Architectural Lifeworld: Exploring Meanings of Spatial Environments for Residents in Dementia Care

by

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Abstract

This study explores the architectural lifeworlds in three dementia care buildings in Alberta, Canada, helping architects better understand the meanings of architectural spaces to people with dementia. Addressing the practical design issue of evidence-based design guidelines challenging architects' application of these guidelines to design practice, this phenomenological study presents lived stories in the concrete spatial environment of dementia care, to metaphorically inspire architects to conduct better design practice. This study is conducted under the guidance of the nested research methodology that integrates reflective lifeworld research, reflexivity, and case study research. By conducting multiple data collection including building analysis, in-depth interviews with residents with dementia and their families, participant observations and ethnographic filming, and whole-parts-whole data analysis, this study explores three architectural lifeworlds that reflect the architectural space's affordance to residents' dwelling in dementia care. Based on these architectural lifeworlds, this study discusses the meanings of dwelling and its associations with architectural design, to further advance knowledge of design for dementia care in both theory and practice.

Keywords: affordances, architectural design, dementia care, dwelling, meaning of home, metaphor, person-environment relationship

Preface

This thesis is an original work by Hui Ren. It is part of a project that received research ethics approval from the University of Alberta Research Ethics Board, project name “MATERIAL ENVIRONMENTS AS METAPHORS: ENHANCING THE WELL-BEING OF PEOPLE WITH DEMENTIA”, No. Pro00076848, March 14, 2018.

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Glossary of Terms

Affordance: the investigation of the spatial environments' proactive influence on residents' lifeworlds in dementia care buildings.

Architectural lifeworld: the study of a building's affordances that relate to the people's daily lives within that building.

Architectural phenomenology: the exploration of lived experience within the specific context of architecture, where meanings are constructed by the architectural environment and human life.

Architectural space/Spatial environments: the spatial aspects of architectural environments. The architectural space that is formed by the material surroundings facilitates people's lives as a physical space and reflects these lives' meanings to the specific people as a non-physical space.

Being: A nature or essence of a person to exist in the world.

Being-in-the-world (Heideggerian Terminology): the familiarity and belonging within a concrete environment, which is established by physical and psychological connections with this environment and people within.

Care partner: Paid caregivers who provide professional care, service, and/or support to residents in dementia care, which excludes unpaid caregivers such as residents' family or friend caregivers.

Couple suite: Couple suites allow residents with dementia and their spouses, who may or may not have dementia, to live together in the locked dementia care cottage. Each suite has a living room, a bedroom, a kitchen without stove and oven, a dining room, and a bathroom.

Dementia care: Caregiving for people with dementia. In this study, dementia care particularly refers to the caregiving that is provided to the residents who live in the three buildings of Red Deer, Wainwright, and Slave Lake.

Dementia Care Building: also presented as buildings that offer dementia care. Dementia care buildings specifically means the three buildings that this study is

focusing on. A dementia care building includes the dementia care cottages that are specifically for residents with dementia and any other relevant spaces that are located inside and outside the building.

Dementia Care Cottage: also called cottage. A (dementia care) cottage is a locked space that is designed and provides care specifically for residents with dementia. In this study, a cottage includes common spaces such as a living room, dining room, kitchen, washroom, corridor, service rooms including laundry, and the private spaces of individual suites (see "individual suite"). Some cottages may also include couple suites (see "couple suite"), and an outdoor garden or balcony.

Design guidelines: Sets of recommendations for the practice in design.

Dwelling: the process of engagement and awareness of being at home in the specific spatial environments.

Evidence-based design: Design that is based on scientific research towards achieving the best possible outcomes in design practice.

Individual suites: Individual suites are for residents with dementia who live by themselves in the locked dementia care cottage. Each individual suite has a bedroom and a bathroom.

Lived Experience: the descriptions of the first-hand accounts and impressions of living in a specific situation.

Metaphor: originally indicates the understanding process of the abstract domain from studying more specific domains. In this study, the in-depth exploration of the architectural lifeworld provides the more concrete world of lives through which the architects understand the meanings of dwelling in dementia care.

Object: a non-living thing that can be seen and touched.

Perception: Awareness of one's surrounding environments through physical sensation.

Person-Environmental relationship: the relationship between the built environment and the individual and his/her well-being.

Place: a material environment that reflects one's value, making him/her dwell in that environment; it is a subjective term, such that a material environment could be one's place but not another's.

Positionality: the self-realization of values and views that will influence the researcher's understanding of the world, including the exploration of knowledge in academic studies.

Practice-led research: research that addresses the needs of improvement from practice, leading to develop new knowledge that will advance the quality of practice.

Problematization: Questioning existing theories, towards producing extra knowledge to advance theory development.

Spatial configuration: the ordering of spaces within a specific context such as a building.

Things: all living beings (such people and plants) and non-living objects.

Whole: Something that is made complete by integrating different parts together.

Chapter One: Introduction

This is a practice-led study that seeks to advance knowledge of the meanings of spatial environments for people with dementia, in order to support architects in conducting better practice in the design of dementia care.[1] Practice-led research "takes the nature of practice and leads to new knowledge that has operational significance for that practice."[2] In any practice-led research project, issues are determined from practice, and the research addressing these issues is meant to lead a new understanding of practice.

In the design practice of dementia care, architects are challenged to apply design guidelines towards final solutions. Guidelines are usually developed through the accumulation and generation of research findings from previous studies, so that the guidelines are presented without the concrete context of the person-environmental relationship and, as such, are not fully understood by

[1] Throughout this dissertation, I will be using the term "dementia care" rather than "dementia care facility." According to the Cambridge Dictionary, a facility is "a place, especially including buildings, where a particular activity happens." Accordingly, a dementia care facility is understood as a building in which specialized care is provided to people with dementia. The facility as such plays the role of institution to afford the efficient and standardized caregiving that addresses the symptoms and behaviours caused by dementia. However, this study looks at people with dementia who conduct their daily lifeworlds as individuals within the building, exploring the meanings of architectural spaces to these people, rather than to the disease of dementia. In order to emphasize this focus, I have chosen to avoid using the word "facility."

[2] Linda Candy, "Practice Based Research: A Guide," *CCS Report* 1 (2006), p. 1. According to Candy, both practice-based and practice-led studies aim to advance the knowledge of practice; the knowledge contribution of the former should include creative outcomes, but the latter can be purely reflected on texts. In practice-based research, a full understanding of the study will not be realized when ignoring the creative works. This study includes three research films that are useful, but may not be necessary, to help better understand the architectural lifeworld of dementia care. The project industry sponsors can read this dissertation while seeing the three films in order to understand the three buildings' architectural lifeworlds. Due to ethical limitations, the broader audience of architects and designers who do not work for industry sponsors are not able to see these three research films, which include many people's faces. However, the in-depth descriptions and interpretations and relevant pictures in this dissertation will provide the information that they need in order to understand the meanings of spatial environments to residents in dementia care. Furthermore, research is always a part of the design process. Design practitioners gather information from literature and practice relating to the specific design projects, looking for new understandings and/or technologies that could help them conduct their particular design projects. According to Candy, practice-based and practice-led research both explore knowledge that can be shared by design practitioners, though in different ways.

architects.[3] By problematizing this issue, this study explores the lifeworlds of three buildings that offer dementia care (called architectural lifeworlds) in Alberta, Canada, to present the continuing stories of residents' lives afforded by the architectural space. These concrete stories are intended to supplement the understanding of design guidelines, metaphorically inspiring architects to conduct better dementia care design.

This chapter begins by introducing the positionality that guides my worldview and, consequently, this study. Based on this positionality, I problematize the dominant research paradigm of evidence-based design and examine its application to the development of design guidelines for dementia care, arguing the need to conduct more in-depth study to supplement existing knowledge. I then propose a theoretical framework of architectural lifeworlds and demonstrate how this approach complements evidence-based design as an approach to architectural design for people with dementia. Based on the theoretical framework, I present the purpose of the study and the research

[3] In recent years, design researchers have been criticizing the shortcomings of practicing architectural design by applying relevant design guidelines and codes. For example, Rieger and Strickfaden have argued that these guidelines and codes are highly abstract. Architects and designers are required to master knowledge of embodied experience in order to interpret these guidelines and codes, and thus to design space that is complex and individualized. According to Mohammad-Moradi and colleagues, design guidelines that are developed from an analysis-oriented approach are collections of parts; design is a process of synthesis in which solutions are created by synthesizing many aspects of the design and attempting to simultaneously solve numerous complicated problems. This synthesis-oriented approach to design cannot be fulfilled by design guidelines that are simply cumulative. Furthermore, Van Steenwinkel and colleagues argue that design is an inspiring process in which designers create their works based on their understanding of the designed phenomenon. The abstracted design guidelines are not sufficient to create such scenarios to inspire designers. This subject is discussed further later in this chapter, in the section "Problematizing Evidence-Based Design." See Asghar Mohammad-Moradia, Mohammad Ali Khan-Mohammadi, and Mojtaba Pour-Ahmadi, "Challenges of Using Building Regulations in Architecture from the Perspective of Design Research," *The Role of the World - Theoretical Studies and New Technologies of Architecture and Urban Development* 6, no. 4 (2017); Janice Rieger and Megan Strickfaden, "Taken for Granted: Material Relations between Disability and Codes/Guidelines," *Societies* 6, no. 1 (2016); Iris Van Steenwinkel, Chantal Van Audenhove, and Ann Heylighen, "Insights into Living with Dementia: Five Implications for Architectural Design" (paper presented at the Proceedings of Arch17—3rd international conference on architecture, Research, Care, Health, Aalborg University Copenhagen, Denmark, 2017).

questions it seeks to answer, as well as a dissertation map that generally introduces the structure of this dissertation in the last section of this chapter.

Positionality: A More Holistic, Dynamic, and Unique World

Positionality is defined as "the notion that personal values, views, and location in time and space influence how one understands the world."[4] The researcher's personal position affects how he/she produces knowledge, and as such is encouraged to clarify that position before engaging in research.[5] In this section, I clarify my positionality based on the philosophical foundation and values that I have established.

Having received almost all my fundamental education in China, I have established my values according to the influence of traditional Chinese philosophy, especially Daoism (also called Taoism).[6] When I had a chance to think academically about the reality of the world while in my first philosophy course during my doctoral study in Canada, I realized that no matter how much I travelled all over the world, my values had been deeply affected and established by the land where I was raised; people view the world as a whole, within which all things are changing but relate to each other to form a dynamic harmony. Guided by my personal interests and the requirements of my academic study, I explored phenomenology, particularly because of its similarities to Daoism. My positionality, influenced by Daoism and phenomenology, can be expressed in terms of holism, dynamic balance, and uniqueness, and in this section I relate my positionality to the understanding of the person-environmental relationship of people with dementia.

Two thousand years ago, Chuang Tzu stated, "Nature lives with me in symbiosis, and everything is with me as a whole."[7] For Chuang Tzu, human

[4] L. Sánchez, "Positionality," in *Encyclopedia of Geography*, ed. B. Warf (Thousand Oaks, California: SAGE Publications, Inc., 2010), p. 2258.
[5] Ibid.
[6] Lao Tsu, *Tao Te Ching* (Vintage, 1989).
[7] Zhuangzi., "The Book of Chuang Tzu," ed. Martin Palmer (London: Arkana, 1996).

beings and nature intertwine with one another to exist as a more holistic whole. In the western world, this idea of holism has been discussed in philosophy, especially in phenomenology, since the early twentieth century. Heidegger, for instance, demonstrated that the whole is greater than the sum of its parts.[8] He criticized the metaphysical tradition in which beings and things are sequentially located according to time, demonstrating the importance of understanding the world on the basis of different beings interacting with each other in a more holistic context.[9] This more holistic way of thinking has been applied to the academic studies in different areas. For example, based on Heidegger, Sarvimäki has criticized the tradition of separating well-being into physical, mental, social and spiritual aspects, seeking instead to establish a more holistic understanding of well-being.[10]

In Daoism, the idea of holism is considered in the human-environmental world, as well as in each individual thing, each of which has two sides, known as Yin and Yang. Yin stands for all "female" energy such as softness, smoothness, and darkness; yang stands for all "male" energy such as strength, solidity, and brightness.[11] The Yin-Yang system is the integration of the opposite energies in the cosmos to realize a dynamic balance; each side both supports and restricts the other.[12] Based on this relationship, Tuan considered space/spaciousness as creating a sense of freedom, while place is the pause of the specific moment which encourages people to dwell.[13] Both space and place, for Tuan, constitute a

[8] Martin Heidegger, John Macquarrie, and Edward Schouten Robinson, *Being and Time...* Translated by John Macquarrie & Edward Robinson (First English Edition). (London, 1962).
[9] Martin Heidegger, "Building Dwelling Thinking," *Poetry, Language, Thought* 154 (1971).
[10] Anneli Sarvimäki, "Well-Being as Being Well—A Heideggerian Look at Well-Being," *International Journal of Qualitative Studies on Health and Well-Being* 1, no. 1 (2006).
[11] Tony Fang, "Yin Yang: A New Perspective on Culture," *Management and Organization Review* 8, no. 1 (2012).
[12] Yin and Yang have been applied to different areas of practice in China. For example, in traditional Chinese medicine, physicians combine herbs that provide both heat and cold for their patients. In the traditional Chinese garden design, a room/building is always attached to a lake or a pool.
[13] Yi-Fu Tuan, "Space and Place: Humanistic Perspective," in *Philosophy in Geography* (Springer, 1979).

healthy existence because human beings need shelter and attachment, and also autonomy and freedom.[14] The Yin-Yang concept can also be found in the theory of mobility-dwelling, in which existential well-being is understood when people feel both comfortable (dwelling) and free (mobility) in a specific environment.[15]

A concept that is not explicitly discussed in Daoism, but is a large part of phenomenology, is uniqueness. The dynamic unity created from the integration of Yin and Yang further ensures the uniqueness of each thing in each moment in the world. Individuals use their own bodies to experience material environments. They perceive the world when combining their pasts and values that are established by the culture from which they come. As such, the meanings of life are unique to a specific environment that includes the specific people, things, time, and interaction, a state that Heidegger called being-in-the-world.[16] According to Merleau-Ponty, people perceive these meanings through their embodiment in and movement through their environments.[17] Seamon further explains this phenomenon as a dynamic process of communication between the flesh of the moving body and the material of the lived world: "through the moving, the body will get to where it needs to go."[18] This interplay between the body's embodiment/movement and the material environment produces a unique whole.

Applying the concepts of holism, dynamic balance, and uniqueness to people with dementia and their architectural environments, people with dementia, just like other individuals, perceive their existential well-being when they recognize their existence in the specific environment. Hughes applies Heidegger's being-in-the-world to his philosophical consideration of people with dementia, and calls this phenomenon dementia-in-the-world: "a person with

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[14] Ibid.
[15] Kathleen Galvin and Les Todres, *Caring and Well-Being: A Lifeworld Approach* (Routledge, 2013).
[16] Heidegger, Macquarrie, and Robinson, *Being and Time...* Translated by John Macquarrie & Edward Robinson (First English Edition).
[17] Maurice Merleau-Ponty, "Phenomenology of Perception," (London: Routledge, 1962).
[18] David Seamon, "A Lived Hermetic of People and Place," (2007), p. 07.

dementia, therefore, is always a being-in-the-world."[19] Perception thus relates to cognition, the body, and its movement, and the quality of surrounding environment. Though people with dementia have varying levels of cognitive impairment, a more proactive surrounding environment helps them retain their memories and maintain their engagement with the world, and vice versa.

Dekkers took a similar approach to answer the question "what do people need from other people in order to experience their world as worth living in and meaningful?"[20] in dementia care.[21] He concludes that the assistance of caregivers and family members can help people with dementia to be engaged with the world and, as such, help them continue to perceive their existential meanings. Based on the positionality of being more holistic, dynamic and unique, the next section problematizes the dominant research paradigm of evidence-based design and examines its application to the development of design guidelines for dementia care.

Problematizing Evidence-Based Design

Previous studies of architectural environments for dementia care have discussed person-environmental relationships and the transference of these relationships to design guidelines/standards for design practice. Within the first context, a majority of previous studies have focused on symptoms such as apathy[22] and delirium;[23] behaviours such as wandering,[24] recognition of

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[19] Julian C Hughes, *Thinking through Dementia* (Oxford University Press, 2011), p. 217.
[20] Wim Dekkers, "Dwelling, House and Home: Towards a Home-Led Perspective on Dementia Care," *Medicine, Health Care and Philosophy* 14, no. 3 (2011), p. 299.
[21] Ibid.
[22] Ying-Ling Jao et al., "The Association between Characteristics of Care Environments and Apathy in Residents with Dementia in Long-Term Care Facilities," *The Gerontologist* 55, no. Suppl_1 (2015).
[23] Jane McCusker et al., "Environmental Factors Predict the Severity of Delirium Symptoms in Long-Term Care Residents with and without Delirium," *Journal of the American Geriatrics Society* 61, no. 4 (2013).
[24] Donna L. Algase et al., "Wandering and the Physical Environment," *American Journal of Alzheimer's Disease & Other Dementias®* 25, no. 4 (2010).

lunchtime,[25] the use and function of rooms,[26] and residents' social interaction;[27] and ability such as activities of daily living.[28] Other studies have focused on more general care outcomes, such as quality of life,[29] well-being,[30] and quality of care.[31] Accordingly, specific design suggestions, such as small-scale layouts to create more homelike environments, single bedrooms to respect residents' privacy, and round loops to allow residents to wander safely, have been proposed.[32]

Scholars also use evidence-based design approaches to combine previous research outcomes and develop guidelines/standards that architects can apply to design practice. Evidence-based design is defined as "the deliberate attempt to base building decisions on the best available research evidence with the goal of improving outcomes and of continuing to monitor the success or failure for subsequent decision-making."[33] As a design approach, evidence-based design

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[25] Masahiro Tanaka and Minoru Hoshiyama, "Effects of Environmental Stimulation on Recognition of Mealtimes in Patients with Dementia," *Physical & Occupational Therapy In Geriatrics* 32, no. 2 (2014).

[26] John P. Marsden, Rebecca A. Meehan, and Margaret P. Calkins, "Therapeutic Kitchens for Residents with Dementia," *American Journal of Alzheimer's Disease & Other Dementias®* 16, no. 5 (2001).

[27] Michael Campo and Habib Chaudhury, "Informal Social Interaction among Residents with Dementia in Special Care Units: Exploring the Role of the Physical and Social Environments," *Dementia* 11, no. 3 (2012).

[28] Gesine Marquardt et al., "Association of the Spatial Layout of the Home and Adl Abilities among Older Adults with Dementia," *American Journal of Alzheimer's Disease & Other Dementias®* 26, no. 1 (2011).

[29] E.g. Christine Anne Edwards, Colin McDonnell, and Helga Merl, "An Evaluation of a Therapeutic Garden's Influence on the Quality of Life of Aged Care Residents with Dementia," *Dementia* 12, no. 4 (2013); Richard Fleming et al., "The Relationship between the Quality of the Built Environment and the Quality of Life of People with Dementia in Residential Care," ibid.15 (2016); Judith Torrington, "Evaluating Quality of Life in Residential Care Buildings," *Building Research & Information* 35, no. 5 (2007).

[30] Dieneke Smit et al., "Wellbeing-Enhancing Occupation and Organizational and Environmental Contributors in Long-Term Dementia Care Facilities: An Explorative Study," *International Psychogeriatrics* 26, no. 1 (2014).

[31] Rachel Milte et al., "Quality in Residential Care from the Perspective of People Living with Dementia: The Importance of Personhood," *Archives of Gerontology and Geriatrics* 63 (2016).

[32] E.g. Margaret P. Calkins, "Evidence-Based Long Term Care Design," *NeuroRehabilitation* 25, no. 3 (2009); Kristen Day, Daisy Carreon, and Cheryl Stump, "The Therapeutic Design of Environments for People with Dementia: A Review of the Empirical Research," *The Gerontologist* 40, no. 4 (2000).

[33] Center of Health Design, https://www.healthdesign.org/.

emphasizes the use of best evidence from previous studies to guide design practice, is the prevailing approach to connect research and practice.[34] As such, evidence-based design has been largely developed in the area of healthcare design research, such as the works of Ulrich and colleagues,[35] the Center of Health Design,[36] and WELL Building Standard,[37] and has been applied to the design research of long-term care facilities (including dementia care units) in recent years.[38] Researchers usually review existing literature, combine the research outcomes of those studies, and finally generalize these outcomes and subsequent evidence into design guidelines to advice architects to conduct design practice.[39]

Many scholars have questioned evidence-based design approaches and design guidelines. For example, Pati and Durmisevic, and Özer Ciftcioglu, have questioned the credibility of much of the evidence that may come from non-rigorous studies.[40] Rashid argues that it is meaningless to accumulate research findings from different studies to guide new design practices because design solutions are based on specific problems.[41] Scholars have also questioned the implementation of knowledge derived from research that had been conducted years ago to design practice that may include innovations such as the

[34] D Kirk Hamilton and JE Stichler, "Evidence-Based Design: What Is It," *Health Environments Research & Design Journal* 1, no. 2 (2008).
[35] E.g. Roger S Ulrich, "View through a Window May Influence Recovery from Surgery," *Science* 224, no. 4647 (1984); "Effects of Interior Design on Wellness: Theory and Recent Scientific Research," *Journal of Health Care Interior Design* 3, no. 1 (1991); Roger S Ulrich et al., "A Review of the Research Literature on Evidence-Based Healthcare Design," *HERD: Health Environments Research & Design Journal* 1, no. 3 (2008); Roger S. Ulrich et al., "A Conceptual Framework for the Domain of Evidence-Based Design," vol. 4, no. 1 (2010).
[36] Center of Health Design, https://www.healthdesign.org/.
[37] WELL Building Standard, http://delos.com/services/programs/well-building-standard.
[38] Calkins, "Evidence-Based Long Term Care Design."
[39] E.g. Gesine Marquardt, Kathrin Bueter, and Tom Motzek, "Impact of the Design of the Built Environment on People with Dementia: An Evidence-Based Review," *HERD: Health Environments Research & Design Journal* 8, no. 1 (2014); Roger S Ulrich et al., "A Conceptual Framework for the Domain of Evidence-Based Design," ibid.4 (2010).
[40] Sanja Durmisevic and Özer Ciftcioglu, "Knowledge Modeling Tool for Evidence-Based Design," vol. 3, no. 3; Debajyoti Pati, "A Framework for Evaluating Evidence in Evidence-Based Design," vol. 4 (2011).
[41] Mahbub Rashid, "The Question of Knowledge in Evidence-Based Design for Healthcare Facilities: Limitations and Suggestions," vol. 6, no. 4 (2013).

involvement of new technology.[42] Different tools, models, frameworks, and suggestions have been proposed to improve the quality of evidence-based design and its implementation on practice.[43] Though some of these improvements relate to ecological and holistic considerations, two underlying assumptions of evidence-based design naturally challenge the validity of applying this approach to architectural design practice in dementia care.

First, things have meanings only in the specific situations in which different things integrate with one another. People are "enmeshed"[44] in their surrounding environments through their embodied experiences in a specific world context and through their holistic perception of the meanings of experiences.[45] Design guidelines that are developed from the accumulation and generation of isolated evidence that is devoid of the meanings of people's enmeshed relationship with their surrounding environments provide little information to architects to understand people's lived experiences. This, as mentioned above, leads to challenges for architects to apply design suggestions/guidelines to design practice that must consider different individuals' values and needs.[46]

Second, design is a problem identifying and solving process in which any given problem may have multiple solutions. Design problems are generally considered ill-structured due to the many people and circumstances that are

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[42] Franklin Becker et al., "Integrated Healthscape Strategies: An Ecological Approach to Evidence-Based Design," vol. 4 (2011); Saif Haq and Debajyoti Pati, "The Research-Design Interaction: Lessons Learned from an Evidence-Based Design Studio," vol. 3 (2010); Caren S. Martin, "The Challenge of Integrating Evidence-Based Design," vol. 2, no. 3 (2009).

[43] Sanja Durmisevic and Özer Ciftcioglu, "Knowledge Modeling Tool for Evidence-Based Design," ibid.3 (2010); Debajyoti Pati, "A Framework for Evaluating Evidence in Evidence-Based Design," ibid.4 (2011); Mahbub Rashid, "The Question of Knowledge in Evidence-Based Design for Healthcare Facilities: Limitations and Suggestions," vol. 6, no. 4 (2013).

[44] Tim Ingold, *Being Alive: Essays on Movement, Knowledge and Description* (Routledge, 2011).

[45] Maurice Merleau-Ponty, *Phenomenology of Perception* (Routledge, 2013); David Seamon, "Merleau-Ponty, Perception, and Environmental Embodiment: Implications for Architectural and Environmental Studies," *Carnal Echoes: Merleau-Ponty and the Flesh of Architecture* (2014).

[46] Rieger and Strickfaden, "Taken for Granted: Material Relations between Disability and Codes/Guidelines.";Van Steenwinkel, Van Audenhove, and Heylighen, "Insights into Living with Dementia: Five Implications for Architectural Design."

related to those problems,[47] which cannot be completely solved by analogical ways of thinking.[48] The analogical method in evidence-based design sets up the foundation of problem reasoning, but architects still require other approaches that allow them to use this reasoning to explore a broader range of design solutions. Metaphorical reasoning that increases architects' knowledge of the people for whom they are designing and that inspires architects' innovation of solutions is a non-analogical approach to addressing ill-structured problems. For example, in dementia care research, the research outcomes of in-depth explorations of people's lived experience are a more understandable domain that can help architects to understand the meanings of lives of people with dementia and, as such, to create design solutions that may address ill-structured problems.

These two drawbacks of evidence-based research are particularly acute in research into dementia care because people with dementia are not a homogeneous group. They are people who are very different from one another, who often have compounding health issues with multiple symptoms, behaviours and compounding disabilities. These complicated situations, together with unique and distinctive personal lifestyles, result in each individual being entirely different from others. Without more comprehensive and nuanced information of people's lived experiences, architects may find it hard to understand the complicated lives of people with dementia when applying any kind of guideline to design practice.[49] For example, for Fleming and colleagues,[50] the principle of small size is meant to translate into the number of suites available in a dementia

[47] Vinod. Goel, "Sketches of Thought," (Cambridge, Mass.: MIT Press, 1995); Han Hee Choi and Mi Jeong Kim, "The Effects of Analogical and Metaphorical Reasoning on Design Thinking," *Thinking Skills and Creativity* 23 (2017).
[48] Goel, "Sketches of Thought."; Choi and Kim, "The Effects of Analogical and Metaphorical Reasoning on Design Thinking."
[49] Van Steenwinkel, Van Audenhove, and Heylighen, "Insights into Living with Dementia: Five Implications for Architectural Design."
[50] Fleming et al., "The Relationship between the Quality of the Built Environment and the Quality of Life of People with Dementia in Residential Care."

care cottage, while according to Van Steenwinkel and colleagues,[51] architects usually understand this principle in other ways, such as making the size of individual suites as small as possible.

Accordingly, this study problematizes the assumptions underlying evidence-based design and explores additional information that will supplement this theory and its application in architectural design practice of dementia care. Problematization that "[produces] new and inspiring points of departures for theory development"[52] allows for the opportunity to question evidence-based design and to think about alternative approaches that may lead to a new knowledge of design for dementia care. The outcomes of this study also provide additional information to help scholars, designers, and caregivers understand lived experiences in dementia care, and to help architects use the meanings of architectural environments to people with dementia to improve dementia care design.

In the exploration of people's lived experience and associations with the architectural environments, Van Steenwinkel and colleagues have conducted insightful studies in the home environment.[53] However, the lived experiences are much more complicated when such research is conducted by balancing respect for residents' individualism that requires specialized care, and the nature of shared group care and congregate living in the cottage environment. Residents' experiences, interactions with and use of material things and spatial environments are also experienced by care partners and other relevant people,[54]

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[51] Van Steenwinkel, Van Audenhove, and Heylighen, "Insights into Living with Dementia: Five Implications for Architectural Design."

[52] Jörgen Sandberg and Mats Alvesson, "Ways of Constructing Research Questions: Gap-Spotting or Problematization?," *Organization* 18, no. 1 (2011). p. 33.

[53] Iris Van Steenwinkel, Chantal Van Audenhove, and Ann Heylighen, "Mary's Little Worlds: Changing Person–Space Relationships When Living with Dementia," *Qualitative Health Research* 24, no. 8 (2014).

[54] For the purposes of this study, a care partner is a paid caregiver who provides professional care, service, and/or support to residents in dementia care; this definition excludes unpaid caregivers such as residents' family members or friend caregivers. The definition used in this study differs slightly from the usual academic definition of a care partner as "an unpaid nonprofessional care assistant, usually a family member who assumes primary responsibility for

so that these unique tangible elements are fused with these complicated lived experiences. This fusion directly affects residents' quality of dwelling, on which the summarizing paper and the research film of Strickfaden and colleagues have both reflected.[55]

In addition to the summary of previous studies and the visual communication of the film, it is necessary to explicitly discuss how the architectural environments afford people's lives in dementia care and to address the design factors that may affect the success of this affordance. This discussion, as demonstrated above, must be interpreted continuously, so that architects can understand how the meanings of spatial environments afford residents' lives in

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assisting a chronically impaired individual, with the management of their health." See Eric Zook, "A Consideration of the Role of Care Partners in Long Term Care for the Frail Elderly," *Pride Institute Journal of Long Term Home Health Care* (1992). The term "care partner" is specifically used in the three buildings that are the focus of this study, under the guidance of the Eden Alternative Model of Care, which is implied in these three buildings' operation. See more details of Eden Alternative Model of Care at: https://www.edenalt.org/about-the-eden-alternative/mission-vision-values/ As this study is phenomenological in scope, using the same terms as are used in the buildings themselves helps me, as the researcher/author of this study, become more involved in the phenomenon of dementia care throughout the project, better understand the meanings of architectural lifeworld, and better interpret my findings. Furthermore, according to Bennett and colleagues, the term "care partner" places greater emphasis on a partnership in which care plans can be negotiated and care responsibilities are shared by the care providers and receivers. Comparably, the terms "carer" and "caregiver" are used in a one-way caregiving relationship in which the care receivers usually passively receive care from the care providers. This emphasis on collaboration between care providers and care receivers in care partner allows for a less institutional and a more collaborative interpretation of the architectural lifeworld. See Paul N. Bennett, Wei Wang, Mel Moore, and Cate Nagle, "Care Partner: A Concept Analysis," *Nursing Outlook* 65, no. 2 (2017): 184-94. In other words, the Eden Alternative Model of Care uses the term "care partner" to call the paid caregiver in order to create a more symmetrical relationship between the care recipient and caregiver in which they are expected to establish a collaborative relationship in terms of the contents and behaviours of caregiving. However, based on my study, it looks like many care partners in the three buildings are actually in the position of power in which they provide caregiving based on the building care policies that actually are institutional. Care partners in these three buildings always gauge timing on daily routines and daily care. For example, they set the time for bathing and lunch and dinner meals, based on the needs of the building operation rather than the needs of the residents. In Wainwright and Slave Lake buildings, the connecting doors between the cottages and the attached gardens that are securely fenced are always locked. Residents who want to smoke or walk in the gardens have to receive permission from the care partners who usually decline the request because they are too busy to company or to watch the residents in the garden.

[55] Megan Strickfaden, "Caring by Design: Innovating Living Spaces for Persons with Dementia," *Design Community* 4, no. 2018 (2018); Nicole Gaudet, Megan Strickfaden, and Steven Hope, "Dementia Care by Design," (2015).

dementia care. Lifeworld, the study of people's lived experience in relation to the surrounding material world, is naturally connected to architecture. Once a building sustains people's lifeworld, it becomes the place of dwelling and has meaning to the people within.[56] As such, this study creates a theoretical framework of architectural lifeworlds, to explore the continuing stories of, and reflect the meanings of architectural environments to, residents in dementia care.

Theoretical Framework of Architectural Lifeworld

A theoretical framework is "the use of a theory (or theories) in a study that simultaneously conveys the deepest values of the researcher(s) and provides a clearly articulated signpost or lens for how the study will process new knowledge."[57] In a qualitative dissertation, the theoretical framework supports the construction of the whole study, including problem identification, literature review, methodology development, and more.[58] The theoretical framework of the architectural lifeworld is presented here as the foundation of knowledge construction for this study.

An architectural lifeworld is the study of a building's affordances that relate to the daily lives of the people within that building. According to Seamon, the architectural lifeworld is useful to explore "the various lived possibilities for who uses and encounters a building how in what manner of time."[59] In other words, research into the architectural lifeworld investigates the lived community within the architecture, in which different people share spaces and interact with each other within the limited spaces that are identified by the architecture. In this study, the explorations of the architectural lifeworld show how the space of

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[56] David Seamon, "Architecture, Place, and Phenomenology: Buildings as Lifeworlds, Atmospheres, and Environmental Wholes," *Place and Phenomenology* (2017).
[57] Christopher S. Collins and Carrie M. Stockton, "The Central Role of Theory in Qualitative Research," *International Journal of Qualitative Methods* 17, no. 1 (2018). p. 2.
[58] Azadeh Osanloo and Cynthia Grant, "Understanding, Selecting, and Integrating a Theoretical Framework in Dissertation Research: Creating the Blueprint for Your 'House'," *Administrative Issues Journal: Connecting Education, Practice, And Research* 4, no. 2 (2016).
[59] Seamon, "Architecture, Place, and Phenomenology: Buildings as Lifeworlds, Atmospheres, and Environmental Wholes," p. 2.

dementia care allow residents to dwell, or not, when their lives are associated with other people such as care partners, other residents, and their families, as well as with the architectural spaces.

The theoretical framework of the architectural lifeworld is developed based on Seamon's theory of building as lifeworlds, atmospheres, and environmental wholes.[60] The concept of the architectural lifeworld was originally developed as one theme that paralleled with architectural atmospheres and environmental and human wholes to understand architecture from a phenomenological perspective.[61] In this study, I consider the latter two themes as parts of the architectural lifeworld.

The architectural atmosphere of a building is "the ineffable architectural presence and ambience of a building that make it unique or unusual as and environment and place."[62] This definition also defines the goal of exploring the architectural lifeworld: to understand the meanings of architecture to the people who use it. The meanings that are constructed by the lifeworld give the architecture a unique atmosphere for the specific people. Moreover, the integration of humans and their environment emphasizes the phenomenological approach of conducting architectural lifeworld research the person-environmental relationship is established on the basis of integration rather than of duality.

The explorations of the architectural lifeworld are based on a phenomenological foundation in which the architectural environments and people's lives are integrated as a whole. Following Husserl's "back to the things itself" principle of phenomenology,[63] architectural phenomenology studies architecture in the concrete situations in which people conduct their lives and determine meanings. Seamon defines architectural phenomenology as "the

[60] Ibid.
[61] Ibid.
[62] "Architecture and Phenomenology," *The Routledge* (2018), p. 8.
[63] Edmund Husserl, *The Crisis of European Sciences and Transcendental Phenomenology: An Introduction to Phenomenological Philosophy* (Northwestern University Press, 1970).

descriptive and interpretive explication of architectural experiences, situations, and meanings as constituted by qualities and features of both the built environment and human life."[64] In the past decades, architectural phenomenology scholars have related their architectural studies to the broader context of human/environmental interaction, such as place,[65] experience,[66] dwelling,[67] and embodiment.[68] These studies generally include the vivid stories of people's lives within the concrete architectural context in order to explore the meanings that are hidden behind these lifeworlds. In this study, I explore the architectural lifeworld through three phenomenological case studies in three dementia care buildings in which residents with dementia conduct their real lives.

The architectural lifeworld is a practice-led framework meant to advance the knowledge of architectural design practice of dementia care. This study uses the architectural lifeworld framework that includes the metaphorical approach to supplement the limitations of conducting analogical reasoning and design in evidence-based design for dementia care. As discussed above, ill-structured design problems can only be identified and solved after comprehensively understanding the phenomena that are constructed by all details of people's lives.[69] In this study, these explorations of architectural lifeworld in dementia care are reflected in a multimodal research outcome, using films, pictures, sketches and texts to tell the architects the lived stories of architectural lifeworlds. By reviewing these multimodal materials, architects will gain a deeper understanding of the meanings of dwelling and how the spatial environments in

[64] Seamon, "Architecture and Phenomenology," p. 1-2.
[65] Christian Norberg Schulz, *Genius Loci: Towards a Phenomenology of Architecture* (Academy Editions, 1980); Tuan, "Space and Place: Humanistic Perspective."
[66] Robert McCarter and Juhani Pallasmaa, *Understanding Architecture* (Phaidon, 2012), p. 11.
[67] Ibid.
[68] Juhani Pallasmaa, *The Eyes of the Skin: Architecture and the Senses* (John Wiley & Sons, 2012).
[69] The definition of metaphor and its application to different areas is discussed in more detail in the section "Metaphor in Design" in Chapter Three.

architecture help to afford these meanings. These understandings will be applied to their future designs and creations.

The lifeworld, in a phenomenological context, is "the everyday realm of experiences, actions, and meanings typically taken for granted." [70] These experiences, actions and meanings are constructed by different lifeworld dimensions that may include self, sociality, embodiment, temporality, spatiality, meanings, and communication.[71] The scope of this doctoral dissertation is meant to improve architects' understanding of the meanings of spatial environment for dementia care. I have chosen here to focus on the spatial dimension of the lifeworld, which closely connects with the architectural environment. This decision does not mean that I will exclude other dimensions in investigating the architectural lifeworld and its meanings. The study does include other dimensions as needed to support the spatial study of the architectural lifeworld of people with dementia.

Research Purpose and Research Questions

It is important to point out that this study does not deny existing evidence-based design or the relevant guidelines for the architectural design of dementia care. Instead, it takes the lifeworld perspective in order to study architecture and its meanings for people with dementia, to supplement the understanding and implementation of evidence-based design in practice. Based on the theoretical framework, the purpose of this study is to explore the architectural lifeworlds and their meanings in dementia care, in order to metaphorically inspire architects to conduct better design practice. The general research question asked in this study is:

[70] Seamon, "Architecture, Place, and Phenomenology: Buildings as Lifeworlds, Atmospheres, and Environmental Wholes," p. 1.
[71] Peter Ashworth, "The Phenomenology of the Lifeworld and Social Psychology," *Social Psychological Review* 5, no. 1 (2003).

What are the architectural lifeworlds of dementia care in three buildings in different cities/towns owned and operated by the same provider?

It includes the following sub-questions:

1. How do the spatial environments afford residents' lives in dementia care?
2. What are the meanings of spatial environments to people with dementia?
3. How can we apply the architectural lifeworld to design in order to enhance the design quality for dementia care?

Dissertation Map

This dissertation consists of six chapters. The first chapter introduces my positionality, problematizes evidence-based design paradigms, presents the theoretical framework of the architectural lifeworld, proposes the research purpose and research questions, and finally outlines the map of this dissertation.

Chapter Two consists of a literature review that further explores the theoretical framework of the architectural lifeworld, divided into three sections to answer three questions (Figure 1-1). The first section explains in more detail which aspects of the architectural lifeworld framework are included in the study. The second section introduces metaphor and its application in design, to clarify why this study uses the architectural lifeworld framework to enhance the design quality of dementia care. The third section explores the study of the architectural lifeworld in dementia care by referencing studies of architectural space, spatial affordance and the meanings of dwelling and home.

Chapter Three introduces the methodological approaches and methods used in this study in order to ensure that the research outcomes will address the questions that were asked in the first chapter (Figure 1-2). It includes an articulation of methodologies, research procedure, data collection, data analysis, validity and ethical consideration.

Chapters Four and Five present the cyclical process of exploring the meanings of spatial environments to people with dementia and the application of these meanings to design practice (Figure 1-3). Chapter Four provides descriptions of the three buildings examined in this project to show their general architectural design information, such as locations, sizes, functions and spatial organizations, and general cottage operation information, such as mealtime, recreation and other care policies. The chapter then explores the architectural lifeworld of each dementia care building, from the respective perspectives of spatial configuration (in the Red Deer building), public/private space definition (in the Wainwright building), and a normal day life (in the Slave Lake building), to present the real lives of the residents with dementia within the specific context of architecture of dementia care.

Chapter Five presents the further exploration of the architectural lifeworld of dementia care buildings based on the research findings in Chapter Four. The first section discusses the meanings of dwelling and how these dwellings can be afforded by their spatial environments. The second section brings the discussion back to design, referencing architectural theories and principles that are familiar to the architects, connecting these theories and principles to the research findings in this study, and metaphorically helping architects to conduct design problem solving and creation.

Chapter Six provides a summary of this dissertation, its contributions and limitations, and future trends and further explorations.

