

# Haptically Healing

*Architecture for Alzheimer's*



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A thesis submitted to the Faculty of Graduate and Postdoctoral Affairs in partial fulfillment  
of the requirements for the degree of

Master of Architecture  
in  
(M.Arch.) Professional

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Ottawa, Ontario

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## ABSTRACT

One of the major health concerns of our generation is the increase in individuals diagnosed with Alzheimer's disease. With this trend comes a need for new systems of support and a concern for quality of care. Ongoing medical research includes not only treatments for the body and brain but also the importance of environmental design. Along with the medical profession, architects also have the ability to design environments that can positively effect the well-being of individuals, through careful attention to the particular sensorial needs of those with Alzheimer's. This thesis proposes utilizing sensory and spatial design research regarding Alzheimer's disease to design a Haptic Retirement Residence for Alzheimer's that will promote enhanced well-being. Although each individual is unique, the similarity of possessing the senses of sight, touch, hearing, smell and taste provides a common departure point for design. The proposed mixed-use facility will be located in the Ottawa neighbourhood of Hintonburg along Old Wellington Street and will house commercial space as well as the Alzheimer's facility.

## ACKNOWLEDGMENTS

To everyone who was present  
and  
looking over me  
throughout this process.

## PREFACE

Twenty years ago I sat on the floor in the den where I sit today. Bursting with creativity, I crouched quietly in-front of a cardboard box with scissors in hand and endless possibilities flying around in my head. Windows, doors, a roof, rooms and furniture with shadow, light, solid and voids began to take form. I was always more interested in the spaces I could create, than the dolls that would inhabit them. My grandmother sat watching over me and saw the creativity, passion and enjoyment I had with building. I vividly remember her saying to me “Jessica, if you like building things so much you should become an architect.” Since that day twenty years ago I have been on the path of becoming an architect.

My grandparents have been a part of my daily life since my early days. Ten years ago my grandmother was diagnosed with Mild Cognitive Disorder, which eventually progressed into Alzheimer’s disease. Five years ago we became a blended family. My parents, brother and I moved in with my grandmother and grandfather to help keep my grandmother at home and as comfortable as possible. The disease progressively took my grandmother away from us, but there was still a person with feelings and a life present with us. At the time I did not understand how this was all happening and thought that the solution was easy; make sure you remember everything. I began to consider how architects and the built environment might have the potential to provide spaces which positively impact the quality of life for people with Alzheimer’s. To gain an understanding of the disease that my grandmother and family were living through, my architectural research began exploring Alzheimer’s and architecture. This was a way to understand the disease, while at the same time exploring the possibilities architecture has to offer help.

In this passing year I saw my grandmothers health deteriorate rapidly. On October 30, 2013 my grandmother passed away peacefully with my grandfather at her side. This thesis is inspired by my caring, loving, happy, passionate and considerate grandmother,

Rosemary Harper.

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## INTRODUCTION

This thesis will explore sensorial architectural environments and the potential they have for enhancing the quality of life for individuals diagnosed with Alzheimer's disease. In the elderly, especially those suffering from dementia and Alzheimer's sensorial environments provide a type of therapeutic benefit resulting in an enhanced well-being. The current 2013 World Alzheimer's Report states, "Dementia, including Alzheimer's disease, is one of the biggest global public health challenges facing our generation. Today, over 35 million people worldwide currently live with the condition and this number is expected to double by 2030 and more than triple by 2050 to 115 million."<sup>1</sup> The Rising Tide: The Impact of Dementia on Canadian Society presents the alarming fact that approximately 500,000 Canadians are currently living with Alzheimer's disease or a related dementia making it the most significant cause of disability among Canadians (65+). Furthermore, the number of dementia cases is on the rise and expected to increase during the coming decades.<sup>2</sup> The World Alzheimer's 2013 report gives the definition of the condition as follows; "Dementia is a degenerative condition with no known cure. Symptoms, such as memory loss, cognitive impairment, difficulty communicating and changes in mood get worse over time. These experiences are distressing for the individual and upsetting for their loved ones. However, people living with dementia can still have a good quality of life throughout the dementia journey, provided the right long-term care plan is in place and being delivered."<sup>3</sup>

These statistics establish the need for increased long-term care facilities, such as nursing homes which adequately care for individuals living with this condition. A nursing home should not simply provide the basic needs for residents in the last quarter of their lives, rather it should provide them with the best suited, stimulating, engaging environment, not reducing their quality of life but celebrating and enhancing it. Old age should be lived

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<sup>1</sup> Alzheimer's Disease International, World Alzheimer Report 2013: Journey of Caring: An Analysis of long-term care for dementia, ([London]: Alzheimer's Disease International, September 2013) 1.

<sup>2</sup> Alzheimer's Society of Canada, Rising Tide: The Impact of Dementia on Canadian Society : Executive Summary : A Study, ([Toronto, Ont.]: Alzheimer Society of Canada, 2010.) 15.

<sup>3</sup> World Alzheimer Report 2013: Journey of Caring: An Analysis of long-term care for dementia, ([London]: Alzheimer's Disease International, September 2013) 1.

out together in a well designed stimulating environment that provides a heightened sense of well-being for the elderly body and mind.

As defined by the phenomenologist, Hans-George Gadamer, well-being is a state of good health as a whole being (mind, body & soul). "Health is not a condition that one introspectively feels of oneself. Rather, it is a condition of being involved, of being in the world, of being together with one's fellow human beings, of active and rewarding engagement in one's everyday tasks."<sup>4</sup> In both medicine and architecture one has the ability to interact with individuals in a process of restoration or recovery. The participation of the individual is key. Marco Frascari writes about participatory engagement in *A Tradition of Architectural Figures: A Search for Vita Beata*; "This Venetian tradition searches for a *vita beata* (well-being) by posing the possibility of a sympathetic dance between bodies and buildings, and interfacing design and construction brings into play edifications gathered from the interaction between corporeal images and building images as a means for allegorically apprehending space and form."<sup>5</sup> Designing for well-being requires empathy, understanding and an impression of the human body as a whole and therefore the human mind, and soul.

Alzheimer's research is constantly evolving in both concepts of the disease and methods for bettering the quality of life through its progressive states. A basic understanding of the disease is provided in Chapter 2 along with an environmental design study with Alzheimer's patients done by Dr. John Zeisel. The study provides eight basic design components to incorporate into built environments that provide an enhanced quality of life for those living with Alzheimer's. One of the key components of this design strategy is Sensory Cognition. Engaging the five senses through architectural design, an individual can improve their physical and cognitive health. This thesis embodies these ideas about sensory design through the proposal for a Nursing Home Community for the elderly. The sensory design strategies will look at architect and phenomenologist, Juhanni Pallasmaa for further guidance. Pallasmaa states "the architecture of the eye detaches and

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4 Hans-Georg Gadamer, *The Enigma of Health*, (Stanford, California: Stanford University Press, 1996) 113.

5 George Dodds, Robert Tavernor, and Joseph Rykwert, *A Tradition of Architectural Figures: A Search for Vita Beata*. "Body and Building: Essays on the Changing Relation of Body and Architecture." (Cambridge, MA: MIT, 2002) 260.

controls, whereas haptic architecture engages and unites.”<sup>6</sup> Haptic architecture pulls one close, captivating the senses, body and mind enticing them to interact and participate with a building. In the proposed architectural design, this thesis will employ the five senses to reinforce the importance of engagement, participation and activity.

To begin, this thesis will carefully explore several case studies of similar building programs to look at the relationship between design and quality of life. These include Alcácer do Sal Elderly Residence by Aires Mateus, that is determined to be a negative example for the goals of this thesis. The WoZoCo housing for the Elderly in Amsterdam by MVRDV, which provides a sense of individuality to each resident, sensory engaging material use and a design to facilitate interaction with others. The Alzheimer’s Respite Centre in Dublin Ireland by Níall McLaughlin Architects is a day-care facility that was successful in integrating the five senses into the design, while at the same time incorporating the historic collective memory of the surrounding area. The Dementia Village in Weesp Netherlands by MBVDA is an example of how environmental design and an investment in an individual can heighten the quality of life. Through the community-type organization, the architects and facility staff provide a engagement of the sense, freedom, a normalized life, familiar environments and enhanced well-being to the residents.

The design of a Nursing Home Community in Hintonburg, Ottawa will provide a built environment with sensorially stimulating spaces, which has the potential to achieve a therapy without pharmaceuticals. These effects are experienced in the architectural spaces of the everyday. Pallasmaa conveys the sense’s ability to increase ‘well-being’ or enhanced life in *Eyes of The Skin*; “It is evident that ‘life enhancing’ architecture has to address all the senses simultaneously and fuse our image of self with our experience of the world. The essential mental task of architecture is accommodation and integration. Architecture articulates the experience of being-in-the-world and strengthens our sense of reality and self; it does not make us inhabit worlds of mere fabrication and fantasy.”<sup>7</sup>

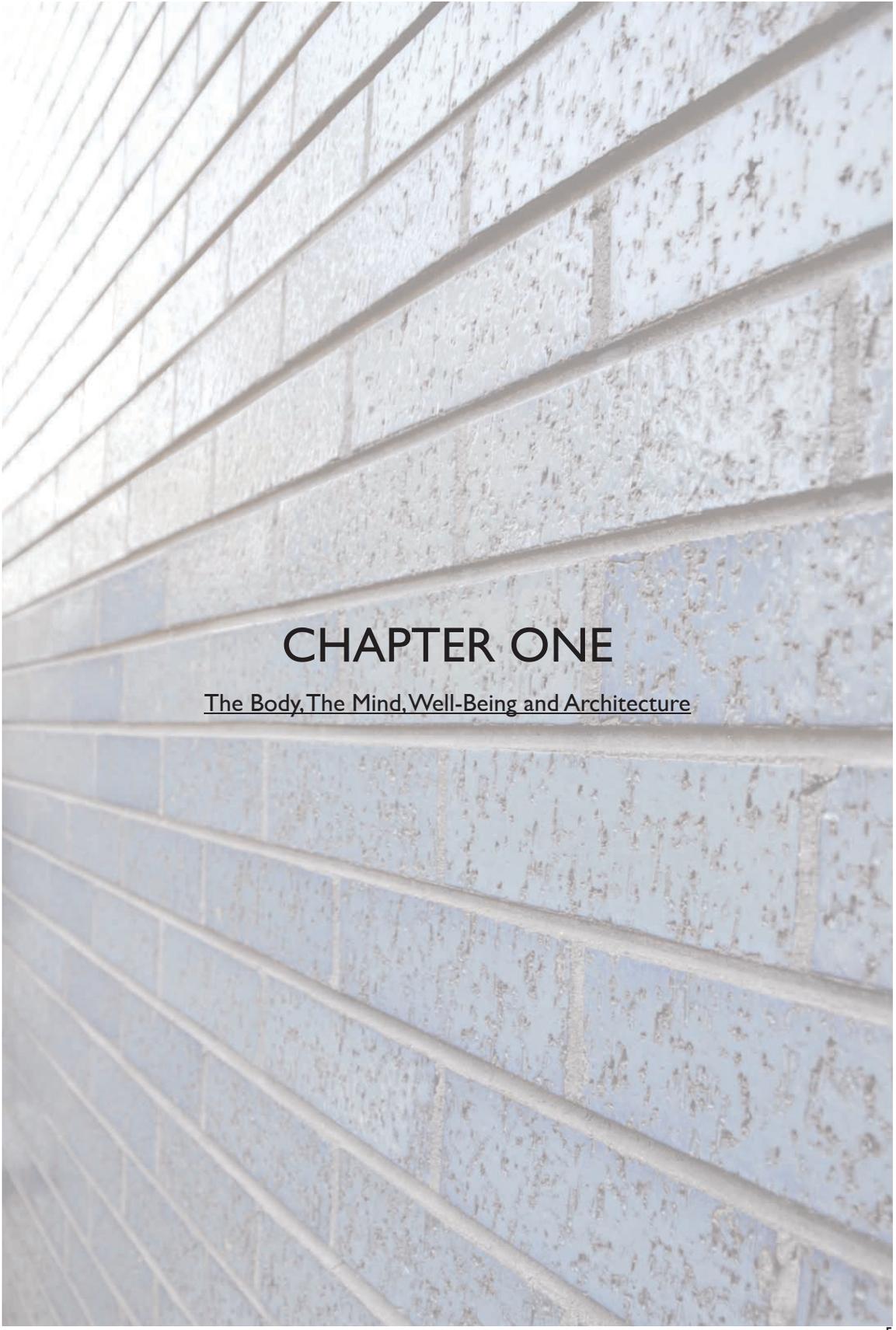
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6 Harry Francis Mallgrave, *The Architect’s Brain: Neuroscience, Creativity and Architecture*. (Chichester; West Sussex, U.K.: Wiley-Blackwell, 2010) 188.

7 Juhani Pallasmaa, *The Eyes of the Skin: Architecture and the Senses*. (Chichester: Wiley-Academy, 2005) 11.

**THESIS QUESTION:**

Can sensorially engaging architectural environments have the potential to enhance the quality of life for individuals diagnosed with Alzheimer's Disease?



# CHAPTER ONE

The Body, The Mind, Well-Being and Architecture

## FEELING AND COMPREHENDING WELL-BEING:

### *The ENIGMA of HEALTH: The Art of Healing in a Scientific Age*

Hans-Georg Gadamer

As individuals we have an understanding of our bodies, as the essential form which carries us through life. We enjoy certain activities with our bodies in good health. The notion of good health is a topic, which most do not reflected upon on a daily basis. However, when one falls ill, the loss of health is of immediate concern. In *The Enigma of Health* Hans-George Gadamer presents illness or sickness as a loss of equilibrium. He states "For illness as the loss of health, as the loss of one's un-disturbed 'freedom', always involves a sort of exclusion from 'life'."<sup>8</sup> This is why the disturbance effects an individual life as a whole. In order to 'get better' Gadamer believes equilibrium or balance needs to be restored.<sup>9</sup> This rebalancing is normally the area of expertise attributed to medicine.

While the role of medicine cannot be understated, there are some similarities in the doctor patient relationship and in an architect patient relationship. In the context of healthy environments as a part of restoring health, a question here is raised; Can the architect aid in the reestablishing of equilibrium of 'ill' patients through the experience of architectural spaces? With medical treatments there exists a possibility of becoming dependent on the aid of doctor's or the medications themselves. If architecture could enhance healing, perhaps a dependency on this healing architecture would not be horrible. We live in architecture, so should it not always contribute to health if possible. Gadamer states that doctor's do not have any demonstrable works, unlike architecture, the health or healing of a person is not 'made' by the doctor. He continues "although health is naturally the goal of the doctor's activity, it is not actually 'made' by the doctor."<sup>10</sup> For the doctor the theory is the understanding and diagnosis, while the practice is the treatment, which requires 'practical' experience. In the chapter titled *Between Nature and Art*, Gadamer states the following; "medicine is the only science which, ultimately, does not make or produce

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8 Hans-Georg Gadamer, *The Enigma of Health*, (Stanford, California: Stanford University Press, 1996) 55.

9 Ibid, 42.

10 Ibid, 20.

anything, rather, it is one which participates in the wonderful capacity of life to renew itself, to set itself aright. The real task which confronts the doctor is that of assisting in this process of restoration and recovery."<sup>11</sup> Practicing architects would benefit from a similar mind-set while carrying out designs. If this was so, the architectural outcome would be one which has a goal of the improvement of human life and heightened well-being.

Well-being is described by Gadamer through the origins of the Greeks and the thoughts of Plato. The notion of the 'whole' becomes essential. The nature of the soul and the nature of the body, cannot be grasped without the understanding of the whole.<sup>12</sup> In the chapter, *Bodily Experience and Objectification*, Gadamer describes Plato's idea that "the body cannot be treated without at the same time treating the soul. It is further suggested that perhaps even this is not enough, that it is impossible to treat the body without possessing knowledge concerning the whole of being."<sup>13</sup> After well-being is understood, to be unwell is to be lacking something from the whole. Well-being also entails a presence of authentic existence of an individual. Aristotle terms this *enthlecheia* "the full complete realization of a living-being."<sup>14</sup> During a state of illness, pain alienates one from oneself. To this dual quality Gadamer states, "It is not an extraordinary thing that the lack of something, although we do not know precisely what it is that is lacking, can reveal the miraculous existence of health? It is only now, in its absence, that I notice what was previously there, or, more precisely, not what was previously there but that it was there. This is what one calls well-being."<sup>15</sup>

With chronic and mental illness such as Alzheimer's disease the ability to reflect on one's ill-being or well-being can be lost. Gadamer describes one of the essential features of being human as follows; "Reflection, the free process of turning in on oneself, appears as the highest form of freedom that exists at all. Here the mind is properly in its own element in so far as it relates solely to its own content."<sup>16</sup> Introducing chronic disease and mental

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<sup>11</sup> Hans-Georg Gadamer, *The Enigma of Health*, (Stanford, California: Stanford University Press, 1996) 89.

