, more comfortable spaces

View of activities space, niches and camp landscape

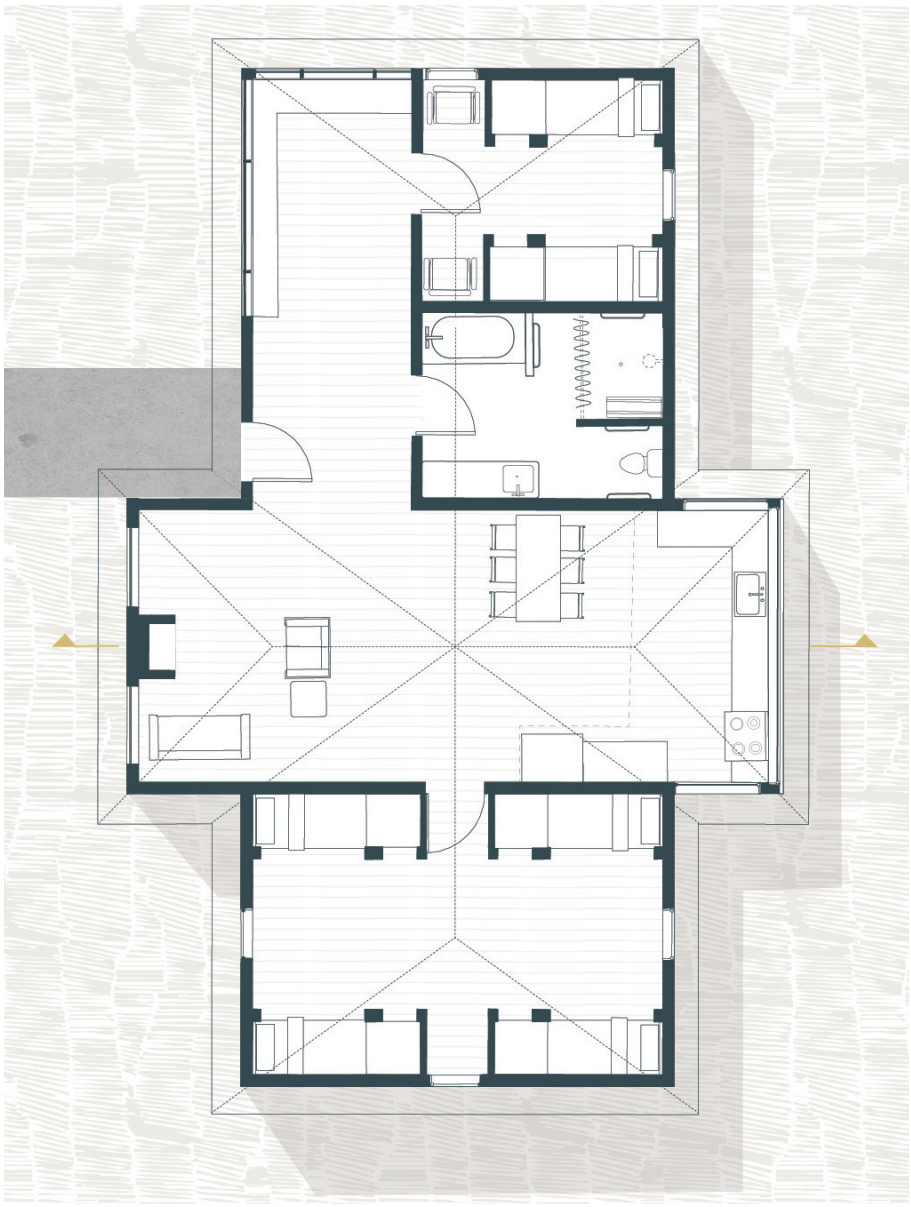


Large Cabin Pod

Cabin Design

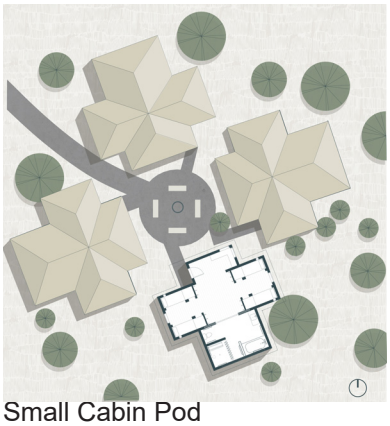
The cabins are designed to be a retreat from the main activities of the camp. They play an important role for the camper because the space offers a place for rest and refuge. The cabins must support the camper by providing space for belongings, a private bunk that the camper can personalize and an accommodating washroom for implementing morning and nighttime routines. There are two types of cabins: a large cabin, and a small cabin. Both types are organized in pods of four and surround a campfire. The campfire promotes community within the cabin areas and the placement of the cabins provides a microclimate to promote a temperate zone for gathering.