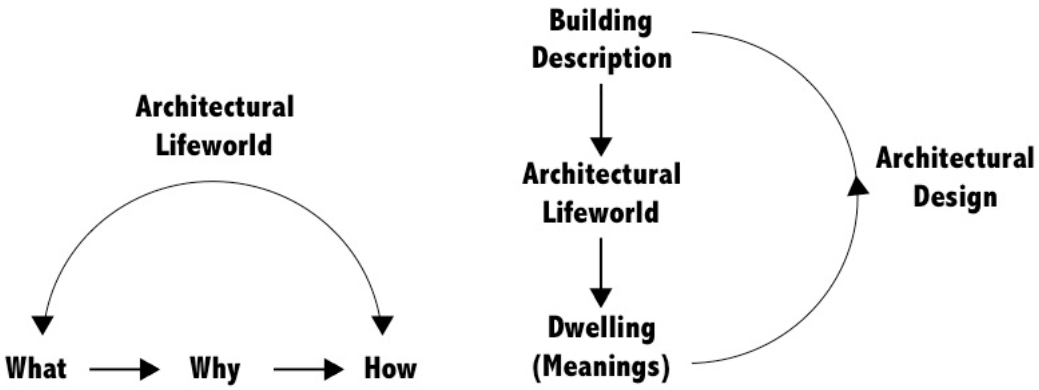

Figure 1-1: Map of Literature Review of Architectural Lifeworld (left)
Figure 1-3: Cyclical Process from Architectural Lifeworld Research to Design Practice (right)

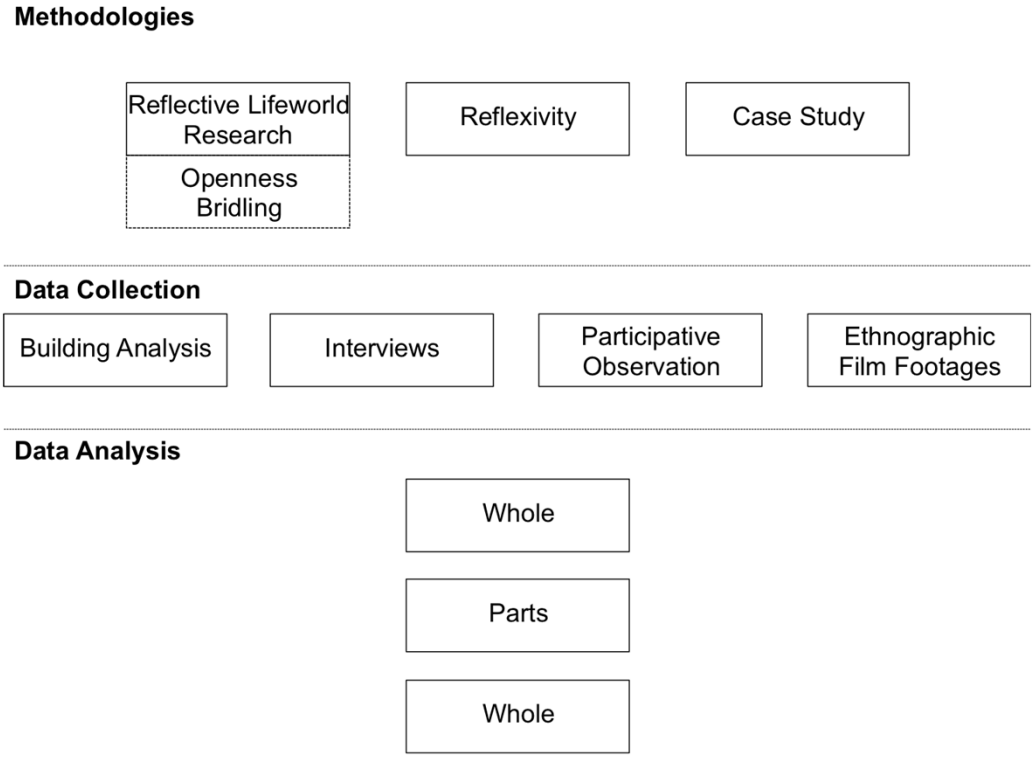

Figure 1-2: Map of Research Methodologies and Methods in This Study

Chapter Two: Literature Review

The purpose of this study is to enhance architects' understanding of the meanings of spatial environments to people with dementia by exploring the architectural lifeworlds of dementia care. The first chapter introduces the theoretical framework of the architectural lifeworld that is used to guide this study, while this chapter establishes the foundation of the study by exploring how this framework is supported by relevant literature.

The architectural lifeworld, as demonstrated in Chapter One, determines the architectural environment's affordance to the people who conduct their everyday lives within the building. The following three sections outline previous literature that discusses the contents, the rationales, and the strategies of studying architectural lifeworlds. The first section clarifies what the architectural lifeworld is and compares it to other relevant concepts. The second section explains why it is necessary to study the architectural lifeworld, arguing the importance of using architectural lifeworlds for metaphorical reasoning and creative design in the field of architectural design for dementia care. The last section explores how architectural lifeworld studies are conducted, focusing on the concepts of architectural space, affordance and dwelling.

A Study of Architectural Lifeworld

This study considers the architecture of dementia care as a lifeworld in itself, in which residents have their own lifeworlds and the interconnections of their lifeworlds with those of others and the architecture create meanings. This chapter reviews the development of lifeworld in literature and its application in dementia studies, clarifies the differences and associations among lived experiences, lifeworlds and architectural lifeworlds, and compares two methods of studying lifeworlds relating to architecture in dementia care: one that regards

architecture as a lifeworld and another that explores individuals' lifeworlds under the support of architectural environments.

Definition and Dimensions of Lifeworld

Lifeworld, as discussed above, is defined as people's lived experience relating to their surrounding environments, and the world of people's everyday lives. Husserl proposed the idea of the lifeworld as a *natural attitude* to demonstrate the intimate relationships of human beings and their world,[72] which sets up the ontological foundation of the lifeworld, in which the world is a whole rather than being separated into objective and subjective sections. Later philosophers took epistemological approaches to understanding the concept. First, the world in a lifeworld is experienced and lived. Merleau-Ponty defines the lifeworld as the world of perception,[73] which is lived and perceived by people's interactions with the concrete world. Furthermore, the lifeworld is tacit. According to Gadamer,[74] the lifeworld is hidden in normal daily lives of which people are generally unaware even though it is the basis of people's experiences. In other words, the study of the lifeworld reveals the meanings of lives within complicated everyday lived situations of which people are always unaware.

Based on the philosophical foundations of Husserl, Heidegger, Merleau-Ponty, Van de Berg, and Boss, scholars have explored various types of relationships that may refer to lifeworld studies. Phenomenological psychologist Ashworth defines seven essential features of the lifeworld as self, sociality, embodiment, temporality (and its events), spatiality (and its objects), project (meanings), and discourse (communication).[75] Similarly, health care scientists

[72] Edmund Husserl, *The Crisis of European Sciences and Transcendental Phenomenology: An Introduction to Phenomenological Philosophy* (Northwestern University Press, 1970).
[73] Merleau-Ponty, "Phenomenology of Perception."
[74] Hans-Georg Gadamer, "Wahrheit Und Methode: Grundziige Einer Philosophischen Hermeneutik," *Gesammelte Werke J* 5 (1960).
[75] Ashworth, "The Phenomenology of the Lifeworld and Social Psychology."

Galvin and Todres include temporality, spatiality, inter-subjectivity, embodiment, and mood as aspects of lifeworld study.[76]

Both Ashworth's and Galvin and Todres's theories of the lifeworld have been applied to dementia care. For example, Ashworth and Ashworth described the lifeworld of a woman with dementia by using the seven features that Ashworth proposed[77] in order to discuss the lived experience of the woman as an individual.[78] McFadden and colleagues also applied Ashworth's seven essential features to the lifeworld of a group of people with dementia who joined in a painting activity.[79] Similarly, Galvin and Todres applied their lists of lifeworld aspects to the case study of a husband caring for his wife who has dementia.[80] Rather than showing the lifeworld directly from the features of temporality, spatiality, inter-subjectivity, embodiment, and mood, Galvin and Todres use these features as tools to analyze the data and relate them to the descriptions and interpretations of six scenarios reflecting the wife's situations and the husband's caregiving.[81]

These studies show the daily lives and meanings in the individuals' concrete lived situations (such as a woman, a painting activity, and a husband's caregiving) when integrating different lifeworld-related features. These multiple lived relationships are based on these individuals and their needs. Spatiality was one of many features associated with the individuals' needs in their lifeworlds. The research outcomes of the lived experiences of people with dementia and their relationships with others, both people and environments, could be helpful for care partners and scholars who do first-hand work (practice and research) in

[76] Galvin and Todres, *Caring and Well-Being: A Lifeworld Approach*.
[77] Ashworth, "The Phenomenology of the Lifeworld and Social Psychology."
[78] Ann Ashworth and Peter Ashworth, "The Lifeworld as Phenomenon and as Research Heuristic, Exemplified by a Study of the Lifeworld of a Person Suffering Alzheimer's Disease," *Journal of Phenomenological Psychology* 34, no. 2 (2003); Ashworth, "The Phenomenology of the Lifeworld and Social Psychology."
[79] Susan H McFadden, Vanessa Frank, and Alyssa Dysert, "Creativity in the "Now" of Advanced Dementia: Glimpses of the Lifeworld through Storytelling and Painting," *Journal of Aging, Humanities, and the Arts* 2, no. 2 (2008).
[80] Galvin and Todres, *Caring and Well-Being: A Lifeworld Approach*.
[81] Galvin and Todres, *Caring and Well-Being: A Lifeworld Approach*.

this field. However, for architects who are interested in how lifeworlds are shaped by their architectural environments, these are simply not enough, even though all lifeworld features are intertwined.

As the closest lifeworld-related feature relating to architectural environments in both Ashworth's and Galvin and Todres's models, spatiality should be specifically explored in order to produce the research outcomes that most directly demonstrate the meanings of architectural spaces to people with dementia. As such, this study specifically discusses the architectural environments' provocative affordance to people's lifeworlds. As an innovative concept, the architectural lifeworld is explored in terms of its associations with and differences from other relevant concepts in the following two sections.

Lived Experience, Lifeworld, and Architectural Lifeworld

As discussed in Chapter One, both Seamon's original concept of the architectural lifeworld and my further development of this theoretical framework are based on a phenomenological foundation in which human beings and the surrounding world are constructed in an interactive context, as noted by Sirowy: [82]

> We understand ourselves and things in terms of the world. The world, however, is not the ultimate frame within which everything is conceived; the world also needs a human existence to perceive it.

According to Sirowy, within this interactive human-world context, the lived experience emphasizes more of the human experience when the lifeworld focuses more on the background world that people experience.[83] The architectural lifeworld explores the lifeworld within a concrete territory of

[82] Beata Sirowy, *Phenomenological Concepts in Architecture: Towards a User-Oriented Practice* (Arkitektur-og designhøgskolen i Oslo (AHO), 2010), p. 94.
[83] Ibid.

buildings, in which person-environmental relationships are reflected in the more tangible materials and more perceivable spatial environments. In other words, the architectural lifeworld helps us understand the meanings of architectural environments by studying the worlds of the lives within the concrete building.

Architectural Lifeworld and Individual Lifeworld

Spatiality in the lifeworld, "[referring] to the environing world; a world of places and things that have meaning to living,"[84] is the totality of subjective experiences and feelings within material environments. According to Seamon, the spatial study of the lifeworld could focus on the lifeworld of each experiencing individual associated with the architectural environments (called individual lifeworld). However, in the architectural lifeworld approach, "we can speak of the lifeworld of the building itself … [and] of the situation or place that provides the setting for those individual and group lifeworlds."[85]

This section uses two articles by Van Steenwinkel and colleagues to compare these two approaches to the spatial study of the lifeworld of people with dementia. Though the authors did not include the term *lifeworld* in their works, their studies closely relate to the lifeworld and the comparison of these two papers help to clarify these two approaches of lifeworld studies.

Van Steenwinkel and colleagues' first paper investigated the changes in the person-environmental relationship in the home of of Mary, a woman with dementia, and her husband.[86] Beginning with the changes in Mary's life caused by her dementia, the study examined how these changes are associated with different factors, including built environments and things within those environments. For example, Mary and her husband exchanged their dark antique furniture for lighter-coloured modern furniture and painted the walls of their

[84] Galvin and Todres, *Caring and Well-Being: A Lifeworld Approach*, p. 27.
[85] Seamon, "Architecture, Place, and Phenomenology: Buildings as Lifeworlds, Atmospheres, and Environmental Wholes."
[86] Van Steenwinkel, Van Audenhove, and Heylighen, "Mary's Little Worlds: Changing Person–Space Relationships When Living with Dementia."

living room and bedroom in lighter colours, which helped Mary to visually recognize the location of her couch and encouraged good moods. Mary's home environment and other factors such as her self (identity) and her inter-subjectivity with her husband and the household assistant are components of her lifeworld.

Van Steenwinkel and colleagues' other paper discussed the lifeworld of Frances, another woman with dementia, and her husband, focusing on her lived experience supported by the built environment of her house.[87] They first examined the home's functional spaces, including the kitchen, the living room, the terrace and garden, the bedroom, and the neighborhood environment. The remainder of the article explored how Frances conducted her daily life within these functional spaces, together with her husband. For example, when assisting her husband cooking in the kitchen, Frances was sometimes asked to get the drinks from the basement while her husband ensured that the lights in the basement were on. The secure and familiar spatial configuration between the kitchen and the basement supports Frances' engagement with the behaviour of getting a drink and enhances the meanings of her and her husband's lives.

Both of these approaches to the home-based person-environmental relationship provide resources for architects to understand the lives of people with dementia. Comparably, this study explores the buildings that offer care for a group of residents with dementia. I tend to use the architectural lifeworld approach that can be used to determine "how the same architectural environment can host different lifeworlds and invoke a spectrum of varying place encounters, situations, and meanings."[88] It is important to demonstrate that the architectural lifeworld is constructed by multiple individual lifeworlds within the building. By using the architectural lifeworld, this study explores the

[87] "Offering Architects Insights into Experiences of Living with Dementia: A Case Study on Orientation in Space, Time, and Identity," *Dementia* (2017).
[88] Seamon, "Architecture, Place, and Phenomenology: Buildings as Lifeworlds, Atmospheres, and Environmental Wholes."

various lived possibilities encountering within the building and to understand their meanings.

Metaphor in Design

For the purposes of this study, the architectural lifeworld is meant to help architects understand the lives of residents within the specific context of dementia care buildings, in order to inspire better design practice. This is a metaphorical process in which the architectural lifeworld that is explored in this study assists the architects to identify design problems and inspires them to create design solutions. In this section I will review the concept of metaphor, its applications in design research, and relate it to problem reasoning, creation and dementia.

Metaphor in Relation to Design Research

Metaphor is defined as "understanding one conceptual domain in terms of another conceptual domain."[89] Specifically, in order to understand domain A, which is "abstract, diffuse, and lack clear delineation,"[90] we must study domain B, which is more tangible, such as human bodies, plants, and buildings. For example, studying the surrounding environment that is constructed by tangible material things (domain B) helps us understand the lives and well-being of people with dementia (domain A). Metaphor is traditionally used in linguistic research to explore the "links between body experience, abstract thought, and metaphoric language and action." [91] It is considered a systematic thought

[89] Zoltan Kovecses, *Metaphor: A Practical Introduction* (Oxford University Press, 2010), p. 5.
[90] Ibid., p. 5.
[91] Raymond W. Gibbs, "Embodied Metaphor," in *The Bloomsbury Companion to Cognitive Linguistics*, ed. Jeannette Littlemore and John R. Taylor (Bloomsbury Publishing, 2014), p. 169; George Lakoff and Mark Johnson, *Metaphors We Live By* (University of Chicago Press, 2008).

structure that exists everywhere in people's lives rather than being purely used in language.[92]

The application of metaphors in design can be found in virtual interaction design, such as interface design and game design.[93] Specifically, interaction design researchers use metaphors to understand the background of what they are going to design for and explore the design problems, to inspire ideas and communicate with their users.[94] The design researchers thus developed relevant tools to implement metaphors in their work.[95] Through metaphors, the virtual products connect with users' prior knowledge in cognition and as such are easily understood and used.[96]

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[92] This systematic structure, according to Lackoff and Johnson, is constructed by conceptual metaphors, orientational metaphors, ontological metaphors, and creative metaphors. For example, in the metaphor "anger is heated fluid in a container," the heated fluid in the container is a conceptual metaphor that represents the emotion of anger. This metaphorical association is created based on the space that allows the water to be heated (orientational metaphor) and the concrete things, such as the pot and water, that construct the space of orientation (ontological metaphor). Furthermore, the metaphorical process of understanding the new things is a creation-producing process.[92] For example, when "anger" is explained as "heated fluid in a container", a scene of water in a pot being heated is a concrete phenomenon, and other ways of interpreting "anger" have been suppressed. However, the specific shape of a pot, how the pot is heated, and where this heating process is conducted depend on different people's cultures and lived experiences. During this interpretive process, new meanings of anger accordingly occur. These conceptual, orientational, ontological, and creative natures allow the application of metaphors to environmental design, as architects use concrete material things (ontological) to design (creative) the space/place (orientational) that represents (conceptual) the needs in the users' minds.

[93] For example, see Alan F. Blackwell, "The Reification of Metaphor as a Design Tool," *ACM Transactions on Computer-Human Interaction (TOCHI)* 13, no. 4 (2006); Sebastian Martin Möring, "Games and Metaphor–A Critical Analysis of the Metaphor Discourse in Game Studies," unpublished doctoral dissertation, IT University of Copenhagen (2013).

[94] Dan Saffer, "The Role of Metaphor in Interaction Design," *Information Architecture Summit* 6 (2005); Antonella De Angeli, Alistair Sutcliffe, and Jan Hartmann, "Interaction, Usability and Aesthetics: What Influences Users' Preferences?" (paper presented at the Proceedings of the 6th conference on Designing Interactive systems, 2006).

[95] Blackwell, "The Reification of Metaphor as a Design Tool."

[96] For example, in desktop design, the icons are usually designed as metaphors for the actual patterns in people's daily lives. The pattern of a calendar on the desktop connects with people's cognition of what a calendar looks like, so that users can easily click the calendar icon when looking for the date and time.

In built environments, architects and researchers mainly use metaphors to inspire architectural design creativity,[97] to solve design problems,[98] to conduct design education,[99] and to describe/interpret the design of architecture.[100] For example, Kahn's design for the Phillips Exeter Library uses natural light as a metaphor for the abstract knowledge contained in the library. As such, the light inspired Kahn to design a library building that helps people perceive the concept of knowledge in a tangible library space.[101] The following section discusses two main functions of metaphor – metaphorical reasoning and inspiring creativity – to demonstrate the role of metaphor in architectural design for dementia care.

Metaphorical Reasoning, Creative Design and Dementia Care

Design is a process of addressing and solving problems under the support of metaphors. Design problems, according to Goel, are all ill-structured, which cannot be solved by analogical thinking.[102] Instead, metaphorical reasoning, defined as "an interactive process through which architects gradually increase their knowledge of a design situation,"[103] is a more innovative way to solve these ill-structured design problems.[104] Partially agreeing with this argument, Choi and Kim demonstrated that the analogical method sets up the foundation of problem

[97] Maryam Azimi, "Metaphor: A Creative Aid in Architectural Design Process," *Iran University of Science & Technology* 25, no. 2 (2015); Hernan Pablo Casakin, "Metaphors in Design Problem Solving: Implications for Creativity," *International Journal of Design* 1, no. 2 (2007).
[98] Hernan P. Casakin, "Assessing the Use of Metaphors in the Design Process," *Environment and Planning B: Planning and Design* 33, no. 2 (2006).
[99] Viktor Hiort af Orn, "Metaphors in Design Curricula" (paper presented at the DS 78: Proceedings of the 16th International conference on Engineering and Product Design Education (E&PDE14), Design Education and Human Technology Relations, University of Twente, The Netherlands, 04-05.09.2014, 2014).
[100] Rosario Caballero, "Talking About Space: Image Metaphor in Architectural Discourse," *Annual Review of Cognitive Linguistics* 1, no. 1 (2003); Terence Love, "Philosophy of Design: A Maier, for Design Theory," *Design Studies* 21, no. 3 (2000).
[101] Brook Muller, "Metaphor, Environmental Receptivity, and Architectural Design," *Symbolic Landscapes* (2009).
[102] Goel, "Sketches of Thought."
[103] Casakin, "Metaphors in Design Problem Solving: Implications for Creativity," p. 21.
[104] Ibid.

reasoning while the metaphors span this reasoning into a broader area in which architects can explore more design solutions.[105]

In architectural design for people with dementia, the integration of analogical and metaphorical reasoning in addressing design problems is meant to supplement the traditional approach of evidence-based design. Design problems in the living environments of people with dementia are always complicated; they are influenced both by technical factors such as construction, fire system, and residents' health/illness consideration, and more human factors such as person-centered care and the creation of home/homelike environments.

The studies in evidence-based design discussed above provide the analogical foundation for this study, in which previous research findings and relevant design guidelines, regulations and principles offer causal structures and generate ideas regarding the person-environmental relationship. However, in order to solve ill-structured design problems, we must conduct metaphorical reasoning to help architects understand the meanings of lives of people with dementia and to inspire their design innovation.

Casakin and Miller developed a three-step process of metaphorical reasoning in design - identification and retrieval, mapping and transference, and application[106] - which was applied to an exploration of the creativity and quality in design studios.[107] I agree that metaphor helps architects identify design problems and explore design solutions, but disagree with the use of structure mapping theory in which the influence of metaphor the design problem identification goes through the analogical process of mapping metaphorical principles and design principles. The principal mapping process (whether in metaphor or in design) is the generating process, which causes the loss of the original meaning of the metaphor, which interprets familiar things in order to

[105] Choi and Kim, "The Effects of Analogical and Metaphorical Reasoning on Design Thinking."
[106] Hernan P Casakin and Kevin Miller, "Individual Learning Styles and Design Performance in the Metaphorical Reasoning Process," *Journal of Design Research* 7, no. 3 (2008).
[107] Azimi, "Metaphor: A Creative Aid in Architectural Design Process."

understand unfamiliar things, and the goal of using metaphor to solve ill-structured design problems. People feel familiar with the completed scenarios rather than with the abstracted principles. Within a specific scenario, all things integrate to establish a familiar whole that brings the architects into the connection between the known and unknown domains.

In addition to problem reasoning, metaphor is used to inspire creativity in design.[108] After identifying the problems through reasoning, architects must find ways to solve these problems through design. Creativity, defined as "turning new and imaginative ideas into reality,"[109] is a significant factor in dealing with ill-structured design problems that cannot be solved by scientific methods such as algorithms. Although scholars have used factors such as elaboration, innovation, fluency, and flexibility to assess design creativity,[110] an in-depth understanding of the people for whom one is designing is the best foundation to inspire any creative design solutions.

This is particularly important in scholarship of architectural design for dementia care. Architects may have to face the challenges that their design outcomes will serve for people with dementia whose lived situations have little connection with their own lives, if the architects have no family members or friends who suffer from dementia. This unfamiliarity may become an obstacle for architects who must create the design outcomes that best meet the users' needs. However, architects can get close to the lifeworlds of people with dementia by reading studies such as this dissertation and watching films that show the architectural lifeworlds of the dementia care. Such explicit lived stories serve as metaphors to inspire architects to conduct creative design solutions.

Design for dementia care is a creative and subjective work in which the architects' understandings of the lives of residents with dementia strongly affect whether the design outcomes will successfully address the residents'

[108] Casakin, "Metaphors in Design Problem Solving: Implications for Creativity."
[109] JP Guilford, "Potentiality for Creativity," *Educating the Ablest* (1971).
[110] Ibid.

expectations, and accordingly, influence the realization of person-centered care when the design project is intended for people with special needs in caregiving such as dementia care.[111] As such, in this study, aiming to "question how certain issues are explained or set up, thereby opening up a range of opportunities for design,"[112] I involve the concept of metaphor to assist reasoning and creativity in environmental design work for people with dementia.

Space and Dwelling

The previous two sections discussed the contents and rationales of studying architectural lifeworlds in dementia care. This section explores specific ways of conducting studies that focus on the spatial dimension of architectural lifeworld. In literature, studies of architectural space, affordance, and dwelling are relevant to architectural lifeworlds that explore the spatial environments' affordance of people's everyday lives. The section on architectural space introduces three main perspectives that have been focused on in the literature; the section on affordance discusses the theory of affordance and its application to the spatial environments of dementia care; and the section on dwelling discusses the architectural lifeworld of dementia care at a deeper level, in which the meanings of spatial environments are reflected in the discussion of dwelling and home.

Studies of Architectural Space

Space is a central concept in architecture. In order to conduct spatial studies on architectural lifeworld in dementia care, we must first familiarize

[111] The improvement of the care process and the awareness of care recipients' rights and expectations have been increasingly considered as significant indicators of person-centered care. See Danielle Bolster and Elizabeth Manias, "Person-Centred Interactions between Nurses and Patients During Medication Activities in an Acute Hospital Setting: Qualitative Observation and Interview Study," *International Journal of Nursing Studies* 47, no. 2 (2010); Mary Dawood, "Patient Centred Care: Lessons from the Medical Profession: Emergency Nurse Practitioners Can Learn Valuable Lessons from the Medical Profession's Experience of Patient Centred Care, Says Mary Dawood," *Emergency Nurse* 13, no. 1 (2005).
[112] af Orn, "Metaphors in Design Curricula."

ourselves with the existing studies on architectural space. This section discusses architectural spatial studies that mostly relate to the architectural lifeworld framework, which includes physical and non-physical spaces, private and public spaces, and spatial configurations.

Physical and Non-Physical Spaces

In architecture, space is defined as "a medium of guiding behaviours" and "an intentional means of mental and artistic communication."[113] The former refers to the physical space that is shaped by the surrounding materials and objects and influences people's experiences. This discussion can be rooted in the *Tao Te Jing,* in which Lao Tsu introduced the concept of space in architecture more than two thousand years ago: [114]

> Shape clay into a vessel;
> It is the space within that makes it useful.
> Cut doors and windows for a room;
> It is the holes which make it useful.
> Therefore benefit comes from what is there;
> Usefulness from what is not there.

This passage characterizes space as intangible but useful. In architecture, space is formed by physical elements such as walls, roofs, stairs, doors and windows, within and around which people conduct basic daily activities such as working, eating, and sleeping, and interpersonal communication such as making friends and establishing families.

In addition to its physical aspect, architectural space also refers to the non-physical space that has meanings to the specific people who experience it; it

[113] McCarter and Pallasmaa, *Understanding Architecture*.p.11.
[114] Lao Tsu, *Tao Te Ching* (Vintage, 1989).

is also known by different names such as existential space,[115] lived space,[116] and dwelling space.[117] People set up and continue their identities, values and cultures in concrete spaces, giving those spaces meanings. In this process, as noted by Dursun and Saglamer, the spatial system and spatial organization reflect the distinctive characteristics of societies.[118] In material culture, Miller considers the material things and spaces as mirrors from which people's lives and meanings are reflected.[119]

The architectural space that is formed by the material surroundings facilitates people's lives as a physical space and reflects these lives' meanings to the specific people as a non-physical space. This integration of physical and non-physical spaces in the architectural space for dementia care relates to the discussion of private and public spaces.

Private and Public Spaces

Each individual extends his/her own body into a certain space to establish a distinctive territory in order to realize his/her self-identity, control and security.[120] In architectural study, this perception of different degrees of privacy is shaped by the space that is formed by the surrounding architectural materials. Various studies have examined different levels of privacy in space. Hall, for instance, proposes four types of spatial distance between people: intimate distance, personal distance, social distance and public distance.[121] Similarly, Robinson defines seven categories of privacy, into which different types of

[115] McCarter and Pallasmaa, *Understanding Architecture*.
[116] Max Van Manen, *Researching Lived Experience: Human Science for an Action Sensitive Pedagogy* (Routledge, 2016).
[117] Robin Roth, "The Challenges of Mapping Complex Indigenous Spatiality: From Abstract Space to Dwelling Space," *Cultural Geographies* 16, no. 2 (2009).
[118] Pelin Dursun and Gulsun Saglamer, "Spatial Analysis of Different Home Environments in the City of Trabzon, Turkey" (paper presented at the Proceedings of Space Syntax Fourth International Symposium, 2003).
[119] Daniel Miller, "Materiality: An Introduction," *Materiality* (2005).
[120] Michael Georgiou, "Architectural Privacy: A Topological Approach to Relational Design Problems" (UCL (University College London), 2006).
[121] Edward Twitchell Hall, *The Hidden Dimension*, vol. 609 (Garden City, NY: Doubleday, 1910).

housing and functional spaces can be organized: the public civil domain, the public neighborhood domain, the semi-public or collective domain, the semi-private domain, the private domain, the semi-intimate domain, and the intimate domain.[122] For example, the bedroom and bathroom in residential housing are identified as intimate spaces and categorized as the most private spaces.

In care environments, including those for dementia care, the physical identification and clarification of private and public spaces based on the built environments has been demonstrated as useless in the discussion of residents' privacy and its association with the architectural space. For example, residents' private rooms usually become public when care partners, families, and other residents visit those spaces.[123] Similarly, private bathrooms are less intimate when the residents have to conduct activities with the assistance of care partners.[124] In public spaces such as the common dining room, residents usually have their own seats, which help to set up privacy in these personal spaces.[125]

In material culture, the private-public relationship is complicated, in which each has a position inside the other. For example, Clarke studies the privacy of home by conducting three case studies with three British women. She concluded that rather than purely standing for the private space of loneliness, home is also a public space for these women to do socialization.[126] This relationship should be more complicated in dementia care, where the spatial environment plays different roles in residents' lives, such as the home, the community center, the restaurant and more. In addition, the buildings that offer dementia care involve groups of people who do not live together, yet who share the architectural space and care partners.

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[122] Julia W Robinson, *Institution and Home: Architecture as a Cultural Medium*, vol. 7 (Techne Press, 2006).
[123] Joan Higgins, "Homes and Institutions," in *Home and Family* (Springer, 1989).
[124] Julia Twigg, "The Spatial Ordering of Care: Public and Private in Bathing Support at Home," *Sociology of Health & Illness* 21, no. 4 (1999).
[125] Catharina Nord, "Architectural Space as a Moulding Factor of Care Practices and Resident Privacy in Assisted Living," *Ageing & Society* 31, no. 6 (2011).
[126] Clarke, Alison. "The Aesthetics of Social Aspiration." *Home Possessions* (2001): 23-45.

Spatial Configurations

In addition to discussing architectural spaces in terms of their differences, researchers also focus on the relationships among these different spaces to explore the organization of these different functional spaces. Spatial configuration, according to Hillier,[127] refers to the ordering of spaces within a specific context such as a building. It is associated with the function of space and the cultural and social relationship.

Function is an important part of architectural design, so that the spaces will satisfy the users' practical requirements.[128] The discussion of function in architectural space usually goes beyond the single space to the accommodation of more complex contexts in which a series of spaces are associated together based on people's daily needs. For example, within a dementia care cottage, residents' private suites that are meant for sleeping, toileting, and sometimes entertainment (for some residents), and common spaces including the dining room, living room, and kitchen, are configured together by the corridor. The corridor design, in this case, affects the quality of use of these functional spaces. For example, a corridor that is too long may reduce the residents' interest in attending activities in the common areas.

The discussion of spatial configuration also relates to the social and cultural backgrounds of the people who are using the space. For instance, Mustafa argued that the ordering of spaces of a house is a social behaviour because these spaces are configured with a certain social purpose that relates to the homeowner's cultural background.[129] Rapoport's study specifically demonstrated five aspects of the cultural influence on housing layouts: basic needs such as eating, sleeping, and sitting habits, the size of the family, the

[127] Bill Hillier and Julienne Hanson, *The Social Logic of Space* (Cambridge University Press, 1989).
[128] Francisco O. Reveron, "Developing Spatial Configuration Abilities Coupled with the Space Syntax Theory for First Year Architectural Studies" (paper presented at the Proceedings of the 7th International Space Syntax Symposium, 2009).
[129] Faris Mustafa, *Spatial Configuration and Functional Efficiency of House Layouts* (2014).

status of women in the family, social interaction, and the degree of privacy.[130] Hillier and colleagues have further developed a theory of space syntax from observations of spatial configurations. Further discussion of space syntax and its application and limitations in dementia care can be found in the next section on affordance.

Affordances

In this study, architecture is seen as a lifeworld within which all things, both tangible and intangible, come together to help people dwell in that space. In the literature of architectural design, affordance refers to behaviours that are driven by users' architectural environments. Shapes, sizes, spaces, or uses that are incompatible, such as furniture that is too large for a small room, may cause design problems.[131] Because this study focuses on the spatial dimension of the architectural lifeworld in dementia care, it mainly explores the affordance in an architectural space though other elements such as materials and decorations are referenced. The remainder of this section reviews the study of affordance in design, particularly its attributes of perception and behaviour invitation, and examines previous studies of the affordance that spatial environments provide for people with dementia.

Affordances, Perceptions, and Behaviours

Affordance refers to the invitation a thing provides to an individual, who perceives this invitation and behaves accordingly. Affordance was first proposed by Gibson in *Ecological Approach to Visual Perception,* and is defined as "what it [the environment] *offers* the animal, what [the environment] it *provides* or

[130] Amos Rapoport, *Human Aspects of Urban Form: Towards a Man—Environment Approach to Urban Form and Design* (Elsevier, 2016).
[131] Alexander Koutamanis, "Buildings and Affordances," in *Design Computing and Cognition '06* (Springer, 2006).

furnishes, either for good or ill."[132] In other words, an affordance is an action or possibility that the animal/subject derives from his/her/its environment, no matter what the results, positive or negative, of those potential actions. The environment naturally has the attribute of inviting people to conduct behaviours.

Based on Gibson,[133] other studies have explored the potential of affordance to invite behaviours toward one's environment. According to Withagen and colleagues, "an affordance can invite behaviour if and only if an agent perceives it."[134] Norman's definition of affordance in design is similarly based on this consideration of perception: "the perceived properties of the things, primarily those fundamental properties that determine just how the thing could possibly be used."[135] In other words, when the individual perceives the meanings of a thing, he/she will conduct the certain behaviour that is afforded by the thing.

A successful affordance, according to Dreyfus, is conducted based on three human skills: instant structures, basic general skills, and cultural skills.[136] For example, a chair affords to be seated when the following conditions are met. First, the individual must have a human physiological structure because the chair is designed for human beings rather than for other animals. Second, the individual must have the physical capibilities to sit down. Diseases such as arthtitis may prevent the individual from bending his/her knees in order to sit down on the chair. Last, the chair must be designed such that individuals of different cultural backgrounds can understand its purpose.

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[132] James Jerome Gibson, "The Ecological Approach to Visual Perception," (Boston: Houghton Mifflin, 1979), p. 127.
[133] Ibid.
[134] Rob Withagen et al., "Affordances Can Invite Behavior: Reconsidering the Relationship between Affordances and Agency," *New Ideas in Psychology* 30, no. 2 (2012), p. 257.
[135] Norman Donald, "The Design of Everyday Things," *Doubled Currency* (1988), p. 9.
[136] Hubert L. Dreyfus, "The Current Relevance of Merleau-Ponty's Phenomenology of Embodiment," *The Electronic Journal of Analytic Philosophy* 4 (1996).

In other words, the quality of the chair, such as its height, the materials from which it is made, its form, and its size relative to the specific person, affects whether it can afford the person to sit on it or not. As Dohn points out, "an affordance is the affordance for someone";[137] therefore, without knowing the instant structures, basic skills and cultural background of an individual in a specific situation, we cannot create an object or environment that can afford this person's behaviours.

In architectural study, affordance is mainly used to help us understand the person-environmental relationship to explore how environmental factors afford people to conduct behaviours, and apply these studies to architectural programming, developing knowledge bases, and understanding architectural failures in practice.[138] In architectural space, scholars have focused on the associations between the physical spatial configuration and human activities such as movement, communication, and interaction, developing theories such as space syntax to better understand people's using behaviours in a specific architectural space.

The theory of space syntax was created by Hillier and colleagues in the late 1970s and 1980s to help urban planners simulate the social engagement driven by urban design,[139] which in the past decades has been developed as a research community that covers different types of architectural environments including healthcare facilities and senior housing. For example, by using the approach of space syntax, Setola and colleagues have studied how the spatial configuration of the public space of a hospital affects patient-doctor communication;[140] Kim and Lee examine hospital layout organization and its

[137] Nina Bonderup Dohn, "Affordances-a Merleau-Pontian Account" (paper presented at the Fifth International Conference on Networked Learning 2006, 2006).p.1.
[138] Jonathan R.A. Maier, Georges M. Fadel, and Dina G. Battisto, "An Affordance-Based Approach to Architectural Theory, Design, and Practice," *Design Studies* 30, no. 4 (2009).
[139] Hillier and Hanson, *The Social Logic of Space*.
[140] Nicoletta Setola et al., "The Role of Spatial Layout of Hospital Public Spaces in Informal Patient-Medical Staff Interface" (paper presented at the Proceedings of the Ninth International Space Syntax Symposium, 2013).

associations with hospital costs caused by the users;[141] and Marquardt and colleagues compared different layouts of home environments, looking at their associations with the activities of daily living among people with dementia.[142] The application of affordance to design for dementia care is specifically discussed in the following section.

Affordance and Dementia Care Environments

Affordance has been used in the study of people with dementia and their surrounding objects, and has influenced microwave interface design,[143] mobile app design,[144] assisted technology,[145] interactive art installation,[146] music,[147] and general daily objects.[148] It has also been used in both quantitative and qualitative research to study the associations between the architectural environment and behaviours of people with dementia.

In quantitative studies, researchers use affordance as a tool or a component of a tool to evaluate the quality of living environments. For example, Topo and colleagues have used the Residential Care Environment Assessment Tool to evaluate the effect of living environments on residents' quality of lives in

[141] Youngchul Kim and Hyun Woo Lee, "Analyzing User Costs in a Hospital: Methodological Implication of Space Syntax to Support Whole-Life Target Value Design," *Lean Construction Journal* (2010).
[142] Marquardt et al., "Association of the Spatial Layout of the Home and Adl Abilities among Older Adults with Dementia."
[143] Li-Hao Chen and Yi-Chien Liu, "Affordance and Intuitive Interface Design for Elder Users with Dementia," *Procedia CIRP* 60 (2017).
[144] Kristine Pitts et al., "Using Mobile Devices and Apps to Support Reflective Learning About Older People with Dementia," *Behaviour & Information Technology* 34, no. 6 (2015).
[145] Lena Rosenberg and Louise Nygård, "Persons with Dementia Become Users of Assistive Technology: A Study of the Process," *Dementia* 11, no. 2 (2012).
[146] Tom Luyten et al., "How Nursing Home Residents with Dementia Respond to the Interactive Art Installation 'Venster': A Pilot Study," *Disability and Rehabilitation: Assistive Technology* 13, no. 1 (2018).
[147] Mariko Hara, "We'll Meet Again: Music in Dementia Care," (2013).
[148] Sasha Bozeat et al., "When Objects Lose Their Meaning: What Happens to Their Use?," *Cognitive, Affective, & Behavioral Neuroscience* 2, no. 3 (2002).

long-term care facilities.[149] Marcheschi and colleagues also conducted a quantitative study of the physical environments' affordance to residents' behaviours in two health care facilities for people with mental health issues, including dementia.[150] Wood and colleagues consider the social (such as interactions with staff and other residents) and physical (such as interactions with eating/drinking/kitchen materials, electronic media and clothing) environments as factors to conduct a quantitative evaluation of residents' quality of life in dementia care environments.[151] Moore and Ferdous studied the influence of spatial configurations on the social interaction of residents with dementia within long-term care facilities.[152]

Findings from these studies reflect the frequency of residents' use of architectural space. For example, Marcheschi and colleagues found that the space close to the dining tables is a popular location for social interaction in the dining room environment.[153] Moore and Ferdous indicate that residents conduct more social interaction in the spaces that are less visible and accessible.[154] These studies show that residents' using behaviours are afforded by different architectural spaces, but they do not adequately explore the reasons for these differences.

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[149] Päivi Topo, Helinä Kotilainen, and Ulla Eloniemi-Sulkava, "Affordances of the Care Environment for People with Dementia—An Assessment Study," *HERD: Health Environments Research & Design Journal* 5, no. 4 (2012).

[150] Elizabeth Marcheschi et al., "Housing Design and People with Severe Mental Illness: An Observational Approach to the Investigation of Supported Housing Facilities," *Scandinavian Journal of Psychology* 57, no. 1 (2016).

[151] Wendy Wood et al., "Activity Situations on an Alzheimer's Disease Special Care Unit and Resident Environmental Interaction, Time Use, and Affect," *American Journal of Alzheimer's Disease & Other Dementias®* 20, no. 2 (2005).

[152] Keith Diaz Moore and Farhana Ferdous, "Spatial Configuration and Social Life for People Experiencing Dementia" (paper presented at the ARCC Conference Repository, 2014); Farhana Ferdous and Keith Diaz Moore, "Field Observations into the Environmental Soul: Spatial Configuration and Social Life for People Experiencing Dementia," *American Journal of Alzheimer's Disease & Other Dementias®* 30, no. 2 (2015).

[153] Marcheschi et al., "Housing Design and People with Severe Mental Illness: An Observational Approach to the Investigation of Supported Housing Facilities."

[154] Moore and Ferdous, "Spatial Configuration and Social Life for People Experiencing Dementia."; Ferdous and Moore, "Field Observations into the Environmental Soul: Spatial Configuration and Social Life for People Experiencing Dementia."

Comparably, qualitative studies tend to explore more of the factors that may hinder the architectural environment's affordance to residents' behaviours in dementia care. Topo and colleagues present a dementia care cottage in a long-term care facility in terms of its spatial configuration and the residents' use of these spaces under the intervention of care partners and activities such as exercising and eating.[155] They address the environmental factors that prevent the residents from conducting various behaviours. For example, the location on the fourth floor of the cottage makes it difficult for care partners to take residents outside because they have to care for other residents in the cottage at the same time; the long corridor reduces the residents' willingness to attend activities in the common room that is located at the end of the corridor; and the separation of the staff room from the residents' activity space in the cottage leads to a lack of communication between the residents and care partners:[156]

> When the dining room was nearly empty with only some very disabled clients remaining. It was very quiet in the room, but the chatting and joking of carers was heard from their coffee room.