<sup>12</sup> Ibid, 40.

<sup>13</sup> Ibid, 73.

<sup>14</sup> Ibid, 74.

<sup>15</sup> Ibid, 74.

<sup>16</sup> Ibid, 50.

illness in extreme cases remove the ability of knowing something is absent. Patients lose the ability to take up a distance from themselves and are not able to recognize they are ill.<sup>17</sup>

Gadamer expresses this opinion on mental illness as follows;

For me the importance of psychiatry lies in its ability to counteract this tendency by drawing on the experience of what is involved in mental illness. In mental illness the twofold manner of 'being at home' which is constitutive of human life, being at home in the world and being at home with oneself, is no longer successfully accomplished....In my opinion even the complete loss of distance towards one-self which characterizes certain forms of dementia must still be seen as a particularly human loss of equilibrium. Like all loss of equilibrium, 'mental' disturbance too is dialectical, capable of being restored but also capable of leading finally to complete destruction through total loss of personalty if the restoration of equilibrium cannot permanently be maintained.<sup>18</sup>

Here we see that an inability to restore the equilibrium of health has the potential to lead towards death. Gadamer describes death as "fading away of the experience of the self."<sup>19</sup> Equilibrium can no longer be restored and a patient's 'normal' life can no longer be returned to. Engaging architecture can have the possibility of enhancing experience so this fading away may be enhanced.

In conclusion many helpful concepts can be drawn from Gadamer's *The Enigma of Health* and to reveal the potential for architecture to contribute to the healing process. The importance of involvement, community, engagement and experience of life are all important elements in the architectural equation. Gadamer touches on these factors in this definition of health. "Health is not a condition that one introspectively feels of oneself. Rather, it is a condition of being involved, of being in the world, of being together with one's fellow human beings, of active and rewarding engagement in one's everyday tasks."<sup>20</sup> By allowing poor architecture to be built we are not providing healthy environments. Spaces should be designed to provide rich experiences that embody the kind of equilibrium that Gadamer reveals. These experiences as expressed by Gadamer are key to health and the whole of life itself.

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<sup>17</sup> Hans-Georg Gadamer, *The Enigma of Health*, (Stanford, California: Stanford University Press, 1996), 52.

<sup>18</sup> Ibid, 60.

<sup>19</sup> Ibid, 62.

<sup>20</sup> Ibid, 113.

## DESIGNING FOR WELL-BEING:

### BODY and BUILDING

#### *Essays on the Changing Relation of Body and Architecture*

#### *A Tradition of Architecture Figures: A Search for Vita Beata*

Marco Frascari

An achievement and awareness of good health and well-being were described in *The Enigma of Health* by Hans-George Gadamer. Marco Frascari's essay *A Tradition of Architecture Figures: A Search for Vita Beata* continues this discussion describing an architecture for well-being. Frascari warns of the contemporary disconnect between architecture and the human bodies which will inhabit them. Describing the Venetian traditions of body-image Frascari states; "architectural design is recognized as an allegorical process of assimilating bodies - bodies with qualities - into the conception of buildings."<sup>21</sup> Every building at the design phase has the potential for *vita beata*. One begins to understand that in order to compose architecture for well-being (*vita beata*) the role of the body is crucial. "This Venetian tradition searches for a *vita beata* by posing the possibility of a sympathetic dance between bodies and buildings, and interfacing design and construction brings into play the edifications gathered from the interaction between corporeal images and building images as a means for allegorical apprehending space and form."<sup>22</sup> There is no claim here that *vita beata* provides well-being to individuals, it poses the possibility of a sympathetic interaction between bodies and buildings. This connection is provided by architects proposing designs which creates the possibility for well-being, through sensitive bodily interactions with the building. The architect needs to allow for these possibilities by incorporating the users human body within the design. If this body is overlooked in the design process the disconnect begins and meaningful interactions may not take place in the finished building.

Play writer Angelo Beolco describes the *vita beata* as; "Beatific existence ... a way of

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21 George Dodds, Robert Tavernor, and Joseph Rykwert, *A Tradition of Architectural Figures: A Search for Vita Beata.* *Body and Building: Essays on the Changing Relation of Body and Architecture* (Cambridge, MA: MIT, 2002), 260.

22 Ibid, 260.

life free of any temporary impairment caused by psychic commotions. The attainment of a *vita beata* - the virtue of being in good spirits - is the primary scope of human existence."<sup>23</sup> Ruzante's definition of 'happy existence' correlates with Gadamer's definition of well being. The concept of a "life free of any temporary impairment" shows that well-being is an attainable state within everyone's grasp, it is the removal of the chaos and commotions which can be and an acceptance of what must stay. On well-being in architecture, the fifteenth century architect known as Filarete states in his *Tratto*; "implementing a *vita beata* through architecture is an ethical requirement for architects, since a beatific edifice increases the potential for investing in psychic talents of its inhabitants."<sup>24</sup> Providing the potential for investment of psychic (body and mind) talents of inhabitants expresses that architecture cannot make people use their minds but it is able to provide a space for this interaction to take place. Buildings which fail to follow the ethical implementation of well-being (*vita beata*) are then creating spaces for ill-being for human beings to dwell within. Frascari analyses Filarete's ideas as follows; "a properly designed and erected building 'will cresce l'animo' (nurture the soul) of its inhabitants. His view of architecture for a *vita beata* poses a real possibility of a dialogic dance between bodies and buildings. He argues that by playing an analogical game of body images, architects should mold and construct the bodies of both humans and buildings."<sup>25</sup>

It seems such a simple concept; body, building and design resulting in the production of well-being. The fast pace of our technologically savvy world, the desire for speed and innovation are the causes of a distance, or even worse a removal of the human body from the scenario. Materials, construction technologies the design software all have efficiency and speed in mind with the end goal usually of profit. Where is the human body in all of this? Do architects feel today they must leave the human body out of the scenario to complete the project faster, more efficiently, and at a higher profit? The simplicity of how

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23 George Dodds, Robert Tavernor, and Joseph Rykwert, *A Tradition of Architectural Figures: A Search for Vita Beata.* *Body and Building: Essays on the Changing Relation of Body and Architecture* (Cambridge, MA: MIT, 2002), 261.

24 *Ibid*, 261.

25 *Ibid*, 261.

the incorporation of the body into construction can imprint architecture is stated as follows; "Constructing architecture through the body-image ensures that the imaginal force of human bodies is impressed, received and vividly transmitted into the built environment. This compelling approach predominantly takes part of the elaboration of the corporeal images evoked by mimes and dancers, especially when counterpoised to culturally specific images of everyday people."<sup>26</sup> Designing for well-being is empathy, understanding and impression of the human body as a whole and therefore the human mind, and soul.

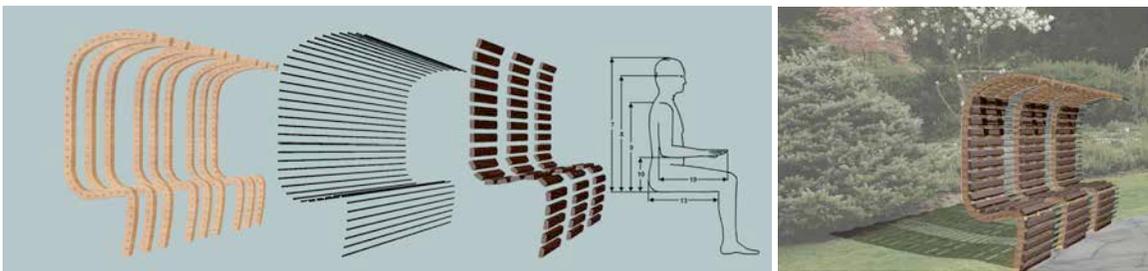
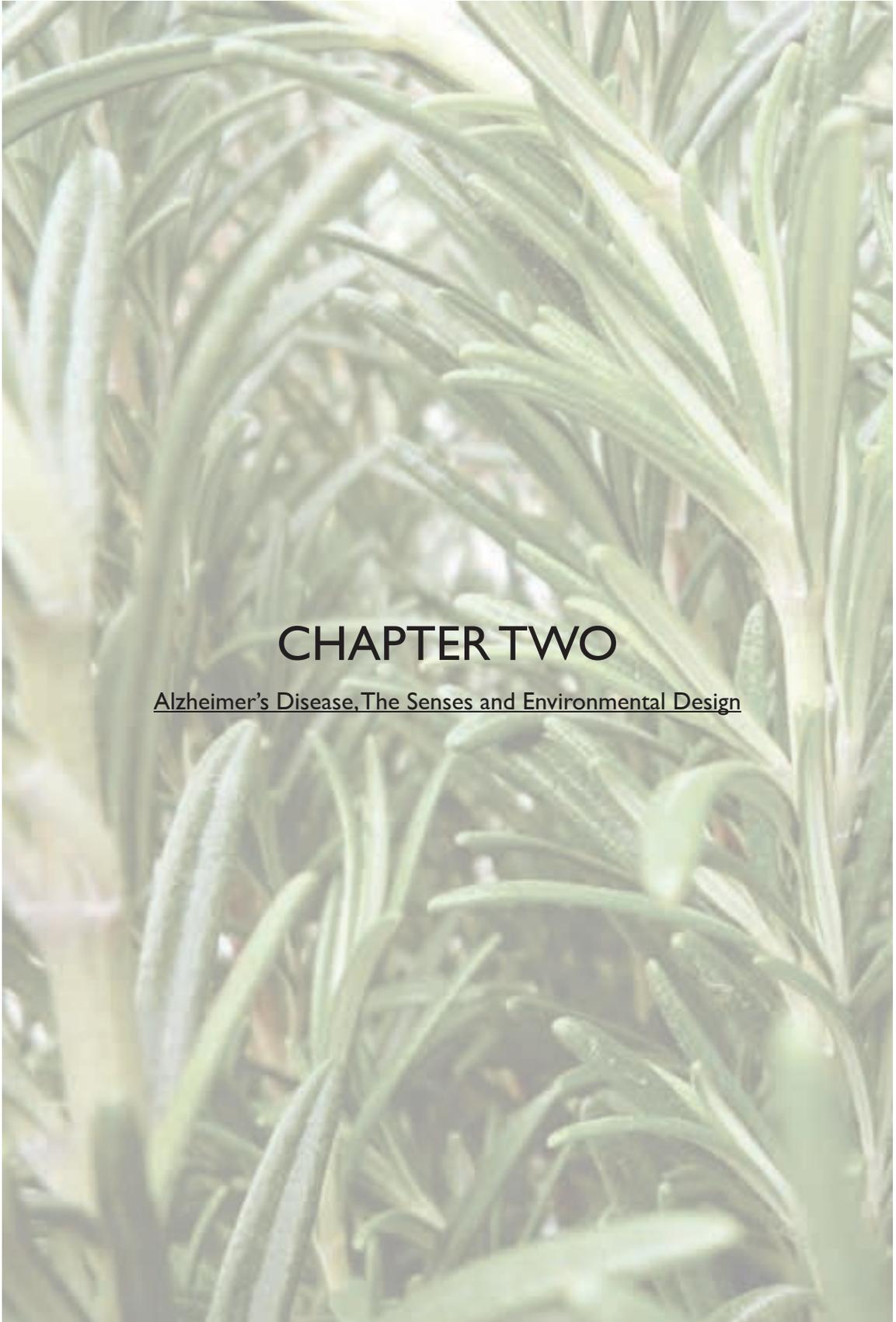


Figure 1,2,3: Seating design for 'well-being' with the engagement of the human body, mind and environment as the key goals of the design.

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26 George Dodds, Robert Tavernor, and Joseph Rykwert, *A Tradition of Architectural Figures: A Search for Vita Beata.* *Body and Building: Essays on the Changing Relation of Body and Architecture* (Cambridge, MA: MIT, 2002), 261.



## CHAPTER TWO

Alzheimer's Disease, The Senses and Environmental Design

Understanding Alzheimer's disease provides a starting point for the process of designing an ideal environment for elderly diagnosed or un-diagnosed with the disease. Each individual diagnosed with the disease possesses the commonality of their senses providing an opportunity for haptic design to positively effect their condition. This provides a basis for using haptic architecture to engage all five senses through design. An interweaving of medical and architectural strategies presents the possibility for sensory engagement in the design of spatial environments to become a treatment or lessening of Alzheimer's symptoms.

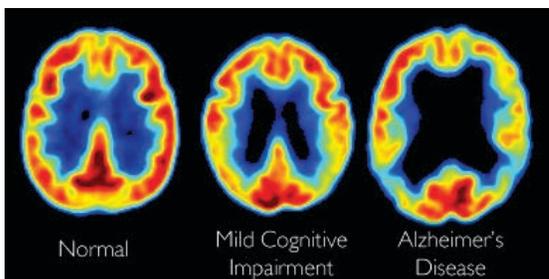


Figure 4: PET scans of brain activity

#### **Alzheimer's Disease Definition:**

"Alzheimer's disease is a fatal, progressive and degenerative disease that destroys brain cells. It is the most common form of dementia, accounting for 64 per cent of all dementias in Canada."<sup>27</sup> The signs and symptoms begin with a progressive loss of memory and mental functions, caused by the destruction of the connections between brain cells. Eventually the brain cells themselves degenerate and die, followed by a steady decline in memory and mental function. There is currently no cure for Alzheimer's disease. New research is constantly being done to test medications, management strategies and enhanced environmental design in order to improve symptoms.<sup>28</sup>

#### **Hapticity Definition:** (Juhani Pallasmaa, *Hapticity and Time: Notes on Fragile Architecture*)

Our culture of control and speed has favoured the architecture of the eye, with its instantaneous imagery and distant impact, whereas haptic architecture promotes

<sup>27</sup> Alzheimer's Society of Canada. "What Is Alzheimer's Disease." *What Is Alzheimer's Disease*. N.p., 03 Jan. 2013. Web. 21 Nov. 2013. <http://www.alzheimer.ca/en/About-dementia/Alzheimers-disease/What-is-Alzheimers-disease>

<sup>28</sup> Staff, Mayo Clinic. "Definition." *Mayo Clinic*. Mayo Foundation for Medical Education and Research, 19 Jan. 2013. Web. 21 Nov. 2013. <http://www.mayoclinic.com/health/alzheimers-disease/DS00161>

slowness and intimacy, appreciated and comprehended gradually as images of the body and the skin. The architecture of the eye detaches and controls, whereas haptic architecture engages and unites. Tactile sensibility replaces distancing visual imagery by enhanced materiality, nearness and intimacy.<sup>29</sup>

### **Alzheimer's Symptoms:**

Symptoms of Alzheimer's disease may begin with increased forgetfulness or mild confusion commonly noticed by close friends and family rather than the individuals themselves. Over time, the disease further diminishes memory, specifically short-term memory and can lead to orientation problems and misinterpretation of spatial relationships, losing a sense of the day, the season, or where one resides. Even familiar surroundings may become confusing and could lead to an individual feeling lost in what were familiar places. Speaking, writing, problem solving and reasoning can also become exasperating for Alzheimer's patients. Confusion may also occur when making judgements, decisions, and responding or solving everyday task and problems. Basic physical abilities such as dressing, bathing, and eating also can be lost as the disease progresses. Each case of the disease is different, some individuals may show symptoms which others do not. Changes in personality and behaviour may also occur including possible experiences of depression, social withdrawal, mood swings, irritability, aggressiveness, changes in sleeping habits, wandering, loss of inhibitions and delusions.<sup>30</sup>



**Sight**

The sense of sight allows individuals to take in their surroundings with the eyes. Depth, shadow, light, colour and form are all perceived by sight. Our sense of sight may begin to deteriorate with age and as Juhani Pallasmaa warns in *The Eyes of The Skin* we must not rely only on our sense of sight. "The very essence of the lived experience is moulded

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29 Juhani Pallasmaa, "Hapticity and Time: Notes on Fragile Architecture" 2000. *The Architectural Review* (May), pp. 78-80  
30 Staff, Mayo Clinic. "Definition." *Mayo Clinic*. Mayo Foundation for Medical Education and Research, 19 Jan. 2013. Web. 21 Nov. 2013. <http://www.mayoclinic.com/health/alzheimers-disease/DS00161>

by hapticity and peripheral unfocused vision. Focused vision confronts us with the world whereas peripheral vision envelops us in the flesh of the world. Alongside the critique of the hegemony of vision, we need to reconsider the very essence of sight itself.”<sup>31</sup> In the design of a retirement residence for individuals living with Alzheimer’s the sense of sight can be provoked by the design through a number of strategies including, placement of openings to control the qualities of light in a space. The use of shading devices can also allow for the elderly to interact and control their environment. The use of colour, texture and patterns on walls, floors and surfaces throughout the design can provide orientation and wayfinding strategies. Different colours or themes can be provided to make each room unique, which may trigger residents memory to the spaces they use. Our sense of sight can also be a way to keep the elderly brain active by people watching in the facility or watching people passing by on the neighbourhood streets. Through providing places to pause and people watch to the interior and exterior of the residence the sense of sight is utilized and simultaneously stimulates the brain. All of these elements can be incorporated and achieved in an architectural design. Our sense of sight can trigger images of memory, imagination and dream.<sup>32</sup> Research has shown how physical activity and stimulating the senses can increase brain activity, in turn helping to maintain brain function, which can slow the progression of the disease and strengthen the existing connections in the brain.<sup>33</sup>

### **Alzheimer’s Risk Factors:**

The risk of being diagnosed with Alzheimer’s increases with age, particularly after the age of 65. About half of the Canadian population over the age of 85 suffer from the disease. If a parent or sibling has the disease, your risk of developing Alzheimer’s appears to be higher due to the presumed genetic linkage. Mild Cognitive Impairment (MCI) is a condition that induces memory problems or symptoms of cognitive decline, but not serious enough to be diagnosed as dementia. Individuals with MCI have an increased risk, yet not

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31 Juhani Pallasmaa, *The Eyes of the Skin: Architecture and the Senses*, (Chichester: Wiley-Academy, 2005) 10.