Gathering in the center of the pod, around the campfire

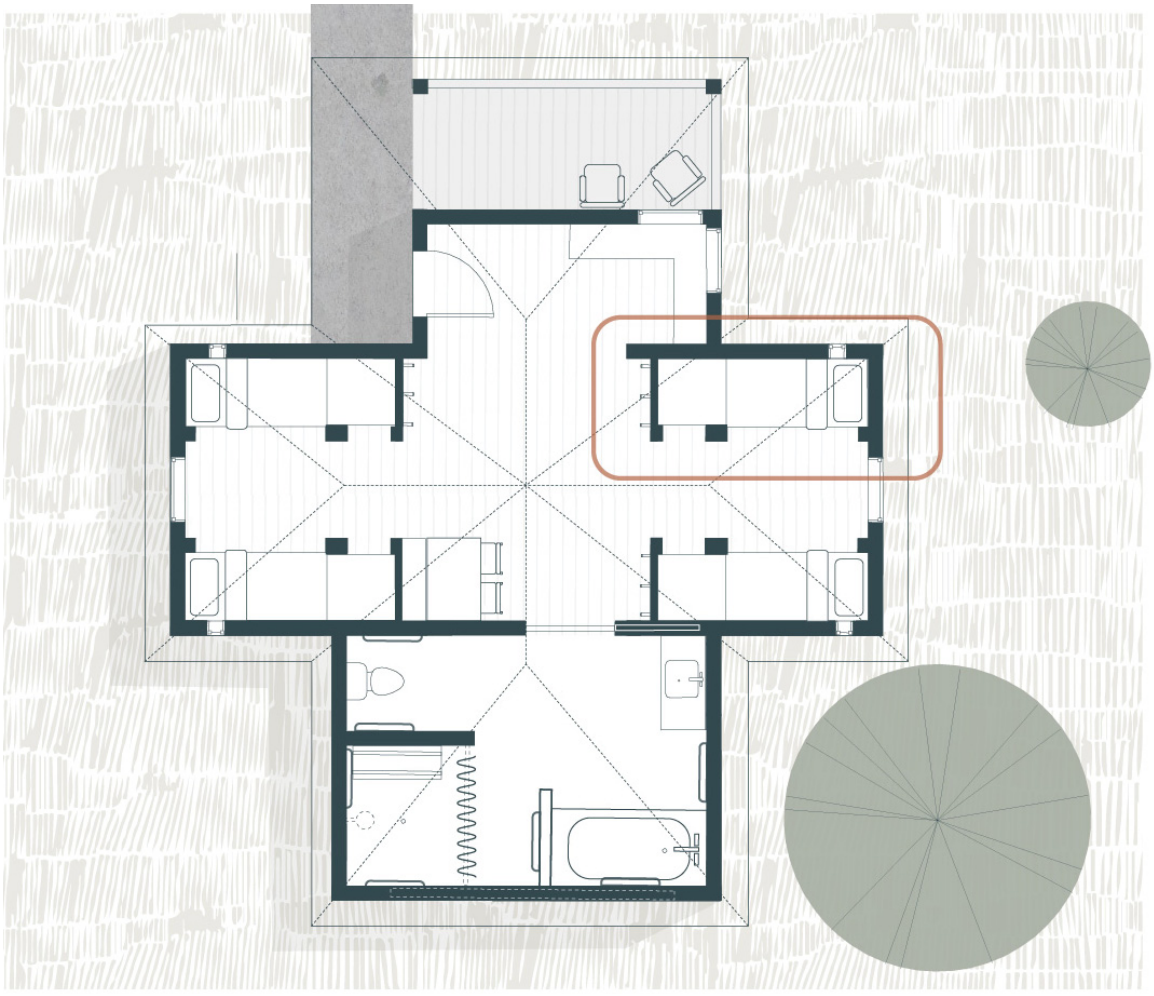


Plan of large cabin

Section cut of large cabin through living space, dining space and kitchen



Small Cabin Pod



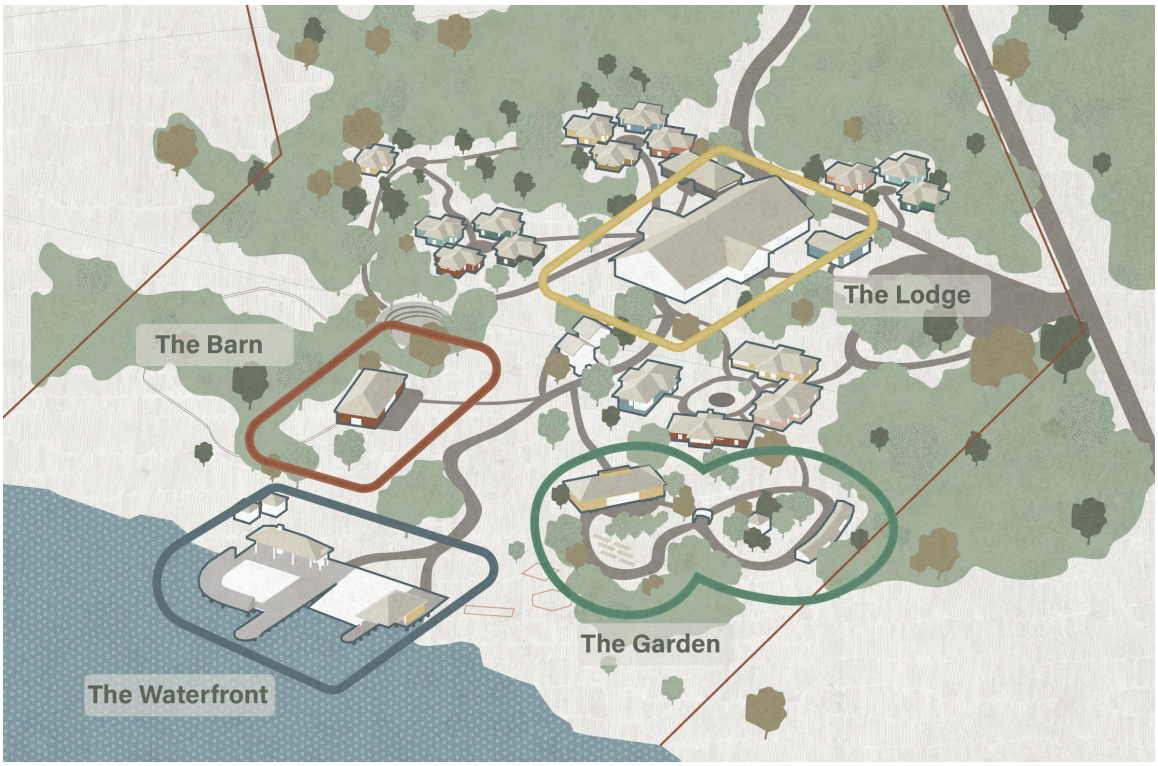
Plan of small cabin. Bunk is indicated in red

The larger cabins are designed for campers that need more support and have a more severe disability. These cabins are similar to a modern group home. They have full amenities but they still provide a camp experience through the large windows in the main space and the fireplace in the living area. The cabin is spacious for wheelchair mobility, the kitchen is lockable and there are more beds because generally these groups have more caretakers. The smaller cabins are a variation of the larger cabins. They house four bunks and a full washroom. The center area is for gathering, hanging up clothes and, possibly, storing wheelchairs. The bunks are designed for comfort for the individual by being private and providing space for personal items. These bunks must also have adjustable beds and a structure for slings, depending on the camper's mobility.

Cabin Bunk

Connections to the Nature

The activity zones facilitate connections with specific elements of the natural environment. The lodge, as discussed previously focuses more on community, but the other three are designed around the natural features of camp. The garden focuses on connection with plants, the barn focuses on animals and the waterfront focuses on connection with the lake. These three zones are designed to accommodate the camper and the camper's comfort level in each zone. These areas must provide different degrees of immersion to be adaptable to the user.