Topo and colleagues' comprehensive descriptions of the dementia care cottage and their in-depth interpretation of factors that hinder the architectural spaces' affordance to residents' behaviours demonstrate the values of conducting a qualitative study of the affordance from the architectural space for people with dementia. Rather than showing the frequency of use of architectural spaces, an in-depth study explores the factors that hinder the architectural environments' affordance to people's behaviours and articulates the reasons for these obstacles by telling the readers a continuing lived story in dementia care.

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[155] Päivi Topo and Helinä Kotilainen, "Designing Enabling Environments for People with Dementia, Their Family Carers and Formal Carers," *Dementia, Design and Technology* (2009).
[156] Ibid.

However, relating to dementia care study, the existing functional study of affordance does not seem to be enough for us to understand the meanings of architectural environments to people with dementia. People with dementia may be able to perceive the invitation of architectural environments, but must conduct different behaviours in reaction to the invitation due to their limited physical or cognitive communication. Their behaviours may therefore be different from what the things are originally expected to afford. For example, a chair, as indicated in the previous section, may not be used for being seated. The design style, texture, and colour may make the chair familiar to specific residents who may have used similar furniture when they were young. It is also possible that a resident who is in a wheelchair cannot sit on this chair. However, locating the chair in the dementia care cottage may create a sense of familiarity and, as such, connect the resident to his/her previous life.

The meaning of things to people, particularly people with dementia, has been explored in studies of material culture. For example, Twigg and colleagues studied the meanings of handbags to the female residents in dementia care, arguing that the handbag may connect the female residents with their previous lives and as such set up their self-identity when they move to the new living environment.[157] Moreover, handbags may also stand for the residents' identification of a space. For example, when a female resident carries her handbag in the common living room, she may consider this a public space because people do not carry bags at home.[158] In architectural study, the meanings of the architectural environments to people always relate to the discussion of dwelling and home. As such, the following section explores these concepts and their application to dementia care.

[157] Christina Buse and Julia Twigg, "Women with Dementia and Their Handbags: Negotiating Identity, Privacy and 'Home' through Material Culture," *Journal of Aging Studies* 30 (2014).
[158] Ibid.

Dwelling, Home, and Dementia Care

From the perspective of phenomenology, being human means dwelling, and dwelling is the meaning of home. This section briefly reviews the phenomenological views of dwelling, home, and architecture, then relates them to the environmental study of dementia care.

Dwelling, Home, and Architecture

Dwelling is fundamental to human existence. From the perspective of phenomenology, "being human is dwelling."[159] The exploration of dwelling started with Heidegger who first recognized human beings' nature of participating in the world (called Being), through which they become aware of their lives and existence. This process of engagement and awareness is called dwelling. According to Heidegger, the cores of dwelling are sparing and preserving; sparing means remaining in the land, and preserving relates to inhabitation among things.[160] As such, dwelling naturally relates to the built environment, including architecture, because "we can only build when we are capable of dwelling."[161]

Home is the product of people's dwelling in a house. Dwelling is the fundamental task of a house; the house "supports the dweller's self-identity and it serves as the organizing center of his/her life" and home is the place "from which the world can be experienced correctly and as an entity."[162] Based on this relationship, Seamon defined dwelling as "the process through which people make their place of existence a home."[163] Home, in this situation, is a subjective term that is used to describe the feeling of dwelling. For example, in dementia care, one of the most common requests, "I want to go home," can be

[159] Dekkers, "Dwelling, House and Home: Towards a Home-Led Perspective on Dementia Care," p. 291.
[160] Heidegger, "Building Dwelling Thinking."
[161] Ibid., p. 14.
[162] McCarter and Pallasmaa, *Understanding Architecture*, p. 217.
[163] David Seamon, "Heidegger's Notion of Dwelling and One Concrete Interpretation as Indicated by Hassan Fathy's 'Architecture for the Poor'," *Geoscience & Man* 24 (1984), p. 43.

understood as the resident wanting to be in the place in which he/she can dwell rather than in the actual home environment in which he/she had lived before moving to the dementia care cottage.

In other words, the desire to create a home or homelike environment in dementia care buildings is not simply realized by architects visiting the residents' previous homes and copying the interior spaces and decorations into the dementia care cottage design. Rather, it requires architects to understand the meanings of dwelling and apply this understanding to their design practice.

Dwelling reflects being-in-the-world in terms of people's lifeworlds that are constructed by different lifeworld dimensions of time, space, people, and activities. The meaning of dwelling, according to Seamon, is "a sense of continuity, community, and at-homeness."[164] In other words, to understand how people dwell is to explore the continuity of their previous lives, their connection with their surrounding people and environment, and as such to establish the sense of home in the particular environment.

Dwelling also refers to a sense of opportunity that relates to the opportunity of new things happening. Seamon notes that in the dwelling process, "there will always be a certain tension, a kind of imperfection, between what we wish, do, and make."[165] This changing feature of dwelling and home is called "mobile home" in which "home is both the source of the setting of mobility and change" by Miller.[166] In the existential theory of well-being, Galvin and Todres demonstrate that dwelling is always connected to mobility.[167] This mobility-dwelling relationship, in which people dwell peacefully in a concrete environment that allows them the opportunity to explore possibilities in their lives, is called "rooted flow."[168]

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[164] Ibid., p. 45.
[165] Ibid.
[166] Daniel Miller, "Behind Closed Doors," in *Home Possessions: Material Culture Behind Closed Doors*, ed. Daniel Miller (Berg, 2001).
[167] Galvin and Todres, *Caring and Well-Being: A Lifeworld Approach*.
[168] Ibid., p. 75.

In other words, there are always factors that may enhance or worsen the quality of dwelling. As such, the study of dwelling becomes the understanding of how people dwell and the examination of factors that may affect the quality of dwelling. From the perspective of architecture and space, the important questions of dwelling are how people dwell in the specific spatial environment and how the quality of spaces affects the quality of dwelling. These are particularly significant for the study of dementia care, in which the sense of home is always a goal but is hard to realize. How one dwells in a non-home or homelike (at the most) environment becomes very important for this study. The following section summarizes literature on home and homelike environments in dementia care, arguing the innovative understanding of meanings of dwelling.

Meanings of Home in Dementia Care

As discussed above, home is the product of the act of dwelling through which human beings realize their existence in the world. However, for many residents who live in dementia care cottages rather than in their own homes, the meanings of home for them and how these meanings relate to their built environments become crucial in order to create a place of dwelling in the architectural design.

In the past decades, researchers have discussed their understandings of home and its applications in dementia care including assisted living, long-term care and hospital environments. The concept of home is usually not restricted to the physical space where people conduct their everyday lives, but is also the extension of their lifeworld. For example, Dekkers understood home as follows:[169]

> 'Being at home' means something else than the more concrete 'staying at home.'…. Home as a fixed place of abode also has a social context, the

[169] Dekkers, "Dwelling, House and Home: Towards a Home-Led Perspective on Dementia Care," p. 291.

> place where one can be together with family and friends (or alone) and where one feels comfortable. Home can refer to the place of birth, a country, the place where one resides, where one comes from or where one is going.

According to Dekkers, home is a subjective term used to describe the place of memories of the past, current situations, or imagination of the future (such as death); the place of abode but also the neighbourhood, the cities, or regions; or the place of setting up interpersonal relationships with other people. The sense of home is particularly significant for people with dementia. Dementia is the process of losing one's recognition of existence in the world because the person's impaired physical and psychological conditions disengage him/her from dwelling. The sense of home and its connection with the lives and things in daily lives are necessary to ease this impairment.

Previous studies of dementia care have concentrated on creating a place with the sense of home, or homelike, though the process is always challenging.[170] The concept of homelike environments has been incorporated into the design guidelines to emphasize the need for domestic characteristics in facility design for people with dementia.[171] In a literature review on the sense of home in long-term care facilities, Rijnaard and colleagues reviewed seventeen relevant papers, organizing the findings into three themes: psychological, social, and built environmental factors.[172] Within the discussion of built environments, previous studies examined the sense of home in facilities in various contexts including individual rooms, common space, personal belonging, technology, and

[170] M.D. Rijnaard et al., "The Factors Influencing the Sense of Home in Nursing Homes: A Systematic Review from the Perspective of Residents," *Journal of Aging Research* 2016 (2016).
[171] E.g. Richard Fleming and Nitin Purandare, "Long-Term Care for People with Dementia: Environmental Design Guidelines," *International Psychogeriatrics* 22, no. 7 (2010); Hilde Verbeek et al., "Small, Homelike Care Environments for Older People with Dementia: A Literature Review," ibid.21, no. 2 (2009); Uriel Cohen and Gerald D. Weisman, *Holding on to Home: Designing Environments for People with Dementia* (Johns Hopkins University Press, 1991).
[172] Rijnaard et al., "The Factors Influencing the Sense of Home in Nursing Homes: A Systematic Review from the Perspective of Residents."

outdoor space.[173] Almost all findings and suggestions propose using simulations of the domestic environment in order to create a homey atmosphere.

However, as discussed above, home is an entirety in which one element relates to all others. For example, if the individual rooms are decorated as homelike but the public space is like an institution, residents may lose this homey feeling. Also, the surrounding environment can be changed in order to adapt to the needs of those with dementia and relevant condition changes such as visual impairment. For example, Van Steenwinkel and colleagues note that Mary's husband changed the living room furniture into a more modern style and painted the walls white.[174] Facing the new living room space, Mary still considers it part of her home. Lastly, each individual's definition of home is unique. For people who think of the place in which they grew up as home, the modern home design in many dementia care cottages may not connect with them as a home.

As such, the critical point is to create a dwelling space in which residents can have a sense of continuity, community, and opportunity that connects with their personal lived history, network, identity, and desires for the future. Architects, as McCarter and Pallasmaa demonstrated, are not able to design a home but the design outcomes of a building can "either facilitate the gradual formation of home, or prohibit it."[175] As such, this study is meant to investigate the spatial environments' facilitation or prevention of affordance to residents' dwelling by exploring the lifeworld in dementia care.

In summary, this chapter reviews previous literature to further develop the theoretical framework of the architectural lifeworld. The first section defines and clarifies the concept of the architectural lifeworld; the second section discusses metaphor in design in order to demonstrate the reason for conducting an architectural lifeworld study to enhance the design quality of dementia care

[173] Ibid.
[174] Van Steenwinkel, Van Audenhove, and Heylighen, "Mary's Little Worlds: Changing Person–Space Relationships When Living with Dementia."
[175] McCarter and Pallasmaa, *Understanding Architecture*. p. 217.

buildings; and the last section explores how to conduct architectural lifeworld studies by discussing architectural space, affordance, and dwelling.

Chapter Three: Methodologies and Methods

With the goal of understanding the architectural lifeworlds of dementia care, this study conducts phenomenological explorations guided by the methodologies of reflective lifeworld research, reflexivity, and case study research. This study implements these methodologies through multiple data-collection methods and the whole-part-whole method of data analysis (see Figure 1-2).

This chapter introduces each methodology and its relevance for this study, and outlines the research procedure including research design, sites, participants, and my role and experience as the researcher. The data collection methods used in this study include building analysis, interviews with residents with dementia and families, participant observation, and ethnographic filming, with the intent of triangulating data. The whole-parts-whole data analysis method allows me to explore more deeply the meanings of spatial environments for, and their influences on, residents' lives. The chapter concludes with an overview of the validity and ethical considerations of the study.

Methodological Approaches

Like many other phenomenological studies that seek to understand the meanings of phenomena as people live and experience them,[176] this study explores the architectural lifeworld that reflects residents' experience in dementia care.

The lifeworld is considered tacit because it is immersed in daily life. The architectural lifeworld framework explores these tacit lifeworlds within the context of the architectural environment, which may help or hinder people's lives.[177] This requires a more innovative research methodology that guides me to be aware of people's tacit daily lives but at the same time reminds me to be

[176] Van Manen, *Researching Lived Experience: Human Science for an Action Sensitive Pedagogy*.
[177] See the section "Definition and Dimensions of Lifeworld" in Chapter Two.

reflective and reflexive of my awareness within a concrete territory of building of dementia care. As such, I develop the nested methodology that is constructed by reflective lifeworld research, reflexivity, and case study research.

Reflective Lifeworld Research

Reflective lifeworld research, developed by Dahlberg, Dahlberg and Nyström,[178] is a methodological approach to understand people by studying their normal lived world. Based on the philosophical foundations of phenomenology and hermeneutics,[179] reflective lifeworld research explores the meanings of people's lives by describing and interpreting how they experience the concrete lived world. Daily lives, as noted above, are always mute because they are normal and as such are always ignored. Lifeworld research seeks to reveal these lives and explicate their meanings by exploring lived phenomena. Also, the study of lifeworlds should be reflective and interpretive, because people understand new things based on uncritical pre-understanding, and as such requires self-awareness and reflection on the part of the scholars.[180] Drawing from the work of Dahlberg, Dahlberg and Nyström,[181] the remainder of this section summarizes the basic methodological principles of reflective lifeworld research, including openness and bridling, and discusses the application of these principles in this study.

Openness: Going to the Lifeworld

Openness is a phenomenological and hermeneutic attitude of conducting lifeworld research, which, unlike traditional research approaches that emphasize

[178] Karin Dahlberg, Maria Nyström, and Helena Dahlberg, *Reflective Lifeworld Research* (Studentlitteratur, Lund, 2007).
[179] Dahlberg and colleagues use the term *phenomenology* to refer to descriptive phenomenology, as developed by Husserl; and *hermeneutics* to refer to interpretive phenomenology, as developed by Heidegger. However, they did demonstrate that hermeneutics was developed from descriptive phenomenology.
[180] Dahlberg, Nyström, and Dahlberg, *Reflective Lifeworld Research*.
[181] Ibid.

formal steps and protocols, encourages scholars to become involved in concrete phenomena, leaving aside their expectations and assumptions and letting the phenomena under discussion demonstrate what they should be and what they mean.[182]

Researchers taking an openness approach must patiently wait for the complexity of the phenomenon and its meanings to reveal themselves. At the same time, the openness should be multi-sensitive, because meanings are hidden everywhere and may be interpreted in oral communication and/or other sensory interaction.[183]

The use of openness in this study follows Dahlberg and colleagues' discussion of the subject, but is adapted to the context of the architectural lifewold. Specifically, the meanings of phenomena, in addition to being hidden within intersubjectivity, are located within the architectural space, material things, and people's experiences. In lifeworld scholarship that emphasizes more holistic ways of thinking, meanings between people, and between people and things, should relate to one another. However, it is important to clarify that in this study, the focused meanings are those afforded from the spatial environment to the residents with dementia, though these meanings are affected by other factors such as material things and interpersonal interactions.

Bridling: Reflection on the Lifeworld

In addition to openness, Dahlberg and colleagues propose another principle, bridling, to add a critical dimension to the openness-based lifeworld model that reflects the researcher's view of the world of lives as it is given, in order to ensure the validity of the study.

The term *bridling* refers to controlling the movements of a horse with a bridle, a headgear consisting of buckled straps with a bit and reins. Each bridle should individually fit the horse. If the bridle does not fit properly, the horse

[182] Ibid.
[183] Ibid.

would feel uncomfortable, and as such would be out of control. For example, a bridle that is too tight would hurt the horse's mouth, tongue, and facial structure. When bridling the horses, riders must understand the horses by interacting and communicating with them, "which is an embodied dialogue between two entireties within, or two sides of, the equipage as a whole."[184] Bridling as such is a phenomenological method that gives the riders an open attitude to understand the horses and communicate with them in order to provide each with a matching bridle.

In terms of lifeworld study, bridling is a methodological principle that lets the phenomenon happen by itself but at the same time ensures the validity of the study by directing the phenomenon. Such an open bridling attitude allows the indefinite world to not be defined. Reflection, defined as "distanc[ing] ourselves and focus[ing] more critically upon the phenomenon of interest and how the meanings come to be,"[185] is used to realize the open bridling attitude, in which the scholar's pre-understanding may include different biases and prejudices but cannot be bracketed because people understand new things by referencing familiar things and established knowledge.

However, for Dahlberg and colleagues, the goal of reflection is to "attempt to balance the complexity of the lifeworld with the objectivity claims of science."[186] Researchers who use this methodology are expected to use reflection to determine subjective factors such as pre-understanding and exclude those factors in order to maintain scientific rigour. This goes against my philosophical foundation noted above, as well as any phenomenological research in which there is no way to neutralize the subjectivity that explores the lifeworld and reveal its meanings. Human beings always merge with their world, which Heidegger characterized as being-in-the-world. As such, reflection that seeks a solution to exclude the subjective factor is obviously not enough for a

[184] Ibid., p. 129.
[185] Ibid., p. 162.
[186] Ibid., p. 276.

phenomenological study. The unique way of realizing the validity in phenomenological research is depth that "gives the phenomenon or lived experience to which we orient ourselves its meaning and its resistance to our fuller understanding."[187] As such, I include another methodology, reflexivity, to supplement my reflective lifeworld research.

Reflexivity

Reflexivity is defined as "finding strategies to question our own attitudes, thought process, values, assumptions, prejudices and habitual actions, to strive to understand our complex roles in relation to others."[188] Scholars consider reflexivity at the epistemological level to assess the relationship between knowledge and the way of knowing,[189] at the methodological level to outline approaches to conducting research,[190] and at particular stages of the research procedure, such as interpreting the research findings.[191]

As a research methodology, reflexivity has been explored with vague references and few methods that can be used in practice.[192] This study considers reflexivity as a part of the nested methodology that provides more practical guidance. In phenomenological study, the data and the researcher who interprets these data construct knowledge together. Researchers understand the particular lived experience and interpret what it means. The purpose of interpreting these meanings is to provide an opportunity to better understand the phenomenon rather than revealing the objective reality that does not exist in

[187] Max Van Manen, *Phenomenology of Practice: Meaning-Giving Methods in Phenomenological Research and Writing* (Routledge, 2016), p. 355.
[188] Kenneth M. Zeichner and Daniel P. Liston, *Reflective Teaching: An Introduction* (Routledge, 2013), p. 13.
[189] Marta B. Calas and Linda Smircich, "Re-Writing Gender into Organizational Theorizing: Directions from Feminist Perspectives," *Rethinking Organization: New Directions in Organization Theory and Analysis* 227, no. 253 (1992).
[190] Mats Alvesson and Kaj Sköldberg, *Reflexive Methodology: New Vistas for Qualitative Research* (Sage, 2017).
[191] Ibid.
[192] Megan Strickfaden, "Cripping Masculinities Reflexivity Plan", Working process.

phenomenological studies,[193] because "reality is subjective and is known only as it is experienced by individuals."[194]

As the knowledge builder, the researcher should be aware of his/her involvement in the whole process of research including design, data collection, analysis, and interpretation. As Tufford and Neuman have pointed out,[195] a reflexive journal should be started before the actual data collection is conducted. This self-awareness decides on reflexivity as a methodology that considers subjectivity the necessary and central factor to understand the phenomena and their meanings.

As a scholar and researcher, I am part of the knowledge construction in this study. I design the research, collect and analyze data from the phenomenon of dementia care, and finally describe and interpret the architectural lifeworlds that reflect the spatial environment's meanings to people. Reflexivity guides me to build up knowledge within the whole research process with self-awareness, which accordingly affects the validity of the study.

Like reflection, reflexivity serves as a critique of the researcher's involvement in the process. However, researchers conduct such critiques from different perspectives. Reflection is possible when the researcher distances him/herself from the phenomena he/she observes, criticizing any possible limitations resulting from broader contexts such as the environment, relationship and time. Reflexivity, meanwhile, is a self-knowing process in which the researchers "become aware of the limits of our knowledge, of how our own behaviours plays into organizational practices and why such practices might marginalize groups or exclude individuals."[196]

Using the methodology of reflexivity does not mean that I will abandon reflection in this study. Reflection helps me see the factors that may affect my

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[193] Ibid.
[194] Sarah Pink, *Doing Visual Ethnography* (Sage, 2013), p. 36.
[195] Lea Tufford and Peter Newman, "Bracketing in Qualitative Research," *Qualitative Social Work* 11, no. 1 (2012).
[196] Zeichner and Liston, *Reflective Teaching: An Introduction*, p. 14.

experience and perceptions from a distance, while reflexivity is my awareness of personal factors. By opening myself to experience the concrete architectural environment of people with dementia and to reveal its meanings, I conduct reflective and reflective discussion of my involvement in three case studies of dementia care.

Case Study Research

Case study research is conducted in a bounded system in which the researchers "emphasize detailed contextual analysis of a limited number of events or conditions and their relationship".[197] Yin listed three reasons to choose case study as a research method/methodology rather than others.[198] First, if the study includes "how" and "why" questions rather than "who, what, where, how many, and how much" questions, case study is a suitable methodology. Second, in contrast to historical study, case study research focuses on contemporary phenomena in order "to deal with a full variety of evidence – documents, artifacts, interviews, and observations."[199] Case study research, therefore, helps us understand a real world in which things happen when the researchers are involved. As such, researchers should be aware of, and take into consideration, the relationship between the variables rather than controlling these variables.[200]

The case study methodology is ideal for this project because it allows me to explore the meanings of lives that are constructed by the architectural environments and residents of dementia care. As mentioned above, I consider the architecture as the lifeworld in each building of dementia care and its associations with the individual residents' lives. As such, each dementia care building is treated as an independent case. The architectural lifeworlds of these

[197] Robert E. Stake, "Handbook of Qualitative Research," ed. Norman K. Denzin and Yvonna S. Lincoln (Sage Publications, Inc, 2000). p. 355.
[198] Robert K. Yin, "Case Study Research: Design and Methods (Applied Social Research Methods)," (London and Singapore: Sage, 2009).
[199] Ibid. p. 12.
[200] Larry M. Dooley, "Case Study Research and Theory Building," *Advances in Developing Human Resources* 4, no. 3 (2002).

three buildings are explored in Chapter Four, and the meanings of dwelling and their association with architectural design are discussed in Chapter Five. More details of integrating these methodologies in this study are presented in the following sections of this chapter.

Research Procedure

This study seeks to explore the architectural lifeworld of dementia care by integrating the methodological approaches of reflective lifeworld research, reflexivity, and case study research. This section outlines the design, process, sites, and participants of this study. As noted above, in phenomenological studies, scholars construct knowledge with the phenomenon, with their pre-understanding of values, cultures, and areas of study influencing the knowledge-producing process and the final outcomes of the project. Previous studies have suggested transparency about the researcher's role, experience, and potential issues in order to mitigate the influence of personal biases.[201] This section, therefore, outlines my role as researcher and previous experience conducting relevant research.

Research Design

This study is based on a broader research project with the same purposes and conducted with the same methodologies for this study.[202] Being guided by the methodologies of reflective lifeworld research, reflexivity, and case study research, this study focuses on exploring the architectural lifeworld of dementia care by investing residents' lives within the concrete context of architecture.

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[201] Tufford and Newman, "Bracketing in Qualitative Research"; Clark Moustakas, *Phenomenological Research Methods* (Sage, 1994).

[202] This broader research project was funded by industrial partners, including the architectural company that designed the three dementia care buildings in this case study and the property developing company that developed and operates these three buildings. This broader research project aims to help the sponsors better understand the person-environmental relationship in these buildings. This study uses part of the data that were collected for the broader research project. Details of data selection for this study will be provided in the "Data Collection" section of this chapter. Detailed deliverables to the industrial partners will be introduced in Chapter Six.

I employ a few key strategies to adhere to the design (see Figure 3-1). First, I consider each building that offers dementia care as a case study, each of whose lifeworlds are explored as a whole to be afforded by the spatial environments of their architecture. Comparing each case study also involves discussion of the meanings of architectural lifeworlds. Second, I sought to be open to the phenomenon by spending a certain length of time (five to seven days) in each building to conduct different types of data collection.[203] Third, I work through my pre-understanding by bridling my thoughts and conducting reflexivity. I remain close to the phenomenon by conducting data collection but also distance myself from the phenomenon through self-reflective and reflexive memos. Finally, I use the whole-parts-whole model, the general principle of conducting lifeworld and hermeneutic research,[204] to analyze the data collected in this study.

Research Sites

As pointed out above, this study considers each building that offers dementia care as a case study, in order to explore its distinctive architectural lifeworld. By reviewing all 13 existing dementia care buildings that were designed, developed, and operated by the industry partners in Alberta,[205] I selected three buildings that cover different geographical conditions, time periods, and degrees of cultural diversity. These three buildings are located in Red Deer, Wainwright, and Slave Lake in Alberta, which are marked on the map in Figure 3-2.

The Red Deer building, located at the edge of the city of Red Deer in central Alberta, opened in 2016. The Red Deer building has a gross floor area of

[203] I spent seven days in the Red Deer buildings, seven days in the Wainwright building, and five days in the Slave Lake buildings to collect data.
[204] Dahlberg, Nyström, and Dahlberg, *Reflective Lifeworld Research*; Van Manen, *Researching Lived Experience: Human Science for an Action Sensitive Pedagogy*; Alvesson and Sköldberg, *Reflexive Methodology: New Vistas for Qualitative Research*.
[205] As an industry-funded research project, this study is required to collect data in the buildings that were designed and developed by the industrial partners.

11,400 m^2 and includes 45 suites for designated supportive living 4 (DSL4),[206] 69 suites specifically for dementia care in the designated supportive level (DSL4D), and 25 suites for independent supportive living.[207] The residents, including those with dementia, mainly come from Central Alberta, including cities such as Edmonton, Calgary, and Red Deer, and some small towns.

The Wainwright building, located in the small town of Wainwright in east-central Alberta, opened in 2010. The Wainwright building has a gross floor area of 7,986 m^2 and includes 35 DSL4 suites, 24 DSL4D suites, and 32 independent supportive living suites. The residents mainly come from Wainwright and other surrounding towns.

The Slave Lake building, located in the town of Slave Lake in northern Alberta, opened in 2015. The Slave Lake building has a gross floor area of 2,260 m^2 and includes 30 DSL4 suites and 22 DSL4D suites. No independent supportive living is provided. The residents mainly come from Slave Lake and other towns in northern Alberta, and there are a certain number of aboriginal residents living in this building. The 3D architectural models of these three buildings are shown in Figure 3-3. Details of these three buildings will be further introduced in the sections on Building Description in Chapter Four.

Research Participants

Participants in this study include all the relevant people in the Red Deer, Wainwright, and Slave Lake buildings. Residents of the dementia care cottages in these three buildings are included in the participant observation and ethnographic filming. 10 residents, together with their families, participated in 10 in-depth interviews.

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[206] Gross floor area means the sum of the floor areas of the spaces within the building.

[207] According to Alberta Health Service, Designated Supportive Living (DSL) is a place in which residents need significant support for their daily living but do not need care in a long-term care facility. Compared to DSL2&3, DSL4&4D sites are for residents who need more complicated medical care and safety management. DSL4D is for residents with dementia (typically in the moderate to advanced stages) who have a high risk of wandering and being lost. More explanation can be found at https://www.albertahealthservices.ca/cc/Page15490.aspx

Participants in this study also include people who have connections with the residents with dementia, such as residents' families and friends who visit their loved ones, cottage care partners, and other staff such as the recreation coordinator, the cook, the site manager, and others. Residents in different parts of the buildings, such as DSL4 or independent living sections, are also considered participants because they share some spaces, such as the multi-purpose rooms, the elevators and the outdoor gardens, with the residents who have dementia. Finally, participants in this study also include people who visit the buildings, such as activity volunteers and taxi drivers who communicated with the people in the buildings while I was collecting data.

Researcher's Identity and Role

My identity in this study is as a researcher, an important role in reflective lifeworld research that requires both openness and bridling in studies.[208] To elaborate, throughout the process of observing and interpreting the architectural lifeworlds of dementia care, I opened myself to see the lives of the residents, but at the same time I critically reviewed what I experienced and perceived. Because this study focuses on the spatial environments' affordance to residents with dementia, I stayed in the guest suite of each building for most of the nights I visited the building. I spent almost the whole day each day in the building, especially in the dementia care cottages, personally and physically experiencing the buildings' spatial environments. At the same time, I conducted on-site reflection at least once each day, taking notes on my observations and feelings. I also conducted reflective and reflexive discussions at the end of each case study with the other researcher, my co-supervisor.

[208] Dahlberg, Nyström, and Dahlberg, *Reflective Lifeworld Research*.

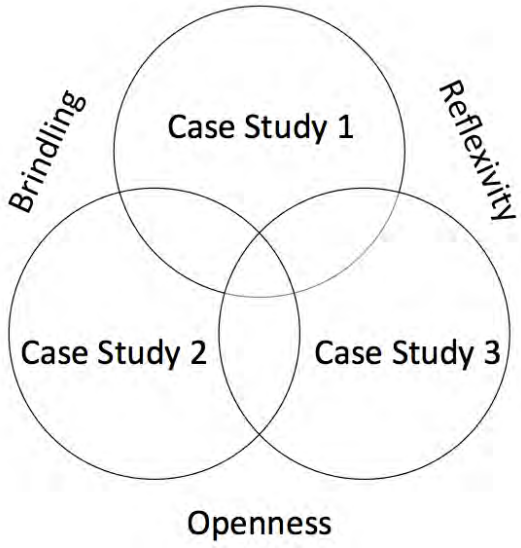

Figure 3-1: Research Design of This Study

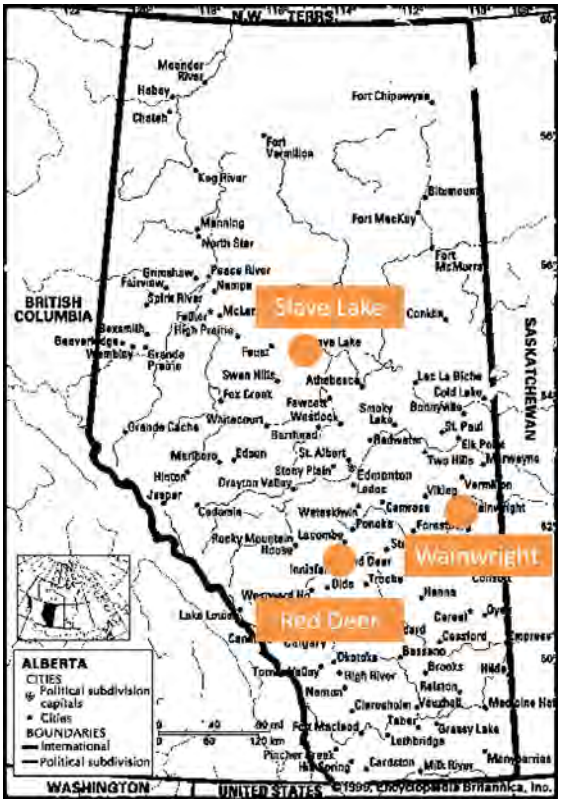

Figure 3-2: Geographical Location of Three Dementia Care Buildings in Alberta

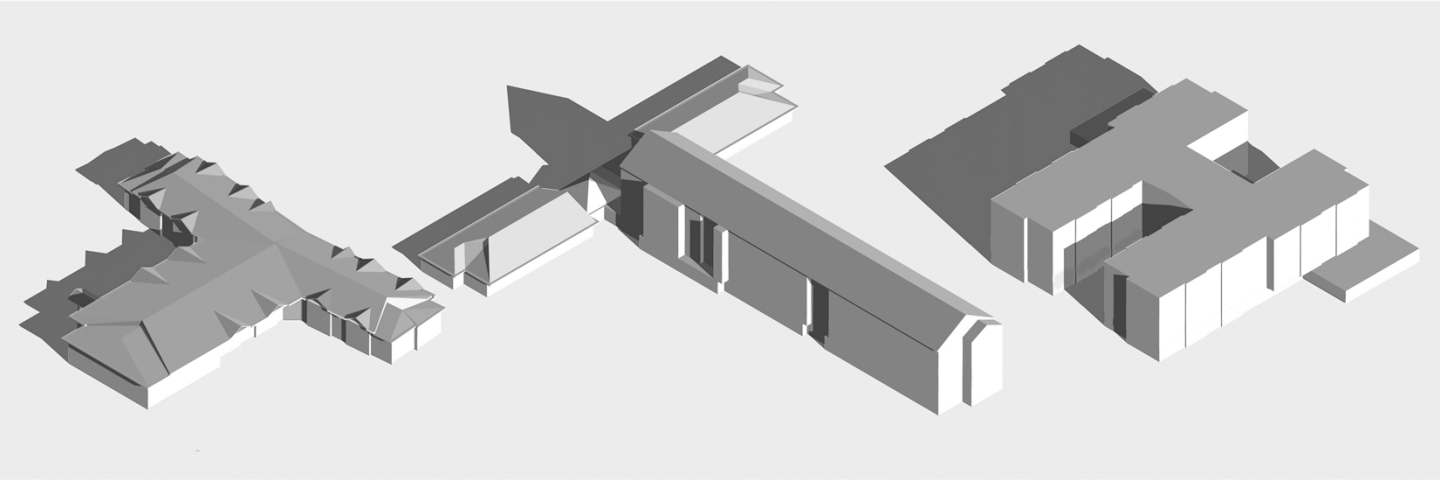

Figure 3-3: 3D Architectural Models of Three Dementia Care Buildings
Slave lake building model (left); Wainwright building model (middle); Red Deer building model (right)

My role in each case study, generally, frequently shifts between "outsider" and "insider." In each case study, I spent the first several days conducting building analysis, during which I did not communicate much with the staff and residents. I observed the building from a design researcher's perspective, examining the spatial environments and how these environments afford the lives of residents with dementia. In the rest of my stay in the building, I slowly changed my role to an "insider" to conduct the study. As a 30+ Asian female researcher, I was familiar to the residents, including those with dementia. Many care partners in the buildings are my age and come from Asia, which made it easy for me to participate in activities and conversations with the residents. I conducted all interviews with family members and residents with dementia with my co-supervisor. Participants, especially family members, understood our roles as researchers, and most of them were happy to share their lives with us. I then pushed myself back into the "outsider" role when writing the reflection immediately after finishing each case study, but involved myself again while doing the reflexive analysis.

Researcher's Experience

Before I began this study, I was familiar with dementia care environments as a visitor, researcher, and volunteer. I have visited more than 40 dementia care buildings in different provinces in Canada, the UK, Japan, Australia, and China from 2012 to the present. These dementia care environments include traditional large-scaled long-term care facilities and dementia care buildings using more innovative concepts, such as Butterfly Home Cares[209] and Green House.[210] I have also worked on research projects relating to dementia care environments and other types of senior housing, both independently and collaboratively. I

[209] Sheard David, "Advancing the Butterfly Model in Dementia Care Homes" *Journal of Dementia Care* 24, no. 3 (2016)
[210] Rabig et al., "Radical Redesign of Nursing Homes: Applying the Green House Concept in Tupelo, Mississippi." *The Gerontologist* 46, no. 4 (2006).

independently conducted a small research project on the associations between activity room environments and participation by people with dementia in a long-term care facility in Vancouver in 2014. I was involved in a longitudinal research project on living environments for elderly people in Vancouver between 2014 and 2017. I conducted about 25 interviews with the senior residents. Though most of our participants were independent, some of them lived with their loved ones with dementia at home and accepted our interviews as dementia care partners. I have also worked as a volunteer of recreation (drawing and crafting) in a dementia care facility for 6 months in the city of Newcastle upon Tyne, UK from 2012 to 2013.

All these experiences help me to be comfortable being involved in dementia care environments and to connect with people with dementia. However, in order to realize the high and comprehensive quality of data collection and to ensure that all works are conducted under ethics approval, I conducted all three case studies with my co-supervisor who has rich experience with case studies of people with disabilities, including those with dementia. Especially in the first case study, I was trained to collect data through building analysis, interviews and participant observation.

Data Collection

Methods of data collection in this study include building analysis, interviews with residents with dementia and their families, participant observations, and ethnographic filming. I selected some of the data that my co-supervisor and I collected in the broader project with the same purposes and conducted with the same methodologies for this study.

Two principles guided me to select data for this study from the broader project. First, the selected data should be comprehensive enough to answer the research questions about the architectural lifeworlds of dementia care. As previously mentioned, the lifeworld is composed of the everyday lives of people

in concrete environments and is afforded by the spatial environments of architecture. Triangulation in this study is realized by the diversity of data collection methods and angles,[211] while the multimodality of the lived person-environmental relationship allows a comprehensive exploration of the architectural lifeworld.

Second, the selected data should be durable enough for a doctoral dissertation study. Because I focus on the architectural lifeworld rather than the association of the individual's lifeworld with the architecture, I selected all three dementia care buildings as case studies in order to compare them. Though I specifically focus on the spatial perspective, the original data that we collected still transcend the scope of a phenomenological doctoral study that requires deep discussion of each piece of data. After carefully reviewing all the data, I decided to include all visual data and reflections, and interviews with residents with dementia and their families. I excluded interviews with architects, care staff, and other types of residents such as those living in the DSL4 or the independent living suites. All selected data are summarized in Table 3-1.[212] The rest of this section describes each method of data collection used in this study.

Building Analysis

For each case study, I spent the first one or two days specifically examining the space and material of each building. Building analysis is developed from the method of object analysis, which aims to understand the roles of inanimate things in the field of material culture. Prown proposed three steps in the process of object analysis: description, deduction, and speculation.[213] Description is the interpretation of a specific thing's attributes, such as its materials, colours, size, and weight; deduction is the interpretation of

[211] Yvonna S. Lincoln and Egon G. Guba, "Establishing Trustworthiness," *Naturalistic Inquiry* 289 (1985).
[212] Summary of data collection for the broader research project can be found in Appendix B.
[213] Jules David Prown, "Mind in Matter: An Introduction to Material Culture Theory and Method," *Winterthur Portfolio* 17, no. 1 (1982).

associations between the thing(s) and the perceivers; speculation is the development of hypotheses about these things by summarizing the results of the previous two steps.[214]

Applying Prown's three steps to my study, I consider the building as the thing. In building analysis, I focused on the spatial environment itself rather than its interactions with people. I analyzed both the outdoor environments, including the neighborhood (such as traffic and amenities), parking lot and garden; and the indoor environments, including the dementia care cottages and other parts of building. I also analyzed the connection of each space, including the outdoor and indoor spaces. In each space, I recorded basic information such as scale (dimension), colour, materials, sound (noise), temperature (if it is too hot or too cold), and lighting. I also interpreted my perception and sometimes wrote down assumptions of how these spaces can be used.

During the analyzing process, I played the role of "outsider," moving through the building with a notebook, pen, and camera. According to Merleau-Ponty, the body's different senses comprehensively perceive the environment in which the body moves.[215] I wrote down notes and sketches based on the taped layout in the notebook that was prepared before the building analysis. Sometimes I drew extra layouts or sections to support my analysis, and I also took pictures of each spatial corner and the components of the buildings.

Interviews with Residents with Dementia and Families

I conducted the interviews along with my co-supervisor. Interviewing is the most direct method of knowing the participants and their lifeworld.[216] According to Moustakas, it is essential to select "research participant[s] [who have] experienced the phenomenon."[217] Because I focus on the architectural

[214] Ibid.
[215] Merleau-Ponty, "Phenomenology of Perception."
[216] Dahlberg, Nyström, and Dahlberg, *Reflective Lifeworld Research*.
[217] Moustakas, *Phenomenological Research Methods.* p. 107.

lifeworlds of people with dementia in this study, I selected all 10 interviews with family members and their loved ones who have dementia, which includes four interviews in the Red Deer case study, four interviews in the Wainwright case study, and two interviews in the Slave Lake case study.

Generally speaking, the 10 interviews cover various attributes of the participants, which are summarized in Table 3-2. In order to ensure a diverse sample of participants, I detected all residents on the first 1-2 days when staying in each building. Following the detection and discussion, I compiled a preferred participant list that covers different types of living situations in the cottages, and sent the list to the site managers, who helped to contact the family members. The site managers also recommended potential participants who may be more willing to share their stories with us, and helped us contact these people. Most of the contacted people agreed to accept our interviews, although a few declined for reasons such as unavailability.

Each interview lasted from 45 minutes to 120 minutes. We conducted semi-structured interviews, for which we prepared a list of questions that guided us through the process. The interview guide included four sections: introduction, material environments, meanings of well-being, and wrap-up. After finishing the first case study in the Red Deer building, I improved the interview guide and applied the new version to the remaining two case studies. Compared to the original version, the improved version includes more direct questions. For example, I changed the question "How does your loved one conduct activities each day in the building?" to "What is a normal day like for your loved one? What activities do they do?" The revised question explicitly focuses on the lifeworld, while the originals often guided the participants to mention only scheduled activities.[218]

[218] Appendix 3 includes these two interview guides.