32 Ibid, 45.

33 Zeisel, John, et al. “Environmental Correlates to Behavioral Health Outcomes in Alzheimer’s Special Care Units” *The Gerontologist* Vol. 43, No. 5, 710.

a certainty of subsequently developing dementia. During the MCI stage, taking action to develop a healthier lifestyle and using strategies to make up for memory loss may help prevent, or delay the advancement towards the progression to dementia. Although it is not conclusively confirmed, there is some evidence that suggest lifestyle factors, which put one at risk for developing many frequent chronic diseases, may also increase the chance for development of Alzheimer's. Such examples include; Lack of physical activity, smoking, high blood pressure and cholesterol, poorly controlled diabetes, a diet lacking fruits and vegetables, and a lack of social engagement. There has been a proven correlation noted between frequent and constant engagement in mentally and socially stimulating engaging actives with the decreased risk of developing Alzheimer's disease. Such factors, which may decrease risk include: a higher level of formal education, a stimulating job, mentally challenging leisure activities (such as reading, playing games or playing a musical instrument) and frequent social interactions. One hypothesis is that utilizing the brain establishes more cell-to-cell connections, which protect the brain from the possible impact of Alzheimer-related changes.<sup>34</sup>



**Touch**

The sense of touch provides physical interaction and engagement. Within the built environment the sense of touch and the interaction it has with the human flesh possesses the potential to trigger cognitive and physical responses. This might include seeing shadows and light on a textured surface which may cause an individual to curiously reach out and touch the wall. To interact with objects one touches or feels them in turn triggering the brain to activate in order to comprehend. We not only feel textures such as rough or smooth, but also as hot to cold. As aging occurs a certain texture from a forgotten past

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<sup>34</sup> Juhani Pallasmaa, *The Eyes of the Skin: Architecture and the Senses*, (Chichester: Wiley-Academy, 2005) 45.

may be remembered by the action of touching and feeling a familiar texture again. By designing spaces with a variety of rich natural textures there could be a chance that these textures are remembered, or that they evoke a past memory. In the design of an elderly residence elements such as walls, handrails, doorknobs, furniture and textiles all provide the opportunity to provide the interactive engagement of touch. Touch is the 'mother of the sense' our bodies sensory mode which integrates our experience of the world and ourselves.<sup>35</sup>

### **Alzheimer's Treatment:**

Currently there are two medications that can help with memory symptoms and cognitive changes in Alzheimer's patients: Cholinesterase inhibitors, and memantine. Most individuals prescribed these drugs may have a remission of symptoms for an extended period of time. These two drugs are sometimes used in combination and less than half of the individuals consuming these drugs can expect to see any improvement.

The living environment for the Alzheimer's patient should be a key part of a treatment plan. This environment should be free of clutter and excess furniture, the paths of movement should be clear and bathrooms accessible. People with Alzheimer's disease may find reflections in mirrors frightening or confusing. Exercise and nutrition are also an important part of an Alzheimer's patient's treatment plan as it can help improve and maintain the health and wellbeing of the individual.<sup>36</sup>



**Hearing**

Hearing has the ability to make an individual take notice and experience their surroundings, whether it be the chirping of a bird or the echo of a vast space. In the book

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35 Juhani Pallasmaa, "Hapticity and Time: Notes on Fragile Architecture" 2000. *The Architectural Review* (May), pp. 78

36 Staff, Mayo Clinic. "Definition." *Mayo Clinic*. Mayo Foundation for Medical Education and Research, 19 Jan. 2013. Web. 21 Nov. 2013. <http://www.mayoclinic.com/health/alzheimers-disease/DS00161>

*I'm Still Here: A Breakthrough Approach to Understanding Someone Living with Alzheimer's*, John Zeisel expresses that even though an individual has Alzheimer's disease they are still living in the present moment and all possess unique capabilities. Founder of a program called ARTZ (Artists for Alzheimer's) Zeisel feels that music and the arts can touch individuals living with the disease like nothing else can.<sup>37</sup> Music has been shown to trigger memories and enable patients to freely express themselves. Through music and the arts interaction and collaboration as a group can occur between staff, family, friends and the residents. In architectural design musical and artistic spaces can be provided to facilitate these activities. Elements such as acoustics, seating and stage like features can allow for performances of all types to take place and be participated in. A range of spaces can be provided through design such as quiet tranquil, spaces which expose the sounds of nature, and spaces which acoustically enhance musical harmonies. A study in the journal *Nature* titled *Music, the food for Neuroscience* presents neurological research proving the positive outcomes for music in things such as motor skills and expressing emotions.<sup>38</sup> Spaces which provide the opportunity for the sense of sound to be evoked can engage the bodies and minds of the residents.

### **Alzheimer's Prevention:**

Currently there is no proven way of preventing Alzheimer's disease. Research is ongoing with the ultimate goal of finding a cure. Lowering one's risk of heart disease seriously reduces the risk of developing Alzheimer's disease. New group programs are targeted to people with high risk of dementia including encouraging physical activity, cognitive stimulation, social engagement and a healthy diet. Memory compensation strategies are also taught in order to help optimize daily function, even if changes in the brain are in progress. "Keeping active — physically, mentally and socially — may make your life more enjoyable and may also help reduce the risk of Alzheimer's disease."<sup>39</sup>

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37 John Zeisel. *I'm Still Here: A Breakthrough Approach to Understanding Someone Living with Alzheimer's*. New York: Avery, 2009.

38 Robert J. Zatorre. "Music, the Food of Neuroscience?" *Nature* (March 17, 2005), vol. 434, p.312

39 Staff, Mayo Clinic. "Definition." *Mayo Clinic*. Mayo Foundation for Medical Education and Research, 19 Jan. 2013. Web. 21 Nov. 2013. <http://www.mayoclinic.com/health/alzheimers-disease/DS00161>



## Smell

Smell is a sense that is often overlooked in the experience of architecture. In the design and construction of spatial environments material choices have the ability to create a fragrant environment. For example, cedar wood design elements such as railings, window trim and built in furniture can omit a memorable aroma. Different types of hardwoods and surface treatments such as paint, varnish, and plaster can all produce architectural aromas. Each individual is unique and has been exposed to different scents through their own distinct lived experiences. Some of the smells that may be present in the retirement residence design could possibly trigger different memories from individual residents past. The scent of the kitchen and the outdoors garden aromas are also unique and fragrant areas. The use of these scents may also assist with orientation within the buildings. At breakfast, lunch and dinner the residents may be able to smell the aromas of food being prepared providing aromatic cues to announce meal times. Wayfinding strategies can use the familiar smell of food to orient individuals towards the kitchen area. Outdoor areas with gardens can provide fresh air and the scents of flowers, fruits, vegetables and herbs. A study in 2009 from a medical researcher at Tottori University in Japan discovered that exposing Alzheimer's patients to rosemary and lemon in the morning and lavender and orange in the evening resulted in improved cognitive functions.<sup>40</sup> These findings begin to support the potential that smell has to evoke memory and keep an individuals brain active. A design which understands these possibilities can begin to explore the possibilities to create a unique and fragrant environment for the residents.

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40 Hosey, Lance. "Scent and the City." [The New York Times](#) 25 October 2013.



## Taste

“The taste of the apple ... lies in the contact of the fruit with the palate, not in the fruit itself; in a similar way ... poetry lies in the meeting of poem and reader, not in the lines of symbols printed on the pages of a book. What is essential is the aesthetic act, the thrill, the almost physical emotion that comes with each reading.”<sup>41</sup> This quote by Jorge Luis Borges describes the sense of taste occurring through an interaction. One cannot use their sense of taste without participating in the experience of eating. The materials used to construct the environment are not able to evoke the sense of taste. Through architecture spaces can be provided such as kitchens and dining rooms to allow for the experience of taste to occur. Architecture has the ability to create spaces for interactions, engagements and experiences to unfold, such as dining. Proper nutrition is a key part of an Alzheimer's treatment plan and ensuring proper meals can aid to improve and maintain the health and wellbeing of an individual. A space created for eating as a group can bring the residents together and stimulate all of the five senses. Through the sense of taste it is apparent that objects, design elements, and food can be provided however, it is up to the individual to participate in order for any of the senses to be engaged.

### **Alzheimer's Disease and the Five Senses:**

Ongoing research and accumulated knowledge about Alzheimer's continue to help form a basic understanding of the disease, its symptoms, causes and prevention methods. While we are all unique research does point to some general suggestions regarding wellbeing that have the possibility of lessening the effects of Alzheimer's disease. The fact that the disease is fatal is devastating and even more so that there are no survivors. However, with this in mind we do know that there are still ways of combating the disease by

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<sup>41</sup> Jorge Luis Borges, Foreword to *Obra Poética*, quoted in, Juhani Pallasmaa, *The Eyes of the Skin*, Polemics, London: Academy, 1996, p. 14

utilizing sensorial cognitive engagement, social interaction and promoting a healthy lifestyle. Sensorially engaging architecture holds the potential to achieving all of these elements. We all share access to the senses despite our individual mind and body. As Marco Frascari states in *A Tradition of Architecture Figures: A Search for Vita Beata*, well-being is achieved “by posing the possibility of a sympathetic dance between bodies and buildings.”<sup>42</sup> In *The Eyes of the Skin* Juhani Pallasmaa writes about this dance through the interaction of senses in architecture. Sight, touch, hearing, taste and smell can all be experienced through architecture. In architectural spaces qualities of matter, space and scale are measured by the eye, nose, skin, tongue, skeleton and muscle.<sup>43</sup> An engagement of the senses brings awareness to ones self and to the quality of the surrounding spaces. Pallasmaa writes about the integration of the body and sensory experience as follows: “Our bodies and movements are in constant interaction with the environment; the world and the self inform and redefine each other constantly. The percept of the body and the image of the world turn into a single continuous existential experience, there is no body separate from its domicile in space, and there is no space unrelated to the unconscious image of the perceiving self.”<sup>44</sup> Architecture which evokes all five of the senses, keeps residents active, both in body and mind. In *Hapticity and Time*, Pallasmaa states “haptic and multi-sensory architecture makes the experience of time, healing and pleasurable. This architecture does not struggle against time, it concretizes the course of time and makes it acceptable. It seeks to accommodate rather than impress, evoke domesticity and comfort rather than admiration and awe.”<sup>45</sup> All of these haptic multi-sensory qualities architecture provides are aspects that elderly experiencing symptoms of Alzheimer’s disease can benefit from.

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42 George Dodds, Robert Tavernor, and Joseph Rykwert, “A Tradition of Architectural Figures: A Search for Vita Beata.” *Body and Building: Essays on the Changing Relation of Body and Architecture* (Cambridge, MA: MIT, 2002) 260.

43 Juhani Pallasmaa, “Hapticity and Time: Notes on Fragile Architecture” 2000. *The Architectural Review* (May), pp. 78

44 Juhani Pallasmaa, *The Eyes of the Skin: Architecture and the Senses*. (Chichester: Wiley-Academy, 2005)

45 Juhani Pallasmaa, “Hapticity and Time: Notes on Fragile Architecture” 2000. *The Architectural Review* (May), pp. 78

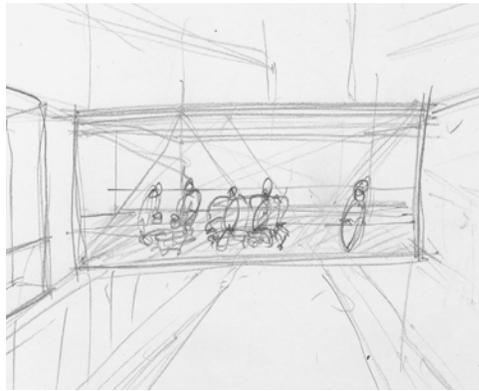
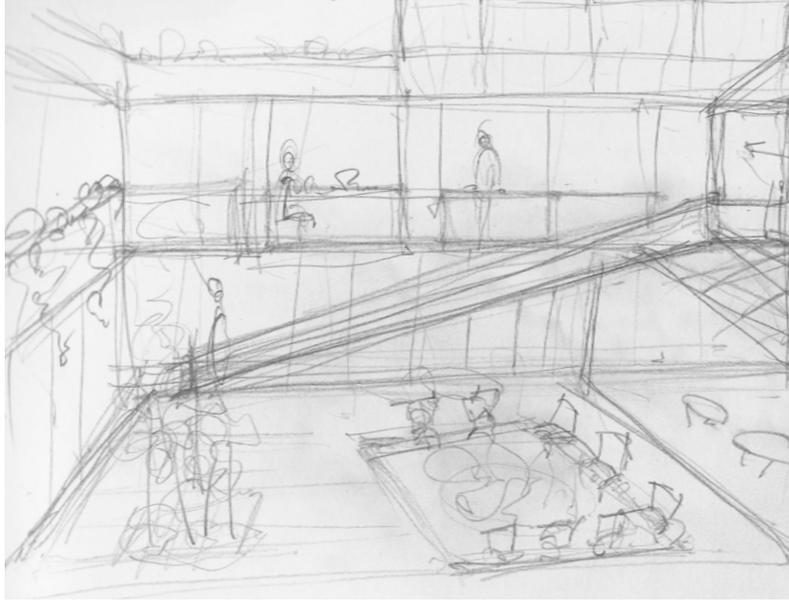


Figure 5, 6, 7: Design sketches of sensory engagement for Alzheimer's Disease (Central exterior courtyard, Bridge for 'people watching' and Group kitchen with aromas circulating throughout the building)

## **ALZHEIMER'S DESIGN GUIDELINES:**

The outcome of a variety of medical studies involving Alzheimer's patients and environmental design by John Zeisel lead to the following criteria for design.<sup>46</sup>

### **Sensory Cognition**

- sight (colour, light, exterior, interior)
- touch (material, finish, temperature)
- hearing (music, acoustics, nature)
- smell (kitchen, nature, garden)
- taste (kitchen, garden)

### **Residential Character**

- neighbourhood
- unique (recognize/remember the building)
- non-institutional -Canadian architecture

### **Provide spaces that encourage Independence and Freedom**

- continuous railings
- bathroom supports/bars
- proper heights of seating and tables