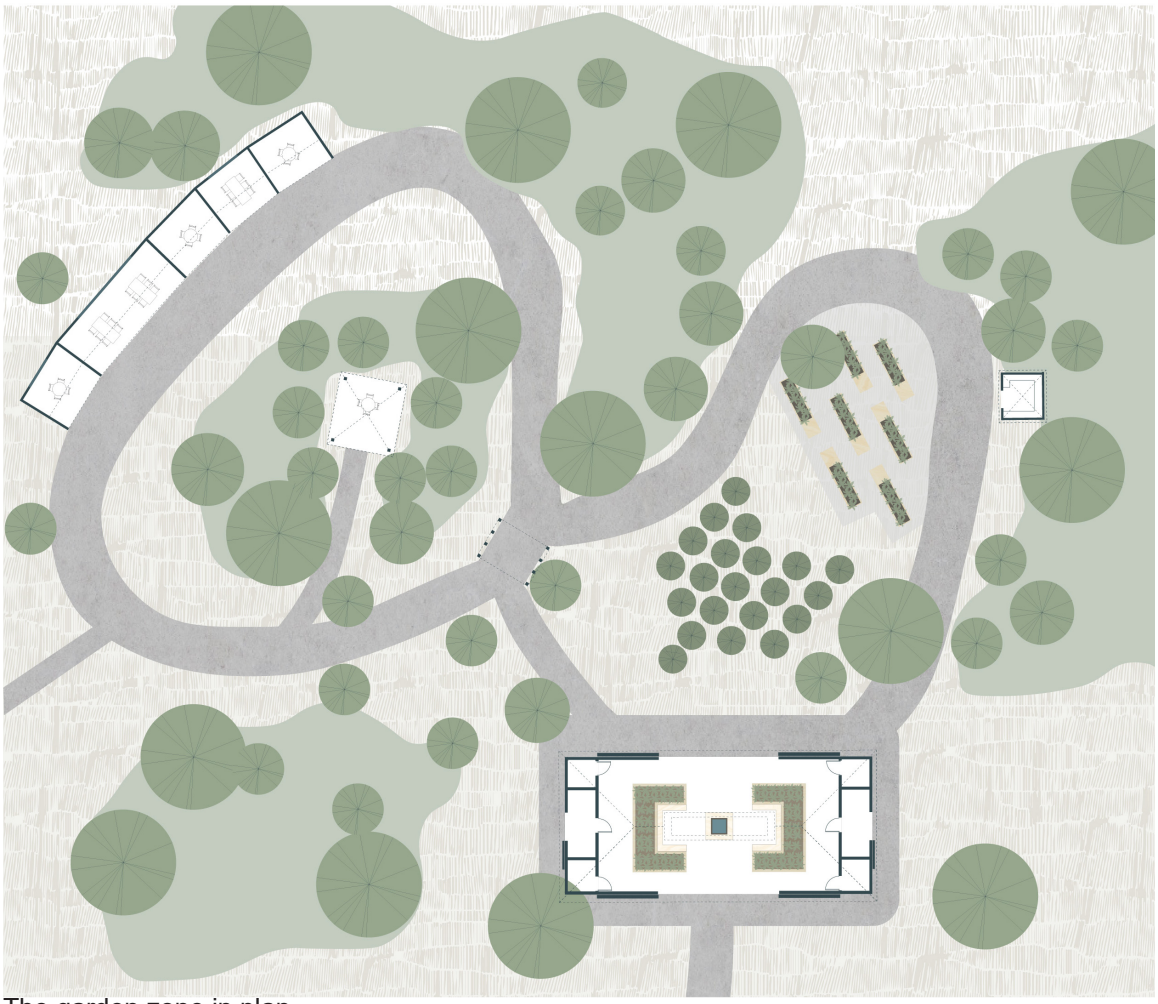


The four zones of the camp

The garden zone

The first zone is the Garden. This may be the closest to ‘wilderness’ that the campers have experience as many of them have not travelled outside of central Alberta. The garden provides different levels of connection to nature based on the comfort level of the camper.

The garden is an opportunity to be a part of green space. The zone is designed for campers to walk along the trees, the vegetable patch and the flowers. The garden zone offers three different points of immersion. The first is the herb garden which provides an indoor garden experience for campers who do not want to go beyond the building. The second experience is the produce garden which facilitates