	Case Study in RD	Case Study in WW	Case Study in SL
Dates/length	7 days	7days	5 days
Interview (families & residents with dementia)	4	4	2
Notes + on-site reflection	139 pages	90 pages	57 pages
Picture	871 pictures	1228 pictures	958 pictures
Film Footages	1hr 36min	4hr 46min	2hr 10min
Reflection immediately after data collection	11 pages	8 pages	4 pages
Layout	5 layouts (floors)	4 layouts (floors)	2 layouts (floors)

Table 3-1: Summary of Data Collection in this Study

Participant Attributes	RD	WW	SL
Mother with dementia and her son	1		1
Husband with dementia and his wife who lives in her own home	1		
Husband with dementia and his wife who live in the independent living suite in the same building	1		
Wife who lives together with her husband in the couple suite in memory care cottage	1	1	1
Sister who has the older sister with dementia but lives in the DSL4 cottage		1	
Daughter whose father with dementia; also a volunteer of facility		1	
Daughter with disability living in the memory care cottage with her mother who has dementia		1	
Total Number: 10	4	4	2

Table 3-2: Interview Participant Attributes

All interviews were conducted in the dementia care buildings; specific locations depended on the participants. We preferred to conduct the interviews in the participants' or loved ones' suites so that the surrounding environments could trigger memories and help them answer our questions; the participants would usually show us things and spaces when referring to specific things. Interviewing the participants in different locations, such as in the meeting room or in the coffee corner, also helped us understand more of their feelings about other spaces in the buildings rather than their own suites.

According to Dahlberg, Nyström, and Dahlberg,[219] the goal of lifeworld interviews is to let the participants share their lived experiences of the phenomenon and express the meanings of the phenomenon and their experiences by reflecting on them. Based on this definition, we conducted each interview in an open but reflective dialogue. Also, the focus of lifeworld research "is not (just) the person as informant, but the phenomenon." [220] In my study, each concrete phenomenon is constructed from the architectural environment and its associations with the people who use this environment. As such, I included questions such as "How do the environments support these activities" and "How do the environments or things connect to his/her previous lives" in order to guide the participants to reflect on their or their loved ones' lives in the broader context of the phenomenon, rather than the individuals.

Participant Observations

This study focuses on the meanings of material environments to residents who live in dementia care buildings. Participant observation, as a method of supporting research that explores the implicated knowledge and the interaction among a group of people,[221] provides me with a perspective as an "insider" in the lifeworld of people with dementia to "see and come to understand

[219] Dahlberg, Nyström, and Dahlberg, *Reflective Lifeworld Research*.
[220] Ibid., p. 187.
[221] Ibid.

phenomena in their natural settings." [222] Spending a continuing length of time in each building for each case study allowed me to be embodied in the specific environments of the buildings. I lived in the buildings 24/7, sleeping in the building guest room, eating, chatting, having coffee, joining scheduled and unscheduled activities, and wandering with the residents.

However, standing inside of the phenomenon does not mean becoming part of it. According to Dahlberg, Nyström, and Dahlberg,[223] researchers should remain distant from and close to the phenomenon, using bridling to observe the things in front of them.[224] Such an exercise of jumping in and out happens throughout the observation process. Typically, I wrote down on-site reflection in the end of each day's observation, but I would also apply reflection when experiencing the phenomenon and perceiving meanings in observation.

Participant observation, compared to the other methods in this study, is the method that most directly brings me into the lives of residents of dementia care, as I empathize with spatial users, such as the residents or care partners, in order to experience the environments and to perceive their meanings. However, Dahlberg, Nyström, and Dahlberg have identified two challenges when conducting participant observations in lifeworld research.[225] First, there are always more things within a lifeworld to observe. Therefore, they suggest being aware of all nuances, even though some of those nuances may not directly relate to the focus of the study.[226] This is particularly important in this study, featuring residents in the cottages who are under the support of care partners. Though I primarily explored the residents' relationships with their surrounding spatial environments, I also paid attention to other aspects of life, such as cottage care

[222] Ibid., p. 212.
[223] Ibid.
[224] The concept of bridling has been explained in the section "Bridling: Reflection on the Lifeworld," earlier in this chapter.
[225] Ibid.
[226] Ibid.

policies and caregiving behaviours that may affect whether the residents can use the material environments or not.

Second, unlike interviews, in which the participants speak directly to the researchers, observations require researchers to express the phenomena they observe and the meanings they perceive. Addressing this, Dahlberg, Nyström, and Dahlberg proposed another challenge of how to use correct terminology to reflect the lifeworld. [227] This is particularly important in their previous projects, as they are Swedish scholars conducting research in English. Like them, I am conducting research in a language that is not my first, something that I have kept in mind throughout the process of research, including my participant observations. I embodied myself in the buildings, writing down notes, sketches, and reflections, and taking pictures of the person-environmental relationship.

Ethnographic Filming

The last method that I applied to the data collection for this study is ethnographic filming. A videographer was hired to come to each building for one or two days to collect footage under the guidance of myself and my co-supervisor. As a type of visual ethnographic research, ethnographic footage collection is the use of a camera to record the real lives of people in a concrete environment.[228] Rather than objective documentation, ethnographic footage is collected through the researchers' and videographer's eyes and, as such, reflect their engaging experience with and understandings of the phenomena.[229]

The videographer started taking footage one or two days after we began collecting data in each building. When the videographer joined the team, I provided him with a list of things that we wanted to record. Each time the videographer was recording, at least one researcher was with him. We explained why we were recording so that the people would be comfortable with our

[227] Ibid.
[228] Pink, *Doing Visual Ethnography*.
[229] Ibid.

presence. We also guided the videographer to focus on the specific phenomena that we wanted to observe, and to adapt the camera angle to take appropriate footage, such as adjusting the height of the camera to that of a wheelchair.

Ethnographic filming was used for this study because the continuing footage reflects the spatial configurations of different functional areas of the buildings, which could not be found in any 2D data collected with the other methods used in this project. For the purposes of a study focusing on the spatial perspective of the person-environmental relationship, these data provide me with a chance to embody concrete moments and perceive their meanings in the data analysis. The video footage also records the sounds in the building, which is unique to all collected data and helps me understand the architectural environments from a multi-sensory perspective. Although the videographer collected the footages under the guidance of the researchers, he still applied his own understanding and creation to his use of the camera. Accordingly, the footage provides a new angle from which to approach the project, as the videographer has no academic background of design for dementia care.

Data Analysis

According to Dahlberg, Nyström, and Dahlberg, analysis of lifeworld study is "a synthesis, the way that the different parts, the meanings, particularities, and uniqueness are related to each other and to the whole of the research."[230] My study focuses on the architectural lifeworld that is a synthesis of different individual lifeworlds within the building. As such, this study follows the lifeworld analysis principle of whole-parts-whole to conduct interpretive analysis.[231]

The whole-parts-whole approach is the general principle of conducting lifeworld and hermeneutic research,[232] in which "the meanings of a part can only

[230] Dahlberg, Nyström, and Dahlberg, *Reflective Lifeworld Research*. p. 233.
[231] Ibid.
[232] Ibid.; Van Manen, *Researching Lived Experience: Human Science for an Action Sensitive Pedagogy*; Alvesson and Sköldberg, *Reflexive Methodology: New Vistas for Qualitative Research*.

be understood if it is related to the whole"[233] and vice versa. Specifically, researchers first read the data several times in order to perceive the general sense of the whole phenomenon. During this process, researchers must be open to the data and allow any new discoveries to occur. In the second step, researchers focus on each part of the data, analyzing their meanings. Finally, researchers integrate all the findings from the first two steps into the "whole" again, to ensure all descriptions and interpretations are presented in a valid and scientific manner.[234]

The application of these three steps to my study will be discussed in detail later in this section. Each step of the data analysis combines descriptive and interpretive approaches,[235] as I describe the architectural lifeworld and interpret how and why the lifeworld is constructed. Furthermore, under the guidance of the nested methodology that integrated the openness, bridling, and reflexivity of this study, I open myself to the data throughout the process, but at the same time, I am aware of any biases and assumptions based on my pre-understanding.

Finally, the whole-parts-whole process is a hermeneutic spiral in which researchers' understanding of the meanings progresses from the tentative level to a higher level. According to Dahlberg, Nyström, and Dahlberg, hermeneutic researchers pay attention to the meanings but also to "why the meaning transpires."[236] In other words, in the last stage of the analysis, comparing and integrating data and previous findings leads to the synthesis of meanings. The remainder of this section explains the data analysis in the three stages of the whole-parts-whole process.

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[233] *Reflexive Methodology: New Vistas for Qualitative Research*, p. 92.
[234] Dahlberg, Nyström, and Dahlberg, *Reflective Lifeworld Research*.
[235] Ibid.
[236] Ibid., p. 280.

Whole

In my study, the analysis of the "whole" began with the first case study. After conducting all data collection at the Red Deer building, I transcribed all the interviews, reviewed all the data, and revised the interview guides that would be used in the other two case studies. Immediately after each case study, I went through all the data and wrote down reflections. After all the data were collected and all the interviews were transcribed, I read them several times and finally selected a certain number of them to use in my doctoral study.[237] I then read all the data for the study several times until I generally understood the lifeworlds of the three buildings.

Under the guidance of reflective lifeworld research and reflexivity,[238] I opened myself to allow new things to emerge from the data, but at the same time I critiqued my findings through reflective and reflexive awareness. In my comparison of these three buildings, I described architectural features such as the neighbourhood, building size, spatial configuration, and functional organization, and outlined the similarities and differences between the three buildings. My findings are discussed in more detail in the building analysis section of Chapter Four.

Parts

The second step of the process specifically focuses on each part of the data, such as each interview, each space's analysis and each activity. I analyzed my transcripts of interviews with families and residents with dementia by referring to the approach proposed by Smith and colleagues.[239] Specifically, in each transcript, I read line by line and wrote descriptive comments, linguistic comments, and conceptual comments. According to Smith and colleagues,

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[237] The data selecting process can be found in the previous section, "Data Collection."
[238] Dahlberg, Nyström, and Dahlberg, *Reflective Lifeworld Research*; Alvesson and Sköldberg, *Reflexive Methodology: New Vistas for Qualitative Research*.
[239] Jonathan A. Smith and Mike Osborn, "Interpretative Phenomenological Analysis," *Doing Social Psychology Research* (2004).

descriptive comments are the explanations of what the participants said; linguistic comments discuss the language and terminology that the participants use and that are related to the research; and conceptual comments are the researchers' interpretations based on the contents of the transcripts.[240]

In my study, I wrote descriptive comments such as relating my earlier conversation with the care partners who were constantly onsite and their frequent checks of their feeling of safety. I also highlighted the terminology that the participants use, such as *home, TV room* (instead of *living room*), and *relieve*. At the end of each transcript, I interpreted the data; for example, I related Becky's and Ray's previous lives on a farm to their current satisfaction with the building even despite its relatively few connections to their previous lives.[241]

Finally, in each transcript, I developed emergent themes relating to the spatial environments' affordance to the residents' lives. For example, each dementia care cottage has only one couple suite, which is located at the end of the corridor, which is far away from the cottage entrance. These spatial conditions cause spouses without dementia who live with their loved ones to feel isolated.[242] As with the interview transcripts, I read all notes, sketches, and reflections that my supervisor and I had made, writing descriptive and conceptual comments and accounting for emergent themes.

Visual data in my study, including pictures and footage, work as "the routes to knowledge and tools through which we can encounter and imagine other people's world."[243] While reviewing the pictures and footage, I considered them as visual evidence that would help me understand the text data and explored the meanings that the visual data may evoke. First, pictures and footage visually connect me to the text data, allowing me to become embodied in the scenes that the participants described. For example, Becky and Ray

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[240] Ibid.
[241] See Becky and Ray's lifeworld in the section "My Wife Lives Upstairs" in Chapter Four.
[242] This can be found in the section "When it is Surrounded in a Way, There is Nothing" in Chapter Four.
[243] Pink, *Doing Visual Ethnography*, p. 39.

mentioned that they enjoy watching children's activities from the apartment's balcony in the summer; however, I did not have a chance to see the children play when we conducted data collection at the building in the winter. The footage that was taken by the videographer who set up the camera from a similar orientation helps me to embody myself into the scene the couple described.

Furthermore, I analyzed the different meanings that the pictures and footage may evoke, especially when the same functional spaces are located in different building. For example, both the Red Deer and Wainwright buildings have corridors with windows at the end, where some residents like to stay or walk. From the footage of Lawrence walking in the corridor, looking at memory boxes, and looking out the end window,[244] I perceived that he considers the corridor a space to walk through or even to do window shopping in order to satisfy his curiosity.[245] A picture of the corridor of the dementia care cottage in Wainwright shows Jim, in his wheelchair, at the end of the corridor, enjoying the sunshine through the window and maybe even observing the waving leaves outside the window. This evokes another meaning of the corridor for him, as he considers this end corner his private space where he can connect with nature.[246]

New Whole

In the final step of the descriptive and interpretive process, all segmental data and analysis were integrated towards the new whole. According to Dahlberg, Nyström, and Dahlberg, researchers at this stage should comparatively analyze all the data and tentative interpretations from the earlier stages, to

[244] Memory boxes contain personal items belonging to people with dementia, used primarily as tools for reminiscence, but also as interior decorations. All the dementia care cottages in the three buildings I visited for this study have a memory box in each suite, mounted on the corridor walls and beside the suite doors. Each memory box has a wood frame and glass cover, which allows the items to be viewed by the people who walk in the corridors, but prevents the residents from taking those items. Families of residents are expected to put their loved ones' familiar items and pictures in these memory boxes.
[245] See details in the section "A Space to Wander" in Chapter Four.
[246] See details in the section "Continuity from Previous Lives."

integrate all previous findings into a higher level of the hermeneutic spiral.[247] I compared my descriptions and interpretations both within the same building and across the three buildings. I compared different residents' usage behaviours in the same functional space and relevant tentative interpretations, exploring how the same spatial environments afford different behaviours and meanings. I also compared the equivalent functional spaces in different buildings and their affordance of different residents' usage behaviours, interpreting the meanings of the material environments. For example, based on each building's corridor analysis as noted above, I integrated all similar interpretations in all three buildings. Finally, I pointed out the factors of architectural environments that can afford different behaviours and affect the quality of wandering. For example, the corridors with windows at the end in the dementia care cottages in both the Red Deer and Wainwright buildings afford residents a more enjoyable experience when either wandering or being alone in the corner; conversely, the corridor with a locked door at the end of the dementia care cottage in the Slave Lake buidling affords residents the tension of existing.[248]

Research Validity

As demonstrated above, in any phenomenological study meanings are constructed according to the researchers' experience in the concrete phenomena. Any approaches using measures of control to neutralize subjectivity in order to realize validity is futile. According to Van Manen, phenomena should be uniquely evaluated according to the depth that "is what givers the phenomenon or lived experience to which we orient ourselves its meaning and its resistance to our fuller understanding."[249] This depth is largely realized in this study by the triangulation of data collection and reflective and reflexive works. I

[247] Dahlberg, Nyström, and Dahlberg, *Reflective Lifeworld Research*.
[248] See details in the section "I Come from Athabasca" in Chapter Four and in the section "Cottage for Wandering" in Chapter Five.
[249] Van Manen, *Phenomenology of Practice: Meaning-Giving Methods in Phenomenological Research and Writing*, p. 355.

used different data collection methods to ensure the triangulation of data to the architectural lifeworlds of dementia care from from different angles. The involvement of two researchers (myself and my co-supervisor) and the videographer also ensures that the data reflect the architectural lifeworld from different people's eyes.

Furthermore, as the most important criterion to ensure the validity of my phenomenological research, I conducted reflective and reflexive works throughout the research process. Reflection, according to Dahlberg and colleagues, should cover all phases of research and should be applied to the researcher him/herself, other researchers and participants, and the interaction among these people.[250] During the data collection process, I wrote down my reflexive thoughts when doing observations, taking notes and drawing sketches. Each evening after the day's work was completed, I reviewed all notes, sketches, and pictures, listened to all interviews, and wrote out my reflective comments. For example, in reviewing any notes on experiences such as the music in the living room, I asked myself if this were what the care partners normally do or if it were because of our on-site study.

At the end of each case study, my co-supervisor and I discussed the case study in depth. As noted above, because I am Asian, residents who are used to being surrounded by Asian care staff were more familiar with me. However, one challenge that I met was the cultural barrier that sometimes caused some difficulty understanding the residents. For example, many residents from the buildings that we studied spent their whole lives on farms in Alberta. The lifestyle of the agricultural community meant that they were accustomed to specific living environments such as farmhouses, flat landscapes, and animals. Because I grew up in an urban area in China, I had some trouble connecting with this culture. However, my co-supervisor spent her childhood on a farm with her grandmother in Alberta and experienced a similar living environment. Discussing

[250] Dahlberg, Nyström, and Dahlberg, *Reflective Lifeworld Research*.

the residents' experiences with her enriched my understanding of the lives of farms and the meanings of farms to the people who live there.

I conducted more reflective and reflexive works during the data analysis process. For example, when examining a picture of two aboriginal residents sitting in front of the window and the locked door of the dementia care cottage dining room, I observed the disconnection between the spatial environment and these two residents. Their view from the cottage window includes parking lots and a geometric landscape, which is different from the bush window view in the reserve from which they came.[251]

I wrote this assumption along with my potential reasons for this assumption. According to Pink, pictures are "framed by the totality of the environmental configurations that also encompassed the person who took the photograph."[252] For example, before seeing these two residents in front of the window, I visited the friendship centre across the street. The people there complained to me about the lack of cultural consideration of the aboriginal residents in the building, which may contribute to my biases about the spatial environments of aboriginal residents.

Ethical Consideration

This study has been conducted under the ethics approval of the University of Alberta. Before doing each case study, I contacted the site manager of each building to schedule the dates of on-site study, attaching all relevant materials including the research protocol, recruitment posters, information sheet, consent form, and assent form. All residents, families, and staff were informed about our study before we visited.

All interviews with residents and families began on the third day of the study. As mentioned in the previous section, I spent the first one or two days detecting and selecting the ideal participants. I then asked the site managers to

[251] See details in the section "I Come from Athabasca" in Chapter Four.
[252] Pink, *Doing Visual Ethnography*, p. 40.

schedule a time when their families are in the building to conduct interviews. In each interview, we started by reading and explaining the consent form (for the families), assent form (for the residents), and information sheet. We provided the participants with all necessary information. For example, we let them know that this was a voluntary and anonymous participation, and they could stop the conversation at any time during the interview or could decline to share their conversation with the research team within two weeks after the interview. We also explained the goal of the interview.

We conducted building analysis and participant observations, making notes, sketches and pictures, and collected film footage in the building. Each time people from the buildings were curious about what we were doing, especially when I used my camera to take pictures and when the videographer was collecting footage, I explained to each person my role and the goal of this study. We ensured that at least one researcher was with the videographer when he was working in the building.

Three days after finishing each case study, I sent an email to the site manager as a reminder that all participants in the interviews could withdraw their interview data within up to two weeks after we had conducted the interviews. I also informed the manager and participants that I would send the film draft for their review. After two weeks, I transcribed the interviews into text, and made a coding sheet for each case study, which includes participants' roles, such as family members or residents with dementia, and some subjective information such as the time and length of the interview. I also gave participants and the persons they mentioned in the conversation pseudonyms rather than using their actual first names. After I finished the transcripts, the original data, including the audio recordings of the interviews, according to the ethical requirement, were stored in a locked cabinet in my co-supervisor's office.

I sent each site manager the draft film that was ready for review, asking them to check with all people, including families of residents with dementia, to

ask their permission to show their and their loved ones' faces in the film in two weeks. Based on the feedback, we deleted or blurred those who did not want to be shown. I also ensured that all relevant people agreed to show their full names and company logos in the end of each film. I blurred all the people's faces in the pictures that were used in any types of presentations, such as this dissertation, the report to the industry sponsors, and conference presentations.

In summary, this chapter introduces the methodologies and methods of this study, including the research design, sites, and participants, and my identity, role and experience as a researcher. The section on data collection discusses the methods of building analysis, interviews with residents with dementia, participant observation and ethnographic filming that were used for this study. The section on data analysis outlines the whole-parts-whole approach as a means of exploring the meanings of spatial environments of architecture in people's lifeworlds. The chapter also acknowledges the validity and ethical considerations of this project.

Chapter Four: Research Findings

As discussed above, all three buildings in this study were designed, developed, and operated by the same architectural and property companies. Therefore, these buildings are very similar in terms of spatial design in architecture and operation policies in the use of architecture. These similarities are mainly reflected in the types of functional spaces and the policies regarding use of these spaces. For example, each dementia care cottage should include private suites with independent bathrooms, as well as common living, dining, and kitchen areas; lunch and dinner are cooked in the public kitchen outside the cottages and are delivered to the cottages at mealtimes each day.

However, because of different geographic conditions, site limitations, and client needs, architects organize these functional spaces into different configurations and design specialized functions based on the needs of clients in the specific buildings. The Red Deer building has the most diverse functional spaces of those I have observed for this study, and as such has the potential to form a lived community where residents have connections with their families, friends and other younger people such as children from the daycare center. Over its almost eight years of operation, the Wainwright building has adapted its spaces for different functions based on the specific needs of its occupants. Residents, as such, identify their spatial attributes according to different levels of public and private use. The Slave Lake building has the lowest occupancy rate and fewest opportunities for engagement in activities. Meanwhile, its geographic location invites residents from different cultural backgrounds.

Accordingly, a comparison of the architectural lifeworlds of these three buildings emphasizes different aspects of their spatial environments. The architectural lifeworld of the Red Deer building is constructed by configuring various functional spaces that allow residents to dwell, or not, in the building. In the Wainwright building, the architectural lifeworld presents lived spaces that

are revised from the designed spaces, in order to adapt to the different needs of the residents with regard to private and public spaces. The architectural lifeworld in the Slave Lake building demonstrates a normal day in the dementia care cottages, whose spatial environments have greater associations with residents' interpersonal and cultural connections.

This chapter begins by comparing the common features of the three buildings in terms of their architectural environments and operation policies. It then presents each building's architectural lifeworld in each independent section from the perspective of architectural space. Specifically, the architectural lifeworld in the Red Deer building is presented as the association of spatial configuration; the architectural lifeworld in the Wainwright building is presented as the identification of residents' private and public spaces with engagements in activities; and the architectural lifeworld of the Slave Lake building is presented as a more holistic interpretation of what a normal day is like within the dementia care cottage.

Commonalities among the Three Buildings

Each dementia care cottage in the three buildings is designed as a locked unit in which 12-16 residential suites are arranged together with common spaces, including the common kitchen, dining room, living room, bathroom, and nurse desk; and supporting rooms such as laundry, soiled utility room, and storage room. Residential suites in each cottage include one couple suite (one living room, one bedroom, one bathroom, and a kitchen without stove) that is always located at the end of the corridor and individual suites in the rest (one bedroom and one bathroom). All residential suites in these three buildings have similar layouts and similar fixed items such as bathroom buildings, bedroom cabinets and ceiling lights. Families of residents are required to take charge of the furniture, decoration, and utility set up for their loved ones. Residential suites are usually located on two sides of a corridor that connects with the

common space. Some cottages have attached gardens, while others do not. Architects design various layouts for these functional spaces according to the specific geographical conditions of the building. Specific layout analyses are shown in the descriptions of each building.

Locked doors connect these cottages with other parts of the building, which is constructed by the public spaces, and other types of senior housing including DSL4 sections in all three buildings and independent living in the Red Deer and Wainwright buildings. Public spaces in all three care buildings include the entrance, entrance sitting area, reception, multi-purpose room, public kitchen, guest room, spa, salon, gym area, some recreation areas such as a reading area, and staff rooms. The Wainwright and Slave Lake buildings have a public garden in each building, while the Red Deer building has commercial spaces including a children's day care centre.

All buildings are operated under the guidance of the *Eden Alternative Model of Care* that aims to encourage residents' independence, choice, and family and community connections.[253] All dementia care cottages are locked 24/7. Residents are not allowed to exit the cottage unless families, friends, or staff accompany them. Caregiving is available 24/7 from care partners who do not wear uniforms. They provide support to maintain residents' ability to conduct daily activities. Each individual suite is meant for one resident, and each couple suite is for two residents at the most. Some cottages allow residents to lock their doors at nighttime.

Residents have three meals per day in the cottages unless their family members or friends take them out for meals. Breakfast is cooked in the cottages, and the time for eating depends on the residents' individual routines. Lunch and dinner are cooked in the public kitchen outside of the cottages and are delivered to different cottages by food carts at scheduled lunch and dinner times.

[253] See more details of the Eden Alternative Model of Care at: https://www.edenalt.org/about-the-eden-alternative/mission-vision-values/

Residents can choose to eat in the cottage's common dining room or in their own suites. The ones who eat in the common dining room usually have designated seats they like to use each day. Care partners sometimes eat together with the residents. Residents conduct scheduled activities, which are mostly organized and conducted by the recreation coordinators, within the cottage common area or in the public multi-purpose room. Pets are welcome in these three buildings, including in the dementia care cottages; some residents have cats, while some staff or family members bring their dogs to visit the buildings. Specialized design and operation policies are explained in each building's analysis. The layout models of each building, demonstrating their spatial relationships, are shown in Figures 4-1 to Figure 4-4.

Case Study One: Architectual Lifeworld in Red Deer

Opened in 2016, the Red Deer building is located in a light industry area of north Red Deer. The building has a gross floor area of 11,400 m^2 and includes 45 DSL4 suites, 69 DSL4D suites specifically for dementia care, and 25 suites for independent supportive living. All suites were occupied when I collected data in this building. This big building has various functional spaces in addition to the dementia care cottages. These attached spaces, such as the independent living suites and the child care centre, create more opportunities to include people who are relevant to the lives of the people with dementia, such as their families and friends, as well as non-relevant people such as the day care centre's children. The configuration and design of these functional spaces, from an architectural perspective, critically affect communication between residents with dementia and other people, and accordingly affect their dwelling in the building.[254] As such, in this case study, the architectural lifeworld is organized by exploring the spatial configuration's affordance to residents' lives.

[254] See the literature review of spatial configuration in the section "Spatial Configuration" in Chapter Two.

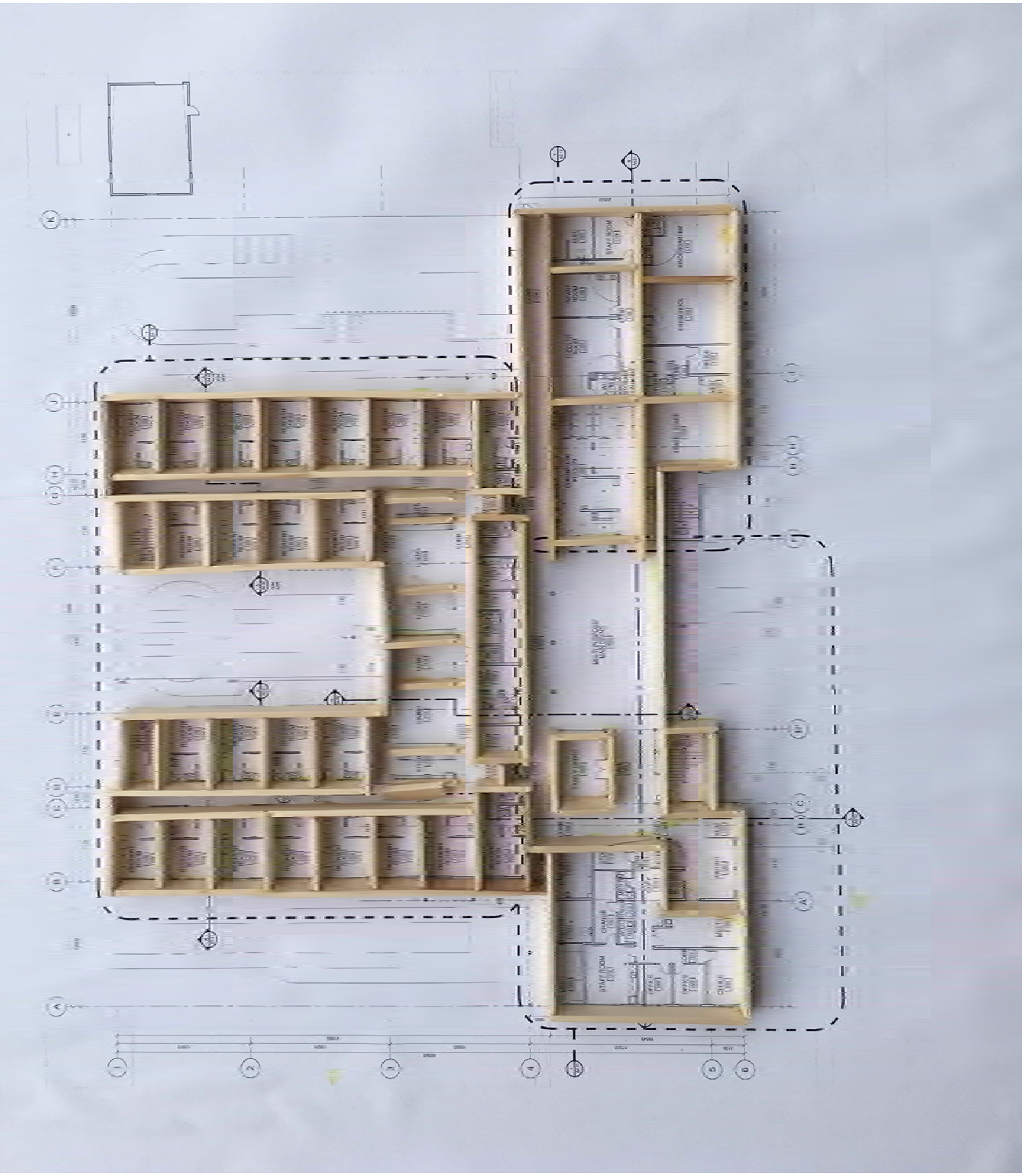


Figure 4-1: Layout Model of Ground Floor of Red Deer Building

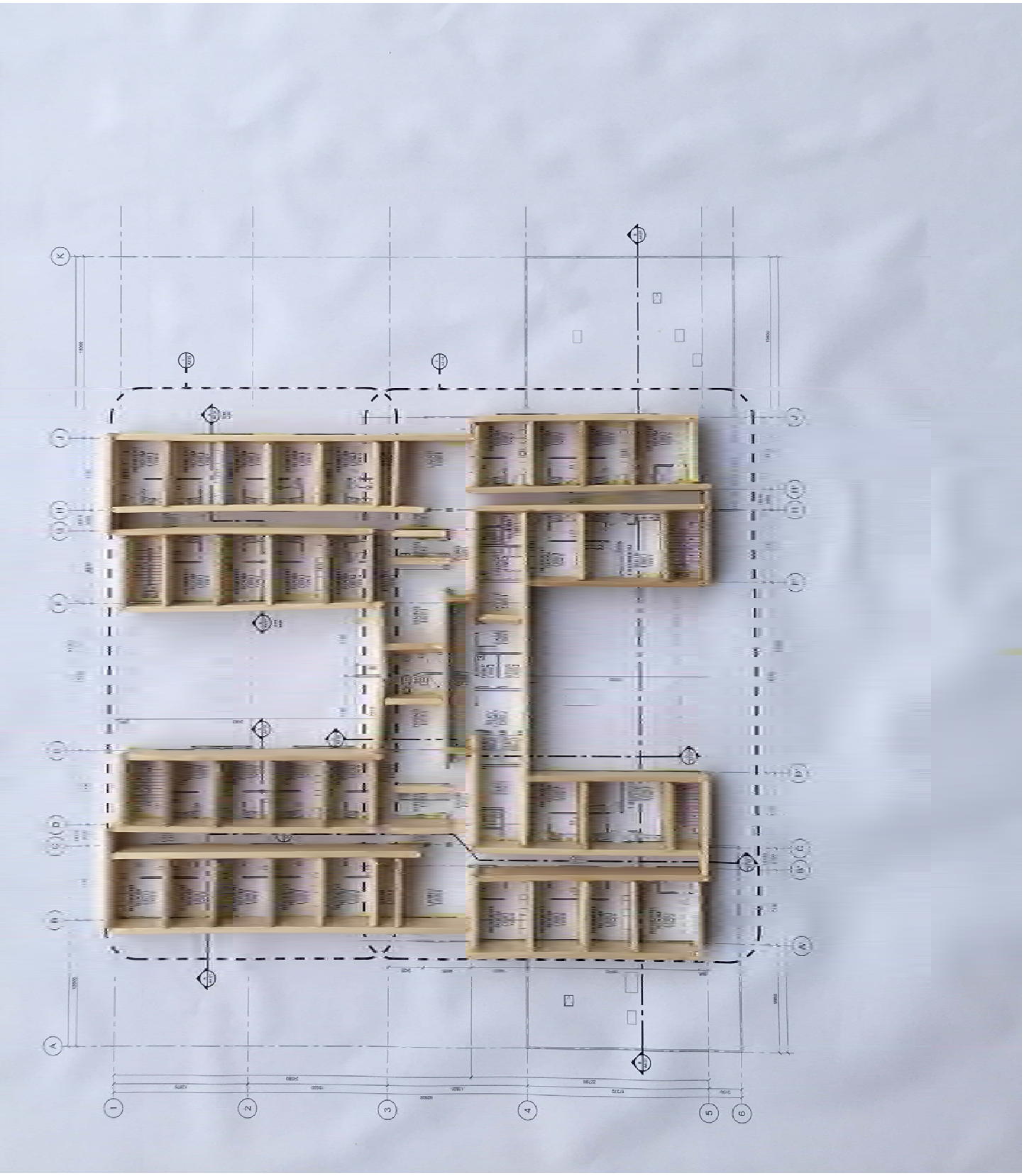


Figure 4-2: Layout Model of 2nd and 3rd Floors of Red Deer Building

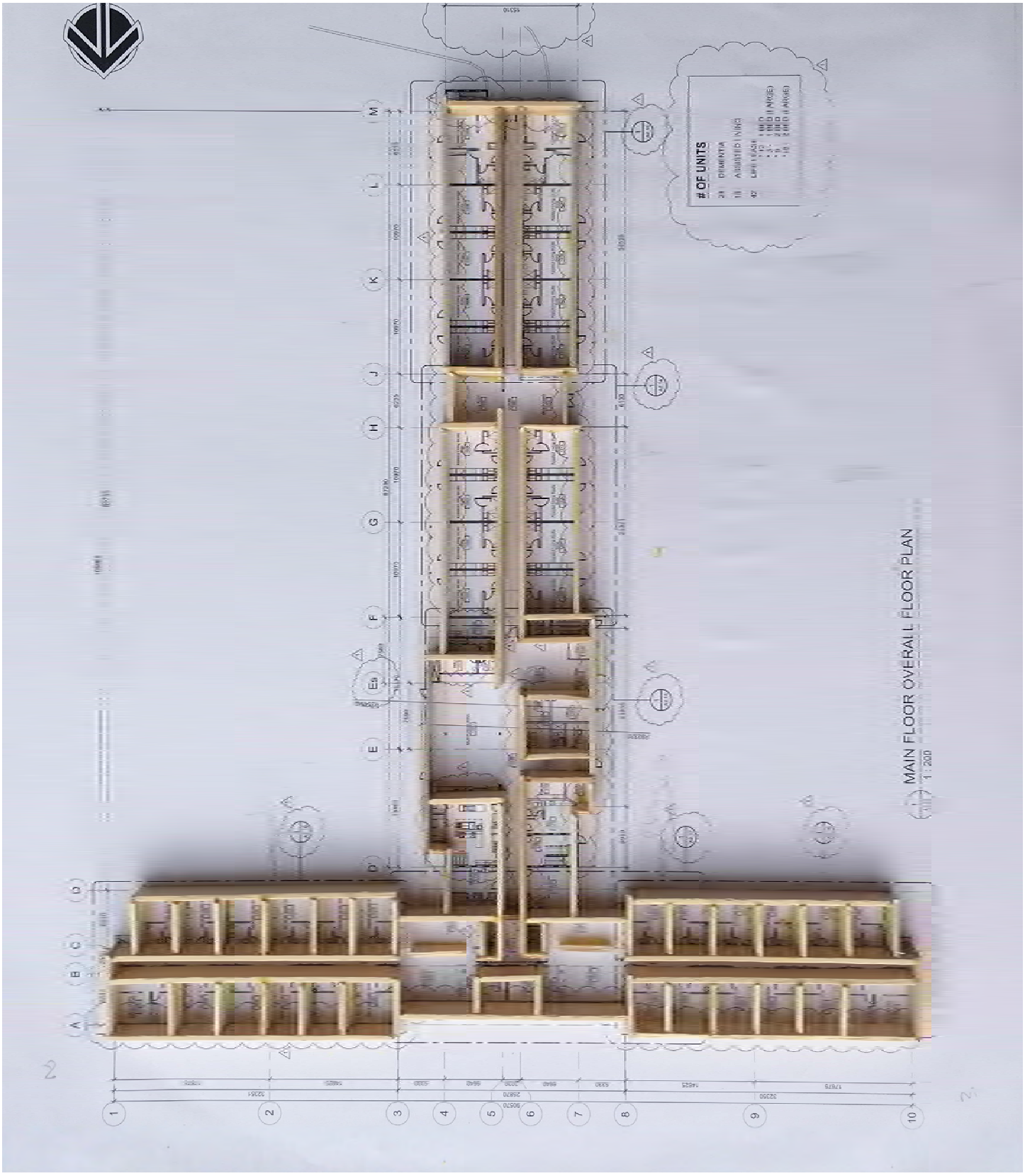


Figure 4-3: Layout Model of Ground Floor of Wainwright Building

Figure 4-4: Layout Model of Ground Floor of Slave Lake Buillding

Building Description

The building is located next to a plaza that provides amenities such as cafés, restaurants, convenience stores, and a pharmacy. There are no outdoor green areas or parks near the building. All parking spots for cars are ground parking. The handy parking spots are in front of the building, and a larger parking area is located at the south of the building. Residents who have cars in the independent living section have a key fob and can access the parking lot through the building's side door that is near the parking lot.

The building has five stories, of which the top floor includes 25 independent living suites, the fourth and half of the third floors include 45 DSL4 suites, and the rest of the third floor and the second and ground floor include 69 DSL4D suites. The second, third, and fourth floors each have two cottages that are located on two sides of the floor, separated by the common area including the elevators and lobby areas and corridors; and a reading room, exercise area, and SPA. On the ground floor, two cottages are located on the west side of the building and are connected to each other. The eastern part of the ground floor is a large public area including all functional spaces that were introduced in the section common features. The Red Deer building also has a café corner beside the entrance lobby and a commercial space on the ground floor that includes a child care centre.

All dementia care cottages are locked 24/7. Family members, friends, and staff, but not residents, can open the doors by entering the codes when they want to enter or exit the cottages. When someone pushes on a door handle for an extended period of time, an alarm sounds loudly.

The Red Deer dementia care cottages are designed in either L-shaped or I-shaped configurations. Each of the two cottages on the ground floor has an L-shaped layout with its own entrance that connects with the public space (see Figure 4-5 and 4-6). Twelve individual suites are located on the longer wing of the L-shape and are connected by a corridor with one other and with the

common area that is on the shorter wing of the L-shape. The kitchen, dining room, and living room of each cottage are located in an open space that connects to the common bathrooms and laundry rooms along the corridor. The L-shape layout is connected with a mirrored L-shape layout to form a bigger U-shaped layout; these are linked by a door that is open during the daytime and closed at nighttime. Residents, family, friends, and staff can walk freely between the two cottages as desired.

A secured fenced garden is attached to the two living rooms. People can see the garden through the living room windows. Residents, family, friends, and staff can access the garden via doors situated beside the living room windows during less inclement weather, such as summer and parts of spring/autumn, at any time during the day. The residents have free access to the garden and can enter/exit at will.

All cottages on the second, third, and fourth floors have the same I-shaped layout, with the common area located in the middle of the cottage. A kitchen wall separates the living room from the kitchen and dining room area, so that most residents sit in the living room rather than accessing the kitchen and dining area, except during mealtimes. At the same time, some care partners complain that the living room is too small for organizing all the residents together. Fifteen residential suites, including thirteen individual suites, one bariatric individual suite and one couple suite, are located on the two wings, necessitating a long corridor. Each cottage on the upper floors has an attached balcony situated off the common living room. All DSL4 and 4D suites have individual bathrooms but no balconies. There is no direct access to the garden on the ground floor from the cottages on the upper floors.