### **Walking and Wandering Paths (with destinations)**

- railings
- material of paths, level, avoid falls
- unique destinations
- no dead ends
- way-finding/landmarks

### **Individual Space (allowing for personalization)**

- details to enable personalizations (eg material/detail of the wall)
- adequate amount of space
- room for family to meet

### **Common Space (with different character)**

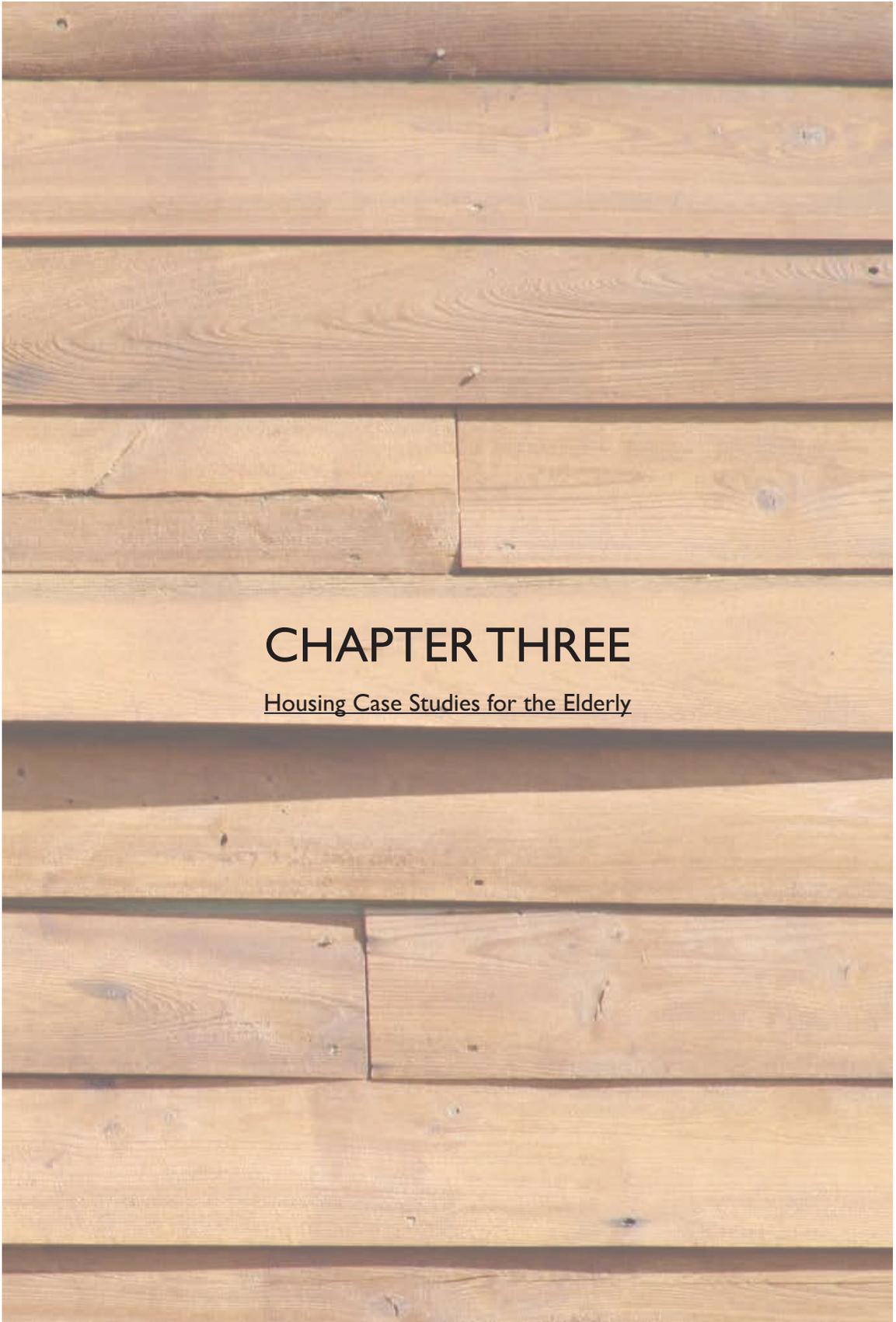
- kitchen
- dining room
- entrance hall
- living room
- workshop / art activity room
- musical / theatre / game room

### **Exit Control**

- avoid egress
- conceal staff doorways
- emphasize residence doorways

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<sup>46</sup> John Zeisel, Environmental Correlates to Behavioral Health Outcomes in Alzheimer's Special Care Units, The Gerontologist Vol. 43, No. 5, 697-711



## CHAPTER THREE

Housing Case Studies for the Elderly

## ALCÁCER DO SAL ELDERLY RESIDENCE



Figure 8: North Facade of building



Figure 9: Lost residents "Which room is mine?"

Project Statistics:  
Architect: Aires Mateus  
Alcácer do Sal, Portugal (fortress of salt)  
Footprint Area: 1560 m<sup>2</sup>  
Floor Gross Area: 3640 m<sup>2</sup>  
Plot area: 10435 m<sup>2</sup>  
Date of Construction: 2008-2010  
38 bedrooms

"The fashionable practices of many contemporary architects produce architectural bodies without qualities. These buildings are miserable figures without proper body images. These patched-together atrocities are lifeless forms bringing together fragmentary body parts in a kind of anatomical Lego game."<sup>47</sup>

-Marco Frascari

Situated in a dirt covered portion of land, a stark white geometric form stretches across the landscape with an angular snake like slither. Located in Alcácer do Sal, Portugal this 38 bedroom residence is designed to house an elderly population. The white box like shapes seem out of place in the surroundings. The building consists of three levels with a few small commons areas, a kitchen and bedrooms on all three floors. Each bedroom consists of a bed, bathroom and small balcony. On the interior the walls and floors are a white-grey highly reflective monotone stone blending almost completely into one another. Analyzing this project with regards to environmental design for the elderly, it seems to neglect many of the elements that make a good residence for the elderly. Reflective materials can cause confusion and disorientation for the elderly, specifically those suffering

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<sup>47</sup> George Dodds, Robert Tavernor, and Joseph Rykwert, *A Tradition of Architectural Figures: A Search for Vita Beata.* *Body and Building: Essays on the Changing Relation of Body and Architecture* (Cambridge, MA: MIT, 2002) 259.

from Alzheimer's disease.<sup>48</sup> Incorporating sensory stimulation into environmental design is a way to keep elderly minds active. Aires Mateus building provides the complete opposite - sensory deprivation.

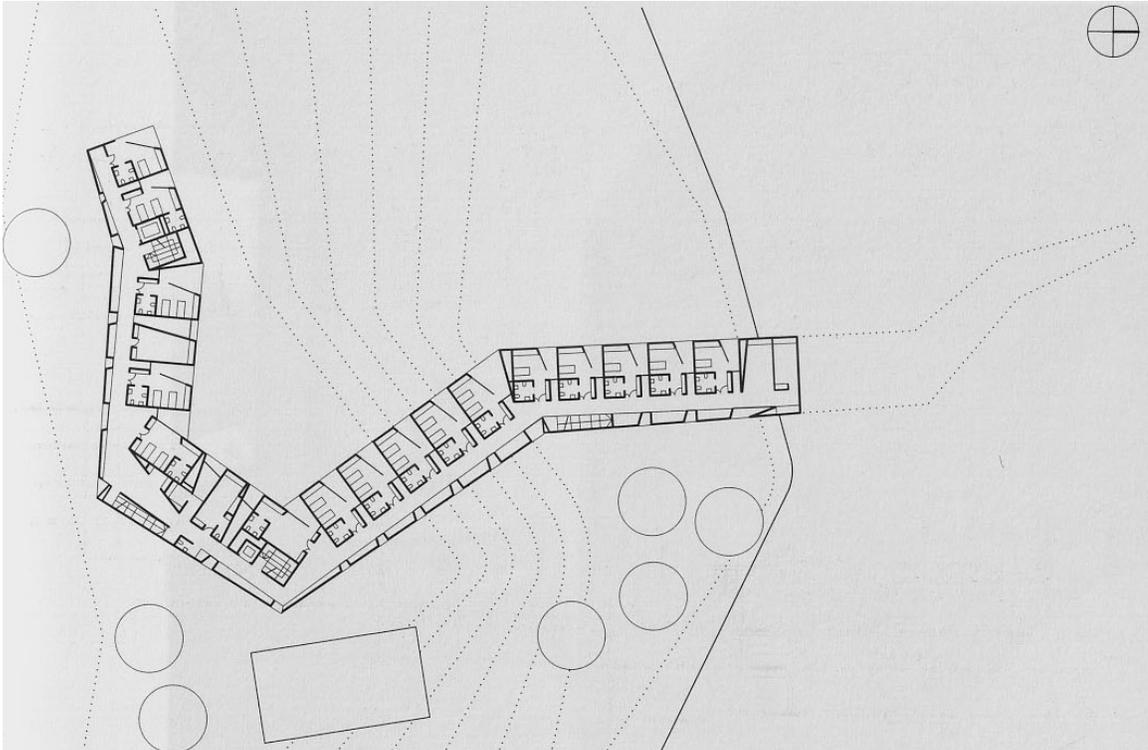


Figure 10: Ground floor plan

The zig-zag hallways, sterile material palette, unrelentless whiteness and repetitive forms create a sense of confusion, even for the able-bodied inhabitant. One might argue that the overall shape looks captivating as a sculptural string of cubic forms. Why are such ultra-modern, minimal residence designs proposed for the elderly generation? - spaces which leave little room for the elderly to personalize the space. An elderly client would most likely relate to a space which looked much different from this ultra modern, monotone and sensorial deprivation space. Aires Mateus Architects claim to have “designed the project according to an attentive and thoughtful reading of the way of life of a very particular community, the elderly, who live in a kind of micro-society with its own

48 Staff, Mayo Clinic. “Definition.” *Mayo Clinic*. Mayo Foundation for Medical Education and Research, 19 Jan. 2013. Web. 21 Nov. 2013. <http://www.mayoclinic.com/health/alzheimers-disease/DS00161>

needs, rules and values.”<sup>49</sup> How could a space designed for the elderly to live in be so insensitive to experiential qualities? The photos and plans tell the story quite clearly. All of the men in the photos look lost, the facade resembles rows of coffins, the room interiors blend into one white plane, and the hallways seem disorienting even from photographs. The research this thesis has engaged points to Alcácer do Sal Elderly Residence as the polar opposite of a place that would be appropriate for the elderly, especially those with Alzheimer’s.



*Figure 11: View of unit interior*



*Figure 12: View from hallway*

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49 "The Nursing Home of Aires Mateus Architects through the Eyes of Fernando Guerra." Yatzer. N.p., n.d. Web. 06 Jan. 2014. <http://www.yatzer.com/The-Nursing-home-of-Aires-Mateus-Architects-through-the-eyes-of-Fernando-Guerra>

## WOZOCO HOUSING FOR THE ELDERLY

Project Statistics:  
Architect: MVRDV  
Location : Amsterdam-Osdorp, The Netherlands  
Year : 1997  
Program : 7.500 m<sup>2</sup>, 100 apartments for elderly inhabitants



Figure 13: North Elevation



Figure 14: South Elevation

Located in Amsterdam-Osdorp, The Netherlands WoZoCo by architects MVRDV grabs the attention of passer-by's with its colourful balconies and gravity defying wood clad cantilevered volumes. Appearing at first glance to be a trendy apartment for the younger generations, the residents of WoZoCo are seniors. The building consists of 9 floors providing 87 units in the main body of the building and another 13 in the cantilevered spaces, allowing the park to meander under the cantilevered forms that is adjacent to a public green space.<sup>50</sup>

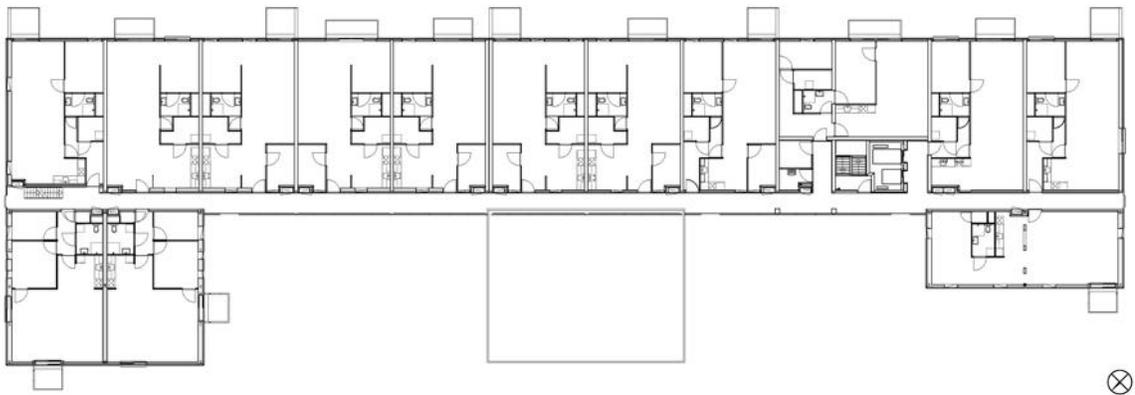


Figure 15: Fifth Floor Plan

50 Sveiven, Megan. "AD Classics: WoZoCo / MVRDV" 28 Feb 2011. ArchDaily. Accessed 22 Oct 2013. <<http://www.archdaily.com/115776>>

This project does provide sensory engaging interactive environments for their elderly clientele, which are all connected by a street-like gallery circulation. Interactions are also made possible from the individual balconies that are arranged on the facade in a staggered fashion, allowing for vocal and visual communication to neighbours. The beautiful wood facades have an engaging tactile quality, inviting interaction by touch. The colours of the balconies also give a cheerful effect to the building as a whole, as well as allowing for individual units to be recognized. The single loaded corridor contains windows which can be opened to allow a connection to the temperature, smell, and feeling of the seasons. The apartments encourage each resident to personalize their own units, creating a sense of place that is their own. At the urban scale the building is sited so it intertwines with park space, canals, other residences and city movement which the residents can engage in and feel a part of.



Figure 16: Personalization of balconies on the North Facade



Figure 17: South facade hallway with and cantilever

## ALZHEIMER'S RESPITE CENTRE

Project Statistics:

Architect: Níall McLaughlin Architects

Location: Dublin, Ireland

Construction: 2006-2008

Internal floor area 1,392m<sup>2</sup>, 11 bedrooms



Figure 18: Exterior view from outside of the existing stone garden wall



Figure 19: use of colour, material and light

Respite centres are facilities that admit Alzheimer's patients for day time care only, providing relief and support for their care-givers. This centre by Níall McLaughlin Architects was aimed to design a day facility that provided calm, logical spaces to reduce distraction, provide cues to orientation, and encourage mobility. Social interaction, a sense of community and a feeling of security or 'home' are also promoted through the design.<sup>51</sup>

William JR Curtis states the following regarding how architecture accommodates the needs of Alzheimer's disease.

Alzheimer's disease affects memory and the sense of belonging in the world: it causes confusion about the sense of time and the sense of place. A person with this condition has to be reminded all the time where he or she is, and where he or she comes from. There is a strong impulse to wander around by circuitous routes, but this is combined with the need to come back to a recognizable and safe base.<sup>52</sup>

By incorporating elements of the collective memory that individuals from the Dublin area a sense of community, homeliness, calm and comfort is created, that each unique individual can connect to. When dealing with Alzheimer's disease, the phenomena of wandering is

51 "Alzheimer's Respite Centre, Dublin." Níall McLaughlin Architects. N.p., n.d. Web. 06 Jan. 2014. <http://www.niallmclaughlin.com/projects/alzheimers-respite-centre-dublin/>

52 William Curtis, "Building for a longer lifetime: Alzheimer's Respite Centre, Dublin, by Níall McLaughlin Architects," The Architect's Journal vol. 233 iss. 5 (2011): 20-27.

an important design consideration. Locating the facility within an existing 18th Century historic walled garden provided an exterior boundary, which also feels familiar for the Irish residents. This existing wall becomes a backdrop for views out of the facility and the rough weathered stone texture catches shadows constantly changing with the passing days and seasons. Patients have the ability to wander through the interior and exterior of the facility via halls and ramps. The interior walls and circulation are arranged in a pinwheel fashion to allow for a continuous wandering movement to occur.