The garden zone in plan

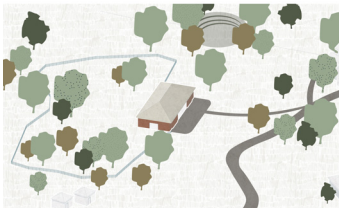
The herb garden interior

The produce garden with garden boxes and orchard

The hidden pavilion interior

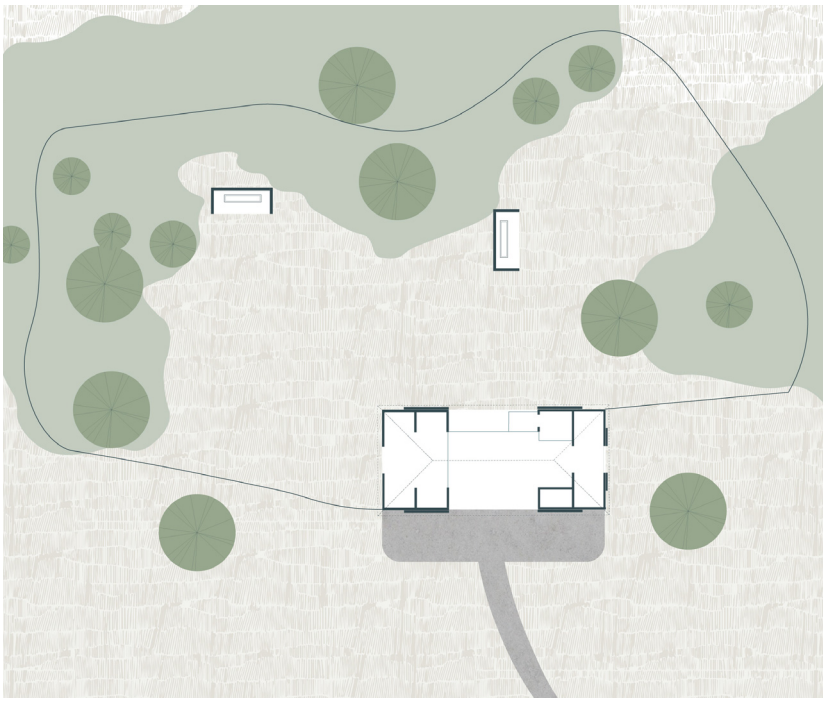
The Fairy house at the far end of the zone

interaction through garden boxes (spaced for wheelchair circulation) and a small orchard. Groups may stop to sit by garden boxes or help pick apples from the small orchard in this loop. The third interaction is a hidden pavilion in the middle of a small wilderness. This pavilion is fully immersed in the garden and campers must explore the wilderness to discover it. The woven willow walls provide seclusion and connection to the environment. The garden zone is composed of two loops. Groups can walk along the loops at enjoy a path that meanders through the space. At the far side of the garden is a curved fairy house that shelters the groups as well as provides a boundary to the garden zone.



The barn zone

The next zone is the barn and it facilitates safe interactions between the camper and the resident animals of the camp. It also provides shelter for animals and campers. Most campers are trepid at first when introduced to the animals but quickly warm up to the gentle creatures of the camp.