All lights in the corridor are required to be on 24/7. Lighting in the other common spaces are on during mealtime but dimmed at other times. Residents can lock their doors in some cottages in which some residents frequently wander at night. Residents who have a risk of falling usually keep their rooms unlocked,

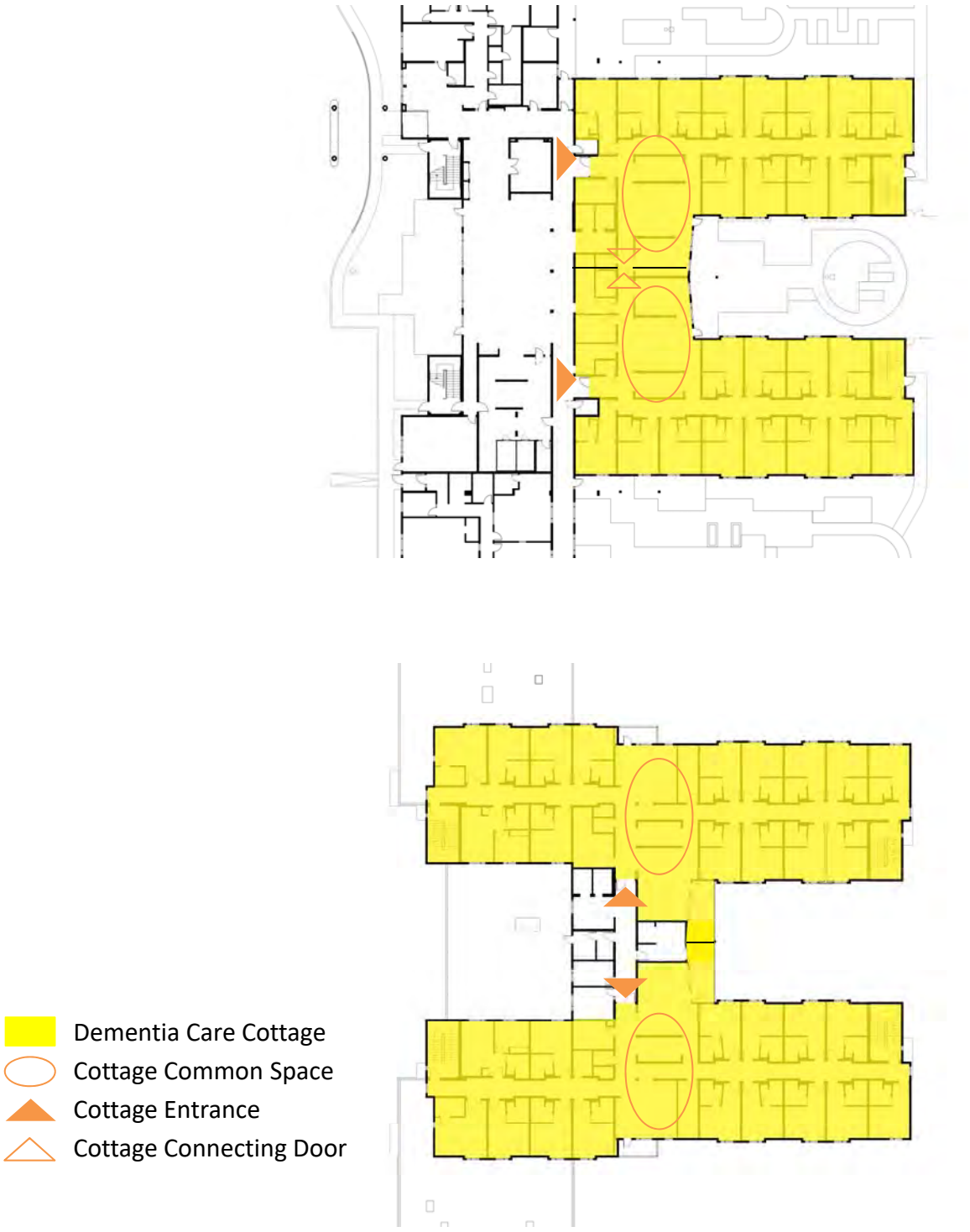


Figure 4-5: Dementia cottage layout analysis in Red Deer Building
Ground floor cottage analysis (up); Upper floor cottage analysis (down)

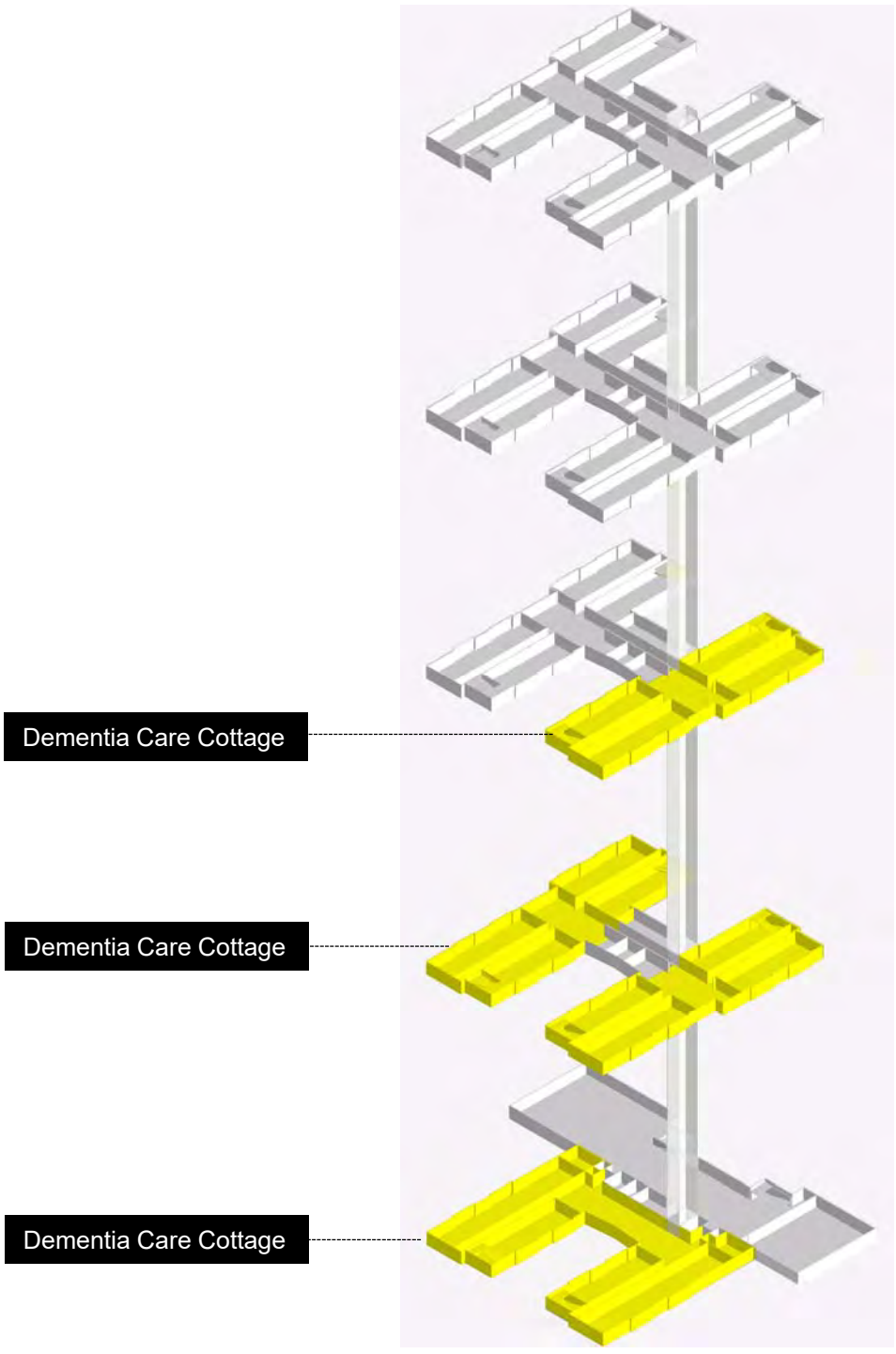


Figure 4-6: Spatial Configuration between Dementia Care Cottages and other Parts of Red Deer Building

and sometimes the doors are kept open in order for care partners to watch/hear if residents are moving around at night.

Architectural Lifeworld and Spatial Configuration

As discussed above, the comparably diverse functional spaces of the Red Deer building means that the architecture can afford a lived community whose residents are able to communicate with other people. For residents with dementia who require different levels of care, the configuration and organization of these functional spaces become crucial to realize these communications. This section examines the architectural lifework of the Red Deer building with the associations of its spatial configurations to different residents.

My Wife Lives Upstairs

Residents with dementia connect with their families, especially their loved ones, in different ways. In the Red Deer building, some residents' spouses live in their own homes, but close to the building. They may visit their loved ones for some time each day. In one cottage on the ground floor, for example, there are usually two couples: the husbands visit their wives, who live in the cottage, watching TV and chatting together in the common living room. The husbands leave when it is time for the wives to sleep. The cottage also offers couple suites that may be occupied by couples, one or both of whom have dementia. I also met several couples consisting of people with dementia who live in the dementia care cottages and their spouses who live in the independent living suites on the fifth floor. They usually see each other at particular moments, such as mealtimes, each day, and have their own times and spaces for the rest of the day. Becky and Ray are one of these couples.

Ray has dementia and lives in an individual suite on the third floor. His wife, Becky, lives in her own one-bedroom independent living suite on the fifth floor in the same building (see Figures 4-7 and 4-8). My co-supervisor and I

conducted an interview with this couple in Becky's living room in the evening, after dinner. Ray's condition, including his memory, allowed him to participate in the whole conversation.

Before this interview, we met this couple on the previous weekend, when their large family celebrated Ray's 93rd birthday in the public area on the ground floor. They reserved the family room, in which they conducted most of their activities, but also got together in the piano corner of the multi-purpose room as one family member played piano and the others sang songs. A middle-aged woman with a disability was involved: she was one of this couple's children, who had become disabled in a car accident decades prior.

Ray and Becky owned a farm in Alberta and worked on the farm for almost their whole lives. Their lives became tough after their daughter had her car accident. The health system in Alberta decades ago was not as comprehensive as it is now, and their daughter's medical expenses led to many debts. As such, in addition to taking care of the farm, both Ray and Beth had a second job for many years. For a certain length of time each Sunday, Ray had to drive their daughter to Calgary from their farm to see the doctor.

In more recent years, their daughter was taken care of by a charity. Her recovery was good, which made them feel better. Years ago they sold the farm and retired. After retiring they moved to a condo in Lacombe, a small town near Red Deer, and travelled across Canada. About two years ago, when Ray was diagnosed with Alzheimer's Disease, they decided to sign a lease in this building and became two of the first group of residents. They have one daughter and one son who live with their own families in Red Deer, making it easy for the family to get together. In the interview, they expressed their satisfaction with this building and their current lives.

The spatial configurations that see them living in the same building but in separate suites allow them to easily connect with each other while still enjoying their own spaces. For example, Becky can access Ray's cottage and his suite by

taking the elevators any time. They have been married for 64 years; many of their daily routines have been fixed together and can be continued in this building. Each day, Becky comes to see Ray in the morning and select his clothes for the day. They have three meals together, which is very important for this couple as they have eaten together every day for decades, like other residents; as Becky noted:

> We have supper together so many years. I just don't want to start to me in one place and him in the other. Most ladies I met still want to [have dinner with their husbands]. It has been 64 years. He is 93.

She also sees Ray each evening in his suite, ensuring everything is good for him, and saying good night to him. For the rest of the day, sometimes Ray has a nap in his suite or joins the building's recreational activities. Sometimes he stays in Becky's suite with her or has a cup of coffee in the recreation room on the fifth floor with her.

Becky enjoys this lifestyle. On the one hand, she can see her husband whenever she wants. On the other, she has the freedom to leave when she feels overwhelmed. Sometimes when Becky goes back to her own suite in the evening, Ray may call her every 10 minutes. Because they are located in different suites, she can decline to answer if she so chooses. Because she understands that the care partners will take care of Ray, she is sure that he is safe even she does not pick up the phone. As Ray's dementia worsens, the care team in this building will provide more comprehensive care for him, which helps to alleviate Becky's worries. As a woman in her 90s, she understands that if she passes away before Ray, the care team will take care of him; therefore, she is less concerned about their future, even about death, and considers this place her home: "I have this little apartment here which I really like…It is my home. It is kind of small but it is my home."

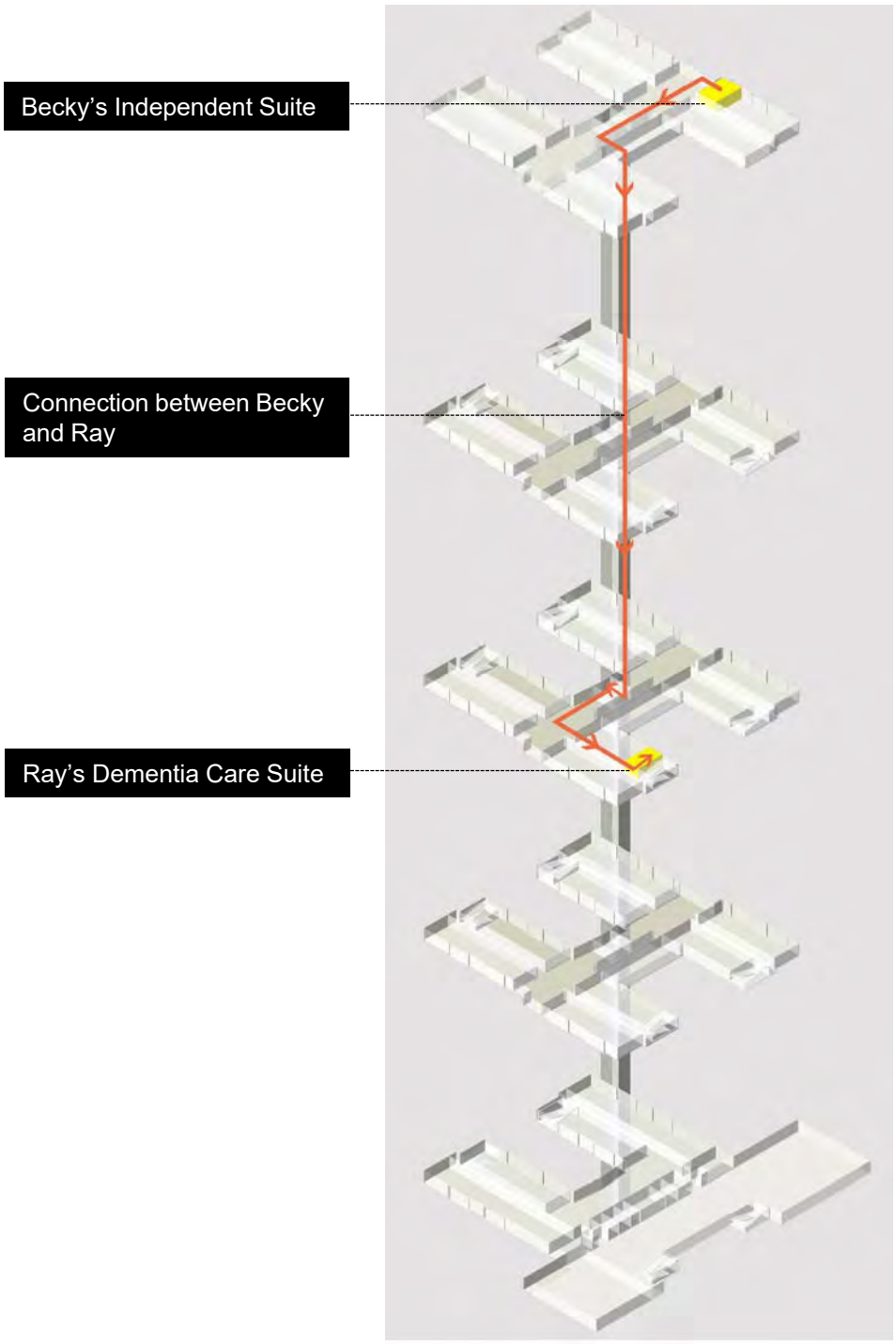


Figure 4-7: Spatial Configuration between Ray and Becky's suites

Figure 4-8: Ray and Becky's Living Environments
Ray' suite in dementia care cottage (left-up); Becky's living room in her independent living suite (left-down); a picture of Becky and Ray's previous farm in Ray's suite (right-up); common dinning room in Ray's cottage where they have meals together everyday (right-down)

Becky has settled in to the building and considers it a place in which she can have a new and more relaxed start. Accordingly, she is less willing to continue her previous activities such as doing housework and being close to nature:

Researcher: Do you like the balcony?

Becky: Yes. In the summertime it is nice.

Researcher: Do you use it a lot? Do you sit outside or have plants?

Becky: I have one plant. It is ok when I have one. [laugh]

Researcher: I am surprised. Don't you miss the plants because of the farm?

Becky: It is just because I have enough there.

…

Becky: I do enjoy not cooking. I have a tiny oven but I have not used it. I belong here. Sometimes I was thinking of the farm when something like that is around. But I don't want to be on that farm.

Researcher: Is there anything you miss from the farm?

Becky: There is a moment that happens sometimes.

Ray also enjoys their lives in the building. He lives in a secure environment in which all his needs are met, and he does not need to worry about bills, even though they pay more than the bills indicate. He had to work very hard in the past, but retirement makes him feel satisfied. More importantly, his wife is together with him. Unlike other residents who live alone in their own suites in the dementia care cottages, Ray has Becky, who lives upstairs. He may easily exit the cottage when accompanied by his wife, walking around in the rest of the building or going to Becky's suite.

Like his wife, Ray considers his suite as a space for sleeping, while he can "go home" with his wife in the daytime. Like other residents with dementia, Ray is sometimes disturbed by other residents who wander and enter the wrong

suites, but this couple chooses to accept it. One main reason is that they consider their home is upstairs. For this couple, who experienced high pressure in their previous lives, the lifestyle that is simple but secure and comfortable makes them dwell in the building, which is partially afforded by the spatial configuration in which they have their own suites but in different parts of the building.

The spatial configurations of different types of senior housing existing, and being connected, within the same building allow Becky and Ray the opportunities to stay together while still maintaining their own space. The combination of independent living suites on the fifth floor and the dementia care suites on the lower floors allow Becky and her loved one with dementia, Ray, to dwell in this building. This spatial configuration provides the couple, especially the one without dementia, with the choice to stay together, such as having three meals per day to maintain their 64-year daily routine, or to have their own spaces. When they are separated, they each know the other is safe. This sense of safety relates both to short-time separation, such as Becky being alone in her suite for one night, and also to potential long-time separation such as in the event of her death: if she dies before her husband, the care team in this building will take care of him.

The satisfaction of living within this building may be higher for Becky and Ray because of their previous difficult lives. Their past experiences, including the heavy work burden on the farm, their daughter's car accident that caused them to spend great amounts of time and money to care for her, and the second job that allowed them to pay their daughter's bills in the past, make them feel relief in this building. Becky, a woman who worked on the farm for almost her whole life, only has one plant, even though she has a balcony where she can plant more if she wants. However, she has said that one is enough for her.

Not all couples of whom one partner has dementia will dwell in the building. Other reasons, such as unaffordable rent or dissatisfaction with food,

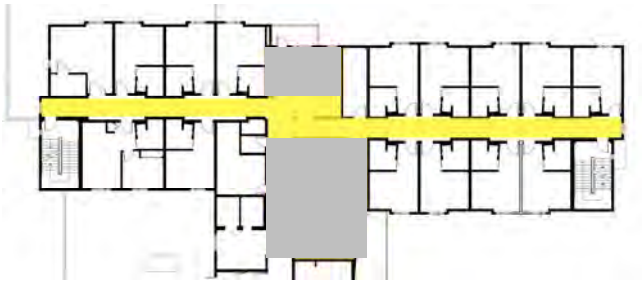
may be barriers to their dwelling. However, including independent living suites in the same building or the same community with the dementia care suites may afford the possibility of couples dwelling within the building/community.

A Space to Wander

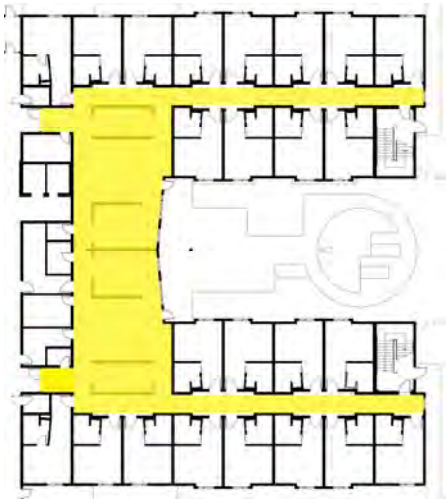
One night, at around 1:00am, I entered Ray's cottage and met with Ray's potential disturbers. It was quiet except for two wandering residents in the corridor. The lights in the living room and dining room were off, but those in the corridor were still on; the contrast made the lighting in the corridor extremely bright. The female resident, Lori, dressed in pajamas and a pair of black velvet gloves, wandered on one side of the corridor. I sat in the end corner of the same side of the corridor, observing. The care partner went towards Lori and carried her back to her room. After a while, the care partner left her room, closed the door, and went toward the man who was on the other side. Quickly, Lori opened the door and went out again.

I decided to stand up and walk with her. She was talking to me and I said, "Everyone is sleeping. It is bedtime now. We can chat tomorrow. Can we go to your home?" She replied, "You are such a good person. But where is my home?" She was lost. When heading up, I found that the long I-shaped corridor did include a little message for her, to help her find her way back to her room. What I saw was an endless corridor with a repeating rhythm created by the wall lights on both sides of the corridor. Furthermore, I noticed that she did not realize that it was nighttime. The corridor was very bright, and I knew that the lights were on for the whole night, so that she did not understand that it was bedtime.

Lawrence, who lives in the cottage on the ground floor, has a different wandering pattern than Lori (see Figure 4-9). On the ground floor, two mirrored L-shaped cottages are attached to each other and are connected by a door that is opened during the day to create a large U-shaped configuration. Lawrence lives in an individual suite in the south cottage. He wanders within the cottage



Lori's Wandering Space



Lawrence's Wandering Space

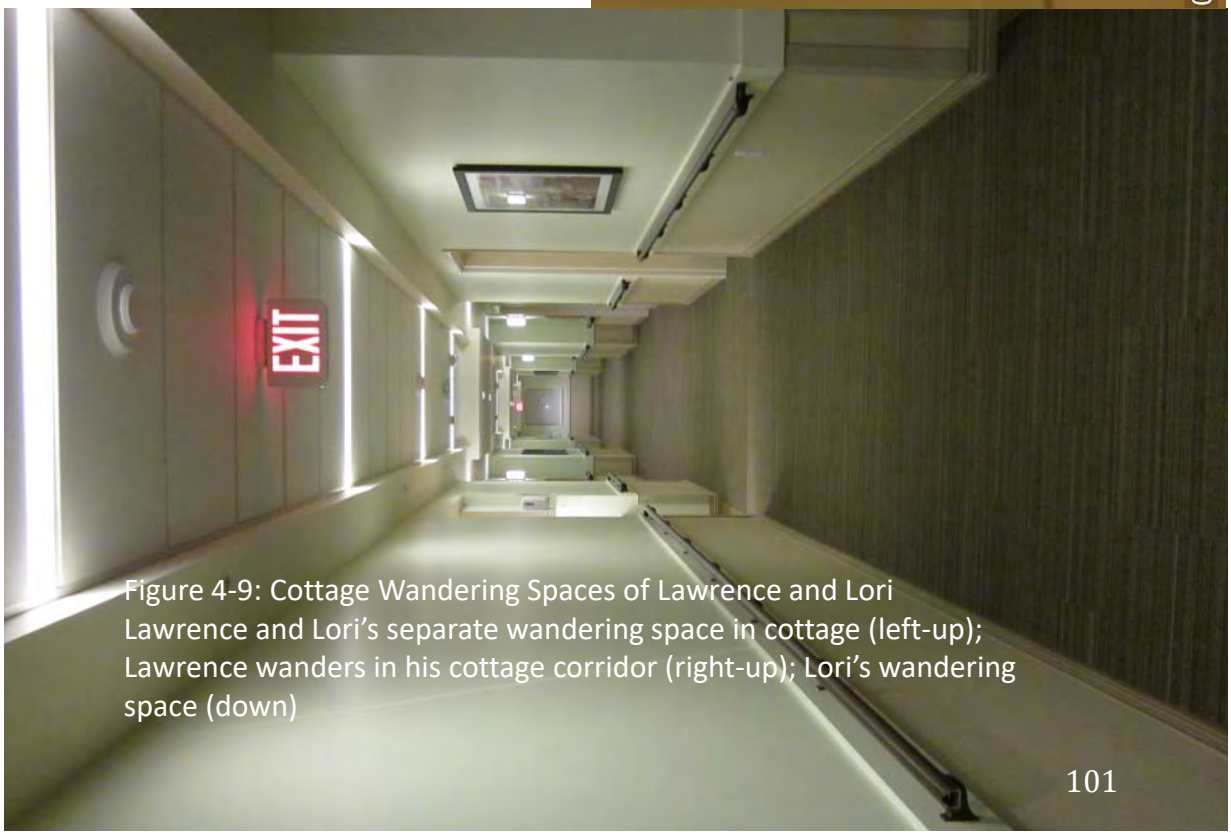


Figure 4-9: Cottage Wandering Spaces of Lawrence and Lori
Lawrence and Lori's separate wandering space in cottage (left-up); Lawrence wanders in his cottage corridor (right-up); Lori's wandering space (down)

several times throughout the day. Usually he walks in the common area including the corridors, kitchens, dining room, and living rooms in both cottages on the ground floor. He was a music teacher before his retirement. Every time he passed the living room, where the TV may play music or entertainment shows, he would be attracted to the TV and would stand in front of it for a time.

Some of Lawrence's wandering behaviours include exploration or even window-shopping. He likes to see and sometimes to touch things on the walls along his route. One evening after dinner, I was sitting on the floor at the end of the corridor, when Lawrence walked from the kitchen area towards me. He looked as though he were in a very good mood. His pace was light, and he even seemed to be dancing when he waved his arms. On the way, he watched the decorations in each window box in front of each suite's door, full of curiosity. When he was close to me, I assumed that he might stop in front of the fire door to the staircase, or in front of the window at the end of the corridor. However, neither of my assumptions was correct. Lawrence was attracted by the decorations in the window box on the other side, turning around automatically when he passed the last window box in the corridor. After he turned around, he continued his explorations. Lawrence walks in this corridor many times per day, but he does not always have as enjoyable an experience as what I observed. Sometimes he becomes agitated when wandering, and the care partners have to take him outside the cottage. However, at other times, like the evening I observed him, he enjoys watching and exploring things on his way.

The spatial configuration is meant to afford a more enjoyable space in which people can wander. Many residents with dementia spend almost the whole day each day within the locked cottage, so that the cottage space is the unique space for their activities including wandering. When comparing the wandering behaviours of Lawrence and Lori, I observed that their spatial environments, especially the corridor designs, afford different experiences of wandering. I observed that Lawrence's experience was generally more enjoyable

than Lori's. The U-shaped layout, including walking loops in the kitchen area and living room areas, and the courtyard in the summertime, together with the two straight corridors, create more options for Lawrence to wander. He may choose to do window-shopping in the corridors, or to be alone to watch the outside views at the end of the corridor, or to be together with other residents and care partners in the living room and kitchen and dining area.

For Lori, the long and straight corridor is almost the only way she can walk at nighttime, which is one of the reasons why, when she walked back and forth in the corridor, she got lost. One may argue that she can walk to the living room or kitchen and dining area that is not closed at nighttime. However, when all the lights are off, these areas do not attract residents, especially those with dementia, to be involved. Also, the wall between the corridor and the kitchen becomes an obstacle for the residents, making it difficult for them to go to the kitchen and dining area. Even in the daytime, residents seldom stay in these areas except for mealtimes. It is possible that these two residents' personal factors, such as their physical and cognitive conditions, give them different motivations for wandering, but the quality of their wandering place also gives them very different experiences.

Why Does Jay Always Stay in the Common Areas?

Jay lives in the same cottage as Lawrence. Unlike Lawrence, who has his wife living upstairs and has a well-decorated suite, Jay has few family members to visit him, and his room has little decoration. For Jay, who has fewer chances to connect with his previous life, the common areas' things, spaces and activities may supplement his losses. He usually shows up in the common areas for the whole day, except at bedtime. Figures 4-10 show the different environments of the private suite and the common living room of Jay's cottage.

During the day, he always watches TV in the living room, sometimes sitting on the couch and other times in his wheelchair. He appears to enjoy

surrounding activities such as the care partners' work in the kitchen, Lawrence's wandering, and other residents' family visits. One day after lunch, he was seated on the two-seat couch with one partner's big dog, stroking her long hair. He eats each meal in the dining room and likes to help the care partners clean the counter after the meals. He can walk with a walker or by holding the handrail, but usually sits in a wheelchair. A care partner told me that he always falls, so they have to ensure that he uses a walker or wheelchair.

It was around 6:30 pm when I entered Jay's room. The building has no organized activities after dinner. At this time, some residents would go back to their own suites while some prefer to stay in the common area to watch TV or to wander. The door of Jay's room was open. I observed the memory box beside the open door. From his wedding picture, I knew that he served in the army when he got married. From the small sculptures of curling and golf, I knew that he was a fan of these two sports.

In his suite, he has a twin-size bed in one corner of the room. When I entered, I found him lying on the edge of the bed, leaning on the standing railing attached to the bed. His body was covered by a blue and white lattice quilt and his head was on a blue pillow. A pair of velvet slippers and his walker were neatly placed beside the bed. A pair of glasses was placed on the nightstand, where there were no other items such as table lamps. A pair of outdoor shoes were in the nightstand drawer. A black plastic table and two white plastic chairs stood beside the window. There were no tablecloths or chair cushions. On the other side, close to the end of the bed, were a single black leather couch and a small table with a grey table lamp standing beside the couch. A standard combination, including two separated desks with a shelf in the middle and a cabinet, stood on the wall facing Jay's bed. The shelf was stuffed with green diaper bags. The desk on the left side had a framed picture of God and the desk on the right side had a

Figure 4-10: Jay's Cottage Living Environments
Jay's suite (left-down and right-down); Jay is watching TV with other residents and family members in the cottage common living room (left-up); Jay is seated in a couch with a care partner's dog in the cottage common living room (right-up).

TV. A white clock hung on the wall behind the TV. The cabinet was closed. When I opened it, two or three sheets were hanging inside. His wheelchair stood next to the entrance door. In addition to the things above, no other items were in the room.

Jay was not sleeping. He noticed my visit and tried to get up. “I just walk around. Is this your home?” I asked.

“No…” he replied.

“Then where is your home?” I asked. I knew he was confused.

“Can I stay here for a while to do my homework?” I asked again.

“Yes.”

Then he continued to lie on the bed, closing his eyes. The grey curtain was open and the sky was still bright. Because of the snow, the natural light was much stronger that it should be at 6:30 in the evening. The light on the ceiling was on. I knew that it should be on for the whole day until he goes to sleep at night. Facing the bare light green walls, I could say this was a totally institutional room. I knew nothing about the man who was on the bed in front of me from his room. I could find nothing about his family or his hobbies other than what I found from the memory box in front of his door. The pillows, sheet, and quilt were hospital style. I could smell the disinfectant in all the bedding. Because there were not many soft materials in the room to absorb the sounds, I could clearly hear the sound of the clock, my pencil rubbing against my notebook, and the echoes.

The care partner’s visit broke the silence. She was coming to clean Jay. Before she helped him get up, she asked him whether he would like to have a shower. He agreed. Then she moved the wheelchair to the bed, helping him to move to the wheelchair and carry him into the washroom, closing the sliding door. I kept on sitting in the plastic chair beside the window, listening to the conversation in the bathroom. Jay actually said nothing but just answered the care partner’s question such as “Have you finished the piss?” It seemed that this

was a routine for Jay. Within his 15-minute stay in the bathroom, Jay completed urination, defecation, oral cleanup, facial cleanup, and shower. When the care partner carried Jay to the bedroom, he had his pajamas on. “Do you want to go to bed?” the care partner asked him.

“Yes,” he replied. After laying him on the bed, the care partner turned on the TV. They had no conversation regarding the channel he preferred. Then the care partner left, closing the door. The light in the room seemed brighter because the sky was still bright, the ceiling lighting was on and the TV was on. The sound from the TV covered other sounds. Jay did not move after being laid on the bed. He did not open his eyes to watch TV. After about five minutes, I slightly walked out of his room. This time he did not notice that.

After coming out from Jay’s room, I understood why he preferred to stay in the common areas all the day. Compared to his institutional suite, the living room, the kitchen and other places in the cottage were more like a home, or at least more cozy, for him. At one time I thought that it was possible that Jay liked the empty style because he served in the army and maybe was used to simple interior decoration. However, being simple is different from being empty. Otherwise, he would prefer to stay in his room rather than the common areas. I had no chance to ask Jay and his family if he dwelt in the building. If he did, his places should include the cottage common areas rather than his individual suite. The meaning of cottage common areas for residents such as Jay, who have little chance for a well-decorated suite, is to provide supplements to allow the residents to dwell comfortably.

The spatial configuration is to afford a place that may supplement the feeling of home for residents who have no chance for a more homelike individual suite. Though family members are always encouraged to bring residents’ personal furniture and belongings to decorate their loved ones’ suites in the building, many suites I observed still lack decoration, so that the space seems more institutional. Care partners may sometimes help the residents decorate,

but according to operational policies, people other than family members are not allowed to do this.

For these residents, a well-designed spatial configuration may supplement the loss of home in the building. Though Jay's individual suite is almost empty except for some daily necessities, the more homelike common space within the cottage provides a supplemental space for him to dwell in. First, the common space should be easily accessed from the individual suites. As mentioned above, a longer distance between individual suites and the common activity space may reduce the residents' interest in joining in with the activity; as such, cottage corridors should be as short as possible. Jay is fortunate because his suite is located in the middle of the cottage corridor, so that he can easily access the common areas. Furthermore, the functional organizations of common space should allow residents to conduct appropriate behaviours. For example, the kitchen counter allows Jay to do cleaning after meals, the living room allows him to watch TV, the couch with the dog on it allows him to be seated and pet the dog, and the dining table allows him to eat meals.

Space for Seeing Children

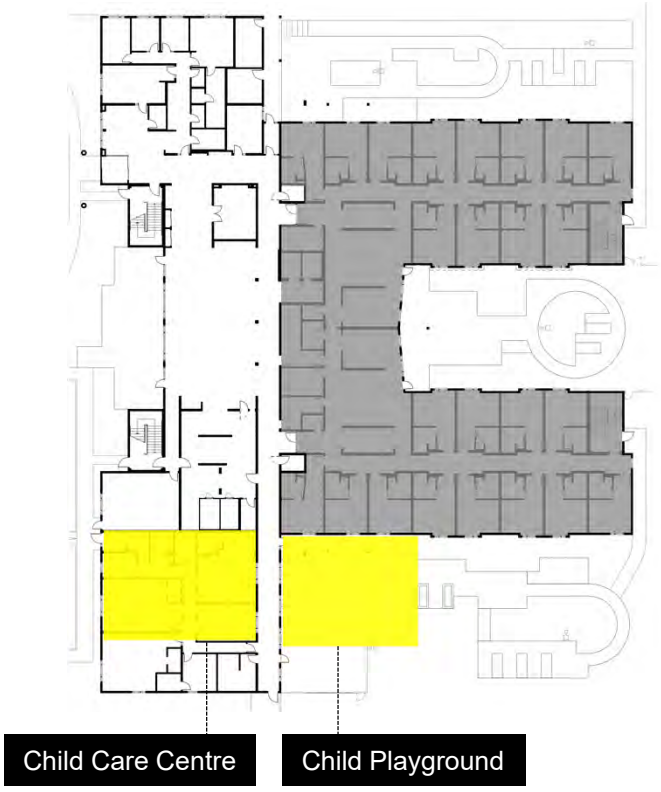
The Red Deer building has a child care centre in the northern corner of the ground floor. An independent entrance to this care centre is located on the east side of the building. The wall connecting the building is designed to include two big windows through which children from the centre and people from the building can visually communicate. There is also a door connecting the centre to the other parts of the building, through which children can come to the building or go to the outdoor playground across the corridor (Figure 4-11).

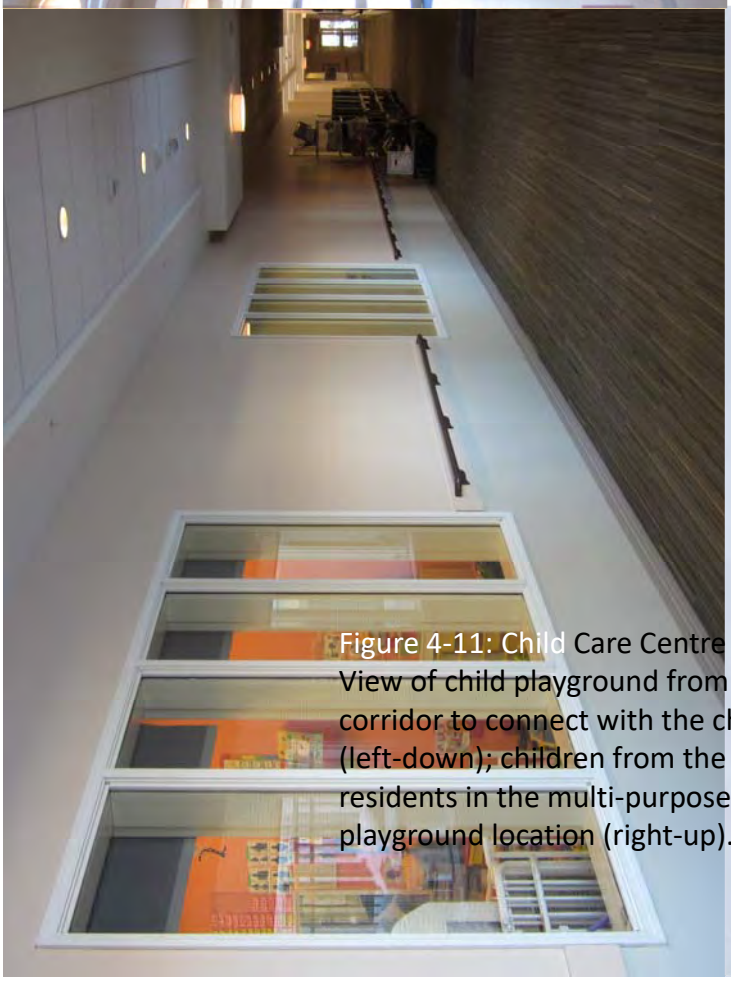
Being involved in the children's activities is one of the favourite activities of the residents, especially those with dementia. These involvements include physically participating in the recreation activities and also watching the children's play from different parts of the building. Each Tuesday morning at 10

o'clock, children are brought to the building to conduct scheduled activities with residents in the building. It is said that sometimes they go to the dementia care cottage to sing songs for the residents. On the Tuesday I was there, they did planting in the couch area of the multi-purpose room with the residents, including those with dementia. A group of 12 children went to the couch area under the guidance of two teachers. Before they arrived, some residents had already been seated in the couches. The ones in wheelchairs were organized close to the couch. Many of them were attracted by the sound of children who came toward them from the end of the corridor, turning their heads and following these children with their eyes. All children were organized to sit on the floor, facing the residents.

Then the recreation coordinators started to instruct residents and children to do planting. They filled paper cups with soil, lay them on the trays that were on the coffee table, and encouraged the residents and children to put seeds into the soil in the cups. During the whole process, some residents practiced while others watched what the children were doing. A female resident in pajamas was sitting in her wheelchair at the beginning. She was attracted by a small girl who was playing with the soil beside her. She started to bend over to watch what the girl was doing, and finally they played with the soil together. At the end of the activity, the children returned to the child care centre with their teachers.

This activity allows the residents to communicate with the children, touch the soil and paper pots, and plant seeds, which is a positive way to connect them with the social and natural world. These connections can be deeper if the quality of space in which the activity is conducted can be improved. The planting activity was conducted in the couch area that is meant for indoor entertainment. Compared to the outdoor garden or balcony or the indoor greenhouse, this space fails to connect residents' memories of doing planting in the garden when spring comes. Second, because the activity was located in an open space,





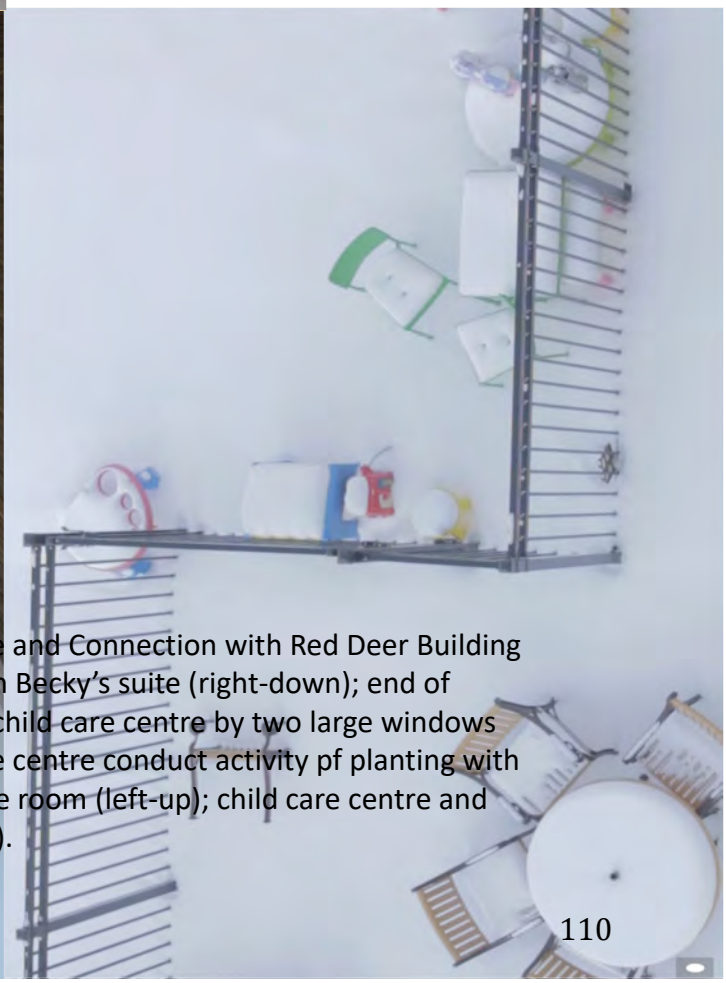


Figure 4-11: Child Care Centre and Connection with Red Deer Building View of child playground from Becky's suite (right-down); end of corridor to connect with the child care centre by two large windows (left-down); children from the centre conduct activity pf planting with residents in the multi-purpose room (left-up); child care centre and playground location (right-up).

residents would interact with people who passed by. In other words, a more closed space would better support this activity.