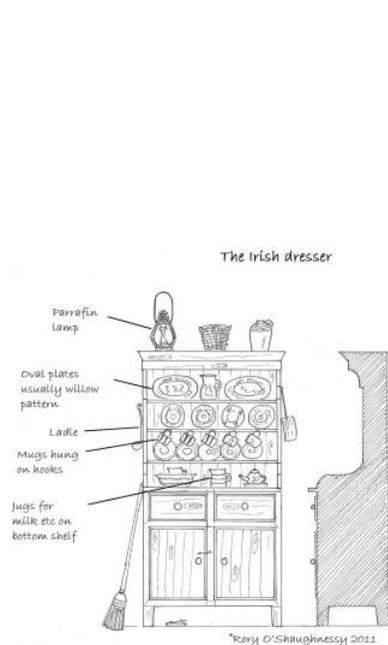


Figure 20: traditional Irish Dresser



Figure 21: Use of the Irish Dresser in the facility

Elements of the vernacular architecture and traditions of Dublin, Ireland are represented in the architectural materiality, forms, and interior features of the building. For example the facility is centered around a large fireplace which is common to the traditional homes of Ireland. "The kitchen was the central hub of the house as it was here that the cooking, washing, dining and general entertaining of neighbours took place. A big open fireplace provided heat and light and was the focal point in the kitchen."<sup>53</sup> Traditional furnishing such as the 'Irish Dresser' are also incorporated into the interior.

Individual rooms are provided for patients to rest during the day allowing for private

53 "Traditional House | Ireland Reaching Out." Ireland Reaching Out. N.p., n.d. Web. 06 Jan. 2014. <http://www.irelandxo.com/node/285>

spaces when needed. The ceilings are high with large clerestory windows allowing daylight to flood into the rooms. As a method of way-finding the architect used bright colours in different areas of the facility, in hopes of triggering the patients memory to a certain space. The hallways are oriented to allow for wandering with varying colours and textures while providing diagonal views to help with orientation. By locating the kitchen as the central element the architect provides orientation via the sense of smell by leading individuals back to a familiar place.<sup>54</sup> The Alzheimer's Respite Centre by Níall McLaughlin Architects showcases the success that design tailored to a specific group of individuals utilizing the human senses can achieve. Not only is the building aesthetically pleasing, but its design aims to help individuals through engagement, movement, orientation and memory.

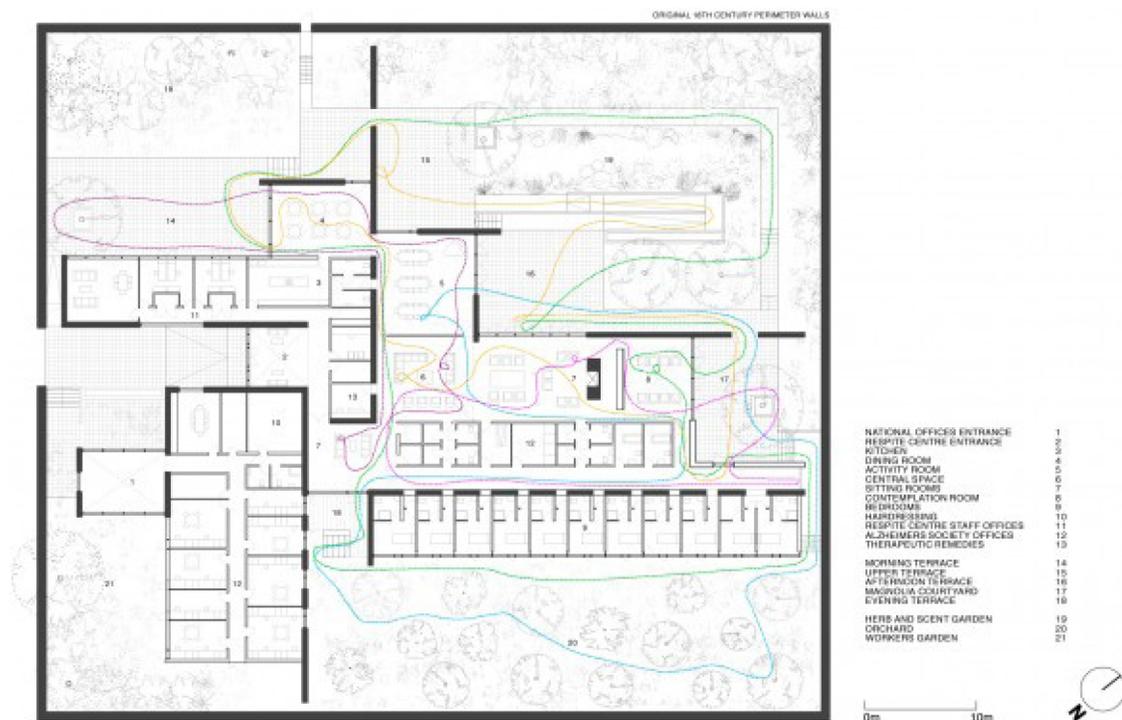


Figure 22: Plan with wandering paths highlighted

54 "Alzheimer's Respite Centre, Dublin." Níall McLaughlin Architects. N.p., n.d. Web. 06 Jan. 2014. <http://www.niallmclaughlin.com/projects/alzheimers-respite-centre-dublin/>

## DEMENTIA VILLAGE 'DE HOGEWYK'



Figure 23: View of interior plazas and elevated walkways

Architect: Molenaar&Bol&VanDillen architecten, Vught (MBVDA)

Location: Weesp, Netherlands

Completion: 2009

Gross Floor Space: 12,000m<sup>2</sup>

23 apartments, max. 2 storey height (one double room, seven single rooms each)

152 senior citizens currently living

Hogeweyk's view on care is founded in day to day life in society. In normal society living means having your own space to live and managing your own household. People live together with other people sharing the same ideas and values in life. This makes the place where one lives a home. Hogeweyk residents have already lived a life where they shaped their own life, where they made choices about their own household and standards. The fact that a resident cannot function "normally" in certain areas, being handicapped by dementia, does not mean that they no longer have a valid opinion on their day to day life and surroundings.<sup>55</sup>

The layout of the plan is confined by a defined perimeter plot. Programmatically the facility consists of 23 different grouped bungalow style residences. Each bungalow houses six to eight residents, grouped by means of common interests according to their personal philosophy, values and living standards to determine where their best fit in the facility may be. There are seven styles of living offered by the facility; urban, artisan, Indonesian, homey, Goois, cultural and Christian. These lifestyles are achieved through the decor, layout, interaction of the group, interactions with the staff members and type of day to day activities. Each house has permanent staff members and the residents are allowed to move freely throughout the facility as they would in a normal home. The 'normal' elements which have been incorporated into the village style plan are a theatre, grocery store, hair salon and restaurant. All of the staff for these facilities are trained to deal with

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<sup>55</sup> "Home." Hogeweyk. N.p., n.d. Web. 06 Jan. 2014. <http://dementiavillage.com/en/>

people who have dementia. If a resident for example were to carry out their groceries containing a nonsensical or unnecessary purchase, the staff member will discretely take it back. There is no currency required in any of the facilities for the residents, but the activities resemble normal life as best as possible.

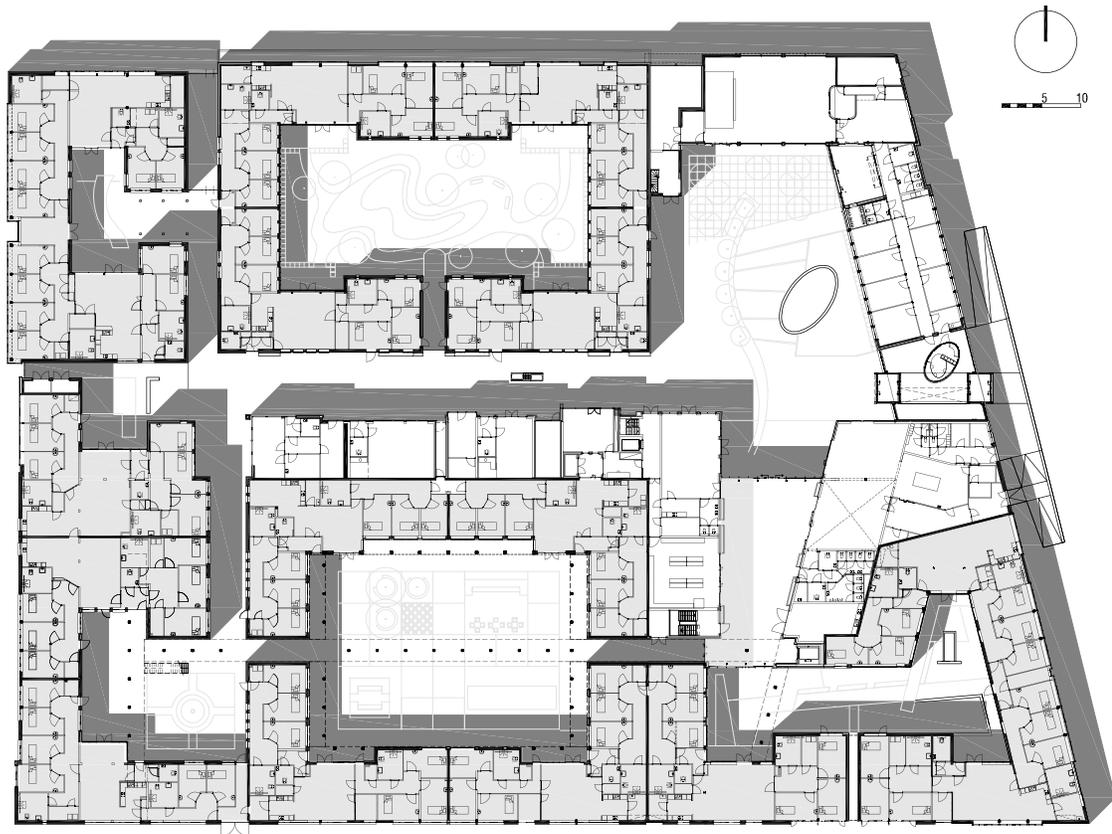


Figure 24: Plan showing the wandering pathways with courtyards which become destinations

The facility and lifestyle themes were designed to provide flexible living concepts for both current and future residents.

Typological research of different lifestyles was combined with the experience the Hogeweyk staff has regarding the collective memory of their residents. In the Dutch province of Noord-Brabant people enter through the kitchen, the community from the former colony of Indonesia live primarily in a central large living-kitchen and houses in the Gooi area of the Netherlands are more formal in their layout. 'Long live the memory!' <sup>56</sup>

The 23 homes became the building blocks on the site give shape to the courtyards and promenades. These exterior elements are all unique and provide stimulating environments that the residents are free to use. Wandering paths allow residents to discover unique and

<sup>56</sup> "Home." Hogeweyk. N.p., n.d. Web. 06 Jan. 2014. <http://dementiavillage.com/en/>

engaging destinations without confronting the confusion of any dead-ends. Each one of the unique outdoor spaces has a different function, including a theatre, boulevard shops and a centre for physical therapy each designed with the goal of stimulating well-being in the residents. Hogeweyks state “Green means relaxation, experiencing the seasons and good health.”<sup>57</sup> All of the elements were designed with the residents collective memory in mind to create a recognizable atmosphere.

Dementia Village by MBVDA is invested in the lives of the individuals who reside in the facility, by creating an atmosphere for residents lives to remain as normal as possible and provides the possibility of an enhanced quality of life. This facility is an example of how designed spaces and care programs for individuals can be achieved through sympathetic, sensorially engaging architecture, which incorporates the idea of collective memory.



Figure 25: Interior details of the units



Figure 26: Paths resembling city streets



Figure 27: Physical activity in the facilities interior courtyards

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57 "Home." Hogeweyk. N.p., n.d. Web. 06 Jan. 2014. <http://dementiavillage.com/en/>

# CHAPTER FOUR

Hintonburg Haptic Retirement Residence for Alzheimer's & enhanced well-being:

A Piece in the Puzzle for the Cure

## SITE ANALYSIS

The goal of this phase of the thesis was to find a site and community in Ottawa that has qualities to best support a retirement residence. These qualities were; sensory engagement, walkability, park space, existing senior support, urban engagement, community arts, music, restaurants, barbershops, laundromats and surrounding low traffic neighborhoods with residential character.



*Figure 28: Neighbourhood of Hintonburg in relation to the City of Ottawa*

Hintonburg is a developing neighborhood of Ottawa with a strong art community, a variety of age groups and existing support for the elderly population. The exact site will be located on the corner of Wellington Street West and Merton Street bordered by Armstrong Street at the rear. Currently there are two commercial stores located on Wellington Street which will be reincorporated into the new design. Armstrong Street contains light traffic and residential homes. One duplex brick home exists at the back of the site which will be integrated into the design becoming the entrance to the facility.



Figure 29: Armstrong Street Existing Site image with Existing two storey brick duplex

The main pedestrian and vehicular street of Hintonburg is Wellington Street, which turns into Somerset Street West and connects to Ottawa's downtown core. Parkdale Avenue is a nearby artery connecting to Carling Avenue, The Experimental Farm and Civic Hospital areas. OCTraspo Bus Route 2 stops along Wellington West and provides easy access to travel to either downtown or Bayshore via Carlingwood.

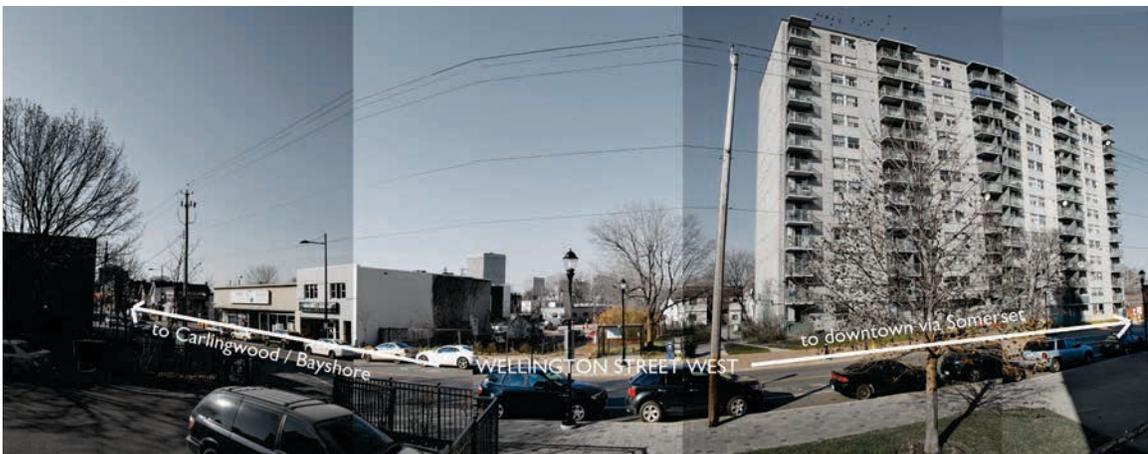


Figure 30: Wellington Street West Existing Site Image

As a main street Wellington West contains a plentiful amount of sensorially engaging activities on both sides of the street including restaurants, barbershops, shops, a laundromat, art galleries and entertainment. There are also three parks located within a four block radius of the site; Hintonburg Park located directly across the street, McCormick Park located behind the Senior Support Centre and Parkdale Park located at Parkdale Avenue Farmers Market. Finding a community that has an existing investment in their senior population is a way to ensure that a retirement residence would thrive. There are three establishments which currently cater to seniors nearby. The Hintonburg Community Centre

located directly across from the site provides senior recreational activity programs, is barrier-free and provides accessible ramps to Hintonburg Park. Ottawa West Community Support Centre located three blocks west of the site at McCormick Park and Wellington Street West, provides meal services, snow removal services, driving services, day care programs and events. Located five blocks west of the site is The Salvation Army Ottawa Grace Manor. This facility is a nursing home providing long-term care to the elderly. These support facilities reinforces the decision to propose a retirement residence at Merton and Wellington Street West. From the parks, to restaurants, artists studios and musical theatres all of the senses of the residents can be engaged, allowing for an enhancement to the quality of their daily lives.

“If Hintonburg were a person, it would be someone who’s a lot of fun and a great laugh but goes to bed early.”