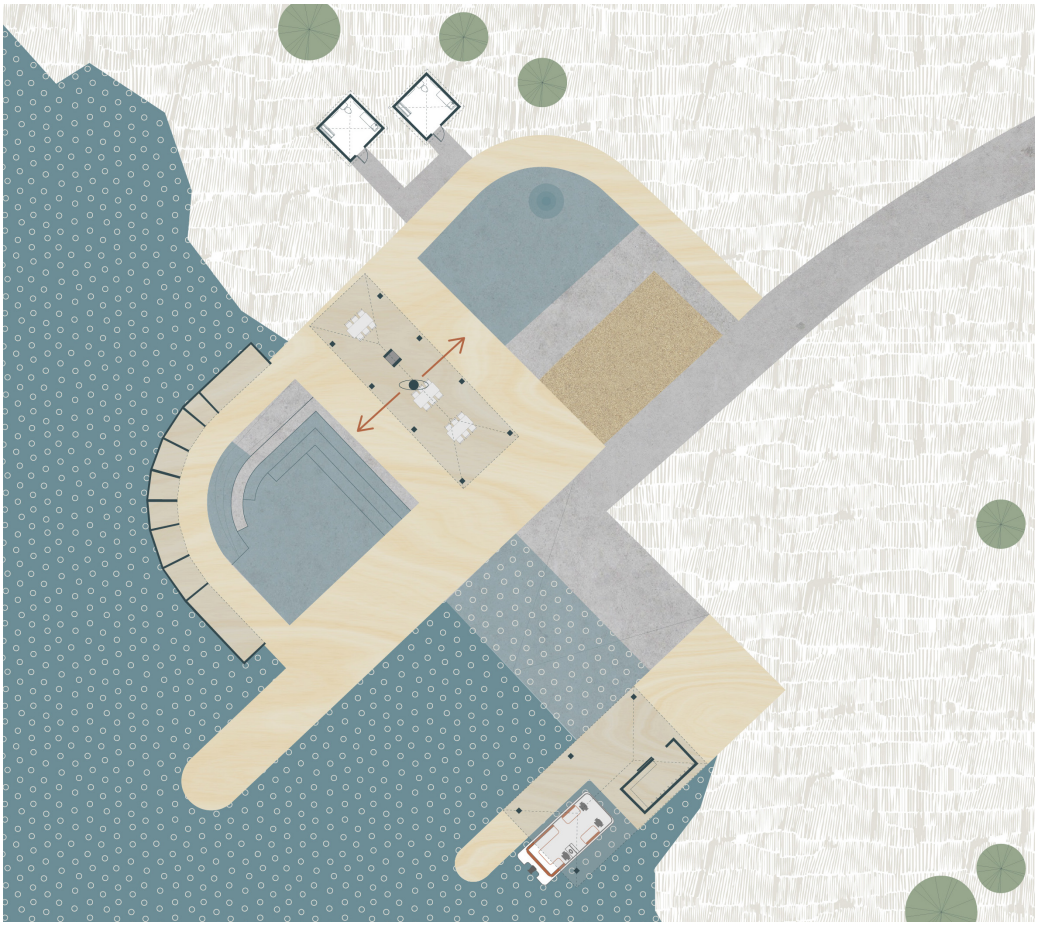
The barn zone in plan

Here, individuals can interact with the animals at their own comfort level. Groups do not generally have pets in the home so these interactions are very special and many campers want to visit the horses every day. Even campers that have very severe disability respond positively when a caretaker guides their hand to pet a bunny.