In addition to communicating with the residents during scheduled activities, the children provide entertainment for the residents at other times of the day. Residents whose suites are north-oriented can see the playground through the suite windows or balconies. When I was in the building, the outdoor spaces, including the playground, were still covered by snow. No children were playing on the playground. However, many people noted that the residents enjoy watching the children play. Becky and Ray, introduced above, shared their experience watching the children play on the ground floor from Becky's balcony on the fifth floor:

> Becky: We got the little kindergarten view…. Hey are cute.
> Ray: I get the kids. There is a tricky little girl there.
> Becky: [laugh] Yep. We can watch them. There is a girl always pushing somebody else.
> Ray: There is a box down the building. That is hers.
> Becky: And they come here and sing songs for us. The Christmas concert last year for us. Very entertaining.

Becky and Ray are lucky to have a balcony that faces the playground. However, because it is located in the northern corner of the building, the playground can only be seen by the residents whose suites are north-oriented. The residents are expected to walk to the end of the corridor to watch the children through the windows connecting with the corridor, the playground, and the care center. However, because the playground is located outside the cottages, residents have to wait for the care partners' availability, or for their families or friends to visit. Some family members reflected on the barriers that prevented their loved ones from accessing the children's activities:

Researcher: How about the daycare, the kids; do you ever go and look at the kids or?

Family: No, access wise, it's not really easy for us.

Researcher: Get over and see the kids.

Family: Get over and see the kids; the kids will be running around in the cafeteria once in a while; that's nice, but yeah, not really. They come and go, from the day care. That's about it.

The spatial configuration is meant to create an attractive functional space that can be accessed by as many residents as possible. The child care centre is one of the most popular spaces for the residents. However, its location at the end of a long corridor restricts resident access. Kitchen activities, noise, and lower temperatures also create obstacles for the residents. Moreover, only residents in the northern-facing suites are able to see the children on the playground. This issue can also be found in the design of the garden locations in the Wainwright and Slave Lake buildings, in which the big garden can only be viewed by a quarter of the residents with dementia whose suites are located beside the garden. One may argue that residents can access these spaces while accompanied by the care partners or their families. In fact, it is hard to realize this because of the time limitations of care partners and residents' families.

Case Study Two: Architectural Lifeworld in Wainwright

The Wainwright building is located at the edge of the town of Wainwright in east-central Alberta. The building has a gross floor area of 7,986 m^2 and includes 35 DSL4 suites, 24 DSL4D suites, and 32 independent supportive living suites. All suites were occupied when I was collecting data there. It was opened in 2010, followed by the Slave Lake building in 2015 and the Red Deer building in

2016, during which time the spatial environments have been adapted to fit with the needs and behaviours of the residents.

As a community that emphasizes conducting activities for the residents including those with dementia, the Wainwright building adapts its spatial environments in close association with specific activities. By conducting these activities, both scheduled and unscheduled, residents identify their private and public spaces, which are different from the predictions of architects. The architectural lifeworld of the Wainwright building is therefore presented by the residents' identification of private and public spaces in relation to their activities.

Building Description

The Wainwright building is located in a residential area that is close to the highway and also close to grocery stores and some fast food restaurants. There are two car parking areas: one ground parking lot in front of the building, and a small underground parking lot that is mainly for the independent living residents. People can access the underground parking area from the inside of the building by taking the elevator. The site plan is shown in the sketch in Figure 4-12.

The main building houses a one-floor DSL4D component, including two connected dementia care cottages on the north side of the building. The main building has four stories including 32 independent living suites on the third and fourth floors, and 25 DSL4 suites on the second floor and the south part of the ground floor. On the ground floor, the public area connects the dementia care cottages on the north and the DSL4 cottage on the south. Public areas within the building include all functional spaces that were discussed above in the section on common features.

A large garden is attached to a multi-purpose room and is also part of the eastern dementia care cottage. Access to the garden includes a good view for the people who are sitting in these spaces. An extension for independent living is

under construction and is located at the east side of the existing building. A corridor will connect with the two parts of the building. All meals will be cooked in the existing public kitchen and delivered to a new larger dining room to serve the residents who live there.

Currently, the public multi-purpose room is one of the most used spaces in the building. All residents from the DSL4 suites on the ground floor have three meals, and almost all residents living independently have lunch in this room each day. The public kitchen also offers snacks and coffee in the mid-mornings and afternoons. On virtually each weekday afternoon, the recreation coordinator conducts scheduled activities that involve residents who wish to participate. Residents who live upstairs have to take the only elevator to the multi-purpose room. Because there is only one elevator for people who predominantly use mobility devices and cannot easily use stairs, many residents need to wait for a long time to take the elevator. The spatial configuration between the two dementia care cottages and other parts of the building is shown in Figure 4-13.

Each dementia care cottage has a common space and 12 residential suites including 11 individual suites and one couple suite. These two cottages are connected together in a long I-shaped layout and share one laundry (see layout analysis in Figure 4-14). The connecting doors of the two cottages are always opened while the main entrance to the DSL4D component is locked 24/7. Family, friends, and care partners can push a button beside the door to enter the cottages but must enter a code when exiting.

The eastern cottage is attached to a large fenced garden that connects to the public multi-purpose room. The western cottage is attached to a small courtyard that is surrounded by a wooden fence. Different suites have different views from the windows: the south-facing suites of the east cottage can view the large garden; the south-facing suites of the west cottage can view the ground-level parking area; and the north-facing suites of both cottages face the

building's fences that look to a walking trail, a hotel, and other industrial buildings. Some of these north-facing suites can see the traffic on nearby roads.

Architectural Lifeworld and Public/Private Spaces

Generally speaking, for residents with dementia, the building is designed to include four layers of spaces. The private space includes the residents' private suites. The semi-private space is the common area of the dementia care cottage that residents can access by themselves. The semi-public space includes the gardens and other parts of the building where residents can go but must be permitted or accompanied by the care partners or their families. The public space is the neighbourhood that is outside the building. However, the attributes of different spaces within the cottage are redefined, which relates to the individuals' previous lives, the specific activities that are conducted, and the influences of the care policies and the care partners who implement these policies.

Continuity from Previous Lives

As discussed above, two dementia care cottages are connected to each other to form a long I-shaped layout. Residents as such share two living rooms, two kitchens, two dining rooms, and two corridors, the use of which was modified in order to adapt to the spatial requirements of different activities. The layout of two connected common spaces with furniture organization is shown in Figure 4-15. Residents find different ways to connect with their previous lives based on the scenarios that are constructed by the architectural environments and activities.

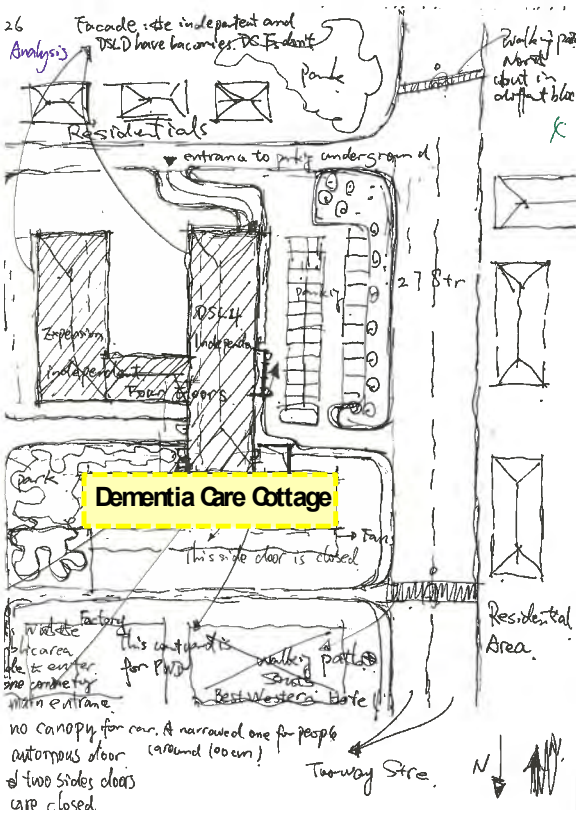


Figure 4-12: Site Plan Sketch of Wainwright Building

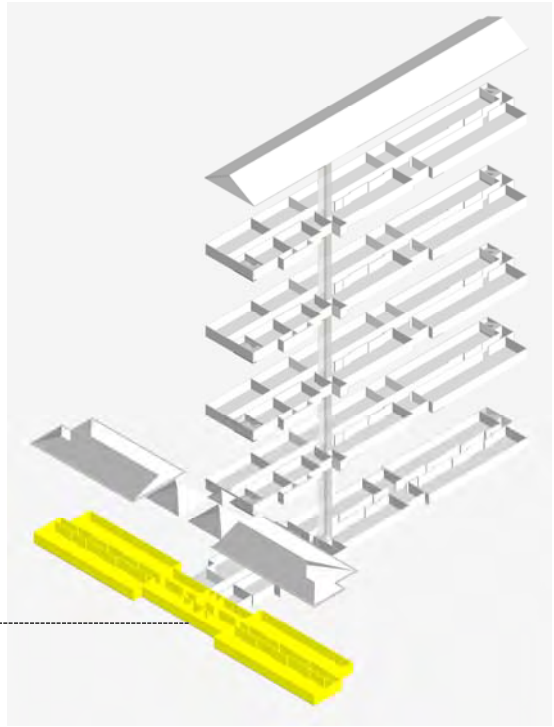


Figure 4-13: Spatial Configuration between Dementia Care Cottages and other Parts of Wainwright Building

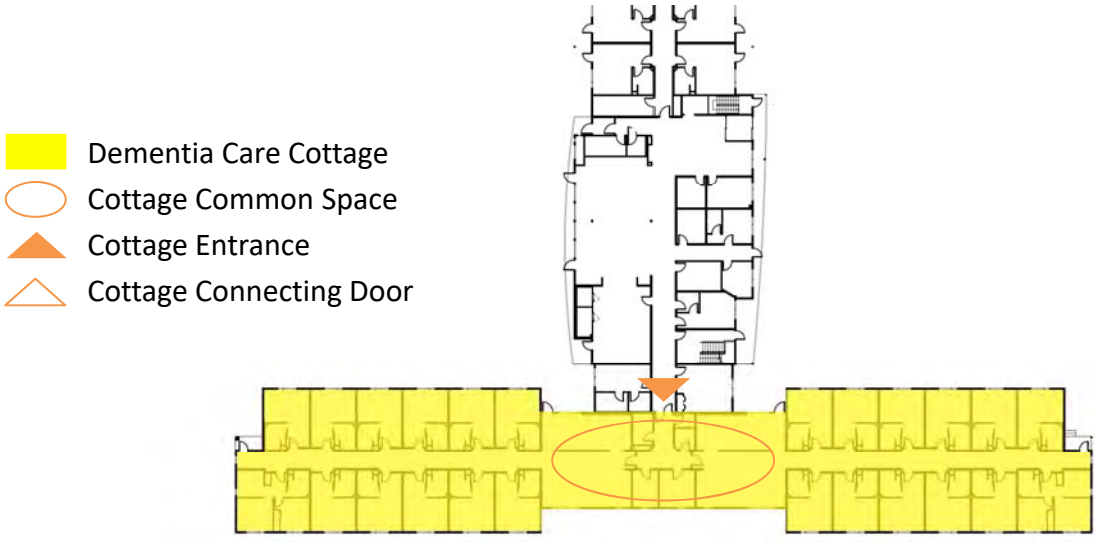


Figure 4-14: Dementia cottage layout analysis in Wainwright Building

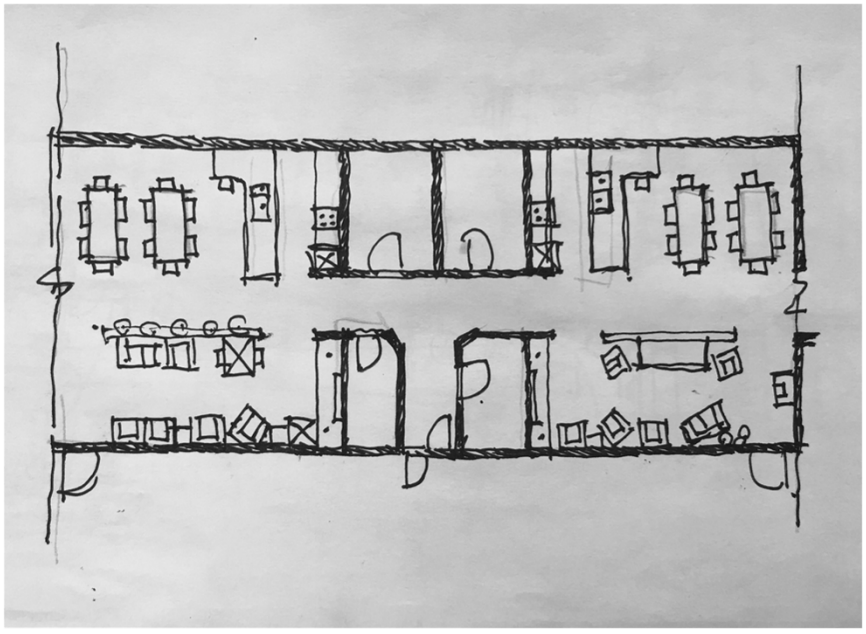


Figure 4-15: Layouts of common activity spaces with furniture in Wainwright cottages

In the morning, the kitchen and dining room area in the eastern cottage is like a restaurant in which both cottages' residents are brought to have breakfast in the common area if the residents so desire. Each morning from 7:30, a care partner is cooking for the residents when they are ready for their breakfast (see the left-down picture in Figure 4-16). The times of waking up and having breakfast depend on each resident's own routine. As such, the eastern kitchen and dining room serve breakfast for the whole morning. Some residents spent a long time, even the whole morning, at the table, having breakfast and watching the care partners' work in the kitchen.

Several male residents like to sit around the table at the end of the dining room, having coffee when finishing their breakfast. I observed similar activities in the public multi-purpose room, where several male residents from the independent living suites always have coffee together in the late morning and the late afternoon. When talking with a resident in a wheelchair in the DSL4 section, he mentioned that his male buddies picked him up each morning to a coffee shop where he had coffee and chats with his other male friends. Therefore, I can assume that, for the older generation in this geographical area, men may have a tradition to get together in a certain public space such as a coffee shop. For some male residents in the dementia care cottage, staying in the corner of the dining room together with other residents of the same gender to have coffee is an activity that continues their everyday routines. This corner becomes a semi-private space that is located in a public space, such as a coffee shop, but they set up territory in that space to conduct their everyday activity.

Some residents spend a short time eating and then leave this dining area. Some of them go back to their own suites while some of them join the 10 o'clock activity in the western cottage (see the right-down picture in Figure 4-16) while some prefer to watch TV in the eastern cottage's living room that is on the opposite side of the dining room. The eastern cottage's living room is only for watching TV. The room contains five armchairs and one two-seat couch, which

all belong to the specific residents. Two residents in wheelchairs also have their own spots in the living room when they come to watch TV. When the living room is full, such as after dinner, people and their seats including the couches and wheelchairs form the first layer of a half-circle in front of the TV set, but there is a second layer in the other half of the living room (see the up picture in Figure 4-16). In the evening, around 7:00, the care partners usually cook toast in the kitchen and give each of the residents a small piece as a snack while they watch TV. These territories of living room seats create private spaces for the residents in this living room area, where their connections with the surrounding environments include but are not limited to the TV programs. Some residents look around while others have naps.

These activities in the eastern cottage's common area are the continuity of residents' routines in their previous lives, such as having coffee with one's buddies in a certain corner of a coffee shop, or watching TV while sitting in a certain armchair when eating a piece of toast. Relating to the architectural design, the idea of open space is suitable for the dining and kitchen area because these male residents are used to having coffee with friends in a coffee shop that is usually designed as open space. However, the too-open space in other areas causes residents to establish and enforce their privacy by occupying specific seats and/or using specific blankets. The unique possible spot for being alone is the end corner of the corridor, where Jim usually stays with his wheelchair.

Jim lives in one individual suite of the eastern cottage. I cannot see him very often in the mornings. In the afternoon, he usually sits in his wheelchair, moving back and forward in the corridor (right-up picture in Figure 4-17). He likes to be alone at the end of the corridor. He always stays where the sunshine is. In the late morning, he stays in the eastern end, and in the afternoon, he stays in the western end (left-up picture in Figure 4-17). Sometimes he falls asleep while enjoying the sunshine. The care partners may bring him back to the eastern living room, where he has his position in front of the TV set as noted

Figure 4-16: Dementia Care Cottage Living Environments in Wainwright Building
Eastern kitchen and dinning area for breakfast eating (left-down); western living room for doing morning exercise (right-down); eastern living room for watching TV after dinning (up)

above. In the evening after dinner, he also likes to be seated in the same position, covering himself with a blanket and watching TV.

Jim has his own suite, where he is one of the fortunate residents who has a good view of the garden. Like his neighbours' suites, Jim's space has an armchair placed against the window (down picture in Figure 4-17). I can imagine that he likes to see the garden when sitting in this armchair, where he can enjoy his own space. However, his privacy is frequently disturbed. According to his daughter, Jim was not comfortable being cared for in the bathroom when he first moved to this building. It seems as though he has adapted to this lifestyle, but he has to accept the fact that his private suite does not totally belong to him, and he has to expose his bed, which should be in his private bedroom, to the care partners and to his family, including his brother, his daughter, and his granddaughters when they visit him. Furthermore, even in the most private bathroom, he has to expose his body to the care partners who sometimes forget to close the sliding bathroom door or the suite's door when Jim is using the toilet, something I observed during the study.

Unlike the predictions of architects who strictly separate the cottage spaces into private space (private suites) and semi-private space (common area), the architectural space's private/public attributes are defined differently by different individuals. It seems that many residents tend to find the spaces that can best support them in continuing their previous lives, which as such affords them to dwell in the cottage. The private/public attributes of architectural spaces are defined by the residents and usually are symbiotic in the same physical spaces. For example, Jim finds his privacy in the common living room, while other residents may see this room as a public space for watching TV. Furthermore, the function of a specific space may be changed to meet the needs of specific residents and/or activities. For example, within the same architectural layouts, the western cottage's living room is used to conduct scheduled activities

such as morning exercise and manicure, so that all the couches in this room are arranged against the walls (right-down in Figure 4-16).

Kitchen for Welcoming Guests when Baking Rhubarb Pie

Each weekday morning at 10 o'clock, the recreation coordinator does one-hour activities with the residents, mainly those with dementia, but sometimes other residents in the buildings are involved. Each Tuesday morning people bake together in the western kitchen when no regular breakfast is being cooked and no residents are having breakfast in the dining room. On the day I observed them, they were making rhubarb pie (Figure 4-18). Residents in this building, including some with dementia, had an ice cream tour the day before. On their way back, they picked up rhubarb beside the road and decided to make rhubarb pie the next day. At 10 o'clock, the recreation coordinator came into the cottage, bringing a cart with the rhubarb, sugar and seasoning, and baking utensils. Four female residents, including Luna, Selah, Sarah, and Rachael, and two volunteers were getting together around the lower counter.

After washing all the rhubarb, residents and volunteers used small knives to cut the rhubarb stalks into small pieces. The coordinator collected all the pieces in a big pot. Then a resident who lives in the independent living suites upstairs entered the cottage, bringing a cookbook and reading the recipe for rhubarb pie. According to what she read, the coordinator put flour, sugar, and water into the big pot. "Rachael, could you please go to the kitchen next door to get four eggs from the fridge?" the coordinator asked one of the residents with dementia. Rachael quickly went to the kitchen in the eastern cottage, and I followed her. When she opened the fridge, she was standing in front and asked herself, "What I should get?" I advised her, "Four eggs." She immediately got the eggs and went back to the northern kitchen. Then she skillfully broke all the eggs on the edge of the big pot, poured the liquid into the pot, and started to stir the

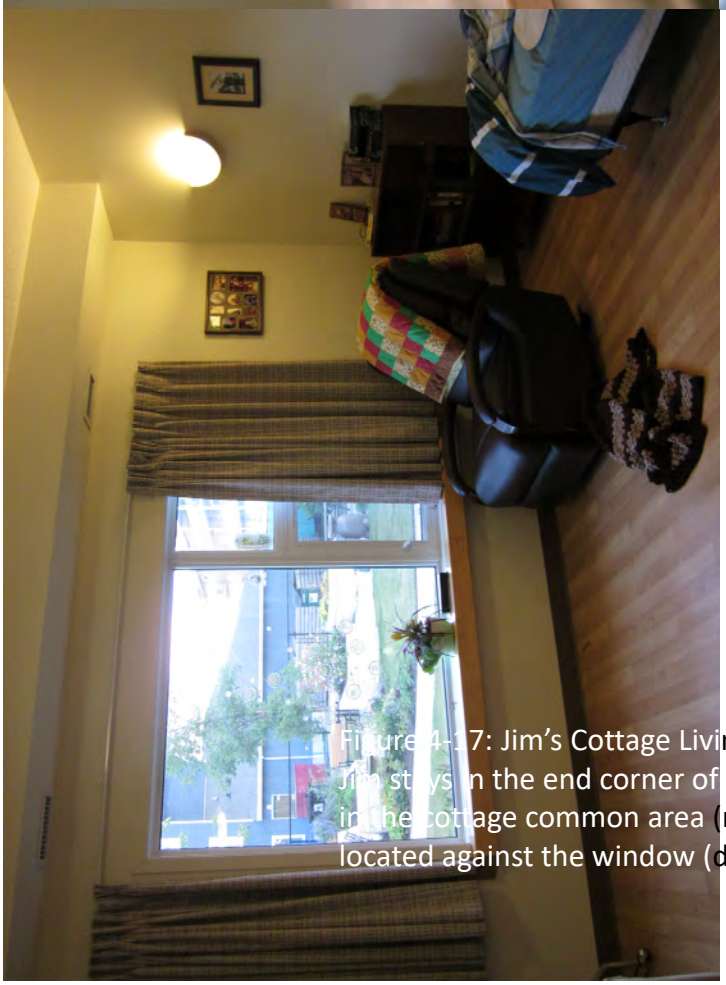


Figure 4-17: Jim's Cottage Living Environments
Jim stays in the end corner of western cottage (left-up); Jim is wandering in the cottage common area (right-up); Jim's room where a chair is located against the window (down)

Figure 4-18: Rhubarb Baking in Western Cottage's Common Kitchen in Wainwright Building

paste. It is obvious that she used to bake, and at that moment she either remembered how to cook, or possibly never forgot how.

The care partner brought a female resident in a wheelchair to join the activity. The home-sized kitchen was crowded, so the care partner had to turn the wheelchair around several times in order to fit it into the space beside the coordinator. This was almost the last vacancy in which the resident could see all the work on the counter. When Rachael finished stirring, the coordinator poured the paste into a big container and put it in the oven. Everyone stared at the container and oven, looking forward to the final product. No one left the kitchen. Instead, they cleaned the counter and washed all the dishes, continuing the chatting, gossiping, laughing loudly together, and singing songs together.

In contrast to other days on which I could smell excreta or disinfectant, the smell of rhubarb pie makes the whole environment more homelike and stimulates the residents to look forward to their afternoon tea at which they would eat the rhubarb pie together. It is also interesting that the baking activity only attracted female residents to become physically involved. However, the male residents were attracted by the women's chatting, laughing, and singing. Some of them who were in wheelchairs asked the care partners to take them there, while others came by themselves in walkers to have a look at what the women were doing.

This is a successful recreational activity, in which people were cooking and baking in the real kitchen using real knives to cut real ingredients and bake real foods. One may argue that the kitchen area is too small to conduct the baking activity because a bigger space may allow more residents both from and outside the cottages to become involved. However, on the other hand, it is this crowed kitchen space that creates a sense of familiarity and security for the residents with dementia. The whole process becomes a real social activity in which a group of women get together on a Sunday afternoon in the kitchen of one participant's home. Residents like Rachael maintain their skills and receive

self-satisfaction when being involved. In this scenario, the kitchen area simulates a semi-private space that is located in a residential house or apartment where the female host bakes with her friends or neighbours.

Limited Accessibility to Cottage Outdoor Space

As discussed above, a big garden is attached to the eastern cottage and a small courtyard is attached to the western cottage. Residents' connections with these outdoor spaces are closely associated with the intervention of care partners and the cottage operation policies.

The big garden that is attached to the eastern cottage is well-landscaped. Near the cottage is a wandering loop, but no fences were set up to separate this loop area from other parts of the garden (right-up picture of Figure 4-19). In the middle of the garden are some benches that form a circle, a passage that is marked by fences, and several rectangular containers filled with blooming flowers, which becomes the focal point of the garden (down picture in Figure 4-19). Further down, the ground has slight rises and falls and was covered by grasses and lanes (left-up picture in Figure 4-19). When I was in the building, a couple who were farmers but now live in the independent living suite do gardening each morning. I was going to see their campfire one evening, but it was canceled due to strong winds in late August in Alberta. I was told that residents from all building would get together around the fire and sing songs together.

In the daytime, a few residents walk in the garden around noon when it is warmer. I only saw those from the dementia care cottage, except for the smokers, only twice during my observation of the building. The first one was a woman who was agitated and was brought to the garden by the care partner to help her calm down. The second was Jim, who, as previously mentioned, likes to be alone in the end corners of the corridor. Jim was accompanied by his daughter in the garden when I saw them. They walked on the lanes. When

passing the flower containers, she turned his wheelchair around in order to let him be close to the flowers, and he looked as though he was enjoying himself. According to the interview with his daughter, Jim likes to walk around: "Wandering for him is for going around in this neighbourhood." He enjoys being connected with the garden, and his daughter did so at the beginning when he moved in:

> I said that would you like to walk in the garden.
>
> He said "Ok. Whose garden?"
>
> I said that this is your garden.
>
> "My garden?"
>
> "Yes. The whole place is your garden."
>
> "Did I plant these flowers?"
>
> I said, "Maybe. I am not 100% sure. If you did then you did. Would you like to help?"
>
> "Should I cut the grass?"
>
> I said "No. You are in your wheelchair so I don't know how you will do that."
>
> "Oh, somebody did."
>
> I said yes. Then he talked about how the sidewalk and how the grass was cut; how the flowers look so good. I brought a slight-house. My sister gave it to my dad. I put it in the garden. And he went to that and said,
>
> "This slight-house. Who gave it to me?"
>
> I said, "Nisa's mom Nina gave it to you."
>
> "Oh, Nisa and Nina gave it to me."
>
> I said yes.
>
> "Oh, that was really nice of them."

Figure 4-19:Wainwright Building's Big Garden
middle part of garden (left-down); a wandering loop with no fences (right-up); far part of garden (left-up)

Jim's daughter created a sense in which the garden was his own, where he planted the flowers and set up the decoration that was given by his family. This discourse appears to create a sense of belonging for Jim, who likes nature in his life. Unfortunately, residents were not allowed to go to the garden by themselves, mainly because the limited number of care partners in the cottage cannot watch both the outside and inside environments. However, Jim's daughter still has concerns:

> The garden.. the only thing is that… it is a little frustrating that they have a beautiful garden but they can't go out to the garden by themselves unless they have the key … He can't autonomously go out to the garden if he wants because he can't get through the door … It is a safe area for them. Why don't think they just have a puzzle or something like that to let the door open. It should have a specific ring tool or something they know somebody is gone and out. Ok. I heard that door. I am going to make sure that whoever went or something. If it is a raining day, or cold or the days they shouldn't go out, then have a lock. But if it is a nice sunny afternoon or a nice morning, why they can just push the door and go out … I know sometimes there are only two of them and it is very very hard to be everywhere. But if they… I don't understand why it is locked.

It is possible that the lack of capability of access to the garden automatically makes Jim like to stay in front of the corridor's end windows where he can enjoy the sunshine and the views outside the window. Seeing the waving leaves on the trees may be another way of connecting him with nature when his daughter is not able to bring him to the garden. From the door and windows connecting to the outdoor garden and indoor space, care partners cannot fully see people's activities when they are working in the common areas.

Therefore, in order to ensure the safety of residents with dementia, the garden doors must be locked. This will be further discussed in Chapter Six.

Those of the residents in the dementia care cottages who mostly access these two outdoor spaces are the ones who smoke. They usually go to the space that is in the same cottage as their suites, sitting in the benches or chairs that are always laid near the entrance doors, and they usually have their own seats. The courtyard of the western cottage is surrounded by wooden fences that are as high as the height of the ground floor (Figure 4-20). People can't see outside when sitting or standing in the courtyard, which makes this space more private and more like an individual house's backyard in Alberta. The courtyard has a few trees and flowers. Luna, for instance, has her own seat near the entrance door. She is not allowed to save her cigarettes by herself, but she knows where the care partners store them: they are in a certain drawer in the laundry. Each day at a certain time, Luna asks the care partners to give her a cigarette and open the door for her. After a while, the care partners come to ask her to come back. Luna appears to be used to this because "I was told that if I smoke inside I would be kicked out of this building." Her privacy in the courtyard is set up on the monitor by the care partners.

The big garden was designed as a public or semi-public space, like the garden or park in the community. The courtyard, by comparison, was designed as a domestic backyard that is a part of people's private space. Whether the community garden or the domestic courtyard, residents are supposed to have access to these spaces without any control, as intended by the architects and designers. However, because of the cottage operation policies, residents with dementia have limited access to these two distinctive outdoor spaces. The previous two sections have reflected on the importance of creating opportunities for residents to set up different levels of private and public spaces. However, the limitation created by cottage operation policies makes these distinctive outdoor spaces useless.

Figure 4-20: Wainwright Building's Courtyard
Courtyard of the western cottage with seats for smokers (left-down);
Access to the courtyard from the western living room (right-down);

Case Study Three: Architectural Lifeworld in Slave Lake

The Slave Lake building, located in the town of Slave Lake in northern Alberta, opened in 2015. The Slave Lake building has a gross floor area of 2,260 m^2 and includes 30 DSL4 suites and 22 DSL4D suites. No independent supportive living is provided in this building. Compared to the other two buildings that were fully occupied, this building only had around 50% occupancy when I was collecting data there.

However, it has the highest degree of cultural diversity. Because it is located in northern Alberta, this building includes almost 30% indigenous residents who come from the reserves in this area. Also, in such a small town, this building features fewer activities and visitors than the other two buildings. This may create a tendency for people within the building to have more interpersonal connections afforded by their spatial environments. As such, this case study presents a normal day's architectural lifeworld in the dementia care cottages in which residents dwell, or not, by the affordance of spatial environments.

Building Description

This building is located in the town centre of Slave Lake. It is in a residential area, with schools, restaurants, a pharmacy, a convenience store, and the *Slave Lake Native Friendship Centre Society* nearby. There are only outdoor car parking spots, which are located in front of the building on the ground floor. Next to the building is a large-scaled senior housing residence that provides independent living and DSL 2-3 suites. The site plan is shown in the sketch in Figure 4-21.

The building has two stories. The second floor includes DSL4 suites, salon, spa and staff meeting room. The ground floor includes two DSL4D cottages, operation offices, and a public area including the lobby, sitting room, multi-functional room, and public kitchen. The multi-purpose room in the Slave Lake

building is less busy than those in the other two buildings. All residents have meals in the cottages, so no residents come to eat in this room other than staff members, or if a family visits and takes their loved one out of their usual space. During scheduled activities, the multi-purpose room was only ever observed to be partially full. In fact, the multi-purpose room was not used as often as those in the Red Deer and Wainwright buildings.

A garden is attached to the multi-purpose room and one of the dementia care cottages, providing views for the people who sit in these spaces. A fence surrounds the garden in order to create a secured smaller garden for the residents with dementia. The rest of the garden is open. The garden backs onto a back lane that houses several larger garage-type buildings, and a school with its grounds is visible from the multi-purpose room and resident suites on the second floor. The 3D model reflecting the spatial configuration between the dementia care cottages and other parts of the Slake Lake building is shown in Figure 4-22.

The Slave Lake building also includes residential suites for bariatric residents. The bariatric suites have integrated ceiling tracks for lifts in some suites on both the inside and outside of the cottages. Two dementia care cottages have their own entrances that are locked 24/7. A door in the kitchens connects to these two cottages. Each cottage is L-shaped and connects the two cottages that form a mirrored L-shaped layout (see layout analysis in Figure 4-23). These two cottages have their own common space that includes a kitchen, a dining room, a living room, and the corridors. The cottages share five supporting rooms including a public bathroom, storage room, electronic room, cleaning room, and soiled utility room, which are located in the middle of the short wing of the L-shape. Each supporting room has one door facing each cottage.

Residents, family, friends, and care partners move freely from one cottage to the other through a connecting door that is opened during the daytime and closed at nighttime. Very few residents were observed moving

between the two cottages. One reason for this could be that the connecting door faces a large wall that backs against the kitchen, so that it feels and looks more like a barrier than a place to wander. In other words, these two walls obstruct people's sightlines, which results in less mobility from one cottage to the other.

Each cottage has 11 residential suites. Two of these suites have ceiling tracks for lifts that are located in the short wing of the L-shaped cottage. Eight suites are for individuals, and there is one couple suite at the end of the corridor. This layout provides a different feeling and also seems shorter. However, the corridors in each cottage feel less friendly than those in the Red Deer and Wainwright buildings because there is no natural light in the corridor whatsoever. A staircase connected to the corridor by a door is located at each end of the cottages. Residents who wander into the corridor usually try to open the end door and become agitated when they discover that it is locked.

Only one cottage connects to the secured garden through a door in the dining room. Residents are not allowed to go into the garden unless a care partner lets them out or accompanies them, even though the garden is surrounded by fences. The other cottage has a door in the dining room, but it connects to the parking lot. This access to the outdoors was blocked by a table, and I never observed it opening.

A Normal Day in Slave Lake

It was 6:45 in the morning when I entered the dementia care cottages. It was quiet and the corridors were dark. All the lights were off. Some suite doors were opened a little bit while the others were closed. When walking closely to Madison and her husband's couple suite, I heard her husband's cough through the slightly opened door. The connecting door between the two cottages was closed. In one cottage, a care partner had started to check each suite. I knew that the morning shift starts at 6:30. He opened the connecting door and entered residents' suites one by one. Some of them had already woken up; I

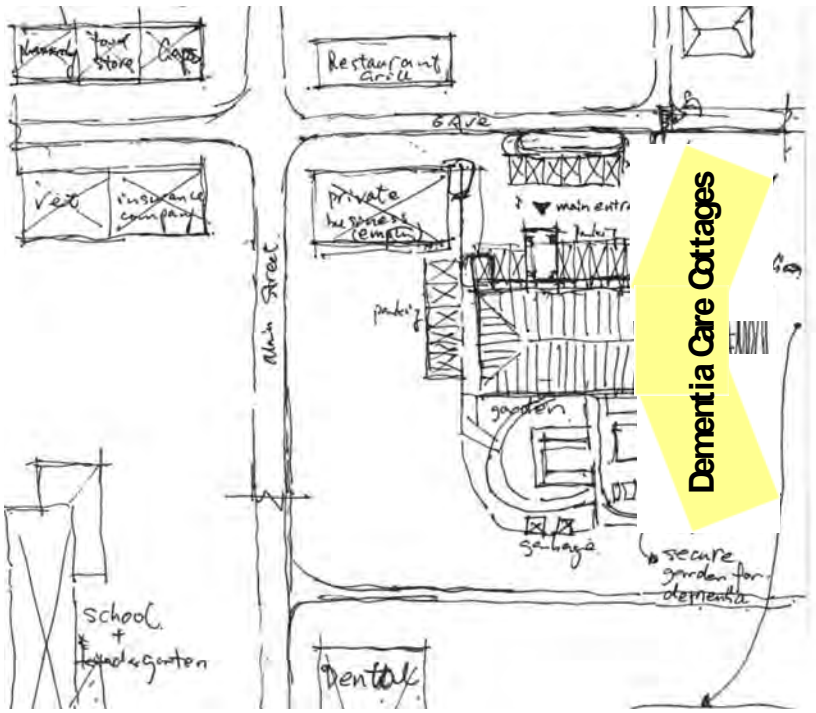


Figure 4-21: Site Plan Sketch of Slave Lake Building

Figure 4-23: Dementia cottage layout analysis in Slave Lake Building

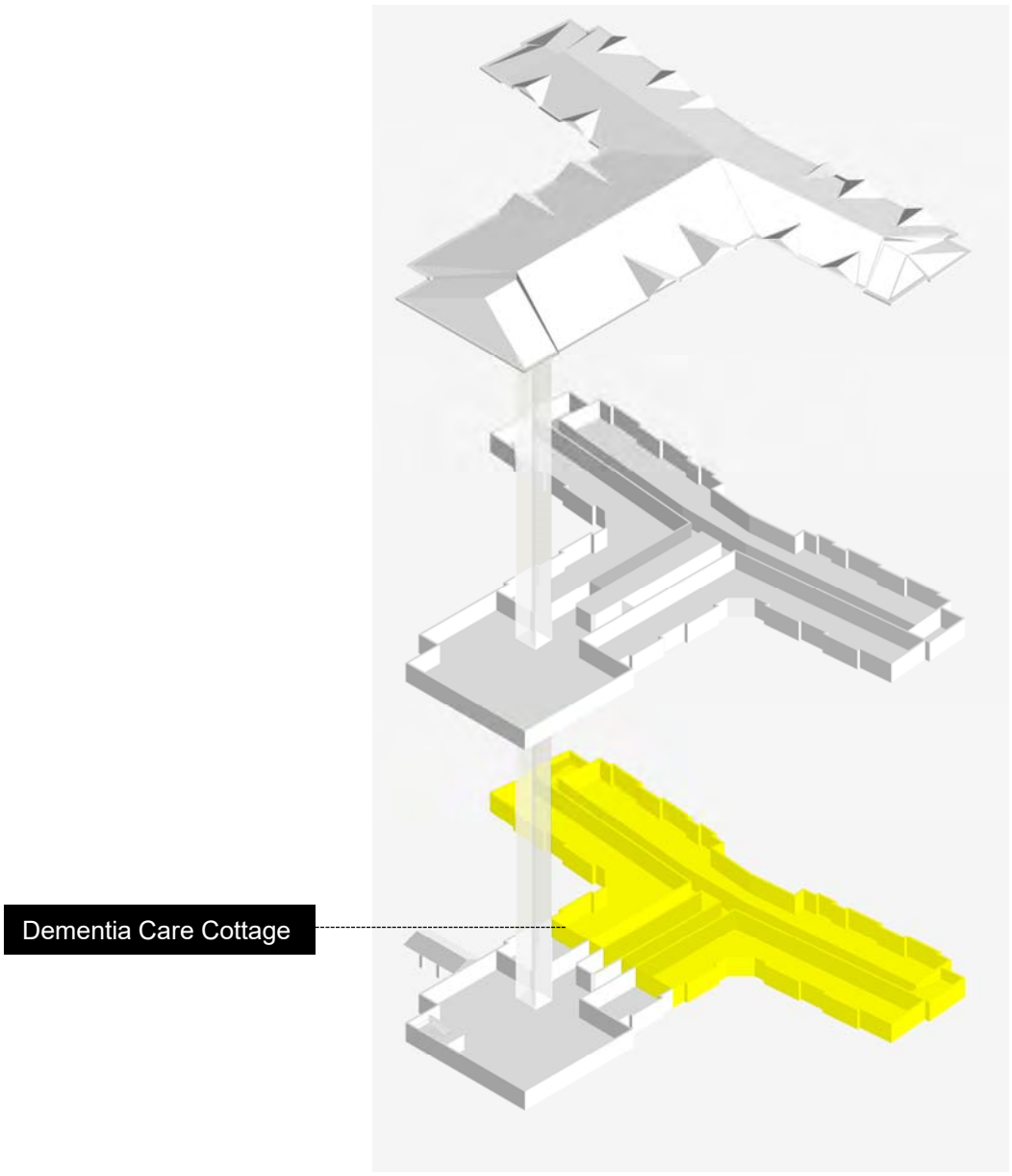


Figure 4-22: Spatial Configuration between Dementia Care Cottages and other Parts of Slave Lake Building

could hear sounds of TV from the suites. After checking all suites in two cottages, he went to one cottage, turning on all lights and opening all curtains. It was still dark outside. Then he started to boil eggs and make coffee. Around 7:05, the kitchen area was filled with the smell of coffee and the sounds of boiling eggs and water, all of which woke me up. Around 7:30, another care partner came to the cottage and continued cooking. She made a piece of toast and brought it, along with a cup of coffee and a banana, to a resident's suite.

At 7:35, Chloe, the first resident who showed up in the common area, started to eat her breakfast on the dining table. She was dressed already. She lived in the northern cottage with the other three aboriginal residents from the same reserve in northern Alberta, all of whom have European names. Chloe had roasted eggs, toast, and coffee. She ate the toast by hand and the eggs with a fork. Throughout the morning, residents had breakfast in the dining room or in their own suites following their own routines. They ate almost the same things. Both kitchens are used to cook. One care partner stayed in the residents' suites to do morning work such as dressing, toileting, and other tasks. The other was taking charge of all work in both kitchens and both dining rooms. She knew what the residents eat, so she prepared foods for them before they came to the dining room. No resident was involved in the kitchen activities such as cooking or washing dishes. The TV in the living room was on. Some residents preferred to watch TV when others walked in the corridors or went back to their own suites.