– Don Monet, curator of Cube Gallery<sup>58</sup>



Figure 31: The fabric of Hintonburg

58 <http://enroute.aircanada.com/en/articles/canada-s-next-great-neighbourhoods/page:6>

## **BUILDING PROGRAM**

TOTAL: 10,292 m<sup>2</sup>

LEVEL 1: TOTAL 2030 m<sup>2</sup>

COMMERCIAL: 1540 m<sup>2</sup>  
Bldg A: 319m<sup>2</sup>  
Therapeutic Offices: 83m<sup>2</sup>  
Bldg B: 1138m<sup>2</sup>  
FACILITY: 473 m<sup>2</sup>  
Workshop: 142 m<sup>2</sup>  
Gallery: 83 m<sup>2</sup>  
Staff / Receiving: 29m<sup>2</sup>  
Front Entrance Rooms: 41m<sup>2</sup>  
Kitchen: 88m<sup>2</sup>  
WC floor 1: 24m<sup>2</sup>  
Circulation space Floor 1: 66m<sup>2</sup>

LEVEL 2: TOTAL 2395 m<sup>2</sup>

Sunroom/Interior Garden/Bridge: 238 m<sup>2</sup>  
Vegetable Garden and Patio: 255 m<sup>2</sup>  
Lounge: 82 m<sup>2</sup>  
Spa / Barbershop: 70m<sup>2</sup>  
Dining: 171 m<sup>2</sup>  
Den: 55 m<sup>2</sup>  
Meeting / Living Room: 50 m<sup>2</sup>  
Nurse Station: 17m<sup>2</sup>  
Staff: 37 m<sup>2</sup>  
Family Visit Area: 53 m<sup>2</sup>  
WC/C and Janitorial: 50 m<sup>2</sup>  
Courtyard: 234 m<sup>2</sup>  
Unit 1.1: 26 m<sup>2</sup> x 10 = 260 m<sup>2</sup>  
Unit 1.2: 28 m<sup>2</sup> x 9 = 252 m<sup>2</sup>  
Circulation: 428 m<sup>2</sup>

LEVEL 3:TOTAL 1773 m<sup>2</sup>

Lounge: 64 m<sup>2</sup>  
Spa: 46 m<sup>2</sup>  
W/C and JAN: 34 m<sup>2</sup>  
Nurse Station: 12 m<sup>2</sup>  
Courtyard 2: 56 m<sup>2</sup>  
Activity Room: 147 m<sup>2</sup>  
Unit A: 30 m<sup>2</sup>  
Unit B: 40 m<sup>2</sup>  
Unit C: 56 m<sup>2</sup>  
Unit D: 30 m<sup>2</sup>  
Unit E: 65 m<sup>2</sup>  
Unit F: 26 m<sup>2</sup>  
Unit 2.1: 39 m<sup>2</sup> x 6 = 234 m<sup>2</sup>  
Unit 2.2: 42 m<sup>2</sup> x 6 = 252 m<sup>2</sup>

LEVEL 4:TOTAL 1790 m<sup>2</sup>

Wandering Roof Garden: 925 m<sup>2</sup>  
Unit A: 41m<sup>2</sup>  
Unit B: 150 m<sup>2</sup>  
Unit C: 58 m<sup>2</sup>  
Unit D: 108 m<sup>2</sup>  
W/C and Jan.: 34 m<sup>2</sup>

BASEMENT:TOTAL 2304 m<sup>2</sup>

Basement Storage / Cleaning / Staff: 527 m<sup>2</sup>  
Basement Theatre / Commercial: 607m<sup>3</sup>

NUMBER OF UNITS:

Level 2 Long Term Care Units: 19  
Level 3 Partially Independent Units: 18  
Level 4 Independent Units: 4

TOTAL: 41

# SITE MAP

Figure 32



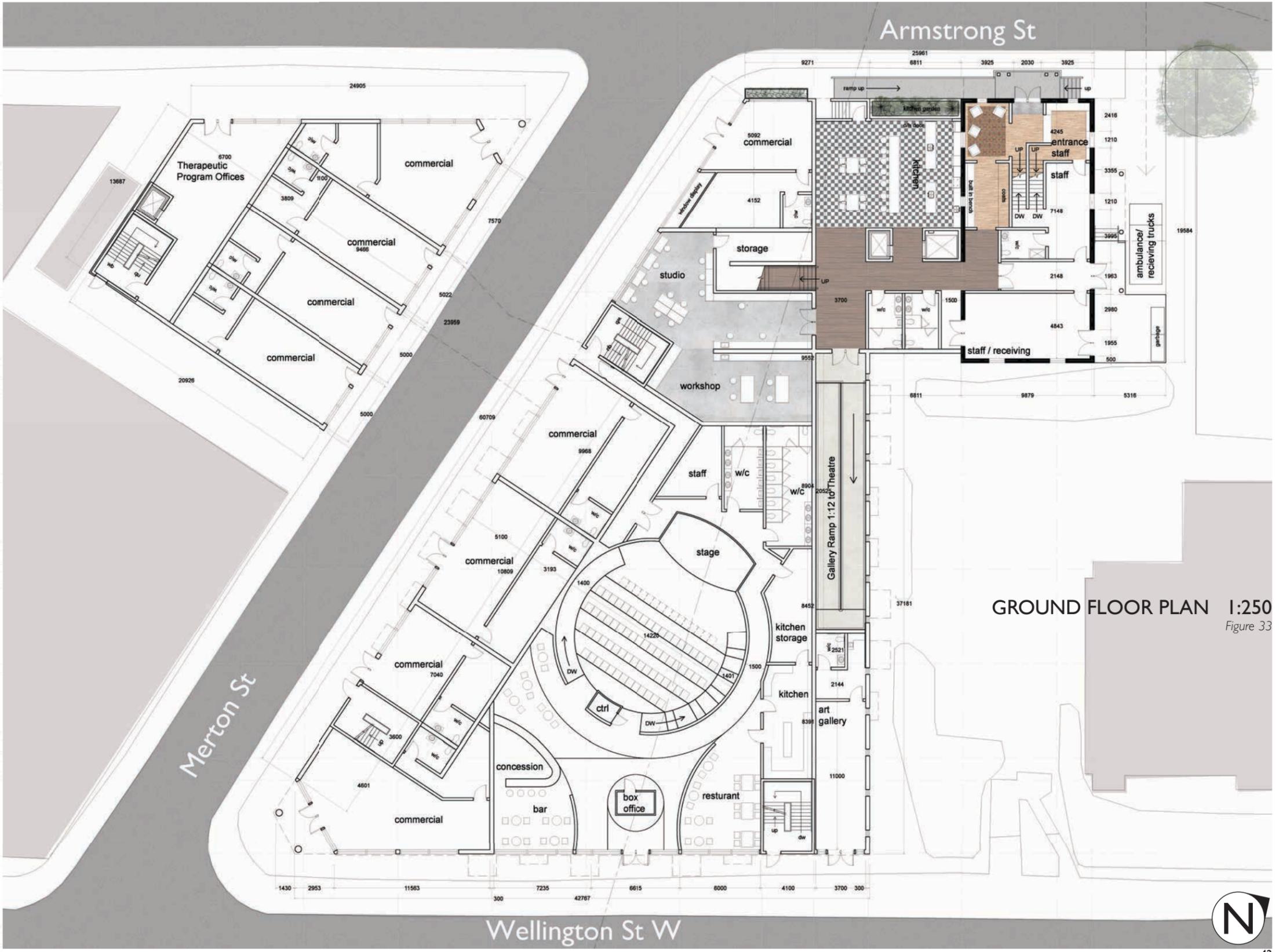
Park Space and Wandering paths



Calm traffic neighbourhood streets



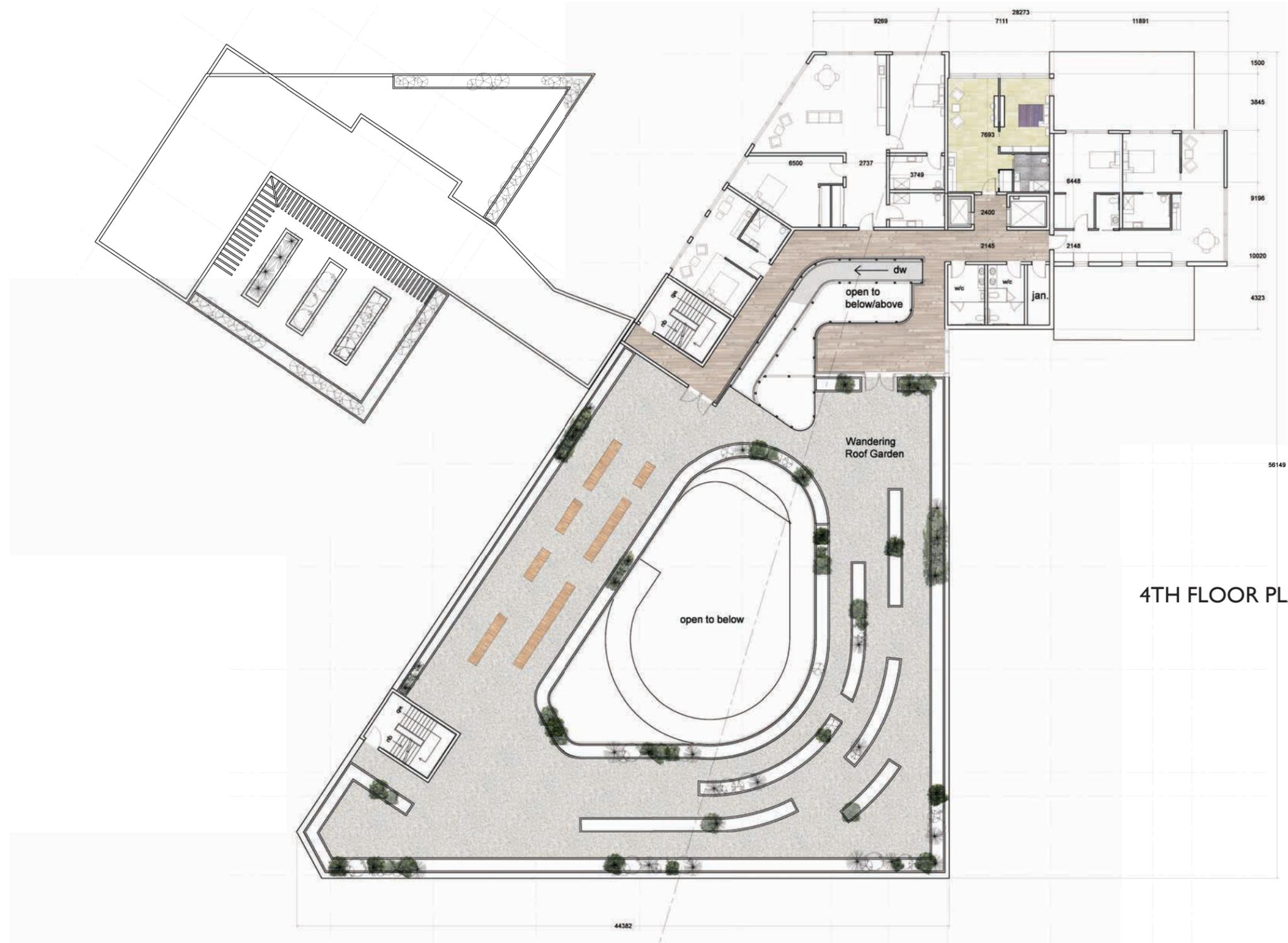
Main traffic arteries



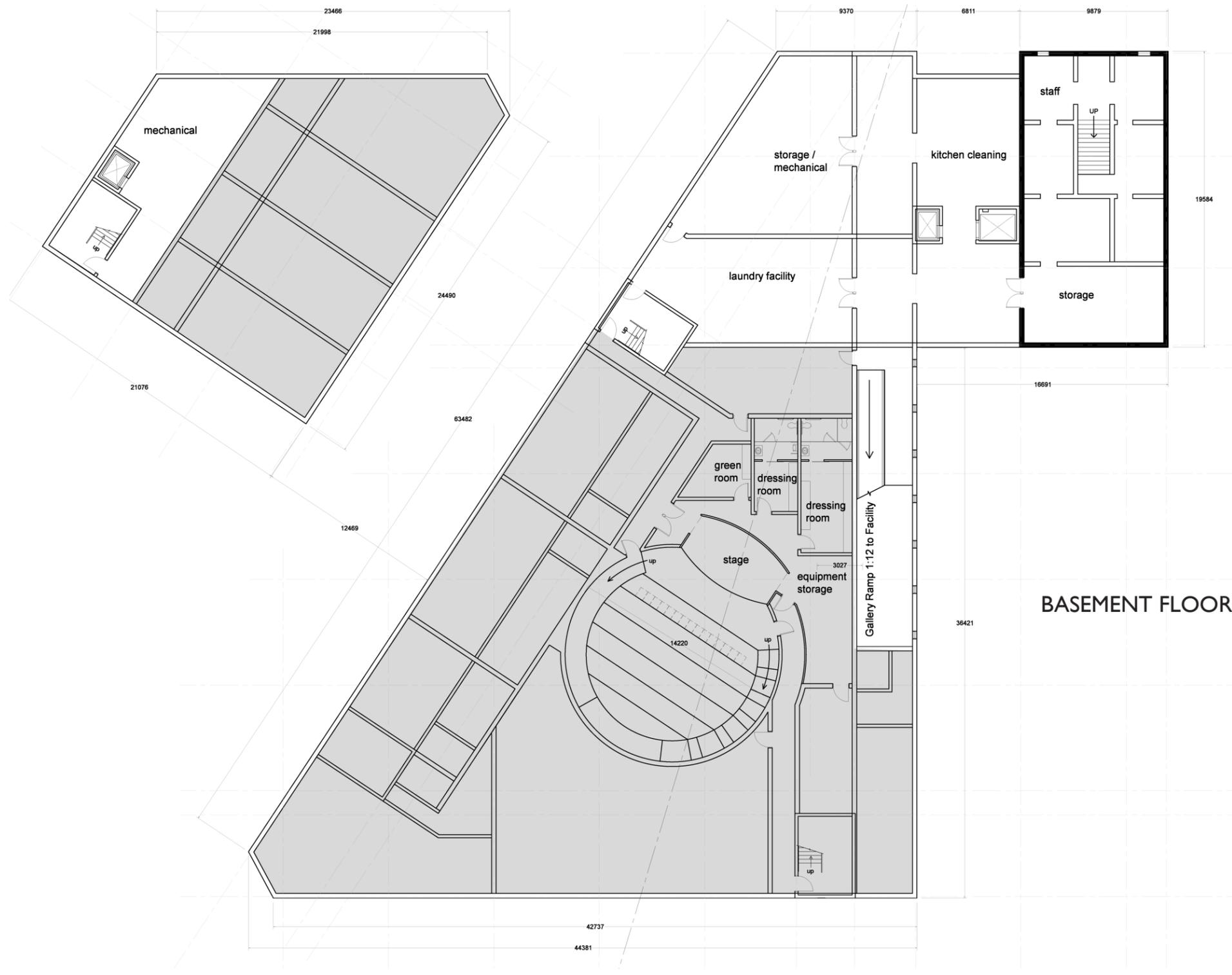
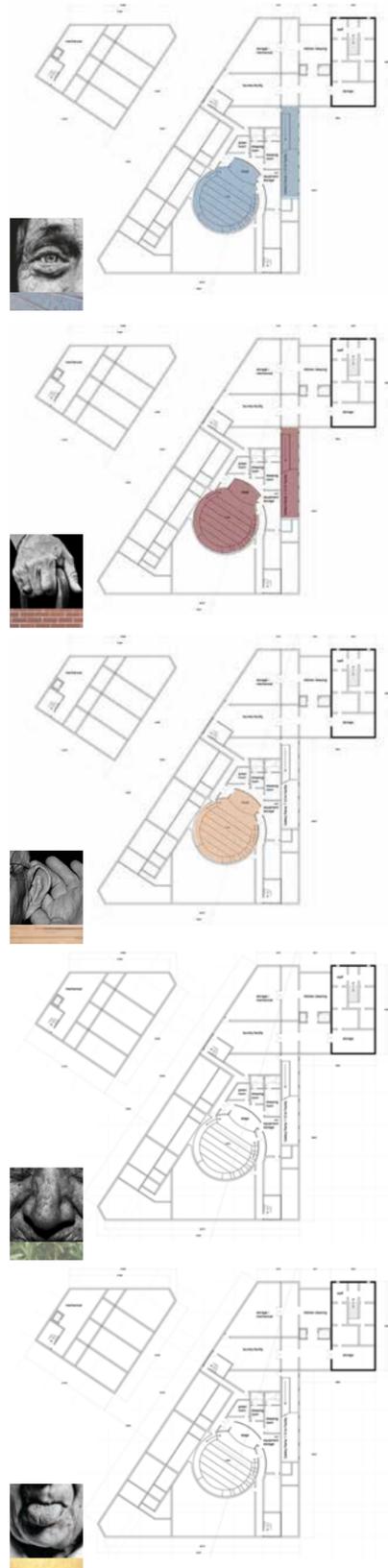
GROUND FLOOR PLAN 1:250  
Figure 33