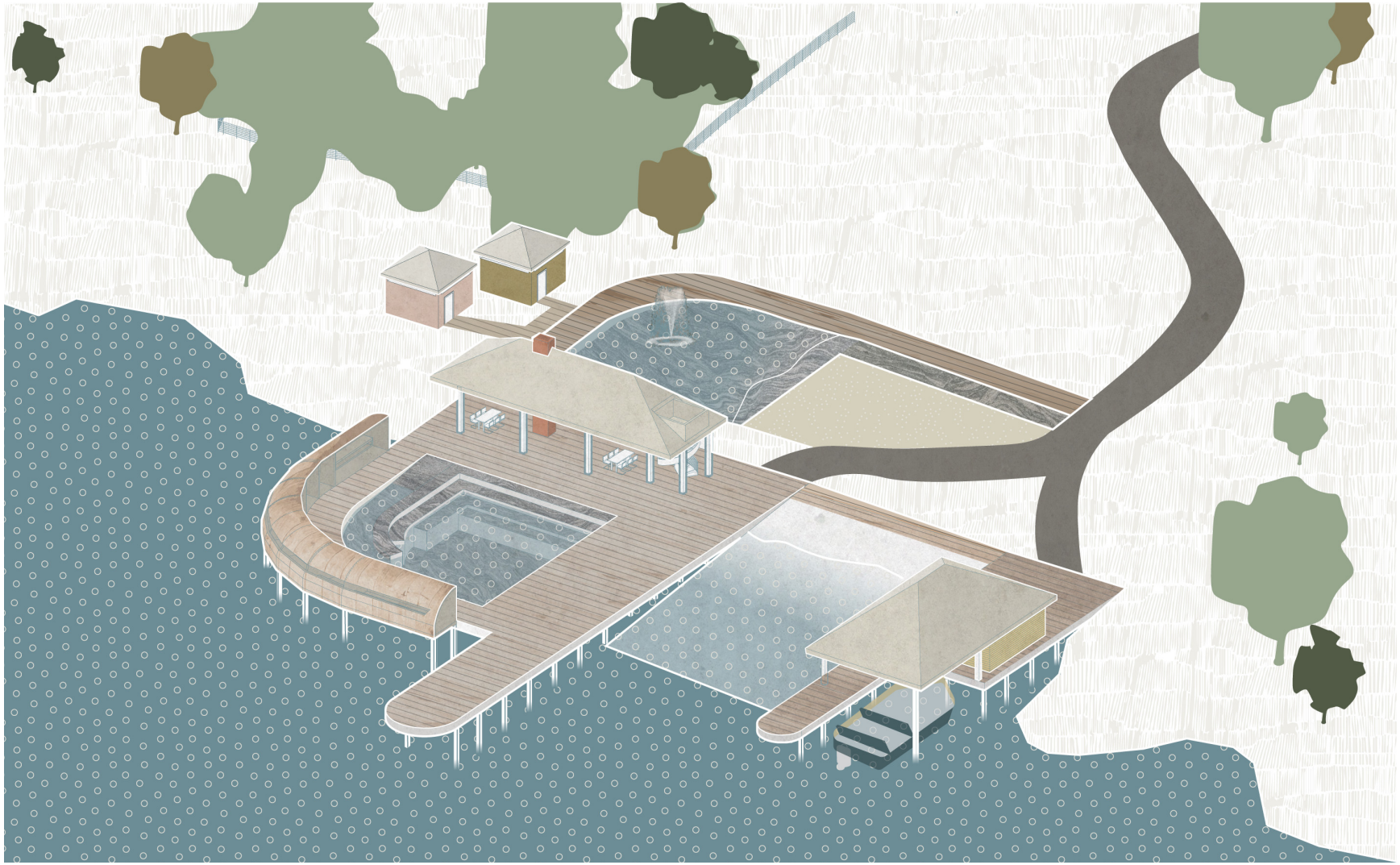
Interior of barn

Section of barn

The final zone is the waterfront. Because water is a unfamiliar environment for most, this zone must provide controlled areas with different levels of immersion for the camper. This design is comprised of three different experiences. The first is the wading pool which is a shallow pool for campers to wade in at ankle depth with a small fountain for water circulation and cooling mist. Adjacent is the sandy beach area for sand castles and lounging. The next experience is the pool which takes in lake water but provides a level plane for standing, steps for exit and entry as well as sitting, and a ramped descent into the pool. In between the two pools is a beach pavilion that provides a place to gather. Groups can have meals at the lake here and warm up by the fire in the pavilion.



The waterfront in plan



The waterfront in axonometric drawing

View to the pool and beach hut

View to the wade pool

Portion of the beach hut with a view to the lake

View of the beach and the boat launch

The pool is protected from the lake winds by a beach hut that follows the curve of the deck. The beach hut is a niche for campers to enjoy the water experience without getting wet as well as being protected from the sun and wind. The third experience is the beach which is a ramped platform into the open lake. This provides even footing for campers to walk into the lake without the sharp rocks or muddy clay of the lake bed. Beyond this and serving as a barrier, a second dock is designed for safe loading onto the boat as well as storage space for beach and boating supplies.

The overall intent of the camp is to facilitate connections to community, nature and provide comfortable space for people with ID within a new environment. This camp design re-imagines what a camp experience could be when using the design principles that address adaptive behavior. The existing Camp LG Barnes provides a wonderful outdoor retreat for a population that does not usually have access to camps in this way and in further imagining the design of this camp, spaces directly address the need for adaptation for the camper and provide different levels of immersion into the natural environment.

Skits and songs at the camp amphitheatre, creating community at camp

Chapter 6: Conclusion

The intent of this thesis is simple: the prioritization of people. People with intellectual disability have a long history of living situation that has marginalized them from mainstream society and has not suited the needs of individuals. However, this building type is on an evolutionary road and there are new opportunities for designing for ID today. Research topics that related ASD, dementia and physical disability to architecture provide new doors for design that suits a broader community. My approach to this type of design is understanding the psychology of ID in order to base the design method on foundational material. Only then can a design method be formed. This is done by addressing sensory stimuli, routine and access in architectural terms, which translate into sensory cue consciousness, rhythmanalysis and user-driven design.

On a final note, the user group for this thesis is people with ID. This group's value, in a society that deems them a surplus population, cannot be overstated. But there is also

another group that deserves recognition in the progression of the rights for people with ID– the Parent Organization. These are the grassroot organizations that fought for rights, they were the catalysts for a new type of housing, they were the ones that spurred new design methods for ASD and dementia and they bought and built a camp that creates a community committed to joy and acceptance. It is the family and friends that actively seek to restructure how society deems value. It is in their spirit that architecture embraces humanity and, in this way, society may advance. As designers and researchers continue to explore how design can address people with disability, space can become more inclusive, stable and comfortable for everyone.

The group campers gathering around the campfire

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