The Best Place for Kate

Kate is one resident with dementia who lives in her own individual suite. Around 9:20am, one of her sons visited her when she was eating in the dining room. Kate was sitting with her boyfriend, who is another resident with dementia. They lived next door to each other, eating, watching TV, and joining in activities together. They knew each other and set up the relationship after moving to the cottage. Kate is one of the residents who spent most of their time,

except for sleeping, in the common areas. She was usually seated in the common living room with her boyfriend, and both were frequently engaged in the afternoon activities conducted in the multi-purpose room (Figure 4-24).

Kate worked in an office before moving to the building. She always dresses well, wearing different pieces of jewelry on different days. In her suite, she has a jewelry box containing different pieces such as earrings, necklaces, and bracelets. Kate's son visited her at least two to three times per week, and about 1-1.5 hours per time. He usually has a walk with his mother around the building. When the weather is good, they walk in the garden. On the day we met him, he brought his mother to the public area, chatting with other visitors in the sitting area near the front door. Kate looked around quite often. It seemed that she did not engage in the conversation. They also walked to the window of the multi-purpose room, where he pointed out the plants by the outdoor side of the window. After a while, her son brought her back to the cottage and left. According to him, his visits gave his mother the chance to do a little exercise and to see things outside the cottage, though he said that his mother did not always know where they were going.

Kate's family has been living in Slave Lake for 30 years. Kate lived in the independent living residence next to this building for almost 2.5 years. When she developed dementia, she started to get lost in the outdoor environment. Her sons moved her into their own houses, taking care of her in turn, but she still wandered. At the time that this building was set up in the town of Slave Lake, her son registered for her and moved her to this place. He believes that this is the best place for his mother because she is safe and well cared for. Like other residents, Kate does not get involved in any kitchen activities. According to her son, her previous place in the independent living residence did not have a kitchen. As such, she had been used to eating in the common dining room rather than cooking by herself for years before moving to this building. He said that she would work on other people's treasure books at the beginning when she moved

there, but since then it appears that she has totally forgotten what she did. The nursing desk is one of the most office-like pieces of furniture in the cottage, but I never saw her use it.

After her son left, Kate was seated in the couch of the living room, watching TV and holding hands with her boyfriend, who was in a wheelchair next to Kate's couch. They usually sit at the end of the living room, dating each other, although there usually are other residents and care partners around. They would stay together in the living room for the whole morning until lunchtime. The building appears to be the best place for Kate, where she has little risk of getting lost and where she can meet with her son who comes to see her often. More importantly, in this place she has the opportunity to be together with her boyfriend, except at bedtime. The meaning of spatial environments, in Kate's case, is to support or even to create interpersonal relationships: spaces for her to see her son and to date her boyfriend help her to dwell in this place.

When It Is Surrounded in a Way, There Is Nothing You Can Change

At around 10 o'clock, Madison and her husband, who has dementia, showed up in the dining room. Unlike Kate, who spends most of her non-sleeping time in the cottage common areas, Madison and her husband show up in the dining room at mealtimes, and spend most of their time in their own suite. They are the unique couple that lives in the dementia care cottage. Another couple lives in the other cottage, but they did not have any communication, even though the connecting door is open all day and closed at night. Having lived in the cottage for almost three months, Madison did not know the other couple in the next cottage.

Figure 4-24: Kate's Cottage Living Environments

After breakfast, as on other days, Madison and her husband went back to their suite, where her husband had a nap and Madison stayed in the bedroom to watch TV. During the day, they came to the dining room for lunch and dinner and then went back to their own suite directly after finishing the meals. Every time they showed up in the common areas, Madison would push her husband in his wheelchair. She appeared to have back or shoulder problems because she always leaned forward. Even so, she always looked well: she dressed well, never forgetting her jewelry or her bag, which would usually hang on the handle of her husband's wheelchair. She seemed to adapt to the environment quite well, keeping her smile and chatting with the care partners at mealtimes. Her husband seemed to have less cognition of his environment. He never talked, and although he could eat by himself, he should have his wife's assistance. Sometimes she used the napkin to clean his mouth, and other times she helped him cut his food on the plate. They would always sit next to each other in their particular seats.

We conducted a 1.5-hour interview with Madison one day in their suite's living room (Figure 4-25), after the 2pm bingo in the multi-purpose room. Her husband was with us, although he did not speak. Their suite includes one living room, one bedroom, one bathroom and a kitchen without stoves and ovens. The suite is full of decorations. Madison put as many items in each corner as she could. Family pictures hung everywhere. Although the suite was cozy, I found it too overly decorated when I first entered. Over the course of the interview, I understood why she had so many decorations in her suite: they moved from a bigger apartment in the more independent living suite next door and needed to find places for her things, even though she had thrown many of them out while moving. Moreover, these personal items made her feel at home even though she and her husband had lived in many different places in their lives.

Figure 4-25: Madison and her Husband's Bedroom Furnishments

Her husband was lying on a single bed in the living room, a hospital single bed covered by cozy sheets, when we entered their suite. After they moved to this suite, her husband often fell out of the higher queen bed in the bedroom. Madison set up a lower bed by the wall on one side and with a rail on the other side, to prevent him from falling anymore. After that, he slept on this bed in both the daytime and nighttime. We requested to take pictures and footages of their suite. She agreed, but did not want to include herself and her husband. She bent over and lifted her husband into the wheelchair. In the process she told us that she had shoulder surgery not long before. It was obvious that the lower bed helped her lift her husband up. When we finished taking pictures, they came back and she laid her husband on his bed again. Then we started our conversation. In the cottage, Madison can look after herself, while her husband needs daily care that is sometimes provided by Madison but is mostly offered by the cottage care partners. The separated bedroom and living room in their suite afford the possibility of setting up an extra bed in the living room for her husband. This enhances Madison's sleeping quality. When her husband needs help during the night, he can push the caller beside his bed to call the care partners. When closing the bedroom door, Madison can sleep well without any disturbance from the activities in other parts of the suite.

When I asked if he was fine sleeping alone in the living room, Madison sighed and said: "You know a couple of times when we were on the same bed, I found him feeling curious of 'who is the woman beside me?'" She gave a helpless smile as she continued: "It is ok. I couldn't expect too much." Having no expectation is Madison's lived situation. Her daily life in the cottage consists of the routines of eating and watching TV. The unique recreational activity in which she and her husband take part is the bingo each Tuesday and Thursday afternoon at 2pm.

There is no place in the building in which Madison and her husband can continue their previous hobbies. For example, they both like dancing. According

to Madison, this common hobby helped them maintain a good relationship over the past decades. They enjoyed shopping for home decor. However, her husband is no longer able to communicate with her and even considers her a stranger. Although she enjoys being together with family members, their children do not have good relationships with each other and they never get together with their parents. Though the ones living in the same town sometimes visit their parents, they have their own families and cannot stay with Madison for long.

When living in the independent living apartment next door, she has her own kitchen in which she can cook and do housework. The building has a big recreation room which hosts activities, such as live shows and dancing, in which she could join. Though she can continue taking any activities there, and the staff and previous neighbours constantly invite her to join them, Madison has never done so since moving to this cottage. She never went to the second floor to see the environment and people, even though she knows somebody living in the DSL4 suites upstairs, and she can enter and exit the dementia care cottage by herself without informing anybody.

For a woman who spent most of her life with her family, the meaning of her life depends on her family. Madison has been married to her husband for 60 years. She now locks herself in the cottage in which her husband lives. In addition, from a physical perspective, because their suite is located at the end of the corridor, the long distance from their suite to the entrance door does not afford her the ability or desire to leave the cottage.

Her isolated living situation within the cottage is also afforded by the cottage layout design, such that each cottage has only one couple suite. Madison is the only resident in the locked dementia care cottage who does not have dementia herself. She is constantly surrounded by residents with dementia, which makes her feel isolated because, as with her husband, she cannot communicate with them. Care partners are always busy with their own work and have no time to talk to her. She said:

> It is so boring… They have got the TV room. They are all sitting there all day. You know not too many of them have everything. They are all having dementia… I have nobody here at all that I can really visit with to talk to.

It is obvious that Madison does not dwell well in such an environment. This couple's lives have been changed into a situation that is dominated by her husband's dementia and relevant daily difficulties, and as a result they have both lost their selves. The locked cottage door automatically cuts Madison off from her previous life, and all her hobbies, such as dancing, music, sewing, cooking, doing housework, and getting together with her family, have become mere memories. The spatial environments allows her to isolate herself because for her, "when it is surrounded in a way, there is nothing you can change."

I Come From Athabasca

When Madison's interview finished at around 4:45, it was almost dinnertime. Residents were seated in the dining room and were served by the care partners. As with lunch, dinner was cooked in the public kitchen outside the cottage. The public area was filled with the smell of the food. Unfortunately, residents within the cottages could not perceive the cooking smell until the food was served to them. After dinner, as usual, some residents went back to their own suites and others were in the living room watching TV. The care partners started to clean each resident.

Gloria, one of the four aboriginal residents, was wandering in the corridor (Figure 4-26). Gloria usually eats food with her hands rather than with a knife and fork. On weekends, her family may visit her, bringing her aboriginal foods. Except during mealtimes and at night, Gloria wanders in the corridor very often. However, she never went to the south cottage or the other parts of the building, not even attending the afternoon activities in the multi-purpose room. When wandering in the corridor, she did not see the memory boxes in front of the

suites' doors. This could be because the boxes are almost all empty. But she usually stopped at the end of the corridor and tried to open the locked door that connects with the staircase. If the care partners happened to see her, they would bring her back to the living room, ask her to have a seat and give her a cup of tea. She has her own couch beside the window, but she never seems to pay attention to the view outside the window or the shows on TV. One time, I sat beside her, trying to talk to her. I asked her: "Where are you from?"

"Athabasca," she replied. "I want to go home. They keep on saying that this is good for me… but I want to go home."

She does not dwell in this environment, which is partially due to the spatial environments. The individual suites and layout of the building, in general, relate to the visual language of a residential school, hospital, or prison rather than a home, which is highly problematic for aboriginal residents. All the doors, including those of the suites and supporting rooms and staircases, are brown wooden doors that contrast markedly with the adjacent white walls. There are nametags on each door indicating its use, which further highlights them in the corridor. The long corridors and doors lined up creates an institutional feeling in the cottage environments, especially when the supporting rooms and staircases' doors remain locked and inaccessible to the residents.

Furthermore, the garden is designed in a geometric, Eurocentric style that does not reflect the natural landscape of the Slave Lake area. The aboriginal residents are housed on the side of the building that has no easy access to the garden, which is counter-intuitive when considering the well-being of these people. These two residents, who are cousins, were sitting beside the dining room window and see the view outside, as shown in Figure 4-27. Unfortunately, they can only see the parking spots and some designed plants, unlike the view of natural bushes from their houses' windows in the reserved area. During my stay in the building, these aboriginal residents never went to the garden that is attached to the next cottage. The long distance from the garden to the aboriginal

residents' suites does not afford them to visit. Moreover, it is possible that they do not know the existence of the garden next door.

Around 7:40 in the evening, the care partner cooked toast for the residents. It smelled good in the kitchen area. Only three residents were in the living room. The care partner also took toast to the residents who were in their own suites. Some of them took some, but others declined. In the south cottage, Sandra, another resident, was looking for the care partner to open the garden door so she could have a cigarette. She is the only resident who smokes in these two cottages and may be the one who mostly uses this garden, mainly for smoking. Residents are not allowed access to the garden unless the care partners use the key to open it for them. For Sandra, this is the place in which she can smoke; however, other residents may forget about the garden since they do not use it. When the residents go to sleep, the care partners turn off all lights. During my stay in the building, no one wandered at nighttime.

In summary, this chapter presents three architectural lifeworlds in the buildings that offer dementia care in Red Deer, Wainwright, and Slave Lake in Alberta. The architectural lifeworlds in each building contribute to the residents' real lives that are afforded by their architectural, specifically spatial, environments. Some of the residents in the same dementia care cottages successfully dwell while others do not. Addressing these findings, the next chapter compares these three architectural lifewords, discussing the meanings of dwelling relating to the spatial environments' affordance to the residents and exploring the reasons for and features of spatial design that affect residents' dwelling in the dementia care buildings.

Figure 4-26: Gloria's Cottage Living Environments

Figure 4-27: Slave lake Building’s Garden

Chapter Five: Discussion

This chapter reiterates the purpose of this study, which is to help architects better understand the spatial environments of residents in dementia care cottages by referencing the theoretical framework and literature that have been discussed in previous chapters to further explore the meanings of architectural lifeworlds. The first section, Space Affords Dwelling, integrates the theories of affordance and dwelling that have been discussed in Chapter Two and the architectural lifeworlds that have been discussed in Chapter Four, exploring the meanings of dwelling and how these dwellings can be afforded by spatial environments. The second section, Returning to Design, relates architectural theories and principles to the findings of this study, metaphorically helping architects to conduct design problem solving and creation.

Space Affords Dwelling

Chapter Two reviewed literature regarding affordance and dwelling, and their application in dementia care. Previous studies of architectural environments of people with dementia tended to discuss these two topics separately. As demonstrated, previous affordance studies that focus on the object/environment's invitation to people's functional behaviours do not sufficiently support a detailed understanding of the meaning of spatial environments to residents in dementia care.[255]

At present, previous studies of dwelling and meanings of home do not always connect people's dwelling with the factors of spatial environments that may affect the quality of dwelling in dementia care.[256] For example, in the study of wandering in dementia care, researchers use affordance theory to discuss the influences of surrounding architectural environments on people's wandering

[255] See the section "Affordance" in Chapter Two.
[256] See the section "Dwelling, Home, and Dementia Care" in Chapter Two.

behaviours,[257] and others focus on the meanings of wandering (such as feeling homesick, lost, or bored) that may affect the ability of people to dwell in new living environments of dementia care.[258]

In this study, the architectural lifeworlds of dementia care reflect the associations between affordance and dwelling; in other words, space affords dwelling. Specifically, the architectural space affords residents to conduct behaviours that affect the quality of dwelling in the buildings. In the case of wandering, the shorter corridor and the connection with the common areas and neighbouring cottages affords Lawrence in the Red Deer building a more pleasurable wandering experience, which may afford him to continue his previous hobbies (such as window shopping), to connect with the community (such as talking with other residents or care partners), and to develop a sense of freedom because he can go to the place he wants.

That said, spatial environments afford meaningful behaviours that allow the residents to dwell in the building. If the goal of architectural design for dementia care is to help residents dwell in those buildings, the exploration of how spatial environments afford such dwelling becomes significant. Based on the literature review in Chapter Two,[259] the meanings of dwelling for residents in dementia care buildings can be organized into three themes: continuity, community, and opportunity. The rest of this section will discuss each theme and how it is afforded by the spatial environment through residents' behaviours in the architectural lifeworld.

In addition, as demonstrated above, residents in dementia care cottages live together as a group, in which they share the cottage common spaces and the

[257] Topo, Kotilainen, and Eloniemi-Sulkava, "Affordances of the Care Environment for People with Dementia—An Assessment Study."
[258] Claudia K.Y. Lai and David G. Arthur, "Wandering Behaviour in People with Dementia," *Journal of Advanced Nursing* 44, no. 2 (2003).
[259] See the section "Dwelling, Home, and Dementia Care" in Chapter Two.

caregiving conducted under the building's care team.[260] In this study, the cottage operation policy and its guidance for the care partners' behaviours are found to be significant factors in the spatial environment's affordance of residents' dwelling. As such, following the three themes of dwelling, the end of this section discusses the last theme of care policy intervention.

Continuity

Dwelling refers to a sense of continuity that relates to a space that allows residents to continue their familiar lifestyles in dementia care. Continuity theory assumes that people modify their behaviours to adapt to the new environment based on their previous experience.[261] This theory has been applied to the studies of elderly and people with dementia.[262] Menne and colleagues found that people in the early stages of dementia have a strong desire to do as many of their usual daily activities as possible and hope that their values are seen.[263] This desire is reflected in the architectural lifeworlds and is afforded by the spatial environments of buildings.

For instance, when baking rhubarb pie with the residents of the Wainwright building's western cottage, the recreation coordinator assigned each resident a job, which creates a sense of involvement and a sense of being valued. When I followed Rachael as she got four eggs from the fridge next door and saw her skillfully break the eggs, pour the liquid into the pot, and stir the paste, I noticed that she was enjoying the moment because she was demonstrating the value of cooking in her life. Rachael and her daughter, who has a disability, live in separate suites within a dementia care cottage in the Wainwright building.

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[260] Topo and Kotilainen, "Designing Enabling Environments for People with Dementia, Their Family Carers and Formal Carers." Also see Chapter One.
[261] Robert C. Atchley, *Social Forces and Aging* (Wadsworth Pub. Co., 1985).
[262] E.g. "A Continuity Theory of Normal Aging," *The Gerontologist* 29, no. 2 (1989); Heather L. Menne, Jennifer M. Kinney, and Darby J. Morhardt, "'Trying to Continue to Do as Much as They Can Do': Theoretical Insights Regarding Continuity and Meaning Making in the Face of Dementia," *Dementia* 1, no. 3 (2002).
[263] "'Trying to Continue to Do as Much as They Can Do': Theoretical Insights Regarding Continuity and Meaning Making in the Face of Dementia."

Before moving to this building, Rachael played the role of family caregiver for almost her whole life. According to her daughter, Rachael did all the household jobs. Having the opportunity to do what she can in the dementia care cottage gives her a sense of continuity. The homelike cottage kitchen, whose size and spatial configuration create a private kitchen space that makes Rachael feel comfortable to bake, affords this continuity.

This importance of spatial environment affordance in creating a sense of continuity is also demonstrated in the case of Gloria and other aboriginal residents in the Slave Lake building. The cottage's spatial environment, with its continuing doors and long corridor, creates an institutional feeling that is extremely problematic for aboriginal residents. The corridor with a locked door in the end and the almost empty boxes in front of each suite allow Gloria to go back and forward or even stop at the end of the corridor to open the end door that is connected with the staircase. Wandering for her is meaningless because she does not know why she is in the cottage or why she walks. By contrast, Lawrence's wandering is valuable to him, because he plays the role of a husband window-shopping with his wife, as he used to do. The spatial environment of the Slave Lake building ignores the connection with aboriginal culture, and therefore fails to afford Gloria and other aboriginal residents the opportunity to continue their previous lifestyles.

Community

Dwelling also means a sense of community that relates to a space that affords residents social engagement and family connections. Engaging in social activities has been demonstrated to affect residents' mood,[264] behaviours,[265]

[264] Ann M. Kolanowski et al., "Capturing Interests: Therapeutic Recreation Activities for Persons with Dementia," *Therapeutic Recreation Journal* 35, no. 3 (2001).
[265] Ann M. Kolanowski, Mark Litaker, and Linda Buettner, "Efficacy of Theory-Based Activities for Behavioral Symptoms of Dementia," *Nursing Research* 54, no. 4 (2005).

physical health and cognitive stimulation,[266] self- and social identity, and overall well-being[267] and quality of life.[268]

In the three dementia care buildings, scheduled activities include eating meals and doing recreational activities. For example, residents participate in the activities such as planting with children from the child care centre in the Red Deer building or baking rhubarb pie in the dementia care cottage of the Wainwright building. All three buildings have 2 o'clock recreation activities such a bingo and church singing in the multi-purpose room, in which residents from all buildings can participate. Residents' social engagement also includes any unscheduled involvement with surrounding lives, such as watching TV, wandering and touching decorations in the cottage, viewing children playing on the playground from the suite's balcony, or having a cigarette in the cottage garden.

Successful engagement in scheduled and unscheduled activities largely depends on affordance from the spatial environment. All three buildings have multi-purpose rooms in which several scheduled activities are conducted, often at the same time, which may confuse residents with dementia. For example, when planting with children from the day care center, some residents feel lost and confused because the planting is conducted in the couch area rather than in the outdoor garden or in the greenhouse. By contrast, Rachael's successful engagement with the rhubarb pie baking activity in the Wainwright building, as discussed above, is afforded by the homelike cottage kitchen.

The maintenance of family connections is a significant factor in the ability of residents to develop a sense of community in dementia care. Studies have

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[266] Patricia Heyn, "The Effect of a Multisensory Exercise Program on Engagement, Behavior, and Selected Physiological Indexes in Persons with Dementia," *American Journal of Alzheimer's Disease & Other Dementias®* 18, no. 4 (2003).

[267] Hanneke C. Beerens et al., "The Relation between Mood, Activity, and Interaction in Long-Term Dementia Care," *Aging & Mental Health* 22, no. 1 (2018).

[268] Hanneke C. Beerens et al., "The Association between Aspects of Daily Life and Quality of Life of People with Dementia Living in Long-Term Care Facilities: A Momentary Assessment Study," *International Psychogeriatrics* 28, no. 8 (2016).

indicated that families' more frequent visits may provide support to their loved ones with dementia in terms of emotional conditions,[269] identity of self and as a couple,[270] engagement in activities,[271] and overall quality of life.[272] In recent years, dementia care has involved setting up innovative living approaches to involve spouses together with their loved ones with dementia, in order to prevent separation that is caused by the limitations of policies and/or built environments.[273]

In this study, I observed close involvement from family members in all three buildings. Some spouses may choose to live in the same building in order to accompany their loved ones. Some, such as Madison and her husband, choose to live in the couple suite of the dementia care cottage, while others, such as Becky and Ray, may prefer to have their own independent living suite in the same building. This geographical closeness helps residents continue their daily routines, such as eating meals together, although there are also some drawbacks, especially for those who share the same couple suites in the dementia care cottage.

In addition, family members' frequent visits to the residents in the cottage help to maintain connections. For example, some spouses who live close to the dementia care buildings, and residents' children such as Kate's son and

[269] Ulla H Graneheim, Anneli Johansson, and Britt-Marie Lindgren, "Family Caregivers' Experiences of Relinquishing the Care of a Person with Dementia to a Nursing Home: Insights from a Meta-Ethnographic Study," *Scandinavian Journal Of Caring Sciences* 28, no. 2 (2014); Jean Hennings and Katherine Froggatt, "The Experiences of Family Caregivers of People with Advanced Dementia Living in Nursing Homes, with a Specific Focus on Spouses: A Narrative Literature Review," *Dementia* 18, no. 1 (2019).

[270] Graneheim, Johansson, and Lindgren, "Family Caregivers' Experiences of Relinquishing the Care of a Person with Dementia to a Nursing Home: Insights from a Meta-Ethnographic Study"; Hennings and Froggatt, "The Experiences of Family Caregivers of People with Advanced Dementia Living in Nursing Homes, with a Specific Focus on Spouses: A Narrative Literature Review."

[271] Debra Dobbs et al., "Characteristics Associated with Lower Activity Involvement in Long-Term Care Residents with Dementia," *The Gerontologist* 45, no. suppl_1 (2005).

[272] Johannes Gräske et al., "Family Visits in Shared-Housing Arrangements for Residents with Dementia–A Cross-Sectional Study on the Impact on Residents' Quality of Life," *BMC Geriatrics* 15, no. 1 (2015).

[273] Candace L Kemp, "Married Couples in Assisted Living: Adult Children's Experiences Providing Support," *Journal of Family Issues* 33, no. 5 (2012).

Jim's daughter, provide family connections and social engagement when participating in activities such as walking in the garden and visiting friends who live different cottages.

Family involvement also includes events such as birthday parties held within the building. Of all three buildings, only the Red Deer building has a family room in which residents and their families can have events such as birthday parties by booking the room in advance. As discussed above, all families celebrated Ray's birthday in the Red Deer family room during my observation. While I was speaking with Becky and Ray, they joyfully introduced this event to us. The family room, or even the whole building, may become part of their memory of this birthday party for years.

Opportunity

Dwelling refers to a sense of opportunity that relates to the possibility of new things happening. In the existential theory of well-being, Galvin and Todres examine well-being from an existential perspective in which dwelling is always connected to mobility.[274] Dwelling also relates to the "acceptance and the possibility of peace, [which is] a true acceptance rather than a resolute form of courage to bear one's aloneness and responsibility."[275] This feeling of peace is always connected to existential mobility in which the concrete world is "connected to our life's desire… in which we are able to have access to, and actualize a full range of experiential and behavioural possibilities." [276] This sense of opportunity, as a factor of dwelling, is reflected in the architectural lifeworlds in this study and is afforded by the spatial environments.

The child care centre in the Red Deer building provides an opportunity for residents with dementia to conduct activities such as seeing children playing on the playground from the upper floor, seeing children's activities in the classroom

[274] Galvin and Todres, *Caring and Well-Being: A Lifeworld Approach*.
[275] Ibid., p. 73.
[276] Ibid., pp. 72-73.

from the ground floor's corridor, or playing with children in the multi-purpose room at 10 o'clock each Tuesday. They might not have conducted similar activities before moving into this building; however, involving the functional space of the child care centre in their lives creates opportunities for the residents to engage in new activities.

As discussed in Chapter Two, the realization of the functional goal of a space, in architecture, depends on the spatial organization of this functional space and of other spaces. The concentration of the spatial configuration on the child care centre, including providing visual and physical communication opportunities such as designing balconies on upper floors or providing corridors and windows to connect the child care centre with the rest of the building, realizes the design goal of connecting residents with the children within the building.

In addition, the sense of opportunity as dwelling may relate to the possibility of establishing new relationships between residents in the same dementia care cottage. In the Slave Lake building, for example, Kate is dwelling well, especially since her boyfriend lives on the opposite site of the cottage suite from her. They started this relationship after moving into the cottage and now do daytime activities, such as having meals, watching TV, and attending scheduled programs, together.

It is likely that no one, including these two residents, expected that they would find new loved ones in the dementia care cottage. However, the spatial configuration that organized their suites in the same cottage and set up dating spaces such as the living room and the dining room offers an opportunity for these two people. As discussed in Chapter Two, dwelling is the process of making home, that describes a place of memories of past and/or current situations or imagination of the future. Kate's and her boyfriend's opportunities to date make them feel satisfied with their current lives while simultaneously looking forward to their future.

Care Policy Interventions

All themes of dwelling, including continuity, community, and opportunity, and their realization through affordance from the spatial environment in dementia care buildings are strongly influenced by the cottage care policies. In this study, one of the main challenges the care team faces in providing care is limited caregiving resources, in which one care partner may have to serve for the whole cottage's residents at some time per day. As such, the care team may have to set up policies that will fit with the work efficiency of the care partners based on the existing spatial environment of the building.

Care policy intervention is associated in literature with the discussion of safety and autonomy in dementia care. Residents' safety has been a significant domain in dementia care research, particularly falls and getting lost, from a non-pharmacy perspective.[277] Though more advanced techniques such as using cameras or GPS have been suggested in some recent studies, care staff monitors are still widely used to minimize residents' risks of falls and getting lost. For example, Lee and colleagues found that care staff prefer small-sized dementia care cottages, and feel that they and the residents are safer, because they can hear the residents even if they are in different spaces from the care staff.[278] Some buildings, accordingly, developed relevant safety policies to ensure that residents' behaviours would be monitored by the care staff, even if this conflicts with the residents' autonomy. For example, Nordin and colleagues found that the building's safety standard forbids residents from independently accessing the garden.[279]

[277] Sandra F Simmons et al., "Defining Safety in the Nursing Home Setting: Implications for Future Research," *Journal of the American Medical Directors Association* 17, no. 6 (2016).
[278] Sook Y. Lee, Habib Chaudhury, and Lillian Hung, "Exploring Staff Perceptions on the Role of Physical Environment in Dementia Care Setting," *Dementia* 15, no. 4 (2016).
[279] Susanna Nordin et al., "Exploring Environmental Variation in Residential Care Facilities for Older People," *HERD: Health Environments Research & Design Journal* 10, no. 2 (2017).

In the buildings I observed, residents are not allowed to access the attached gardens and the courtyard, which are secured by fences.[280] While the Red Deer building's doors are locked in inclement weather such as snow, the other two buildings are both designed such that it is hard for the care partners to see residents who are walking in the garden. This policy influence of access to the garden is referred to in the discussion of the architectural lifeworld of the Wainwright building in Chapter Four. For instance, Jim is not allowed access to the garden by himself, which he found disappointing because he likes to be close to nature. Luna was not allowed access to the courtyard to smoke, so that she must ask the care partners for permission a few times each day. Similarly, the fenced outdoor garden at the Slave Lake building is practically useless to the residents because they cannot access it on their own, and the aboriginal residents must sit at the dining room window in order to see it.

Within one dementia care cottage, one care partner takes care of a group of 12 to 16 residents and must do his/her best to satisfy all their needs. For example, each morning, the care partner in the cottage may have to cook breakfast for the residents who are in the dining room. But at the same time, the other residents may need assistance getting up, toileting, washing, or having a cigarette in the garden. From the perspective of architectural design, the spatial environments can be designed in order to support the staff's care behaviours and to afford residents' dwelling. This will be further discussed in the next section, which relates all the lifeworlds that have been discussed above to architectural design.

Back to Spatial Design

Previous sections of this study have explored the architectural lifeworlds in three dementia care buildings and the spatial environment's affordance to residents' dwelling. As demonstrated above, these in-depth descriptions and

[280] See the section "Case Study Two: Architectural Lifeworld of Wainwright Building" in Chapter Four.

interpretations of architectural lifeworlds and meanings are expected to inspire architects to conduct metaphorical reasoning and creative design for future dementia care.[281] As part of a practice-led study that aims to enhance the quality of practice through research, this section ties all the discussion in the previous sections to design. Specifically, the following discussion refers to different architectural design theories and principles to analyze the architectural lifeworlds in different functional spaces in dementia care.

Cottage Wandering Space

According to Chaudhury and colleagues' study of the architectural environment's influence on people with dementia,[282] previous studies have examined wandering spaces for people with dementia by comparing the layouts of those spaces. The results of these studies, however, appear to conflict with each other. Some studies argued that residents with dementia experiencing the I-shaped layouts were more likely to become lost, compared to the L- and H-shaped layouts,[283] while others argued that straighter corridors help people find their way.[284] Some researchers found that colours and items such as familiar photographs can lessen the chances of residents becoming lost, but others argue that these cues have failed to orient residents.[285]

As noted in previous chapters, things have meanings in lived situations. It is hard to judge the meaning(s) of a singular layout or material without

[281] See the section "Metaphorical Reasoning, Creative Design, and Dementia" in Chapter Two.
[282] Habib Chaudhury et al., "The Influence of the Physical Environment on Residents with Dementia in Long-Term Care Settings: A Review of the Empirical Literature," *The Gerontologist* 58, no. 5 (2017).
[283] Solve Elmståhl, Lena Annerstedt, and Owe Ahlund, "How Should a Group Living Unit for Demented Elderly Be Designed to Decrease Psychiatric Symptoms?," *Alzheimer Disease and Associated Disorders* 11, no. 1 (1997); DG Morgan et al., "Evaluating Rural Nursing Home Environments: Dementia Special Care Units Versus Integrated Facilities," *Aging & Mental Health* 8, no. 3 (2004).
[284] Gesine Marquardt and Peter Schmieg, "Dementia-Friendly Architecture: Environments That Facilitate Wayfinding in Nursing Homes," *American Journal of Alzheimer's Disease & Other Dementias®* 24, no. 4 (2009).
[285] Romedi Passini et al., "Wayfinding in a Nursing Home for Advanced Dementia of the Alzheimer's Type," *Environment and Behavior* 32, no. 5 (2000).

considering other aspects that work together to shape the phenomenon and its meanings. For example, in this study, Lawrence's cottage in the Red Deer building and Gloria's in the Slave Lake building are both L-shaped (Lawrence's wandering space is U-shaped in the daytime when the connecting door between the two cottages is open); and Jim's cottage in the Wainwright building and Lori's cottage in the Red Deer building are both I-shaped (see Figure 5-1). All of these residents have different experiences and qualities of wandering. The discussion of the architectural lifeworld in Chapter Four demonstrates that some of them enjoy their wandering while others do not.

Of these four residents, Lawrence and Jim have more enjoyable wandering experiences: Lawrence enjoys window shopping in the corridor, while Jim is able to be alone in the end corners and to observe nature through the windows. In contrast, Lori's and Gloria's wandering experiences are less satisfying: Lori would become lost at night in the long corridor, and Gloria always had struggles at the end of the corridor when she failed to open the staircase door.

Lori lived upstairs from Lawrence. Their cottages' functional spaces and construction materials are very similar: the west part of the corridor, the kitchen and dining room, and the connections with the corridor are almost the same. However, in Lori's cottage, the corridor continues to the south half, crossing the living room and kitchen area. Especially at night when all the lights in other parts of the common areas are off, the bright I-shaped corridor affords Lori to walk back and forth in the corridor, in which the repeating suite doors and wall lamps confuse her. In Lawrence's cottage, the L-shaped common areas have different things that attract him to wander: in the corridor, he explores different window boxes and may appreciate the views from the end window. When he walked to

Figure 5-1: Wandering Space in Different Dementia Care Cottages
Lawrence's L/U-shaped space on the ground floor of Red Deer building (left-up); Lori's I-shaped space on the second floor of Red Deer building (right-up); Jim's I-shaped space in Wainwright building (left-down); Gloria's L-shaped space in Slave Lake building (right-down).

the other end of the corridor, the turn-around layout of the L-shape naturally affords him to turn toward the kitchen, living room and dining room area, where he might talk to other residents or the care partners, watch some TV, listen to music, walk to the courtyard through the side door in the kitchen, or walk to the next cottage through the connecting door.

Lawrence's wandering environment is more interesting than Lori's, because different spaces and things attract his curiosity. In terms of spatial design, the I-shaped layout of Lori's cottage, giving it a longer corridor than Lawrence's, is a factor in this difference. However, there other design elements contribute to their different experiences. For example, architects use the design principle of rhythm to organize the corridor. Rhythm emphasizes the "use of repeating patterns, shapes and forms to create an ordering influence of the space."[286] It aims to animate the space and help it flow. Looking at the cottage corridor design, the same doors, memory boxes, and wall lamps are set up on two sides of each corridor in a fixed distance in between, which creates a repeating rhythm to push people to move forward in such a flowing space. Unfortunately, the length of Lori's corridor aggravates this effect, while Lawrence's shorter corridor does not emphasize it.

Rhythm, as a design principle, is largely applied to corridor design in public spaces such as condo buildings, hotels, hospitals, and airports, in order to enhance the efficiency of space. However, it is important for architects to understand the goals of setting up the corridors in dementia care cottages. In addition to connecting the residential suites to the other common parts of the cottage, the corridor is an important space in which residents can spend time, and some residents, such as Jim, may consider some corners their private space. As such, compared to creating a corridor that pushes the space to flow, the corridor design in dementia care buildings should be more like a commercial

[286] Simon Dodsworth and Stephen Anderson, *The Fundamentals of Interior Design* (Bloomsbury Publishing, 2015), p. 100.

street in which residents may enjoy their walking, or may own their privacy in a corner of the corridor.

Compared to Jim, who considers the end corner a private space from which he can enjoy the sunshine and see the view of nature through the window, Gloria has a different experience staying at the end of her cottage's corridor. The locked end door in Gloria's cottage reminds her that she lives in this locked cottage, though her cottage corridor is much shorter than Jim's. In design, this experience relates to the use of doors and windows to organize space.

Doors and windows, two important components of architecture, play different roles of connecting people with inner and outer spaces. Both the door and the window afford people a sense of control of the world, but in different ways. According to Vogler and Jørgensen, the door stands for control and decision-making: "Somebody controls the door as it is opened or closed, allowing entry into one's space."[287] For Gloria, the observable door at the end of the corridor always affords her to open it every time when she walks to that corner. However, this locked door upset her every time, reminding her that she was in the locked area where she loses the freedom to control herself to go in and out through the end door. As mentioned earlier, Gloria repeated that she wanted to go home, though her home is located in the reserve area of Athabasca. The building's failure to encourage her dwelling results from many factors, including lack of consideration of aboriginal culture in the cottage design and decoration; however, it should also include the loss of control and physical freedom, of which she is constantly reminded by the locked door at the end of the corridor.

Unlike doors, through which people communicate with the world on the other side, windows provide the opportunity for visual communication, which creates a sense of security: "From this comfortable condition, we can look out,

[287] Andreas Vogler and Jesper Jørgensen, "Windows to the World, Doors to Space: The Psychology of Space Architecture," *Leonardo* 38, no. 5 (2005), pp. 394-395.

observe or just connect our inner self to the outside world."[288] According to this, it is understandable that Jim considers this corner his private space where he always falls asleep when sitting by the end window, and where he knows that he is safe but can still observe things happening in the outside world through the window.

People with dementia are curious about the world around them and would like to control their own involvement with the world. Locked doors are meant to keep them safe but should not impede their desire to control their environments, which would further hinder their ability to dwell in the space. There are different design approaches that can satisfy residents' wills of freedom and control. A window at the end of the corridor, for example, affords Jim the ability to explore the outside world but at the same time ensures his security in the cottage. This connection with the outdoor environments also relates to the following sections of the discussion, regarding accessibility to the gardens and other parts of the buildings.

Access to the Garden and Other Leisure Spaces

The outdoor garden has been recognized as a non-pharmacy therapy in dementia care in literature.[289] Participating in garden activities has multiple therapeutic purposes for people with dementia. For example, things in the garden, such as plants, flowers, birds, sunshine, and shadows, and wind may provide multi-sensory stimulation to people with dementia.[290] The looped paths of the garden may promote residents' movement to improve their functional

[288] Ibid., p. 397.
[289] Gary Mitchell and Joanne Agnelli, "Non-Pharmacological Approaches to Alleviate Distress in Dementia Care," *Nursing Standard (2014+)* 30, no. 13 (2015).
[290] Mark B. Detweiler et al., "Does a Wander Garden Influence Inappropriate Behaviors in Dementia Residents?," *American Journal of Alzheimer's Disease & Other Dementias®* 23, no. 1 (2008).

ability and reduce dementia-related symptoms such as agitation.[291] Some residents who are used to gardening may have an opportunity to continue this hobby in the dementia cottage's garden, which may articulate their identity, selfhood, and social connections with each other based on the common interest of gardening.[292] In addition to engaging residents' physical involvement, the garden also provides visual connection between the residents and nature.[293]

Accordingly, in recent years, architectural design practice for dementia care has been encouraged to set up an attached garden in which residents can have access to nature as often as possible. [294] These gardens are usually fenced, in order to ensure the residents' autonomy over the garden but also minimize their risk of becoming lost. In addition to the door through which residents can access the garden, there is usually a large window to provide views of the garden, which encourages residents to remember being involved in nature and also attracts physical accessibility.[295]

The design of large windows also relates to residents' autonomy of access to the garden that is associated with caregiving. All of the buildings that I observed have gardens. In the Red Deer building, a small fenced garden is attached to the two L-shaped dementia care cottages on the ground floor. The upstairs cottages set up balconies from which residents can view the garden. The Wainwright building and Slave Lake building each have a big garden that is attached to one dementia care cottage that is connected with the other one through the cottages' connecting door (see Figure 5-2).

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[291] Pamela Ford Murphy et al., "Longitudinal Analysis of Differential Effects on Agitation of a Therapeutic Wander Garden for Dementia Patients Based on Ambulation Ability," *Dementia* 9, no. 3 (2010).
[292] Sarah Noone and Nicholas Jenkins, "Digging for Dementia: Exploring the Experience of Community Gardening from the Perspectives of People with Dementia," *Aging & Mental Health* 22, no. 7 (2018).
[293] Seiko Goto et al., "The Positive Effects of Viewing Gardens for Persons with Dementia," *Journal of Alzheimer's Disease*, no. Preprint (2018).
[294] Detweiler et al., "Does a Wander Garden Influence Inappropriate Behaviors in Dementia Residents?."
[295] Ibid.

However, only the garden in the Red Deer building is kept completely accessible for the residents during the seasons in what is considered good weather (i.e., summer and some of spring and autumn). The gardens in the Wainwright and Slave Lake buildings are locked all the time, and consequently, residents need care partners to accompany them or give them permission if they wish to go outside. The main reason for this seems to be that the care partners cannot monitor the residents who are walking in the garden while also watching the other residents who are inside the cottage. The garden in the Red Deer building is the only one that can be monitored directly from inside (see Figure 5-3), which paradoxically means that only the garden that can be easily and totally watched from inside supports residents' autonomy of going to the garden by themselves.

Similarly, the location of the child care centre sets up barriers to the residents to access the public corridor where they can see the children's activities. It is important for the architects to understand the caregiving behaviours of care partners and to incorporate these behaviours into the architectural design.

Cottage Living Rooms

As noted above, each of the three buildings' dementia care cottages has a living room. For the residents who prefer to spend their waking time in the common areas rather than in their private suites, the living room is the most used space, in which they conduct unscheduled activities, mainly including watching TV. Some previous studies have considered TV watching a passive activity and a part of the daily routine for elderly people, including those with dementia.[296] In contrast, others argue that watching TV may improve connections with other people and with the environment for people with

[296] Karl-Gustaf Norbergh et al., "A Retrospective Study of Functional Ability among People with Dementia When Admitted to Group-Dwelling," *Scandinavian Journal of Primary Health Care* 19, no. 1 (2001).

Figure 5-2: Garden Location in Three Buildings
Garden in Red Deer building (left-up); Garden and courtyard in Wainwright building (left-down); Garden in Slave Lake building (right-down).