4TH FLOOR PLAN 1:250  
Figure 36



**BASEMENT FLOOR PLAN 1:250**  
*Figure 37*

# TYPICAL UNIT FLOOR PLANS

Figure 38



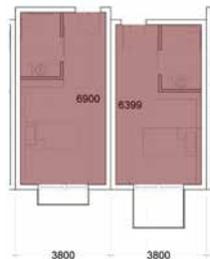
level 3 rooms



level 2 rooms



level 3 rooms



level 2 rooms



level 3 rooms



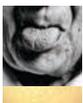
level 2 rooms



level 3 rooms



level 2 rooms



level 3 rooms



level 2 rooms



**BUILDING SECTION**  
*Figure 39*



ARMSTRONG ST ELEVATION

Figure 40

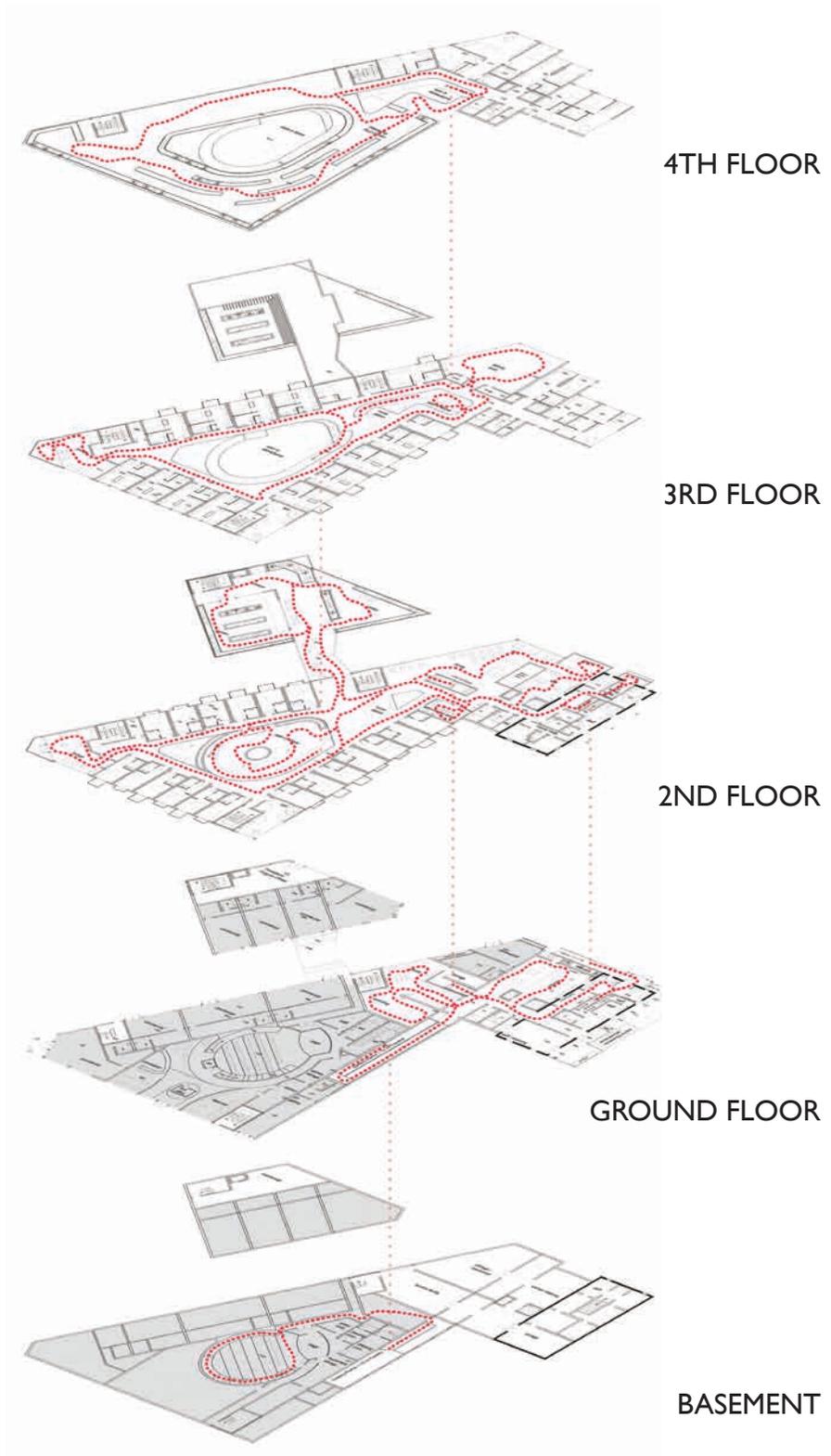


WELLINGTON ST WEST ELEVATION

Figure 41

# WANDERING PATHS

Figure 42



## SENSORY BUILDING NARRATIVE

Approaching the retirement residence entrance from Armstrong Street a calm, familiar neighbourhood quality welcomes individuals. An assortment of quaint two storey homes and the odd small business flank the street clad in mixture of vinyl, wood and brick. Traffic moves at a slow pace in comparison to the main artery of Wellington Street West. At Armstrong and Merton, the colourful frosted glass balconies catch the eye giving the building a playful quality. The teal-glazed brick engaging those passing by with its glass like shine and rough brick pores. The existing two storey red brick house has been incorporated into the facilities design as the main entrance, giving a residential character to the progression of entry due to its scale, material palette and patina. Memories of previous homes may be drawn upon from the surrounding residential qualities of the facilities site. By placing the facility in a community that already has elements such as a market, parks, community centres, restaurants and family friendly neighbourhood streets the building and residents can become inter-weaved with the community, supporting its ability to thrive.

Rough concrete against glass balustrades and a smooth dark mahogany hand rail are engaged with as the front door is approached. As one ascends the ramp the glazed teal brick catches the rays of the sun revealing a sub layer of textured pores upon closer examination. The entry pathway passes next to the kitchen window where aromas from the daily meals and herb kitchen garden permeate the air. The garden is constructed of cedar which extends onto the facade above. Extending from ground to roof, this wood facade creates a joint between the rough brick existing house and the blue-glazed brick of the new facility. A balcony clad on the underside with wood boards, provides shelter to the front door and reduces the scale of the facility down to that of the human body. This awning provides the entrance with a 'home like' and intimate feeling, as opposed to vast, overwhelming institutional one.



Figure 43: Front entrance and kitchen garden

Opening the traditional existing door to the residence provides a feeling of familiarity and comfort. To the left is a small room resembling a library, with walls covered in books attended to by staff who are able to monitor the entrance 24/7. Turning to the right a room with traditional furniture, plants and a window allowing for a glimpse into the kitchen are discovered. Similar to the front rooms of traditional homes this room can be used by residents to sit and meet friends and family. Depending on the time of day the aroma from breakfast, lunch or dinner fill the residence in this area letting guests know that a meal is soon to be served. Passing through the wood paneled coat room with a built in bench one turns right into the elevator area and discovers the kitchen. The space is filled with natural light which accentuates the kitchen's brick back wall, warmth is omitted from the cooking activities and aromas of the herb garden. Residents of the facility are able to participate in food preparation if they wish to do so. As found in previous research, a healthy diet and certain foods can enhance the life of individuals living with Alzheimer's. The Respite Care Centre in Dublin also revealed this importance of food using the kitchen as the central element of the facility. The scents, the red textured brick wall and the action of participating in meal preparation allows for patients living with Alzheimer's to have strong sensory queues to remember or trigger to the memory of a space.



Figure 44: Kitchen with existing house connection

Stairs from the back of the kitchen lead up to the second level dining room filled with tables and daylight. Through the windows a view to residential activity on Armstrong street is framed. Food is transferred to the second floor by the staff through the dumb-waiter or via the staircase. Aromas travel upward through the opening in the floor connected to the kitchen. This opening also provides a visual connection for the residents to the familiar kitchen below. As meals end the residents are free to partake in group activities such as art classes, dance classes and other organized events. These group activities encourage physical activity and interaction with others. Adjacent to the dining room is a den where residents can relax, lounge, talk, read and gather by a fireplace. A patio to the North allows for access to the outdoors and fresh air whenever the residents desire. The design of the facility provides a variety of locations to access the outdoors, where the temperature of the breeze can be felt, the passings seasons can be monitored, gardens can be tended to, and people watching can occur.

On the second floor right in the hustle and bustle of the facility is the barber shop and salon. Aromas of the spa along with the feeling of the warm water and combs passing

through their hair is another way that the senses of the individual residents can be engaged.



Figure 45: central courtyard summer and winter

While entry occurs at the street level, the facility creates a new “ground floor” on the second storey with outdoor gardens in a courtyard space. Daylight fills the two storey glazed central courtyard that reaches to the sky above. This void radiates light outward, filling the surrounding interior hallways with light during the day. Entering the courtyard one has the option to wander through the trees and greenery exposed to the outdoors, or ascend the winding ramp which circulates its perimeter. This courtyard becomes the

second unique destination for the residents to stroll around while still inside the facility. The vegetation in the courtyard captures the changes of the seasons for the residents to see. Garden seating elements introduced earlier are located throughout the gardens, providing a place for resting. Events and activities can take place in the courtyard and during the summer months sections of the glass are able to open allowing fresh air to circulate in the facility. Surrounding the courtyard are the staggered entrances to rooms which are individualized for each unit. As residents walk the hallway or ramp around the courtyard they experience the weather: rain, snow, sunlight, the shadows growing longer and nightfall. All of these signs are important and can signal the daily routine for residents. Experiencing the seasons, sunsets and sunrise are elements which are often absent from long-term care facilities. Even though these events may be forgotten such as yesterdays snowfall, they are still able to make that discovery again the next day. As the rain falls down the glass of the courtyard the space changes, the glass catches the water and begins to stream down in lines, passing around the central courtyard the space is constantly changing and these events are showcased for the residents to observe. The wandering paths loop around the courtyard enclosed from the elements. This loop allows for free wandering and encourages safe physical activity for the residents away from traffic. The wandering paths also allow for interactions with others and the discovery of the many sensory engaging destinations throughout the facility.

On the second level the rooms houses residents with Alzheimer's that has progressed to a point where constant support is needed to do tasks such as bathe, dress and eat. The room has a sleeping and washroom area, but does not resemble a typical hospital room. Built in wood shelving compartments, soft coloured walls, rich linens, a large window with a small balcony to the exterior and the ability to bring personal items create a unique and personalized room. Each of the rooms has a front entrance which can be customized with the residents name, photos, planters, a special chair to sit and look towards the courtyard. In order to enter a space a door handle needs to be held, therefore each of the rooms is fit

with a unique door handle to provoke the sense of touch and provide a sensual cue to the memory of their room.



Figure 46: interior of a level 3 unit.

Units on the third floor are more spacious, providing a larger bathroom and small kitchenette to residents who still have the ability to carry out tasks on their own. The staff are present on this floor but may not be needed as much. These rooms have balconies for access to fresh air and people watching. The interior of the unit can be personalized to create a sense of comfort. Items and mementoes from past homes can act as a form of comfort and have the possibility of keeping memories alive. Neighbour interaction can occur on the balconies or in the hall, but the personal rooms are a quiet tranquil private spaces. The built in furniture and hanging fabric partitions allow for a separation of the sitting area and bedroom. Each morning as a resident leaves their room their view shifts from the exterior Hintonburg view of the outside to the interior garden courtyard. From both within the room, or in the facility, instantly the time of day, the weather, the colour of the leaves and the temperature can be followed.

Continuing up the ramp to the fourth level the rooms take on an apartment style

layout. This floor houses four units, two with a second bedroom in the layout. As the floors go up through the facility the dependency for care declines. Residents of the top floor are able to be mostly independent, living in more of an apartment style arrangement with their family. The wandering path continues on this floor to a seasonal open roof garden. Residents can experience the rich garden or, if the weather allows on a clear evening they could watch the sunset and follow the stars.



*Figure 47: Stargazing from the Roof Garden*

Visitors lounges are located on the second and third floor with a view of the busier street of Wellington West. Smaller scale intimate meeting rooms are located on the second level of the existing house. These rooms may also be used for memory therapy exercises. The balcony in this area acts to covers the entrance below. On the third floor the activity room can house events such as dance classes, large group activities or events. Each of these rooms has a unique texture, colour and built in design elements for the purpose of not one beings mistaken or confused for the other.



*Figure 48: View from bridge to sunroom & vegetable garden*

From the main floor of the central courtyard the wandering path can continue across the bridge to the wood slat elevated interior and exterior vegetable garden. During the summer and fall months residents can tend to gardens to the south side, sit in the sun or take a seat by the window under the shade of the lattices work awnings. In the off seasons hydroponic gardens are located on the interior to allow plants to grow all year round. Throughout the day the sun casts layers of shadows, that animate the floors. The change from a hard travertine tile surface to a dense material carpet allows not only for a change in feeling under ones feet, but a change in sound to ones ear. Meeting areas along this path provide space for residents to watch the activity of Merton Street below. Throughout the facility the presence of continuous railings around the halls and courtyards allow for residents to walk independently and safely. Different textures which engage the sense of touch are employed in the; entrance, existing house and kitchen, central courtyard and

ramps, elevated vegetable garden and rooftop garden. Some residents who have a strong connection to their sense of touch may be able to use these feelings to navigate the facility.



Figure 49: Detail of Railings

By raising the main floor one storey above grade this allows the street level of the facility to be inhabited by commercial tenants. One of the fixed commercial spaces of this facility is a theatre which can also be accessed by the residents of the facility at designated times with the staff. From the first floor near the public kitchen a ramping gallery showcasing artworks of the residents takes individuals to a lower theatre entrance. The form of the circular theatre informs the shape of the courtyard above. The acoustic treatment of the theatre is an end grain textural wood that also engages the sense of sight and touch. Music, dance, plays, poetry, films and any form of artist performance can be held in the theatre. Residents with hidden talents may even become the theatre performers, allowing their abilities to be showcased and the performance to be enjoyed by others. The theatre, gardens and interactive design within the facility contribute to an enhanced and engaged life for the residents.

While only touching down in two locations on Armstrong Street, the main floor and primary spaces of the facility are raised on commercial space. This building organization more easily accommodates the issue of wandering and egress. The central courtyard, gardens, decks and balconies allow individuals to access the outdoors and feel a sense of freedom. Residents are also allowed to wander freely throughout the wide ramps and corridors of the facility. Sensory 'events' such as the entrance, kitchen, courtyards, vegetable

garden, sunroom, activity room and roof garden become the destinations in one's daily routine which have the potential to engage all of the senses, body and mind. Through this activity an enhanced quality of life and well-being has the potential to be achieved.



Figure 50: Exterior South Elevation from Wellington Street West

## CONCLUSION

Architects have the ability to design buildings with spaces that can make a difference in the quality of life. By understanding the unique sensory requirements for the design of a retirement home for individuals with Alzheimer's disease a sensory approach to design and detailing was realized. The design process began with understanding the concept of architecture for well-being. Through this it became apparent that the sensorial body was of critical importance in designing for well-being and that this strategy should be a part of all good design. The elderly living with Alzheimer's disease can particularly have a greater quality of life, and perhaps manage their disease better by living in haptic sensory engaging architecture that provides interaction and engagement with their surroundings. Architectural case studies of existing buildings designed specifically for the elderly and Alzheimer's disease provided insight to potential positive and negative design strategies. Currently in Canada there are approximately 500,000 individuals and their families who are managing this disease and the numbers are estimated to continue to grow in the coming decades.<sup>59</sup> The need for care and housing for this population is in high demand. At this moment in time there is no known cure for Alzheimer's disease. Architecture has the ability to become a piece in the puzzle towards finding a cure. A collaborative effort between patients, staff, family, doctors and architects could provide a promising possibility of finding a cure. Individuals suffering from Alzheimer's disease are still here with us and should live their lives in environments which will enhance their quality of life.

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<sup>59</sup> Alzheimer's Society of Canada, *Rising Tide: The Impact of Dementia on Canadian Society : Executive Summary : A Study*, ([Toronto, Ont.]: Alzheimer Society of Canada, 2010.) 15.



**APPENDIX**

# DESIGN DEVELOPMENT

## MASSING AND SUN STUDIES

Figure 51:  
MASS  
ONE

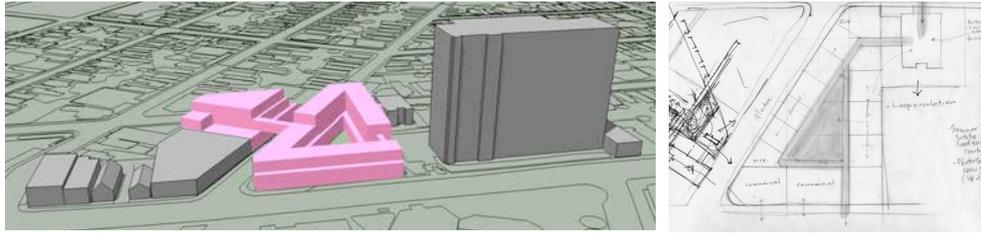


Figure 52:  
MASS  
TWO

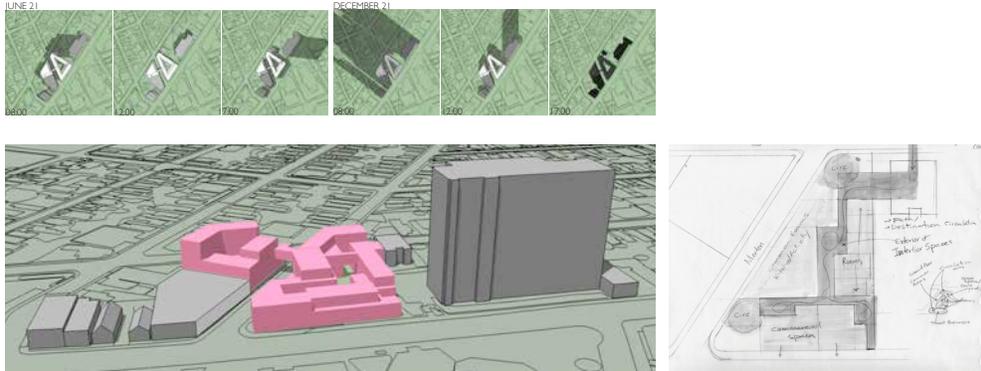


Figure 53:  
MASS  
THREE

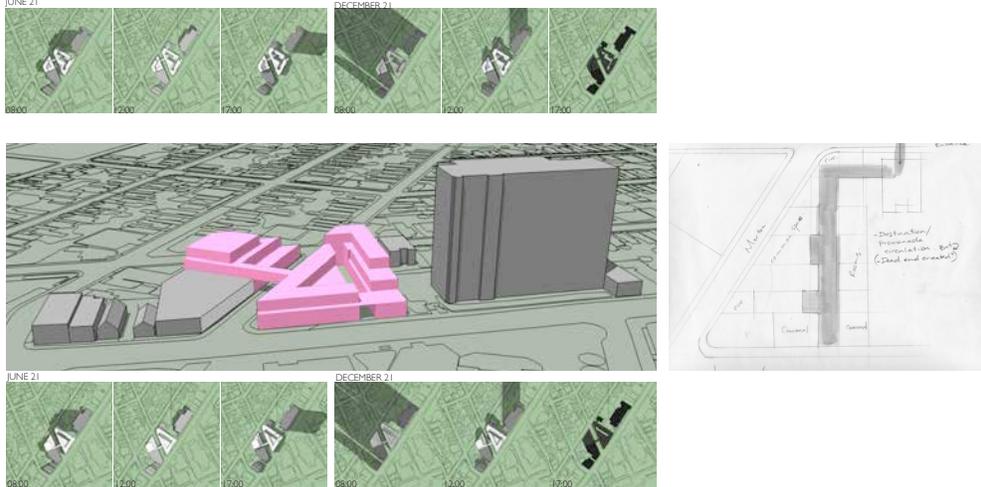
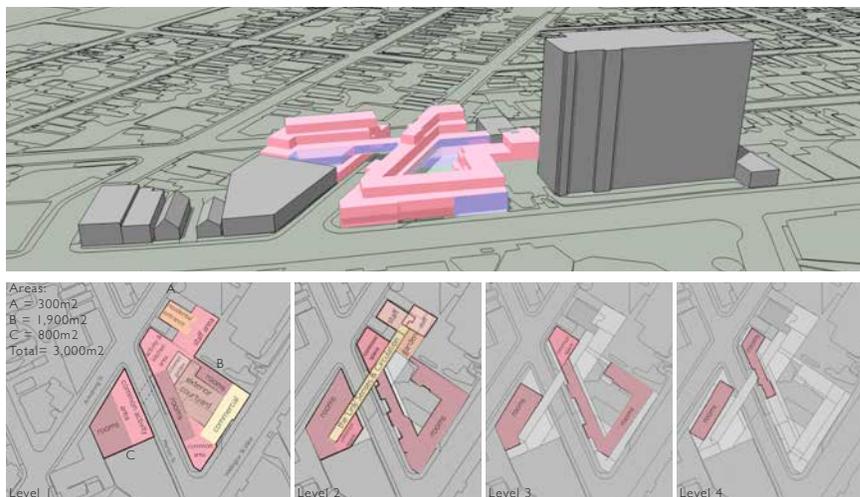


Figure 54:  
MASS  
FOUR



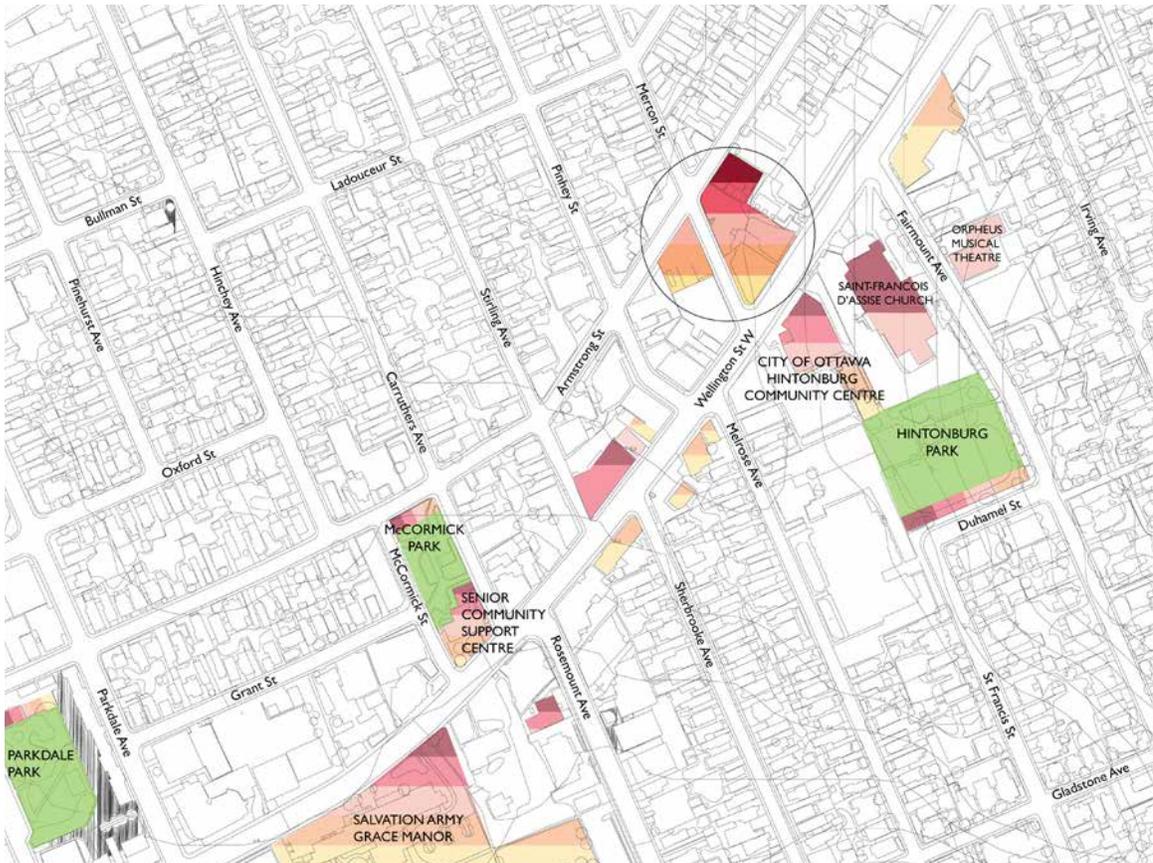


Figure 55:  
SENSORY ENGAGEMENT AROUND SITE



Winter Sun Study



Summer Sun Study



Winter Sun Study



Summer Sun Study

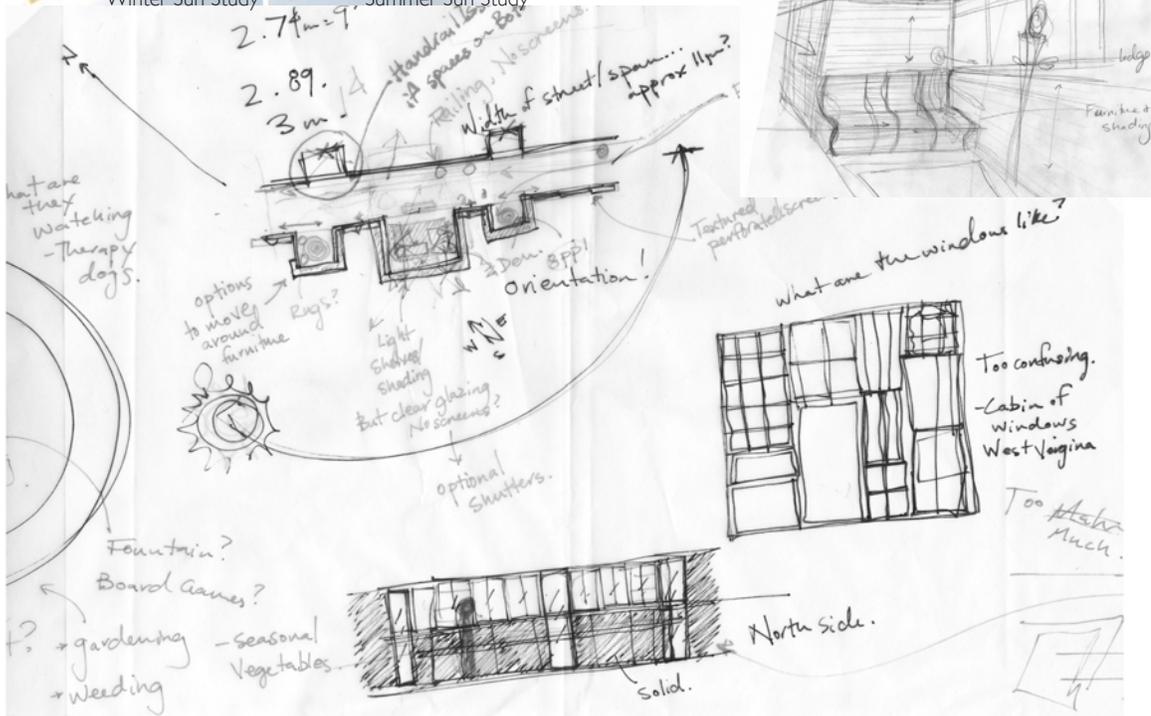
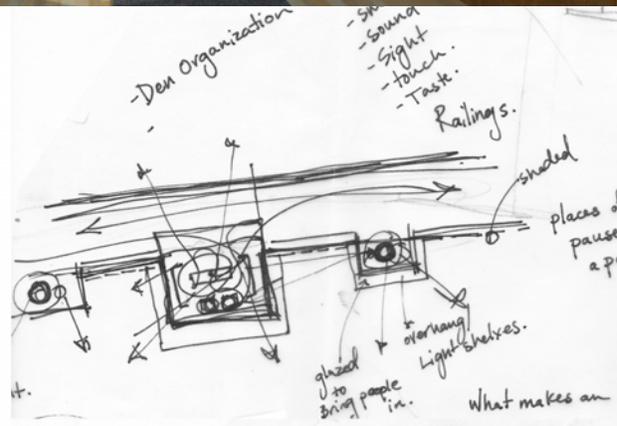


Figure 56: DESIGN DEVELOPMENT OF BRIDGE ELEMENT

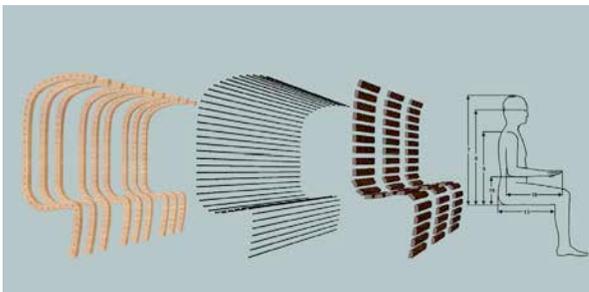
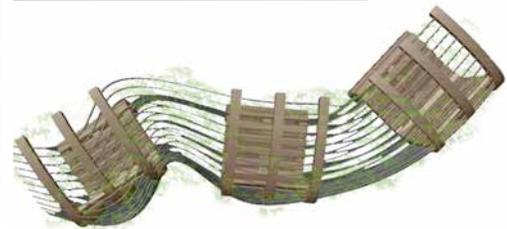
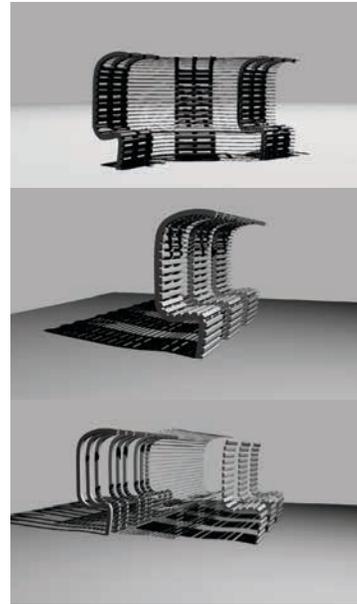
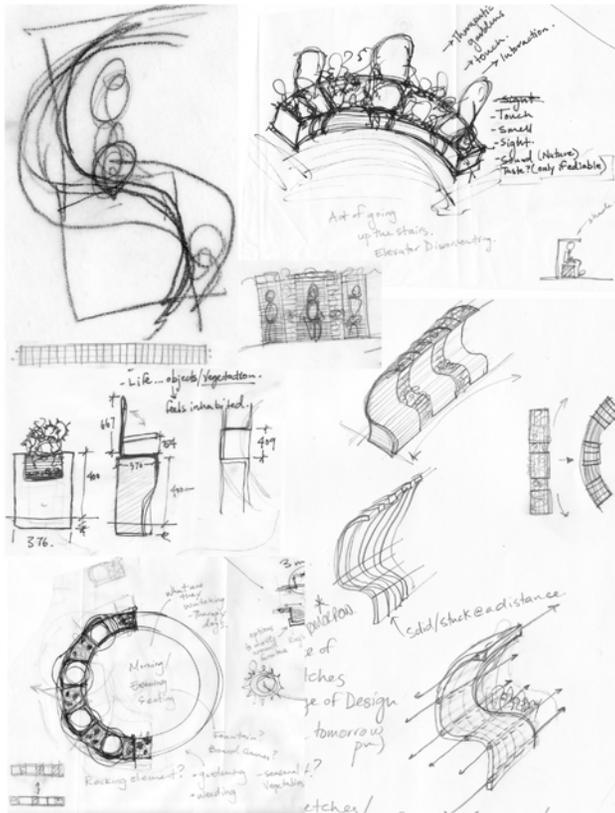


Figure 57:  
DESIGN DEVELOPMENT OF SEATING DESIGN

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