Figure 5-3: Cottage Window Connection with Gardens in Different Building
Red Deer building (left-up); Wainwright building (left-down); Slave Lake building (right-down)

dementia. For example, people may experience familiarity when seeing the TV set, the room in which it is located, some contents of the TV programs, and the behaviours of watching TV that have been part of their lives for decades before moving to the cottage. Furthermore, watching TV together may improve participants' communication, whether or not their conversations relate to the contents of the TV programs.[297] In other words, social engagement is an important goal of watching TV in the cottage living room.

For Jay, whose suite is only minimally decorated, sitting in the common living room to watch TV is an important way to connect him with the world. The contents of the TV shows seem to matter less to Jay than his enjoyment of the TV watching ambience being constructed by the TV set, the sounds from the TV, the fireplace, the comfortable couches, the people around him, and sometimes the company with the care partner's dog. For the two couples who spent their evening time in the cottage living room,[298] watching TV and chatting with each other in this particular environment allow them to continue their lifestyles before their wives moved to the cottage.

Previous studies have demonstrated the importance of maintaining short distances between residents' suites/rooms and the living/TV room in order to encourage residents' participation in the living room area.[299] My observations also stress the importance of the living room's design in terms of spatial configuration, form, and scale.

Living rooms are designed in different ways based on the layouts of different cottages. Accordingly, there are four types of living room design in four types of dementia care cottage layouts in the three buildings. The following discussion uses Red Deer's I-shaped cottage, Red Deer's L-shaped cottage,

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[297] P. Topo and B. Östlund, "People with Dementia Watch Television! But Why?," *Dementia, Design and Technology: Time to Get Involved* 24 (2009).
[298] See the section "My Wife Lives Upstairs" in Chapter Four.
[299] Topo and Östlund, "People with Dementia Watch Television! But Why?."

Wainwright's cottage and Slave Lake's cottage as examples of the four types of dementia care cottage layouts. Their spatial positions can be seen in Figure 5-4.

Using architectural language to describe these layouts, all living rooms are designed as a U-shaped plane but are modified by the vertical construction to afford different qualities for the spaces. According to Ching, "a U-shaped configuration of vertical planes defines a field of space that has an inward focus as well as an outward orientation."[300] The inward focus of space can be seen in the inside parts of the living rooms of the Red Deer building's I-shaped cottage (Figure 5-5 right) and the Slave Lake cottage (Figure 5-7). In contrast, in the cottage of the Slave Lake building, the living room's inward focus is broken by the opened corner, which affords people the space to flow from this corner to the open side of U-shape (Figure 5-5 left). The Wainwright cottage's living room layout was designed as a I-shaped layout, but the organization of couches breaks the space into two separate parts (Figure 5-6).

These different space configurations afford residents the opportunity to conduct activities in different ways. First, the two inward spaces are less used by residents; the Slave Lake cottage's U-shaped corner is the least welcoming because the space is too deep. As summarized above, the living room is a space for residents' social communication. This inward design prevents the space from flowing, and as such fails to attract resident involvement. Comparably, the living room of Red Deer's L-shaped cottage includes a more flowing space in which residents can come in and out as they want. In Jay's common living room, for example, residents are usually seated in the living room and they usually have their own seats. Some of them may have snacks and drinks when watching the TV programs, and sometimes they may chat with each other. Sometimes the care partners would bring their dogs, who might be seated beside the residents on the couches.

[300] Francis D.K. Ching, *Architecture: Form, Space, and Order* (John Wiley & Sons, 2014).

Figure 5-4: Living Room Location in Different Cottages
Cottage living room on the ground floor of Red Deer building (left-up); Cottage living room on the second floor of Red Deer building (right-up); Cottage living room in Wainwright building (left-down); Cottage living room in Slave Lake building (right-down).

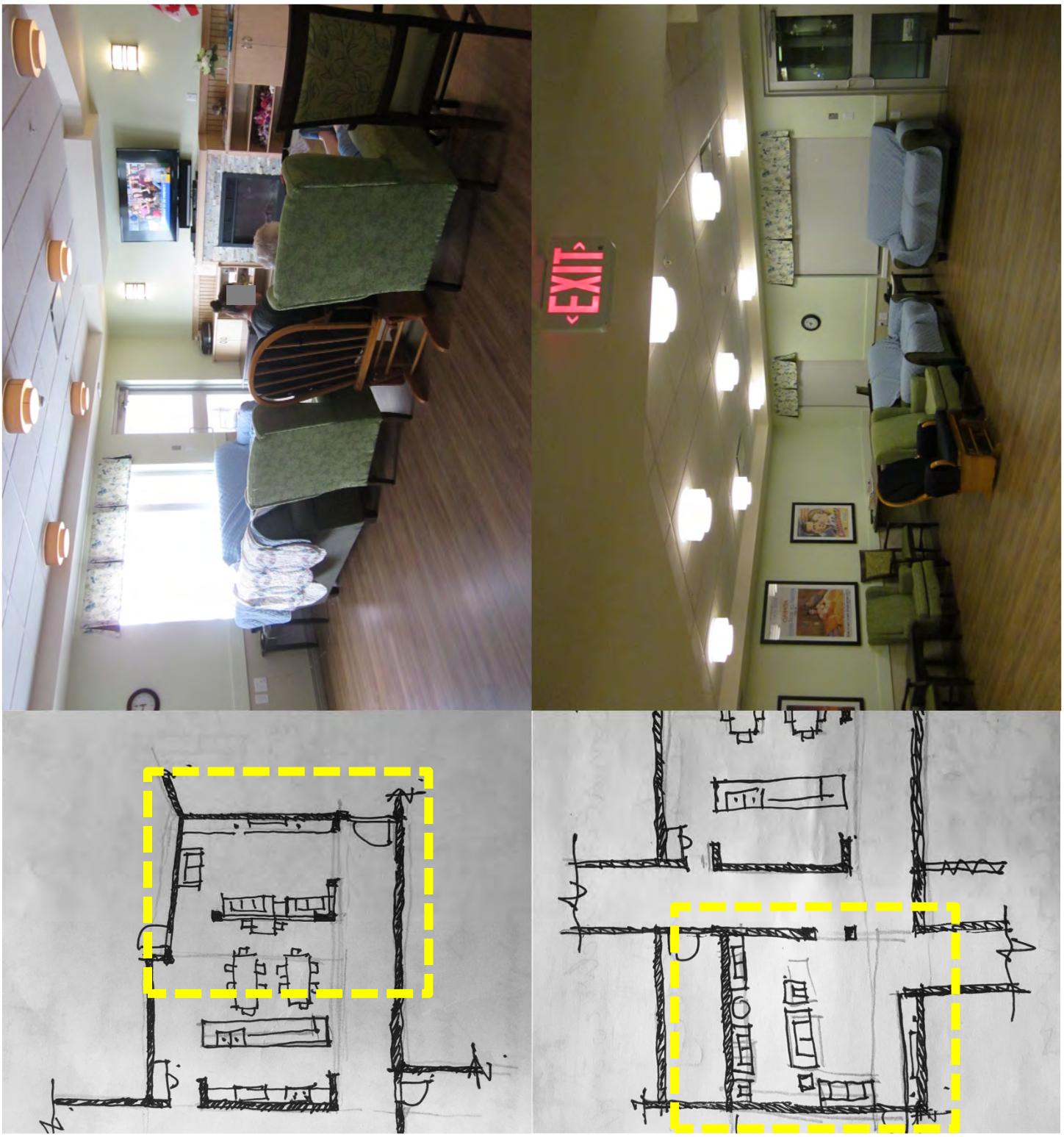

Figure 5-5: Cottage Living Rooms in Red Deer Building
U/L-shaped cottage living room of the ground floor in Red Deer building (left); I-shaped cottage living room of the upper floor in Red Deer building (right)

Figure 5-6: Cottage Living Room in Wainwright Building (left)
Figure 5-7: Cottage Living Room in Slave Lake Building (right)

The popularity of the living room, from the perspective of architectural design, also relates to the consideration of scale. The distance between the TV set and the couches should be designed in a certain range. According to Kliner,[301] distance between the seat and the TV screen should be "between 1.5 to 2.5 times the diagonal screen measurement away, with about a 30-degree viewing angle." Accordingly, if the TV's screen size is 50", the most suitable distance from the screen to the couches is 6.25' – 10.5' (1.9 m – 3.2 m). In fact, in the Slave Lake cottages, the couches are located against the end wall, almost 7.5 m from the TV set, which makes it hard for the residents to engage in TV activities. Comparably, in the living room of Red Deer's L-shaped cottage, the distance between the couches and the TV set is more suitable. The Wainwright cottage revised the space to meet with their requirement, so that the couches are organized around the TV set in a shorter distance.

Cottage Kitchens

Previous studies have emphasized the significance of setting up the common kitchens in dementia care cottages and of conducting more kitchen activities within the cottage. When the care partners are preparing or warming foods within the cottage kitchen, the sights, sounds, and smells of foods might motivate residents to be involved in the kitchen activities.[302] These kitchen involvements improve the residents' familiarity with their new living environments,[303] and help the cottages create senses of home and belonging for the residents.[304] Design recommendations suggest that the kitchen should be located in the centre of the cottage, and should be open in order to engage

[301] Kate Kliner, "Sitting Too Close to Your Tv? Why Distance Matters" (2019).
[302] Mark Morgan-Brown, Rita Newton, and Marcus Ormerod, "Engaging Life in Two Irish Nursing Home Units for People with Dementia: Quantitative Comparisons before and after Implementing Household Environments," *Aging & Mental Health* 17, no. 1 (2013).
[303] Ibid.
[304] Alison Phinney, Habib Chaudhury, and Deborah L. O'Connor, "Doing as Much as I Can Do: The Meaning of Activity for People with Dementia," *Aging and Mental Health* 11, no. 4 (2007); Carole A. Robinson, R. Colin Reid, and Heather A. Cooke, "A Home Away from Home: The Meaning of Home According to Families of Residents with Dementia," *Dementia* 9, no. 4 (2010).

residents in its activities.[305] However, my study indicates that such a design approach does reflect some problems with affording residents these opportunities.

All three buildings in this study have common open kitchens in their dementia care cottages (Figure 5-8 to 5-11). Except for the Wainwright cottages, all kitchens are designed with kitchen islands and are located in the center of the cottage in order to connect with other functional spaces. By comparison, the two Wainwright kitchens were located in the corner of the cottages and were attached by a window (Figure 5-10). As discussed above, these kitchens are used to cook breakfast, to warm lunch and dinner meals that are cooked in the public kitchen, to cook snacks such as toast, and to make coffee and tea for the residents. Some kitchens are also used to conduct weekly baking activities, while in others care partners may bake occasionally.

Residents' involvement in the kitchen activities, generally speaking, was infrequent. In their daily lives, only a small number of residents were involved in activities such as cleaning the counter and asking for a cup of tea. One afternoon when I entered a cottage on the third floor of the Red Deer building, the care partner was baking brownies. Throughout the process, no residents walked into the kitchen area.

Except for potential individual factors such as the residents' impaired cognition and the care partners' lack of engagement, the spatial configuration of the kitchen lacks consideration of the current residents' cultural backgrounds, so that it may be designed in a manner that is unfamiliar to the residents, who are mostly within the cohort of 80-90 years old.

When researching the kitchen design history, I found that the consideration of the kitchen as a central and open space, especially an island kitchen, is a design language that has been used in household spatial design in

[305] Rabig et al., "Radical Redesign of Nursing Homes: Applying the Green House Concept in Tupelo, Mississippi."

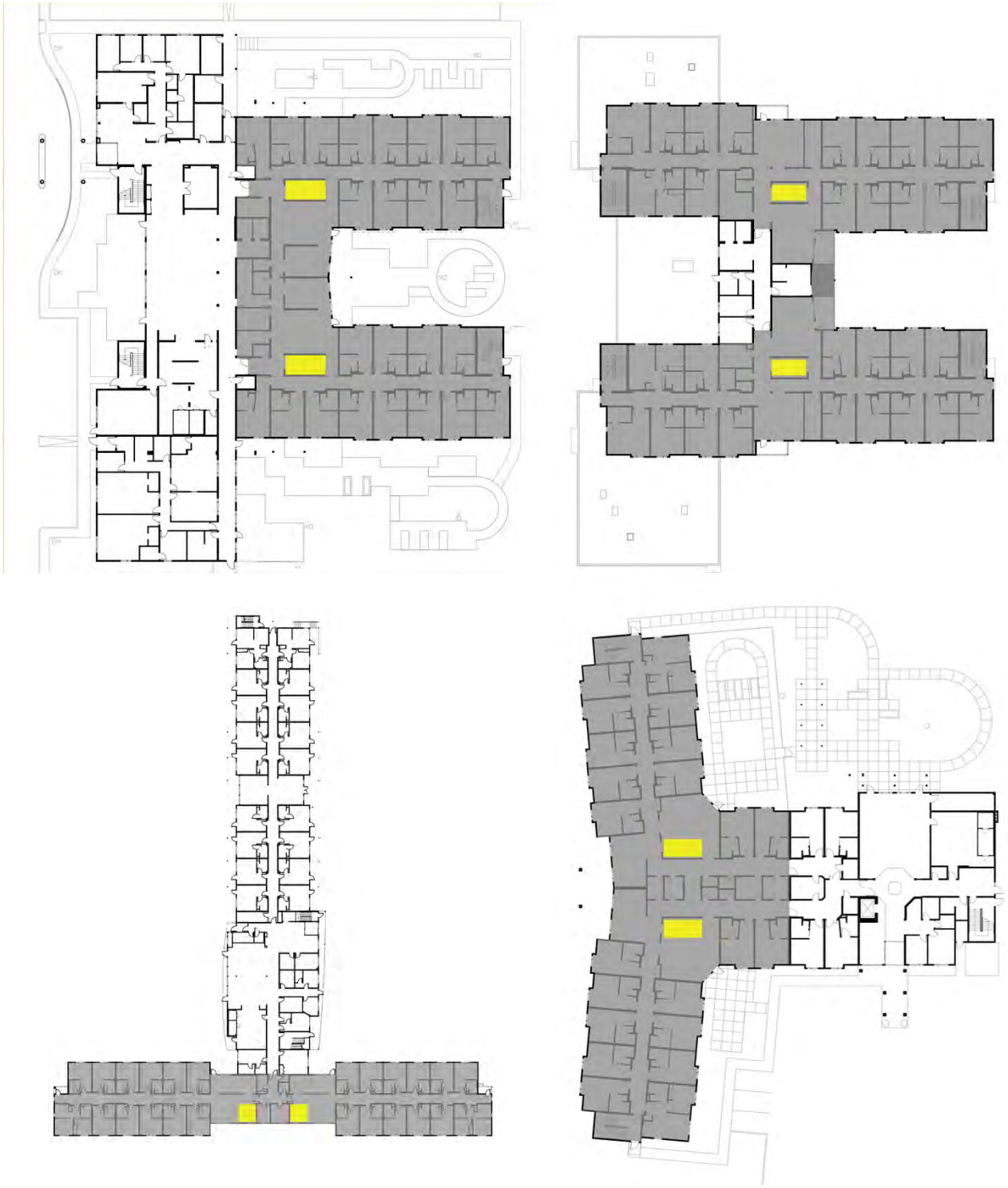

Figure 5-8: Cottage kitchen Location in Three Buildings
Cottage kitchen on the ground floor of Red Deer building (left-up); Cottage kitchen on the second floor of Red Deer building (right-up); Cottage kitchen in Wainwright building (left-down); Cottage kitchen in Slave Lake building (right-down).

Figure 5-9: Cottage Kitchen in Red Deer Building
Cottage kitchen of the ground floor of Red Deer building (left); Cottage kitchen of the upper floor of Red Deer building (right)

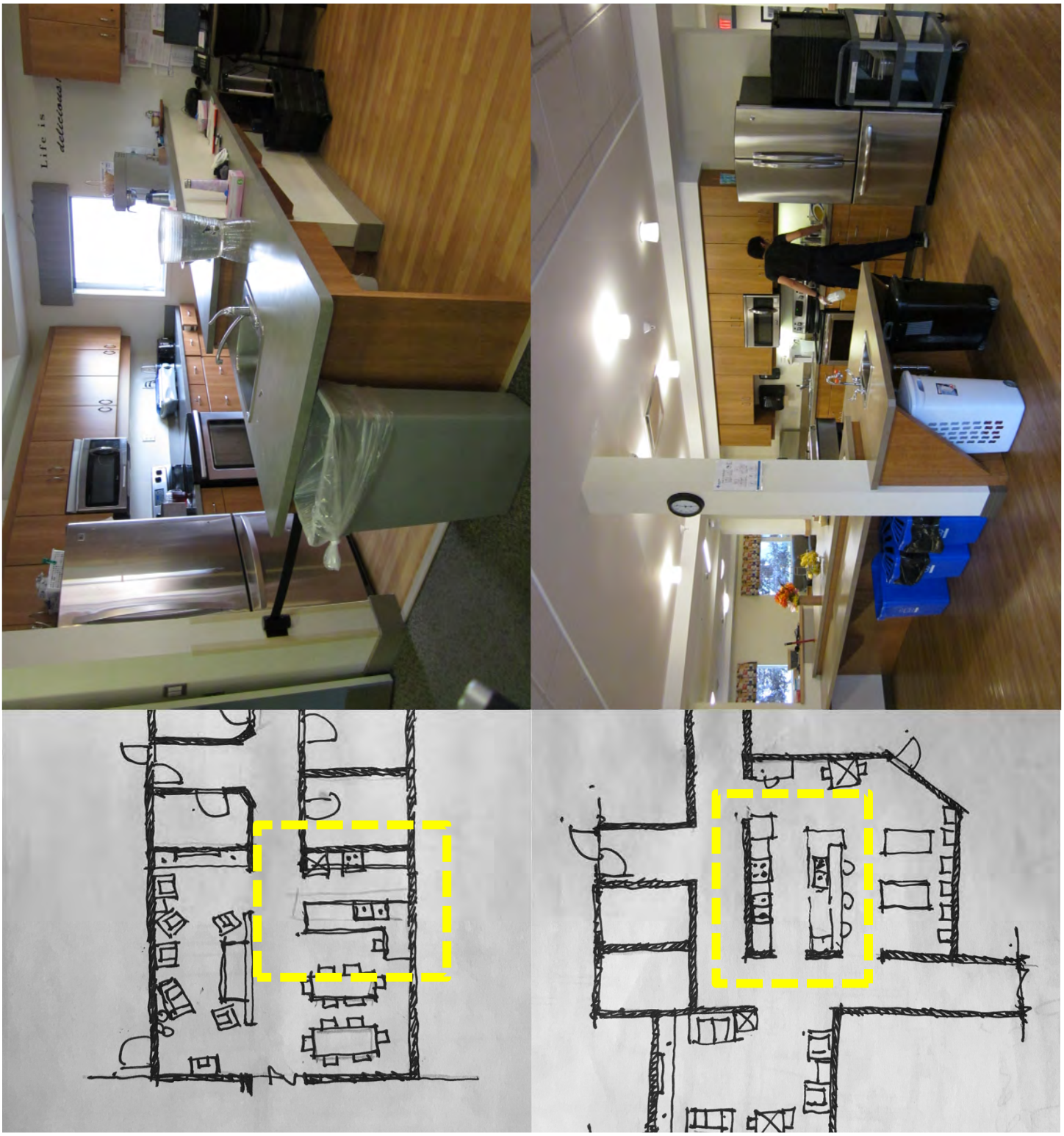

Figure 5-10: Cottage kitchen of Wainwright Building (left)
Figure 5-11: Cottage kitchen of Slave Lake Building (right)

Canada for a relatively short period. According to Ward,[306] in the areas of Canada that were influenced by European cultures, household space was designed in a manner that was popular in the nineteenth century, with functional rooms separated by walls. In the 1880s, the idea of an open plan was first applied to apartment design, but the kitchen was still considered an independent space that was separated from other parts of the domestic space "at least by a wall and usually by its location at the rear of the house."[307] In Canada, the idea of designing the kitchen as a more open space was not put into practice until the 1960s.[308] With the development of technology, the location of the kitchen became more flexible in recent decades, so that kitchens are often located as an island in the central area of the space.[309]

According to this, it is possible that the concept of kitchen island design in the cottages does not connect the residents, who were mainly born in the 1920s and 1930s, with their previous lifeworlds in kitchens that were more closed off and/or located in the corner of the space. In this study, I found that many residents consider the kitchen and dining room areas as restaurants, which allows them to enjoy service from the care partners rather than being involved in the housework. One important reason for this is that the unfamiliar kitchen design affords restaurant environments rather than home environments for the residents.

The only exception is the rhubarb pie baking activity conducted in one of the Wainwright cottages, for which several female residents got together, as discussed in Chapter Four. The domestic kitchen, according to Ward, "remains common in rural and small town Canada, for example, to entertain close family friends in the kitchen." [310] The rhubarb pie baking in the Wainwright cottage is

[306] Peter Ward, *A History of Domestic Space: Privacy and the Canadian Home* (UBC Press, 2011).
[307] Ibid., p. 73.
[308] Ibid., p. 24.
[309] Jerzy Charytonowicz and Dzoana Latala, "Evolution of Domestic Kitchen" (paper presented at the International Conference on Universal Access in Human-Computer Interaction, 2011).
[310] Ward, *A History of Domestic Space: Privacy and the Canadian Home*.

one such instance. As discussed above, the female residents engage in baking, chatting, gossiping about men, laughing, and singing songs together. The kitchen area in this scenario becomes the domestic kitchen in one of the residents' homes, where she entertains her female friends and/or neighbours. Again, the recreation coordinator and volunteers are among the many factors that influence the engagement of residents with dementia. However, from a design perspective, the kitchen located against the wall and beside a window is similar to the kitchen environment with which the current cohort of residents is generally familiar.

Suites for Couples

As discussed above, the maintenance of couple relationships is important for residents with dementia to dwell in the dementia care buildings. In architectural design practice, an increasing number of innovative living approaches have been proposed in recent years. For example, as noted above, each dementia care cottage in this study includes a couple suite that is occupied by a resident with dementia (Figure 5-12),[311] such as Madison's husband, and his/her spouse who does not have dementia, such as Madison. One couple suite in the Red Deer buildings was occupied by a couple both of whom have dementia. Also, the Red Deer and Wainwright buildings have, in addition to the dementia care cottages, other types of suites, including independent living suites, located in the same building. Residents such as Ray live in the dementia care cottage, and their spouses such as Ray's wife Becky live in the independent living suites on the fifth floor of the same building. At the Slave Lake building, some spouses live in the independent living suites in the building next door.

I observed that the couples who live in the same building but in different suites seem more satisfied with their living situations. Becky and Ray's story is an example of the advantages of such an arrangement. However, not all people

[311] Except for the two cottages on the ground floor of Red Deer building.

have enough finances to support both partners living in separate suites. In addition, some, such as Madison, may consider the responsibility of caring for their loved ones a factor in their decision to live in the couple suites in the dementia care cottage.

There is little research discussing such couples' lives and well-being, and the associations of those with the designed environment. According to my study, the spouses who do not have dementia but live in the cottage's couple suites are under a great deal of pressure and their satisfaction is much lower than what we expected. Specifically, they feel lonely, overburdened, and overworked because of their previous relationship habits and their status as residents without dementia but still living in the locked cottages. All the activities and services are meant for those with dementia. Though they have the chance to exist in the cottage without the staff's allowance, the living environment may not support their being away because other residents may enter their suites if they are away, or they may not have the mobility to ambulate from the far end of the cottage to the locked doors.

Providing couple suites in the dementia care cottages is a very good idea to support couples who want to stay together even if one or both of them has dementia. However, it is important to consider how the design can better support these residents, including the spouses without dementia. That is, in order to prevent the spouses without dementia from feeling isolated, each cottage should have at least two couple suites side-by-side in which the spouses without dementia can experience a better sense of community.

Multi-Purpose Rooms

In addition to the cottage spaces that have been discussed above, the multi-purpose room in each building is a space in which some of the recreation activities are developed to involve residents with dementia (Figures 5-13 and 5-14). Participating in the activities in the multi-purpose rooms offers

Figure 5-12: Couple Suite Location in Three buildings
Couple suite on the upper floor of Red Deer building (right-up); Couple suite in Wainwright building (left-down); Couple suite in Slave Lake building (right-down).

opportunities to the residents, who spend most of their time in the locked cottages, to engage in the larger community. The quality of engagement relates to the spatial design.

Multi-purpose spaces or multifunctional spaces have become a popular spatial design approach in architecture in the past century in order to meet with different users' functional requirements of spaces. In the wave of modernism, functionalism that emphasizes the architectural form should be designed strictly following the functions that emerged in the early twentieth century.[312] Later, researchers and practitioners questioned this design approach because people use the spaces in different ways from the architects' expectations.[313] Furthermore, with the development of urbanization, people with different backgrounds and cultures inhabit the same environment, in which spaces, especially public spaces, are used in multiple ways.[314] All of these factors require an innovative design approach that allows diverse possibilities and behaviours conducted in the space; in short, multifunctional spaces. Open plan as a popular design language was used in the design of houses, offices, school classrooms, and other types of spaces in in order to improve communication among users and to realize the flexible use of spaces.[315]

The multi-purpose rooms in all three buildings I observed are designed with an open plan to meet different functional goals. They all include an attached public kitchen in which all lunch and dinner meals are cooked and delivered to different dementia care and DSL4 cottages. In the Red Deer and Wainwright buildings, residents in the independent living suites also have lunch in the multi-purpose rooms. These rooms are used to conduct the scheduled

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[312] Vittorio Magnago Lampugnani, *The Thames & Hudson Dictionary of 20th Century Architecture* (London & New York: Thames & Hudson, 2000).
[313] Bernard Tschumi, *Architecture and Disjunction* (MIT Press, 1996).
[314] M. Batty et al., "Representing Multifunctional Cities: Density and Diversity in Space," *University College, London* (2003).
[315] Ethan S. Bernstein and Stephen Turban, "The Impact of the 'Open' Workspace on Human Collaboration," *Philosophical Transactions of the Royal Society B: Biological Sciences* 373, no. 1753 (2018).

Figure 5-13: Multi-Purpose Room Location in Three Buildings
Multi-purpose room in Red Deer building (left-up); Multi-purpose room in Wainwright building (left-down); Multi-purpose room in Slave Lake building (right-up).

Figure 5-14: Multi-Purpose Room Environments in Three Buildings Multi-purpose room in Red Deer building (left-up); Multi-purpose room in Wainwright building (left-down); Multi-purpose room in Slave Lake building (right-up).

recreation activities, which are usually at 2 o'clock each weekday afternoon and involve residents from the whole building. Sometimes people use part of the space to do scheduled activities, such as planting with the children from the child care centre in the Red Deer building.

At other times, residents, visitors, and staff are welcome to use these rooms to have coffee or tea, which is offered all day long, and to chat. For example, in the Wainwright building, as mentioned previously, a group of four or five male residents from the independent suites always sit together around the end table to have coffee. With these multiple purposes, the number of participants in each activity varies. As such, one side of each multi-purpose room was designed to be open to the corridor, so that the usable space can be extended to the corridor space for activities that attract a large number of participants. Furthermore, because the rooms are meant to allow participants from different areas of the buildings to join the activities, they are all located in the centre of the buildings and are connected to the main corridor, the elevator(s), and other functional spaces.

The multi-purpose rooms with open plans have design problems that prevent the residents, especially those with dementia, from successfully dwelling in these spaces. As previously noted, all three multi-purpose rooms have a side that is open to the other parts of the building, including the main corridors, the elevators, and the reception areas. Usually, while some residents and staff are conducting scheduled activities, other residents, staff, and visitors are still active in the public spaces. For example, visitors may chat with the front desk staff and take the elevators to visit their loved ones who live upstairs; the care partners may pass the corridor to the cottages; and the postman may come in and deliver the mail to the mailbox that is set up in the lobby. All these activities and relevant sounds, such as chatting and elevator noises, affect the participants, especially those with dementia, and may make it harder for them to concentrate on the activities.

According to my observations in all three buildings, residents would often turn their heads when someone was passing through the other parts of the building that could be seen from the place in which they were sitting. Of all three multi-purpose room spaces in these buildings, the Wainwright building's has the least amount of disturbance because the lobby, reception area, and elevators are diagonally opposite to, rather than directly facing, the multi-purpose room. The Slave Lake building set up a decoration in the centre of the lobby in order to block the disturbance of activities in the lobby, reception, and elevator areas.

Engaging in activities means enjoying the content and perceiving the meanings of those activities, rather than purely physical participation; this is especially true for residents with dementia. For example, I participated in a church singing session one afternoon at 2 o'clock in the Red Deer building, along with the former music teacher Lawrence, who was discussed earlier in this study in the section on wandering. We were sitting around a table in the inner corner of the multi-purpose room from which we could not notice disturbances from the corridor or the elevator. At the beginning, Lawrence was trying to wander but was attracted by the singing. He used his finger to beat the rhythm on the table and said to me: "It is nice music." He then slept afterwards. It appears that when Lawrence, who had a problem with wandering, participates in this activity, having a nap is a good result that is afforded by the music and the surrounding environment, which allows him to listen to the music without any disturbance. For the residents who sit close to the corridor, on the other hand, the disturbance distracted them so that they paid less attention to the activity.

Furthermore, although the multi-purpose rooms are designed to conduct different activities, only those that relate to the attributes of the spaces are recommended. All three multi-purpose rooms are designed in the style of restaurants and entertainment rooms. Activities such as having meals, church singing, and birthday parties are reasonable. However, some activities, such as planting with children from the child care centre, would confuse residents,

especially those with dementia, and make them less likely to participate in the activities.

Multi-purpose room design in buildings for residents with dementia, as such, should have fewer connections to high-traffic spaces such as the main corridors and elevator area. Also, not all activities are suitable for the multi-purpose room. It is therefore recommended that other activity spaces be set up so that people in the building can conduct different types of activities in order to maintain residents' social engagement.

In summary, this chapter is a further discussion based on previous works in this study. The first section, Space Affords Dwelling, is a rethinking of the theories of affordance and dwelling that were introduced in Chapter Two. The vivid stories in the architectural lifeworlds in Chapter Four indicate the need to integrate these two theories together in order to better understand the first two sub-research questions regarding the influence of the spatial environment on the affording process for people with dementia and its meanings. Specifically, dwelling for residents in dementia care buildings creates a sense of continuity, community and opportunity, which is afforded by different spatial environments under the influence of the cottage care policy.

This project is a practice-led study in which all explorations aim to advance the knowledge of architectural design for dementia care in order to help architects conduct better metaphorical reasoning and design creation. In order to answer the last question regarding the application of this study to design practice, the second section, Back to Spatial Design, brings all previous discussion in this study back to the area of design. I reference different design theories and design principles with which architects are familiar, using their language to further explain the meanings of spatial environments to people with dementia and the application of these understandings to the design practice of different functional spaces and their spatial configuration in dementia care.

Chapter Six: Conclusion

This chapter summarizes the research objective of this study and outlines how this study has met that objective, demonstrates the contributions of this study to knowledge in both practice and theory, introduces the deliverables and implementations, and reflects on the limitations of this study.

Research Objectives

In this practice-led project that addresses the practical issue of the difficulties architects face in applying design guidelines to dementia care practice, my personal research objective is to explore knowledge that will enhance the architects' understandings of person-environmental relationships in dementia care that will accordingly better supplement their use of design guidelines in practice.

This research objective is realized through three in-depth case studies of three dementia care buildings in Red Deer, Wainwright, and Slave Lake in Alberta, Canada. Chapter One developed the theoretical framework of the architectural lifeworld, and Chapter Two reviewed previous literature relating to this framework. These architectural lifeworlds were studied under the guidance of the nested methodology integrating reflective lifeworld research, reflexivity, and case study research, as outlined in Chapter Three, and were presented in Chapter Four to reflect how residents dwell in dementia care relating to the affordance of the surrounding architectural spaces. Chapter Five discussed how various factors of architectural spaces may affect residents' dwelling in these spaces, and the relations of different functional spaces to architectural design as a whole.

Contributions to Knowledge

The primary contribution of this study is its proposal of an innovative research approach to studying the person-environmental relationship in dementia care in order to lead new knowledge of architectural design for people with dementia. This new knowledge challenges the evidence-based research on dementia care design but, in the meantime, supplements the implementation of evidence-based design guidelines in design practice.

As discussed in Chapter One, evidence-based design guidelines that have been accumulated and generated from evidence in previous studies are often challenges to architects who seek to apply these guidelines to the design practice of dementia care. Ill-structured design problems cannot be addressed and solved until the architects fully understand the residents' lives and their associations with the spatial environments.

Based on this issue in practice, this study explores the architectural lifeworld of, and comprehensively presents, the residents' daily lives that are afforded by their spatial environments. The architectural lifeworld is constructed from the complicated interactions among residents, care staff, visitors such as family members and friends, care policies, and architectural spaces. These complicated relationships within the architectural lifeworld contribute to the real lives of residents with dementia, metaphorically inspiring future design practice in dementia care.

This study also enriches theories of both architectural and dementia care studies. In the study of architectural phenomenology, the theoretical framework of the architectural lifeworld can be applied to other projects that seeks to understand the meanings of spatial environments for people who use these environments, such as the healthcare and autism care environments, healthy and age-friendly neighbourhoods, and other types of built environments outside the area of health.

Furthermore, this study enhances the theories of affordance and dwelling by integrating these two separated theories into the exploration of the architectural lifeworld. The literature review in Chapter Two reflects the limitations of these two theories. On the one hand, the existing affordance theory only focuses on the object/environment's invitation to people's functional behaviours rather than exploring the meanings behind the affordance. On the other hand, the existing dwelling and home theories, especially in relation to dementia care, tend to discuss the meanings of dwelling and home for the individual rather than looking at the factors of architectural environments that may affect the quality of dwelling.

These two theories are integrated together in this study to explore the architectural lifeworld of dementia care. The first section of Chapter Five explicitly discusses the meanings of dwelling in terms of continuity, community, and opportunity, relating to the spatial environments and affordance that have been presented in the architectural lifeworlds in Chapter Four.

The last theoretical contribution of this study is to emphasize the significance of architectural environments in the study of dementia care. I propose an innovative standpoint whereby the architectural environment plays a proactive role in the affordance of people's dwelling, or not, in the building, which challenges the dominant paradigm in social science in which the architectural environments are seen as passive influences on the implementation of person-environmental relationship. This study emphasizes the proactive role of architectural spaces in shaping residents' lives and well-being.

Deliverables

The main audiences of this study include architects who conduct architectural design for dementia care, and designers, such as interior designers and landscape designers, who are involved in the process. The deliverables

based on the academic investigation are developed to advance architects' and designers' knowledge of dementia care. My background in architectural design has helped me to use architectural language to develop multimodal deliverables that are expected to inspire architects and designers in multisensory dimensions.

The deliverables that have been completed include this dissertation, which features text, pictures, diagrams, and sketches. Alongside the research team of the broader applied project, I completed three ethnographic films that depict the architectural lifeworlds of three dementia care buildings. The films supplement the 2D presentation of the dissertation, providing a multisensory approach so that architects can hear the sounds, experience the space, and perceive the spatial scale. I also completed a 44-page report that includes examinations of these three buildings and design recommendations that are expected to help the industrial partners to enhance the architectural design quality of dementia care in their future project of dementia care.

Upon the completion of this dissertation, my future plans include developing a three-day workshop curriculum to help participants understand the architectural lifeworld of dementia care, which will inspire them to better apply existing design guidelines developed from evidence-based design to their design practice. Eligible participants include architects, designers, and students who are in the last year of their undergraduate program or in graduate programs relating to design for dementia or for health. The workshop focuses on important concepts such as the architectural lifeworld, dwelling, affordance, and metaphor. The training section of the workshop also presents the continuing architectual lifeworld of dementia care, to bring the audience into the specific scenario. This presentation includes a re-edited film that integrates the three films that we have completed, but which excludes people's faces so that the film can be shown to the public without compromising the participants' privacy. I am planning to publish at least six works based on this doctoral study within the next two or three years.

Implementations

This study is practice-led, and as such will be implemented into practice. It will help the industrial partners, including the architectural design company and the property developing company, to understand the lives of the residents and their associations with the architectural environments that they have designed and developed. This will help them improve the design quality in future projects and accordingly help enhance the well-being of future residents. They may also renovate existing dementia care buildings based on the suggestions of this study, in order to improve the quality of the existing architectural environments and enhance the well-being of current residents.

As pointed out in the section on deliverables, I am planning to develop a curriculum that will help me to implement the findings of this study to a broader educational context, so that more architects and designers will be able to share these findings. I have also implemented the architectural lifeworld paradigm into my teaching practice at the university level in Ontario and will continue to do so in the future, to encourage students in design, especially in design for health, to explore different approaches to research and practice in design.

Limitations

This study faces several limitations. First, due to funding from industrial partners, my case studies were necessarily selected from existing dementia care buildings that were designed and developed by those partners. Though I selected three buildings that cover different geographic areas and cultural backgrounds, all three have similar design approaches and operation policies. For example, all cottage layouts feature independent private suites and common areas that are connected by corridors, although each building has a different corridor design. I was unable to compare this design approach to others, such as the greenhouse design in which the private suites are surrounded by the

common area without a corridor, in order to discuss the spatial design and its prototype.

Second, although this study includes some cultural considerations, such as farm culture and aboriginal culture, in its exploration of the architectural lifeworlds of the dementia care buildings under discussion, it was difficult for me to relate my understanding and experience to the culture and history of the specific geographical area of Canada. Many residents in this study had experienced such things as immigration to Canada, World War II, and complicated life changes such as moving from farms that were much closer to nature into the artificial environments of these buildings. Some residents, particularly in the Slave Lake building, are from reserves that I have not visited.

My relative lack of experience with aboriginal culture and the experience of aboriginal people in the past century were also challenges to my understanding of the aboriginal residents' dwelling in dementia care. Because I was born and raised in East Asia and have not experienced war, I perceived barriers to an immediate perception of the cultural meanings of the residents' spatial environments and material things. However, I tried to supplement my lack of understanding by communicating with people in the buildings (such as staff and families) and my co-supervisor, by visiting farms in Alberta, and by reading books about Albertan and aboriginal culture.

Final Notes

This is an interdisciplinary study that integrates architectural design, material culture, and aging, especially environmental gerontology, to explore the relationships of people with dementia to their environments. This is a practice-led study that explores the architectural lifeworld of dementia care to advance knowledge of architectural guidelines and the application of those guidelines to design practice in dementia care. It proposes an innovative perspective in which the architectural environment proactively affords residents' dwelling in

dementia care, so that the improvement of architectural design will accordingly enhance the dwelling and well-being of residents in dementia care.

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Appendix A: Summary of Data Collected for the Broader Research Project

	Interview with architects	Case Study 1	Case Study 2	Case Study 3
Dates/length	N/A	Mar29-Apr04 7 days	Aug25-Aug31 7 days	Sep14-Sep18 5 days
Interview (care staff)	N/A	6 interviews	4 interviews	3 interviews
Interview (families & residents)	N/A	6 interviews	6 interviews	3 interviews
# of Interview (architects)	3 interviews	N/A	N/A	N/A
Notes + on-site reflection	N/A	139 pages	90 pages	57 pages
Reflection immediately after data collection	N/A	11 pages	8 pages	4 pages
Picture	N/A	871 pictures	1228 pictures	958 pictures
Video (raw)	N/A	1 hr 36 min	4 hr 46 min	2 hr 10 min
Layouts	N/A	5 layouts (floors)	4 layouts (floors)	2 layouts (floors)

Appendix B: Sample Interview Guides

Interview Guide of Families and Residents
Material Environments as Metaphors: Enhancing the Well-being of People with Dementia

Principle Investigator: Tori, Hui Ren, PhD Candidate, University of Alberta
Research Supervisor: Dr. Megan Strickfaden, Associate Professor, University of Alberta

Interview Guide: Families and residents in one of the following facilities: Points West Living Slave Lake, Points West Living Red Deer, and Points West Living Wainwright

Introduction

1. We are interested in your experiences of having your loved one stay in (insert facility name).
2. What is your relationship with your loved one?
3. How long has they lived here?

Material Environments

1. Tell me how does your loved one conduct activities each day in this facility?
2. How do the environments support these activities?
3. What is your loved one's favorite area in this facility? Why?
4. What is your loved one's least favorite area in this facility? Why?
5. Is there a space or place on-site that provides he/she and the family members with time to spend together?
6. How does the design of this facility make you feel? Does the design make you stay away or come to visit? Is this the main reason that you selected this facility as the living place for your loved one?
7. How do the environments or things connect your loved one with his/her lifestyle that was established before moving to this facility?
8. How do the environments create a sense of belonging to your loved one?
9. Do you feel this is a good place for your loved one? Why?
10. Can we say this is a home for your loved one? Why?

Meanings of Well-being

1. As a family member, from your perspective, what is the meaning of well-being of residents in this facility?
2. What qualities of the environments you think are important to affect residents' well-being? How?

Wrap-up

1. If you could improve anything about the design of this facility for residents, what would it be?
2. Is there anything in your home/in this place you want to show me?

Interview Guide of Families and Residents
Material Environments as Metaphors: Enhancing the Well-being of People with Dementia

Principle Investigator: Tori, Hui Ren, PhD Candidate, University of Alberta
Research Supervisor: Dr. Megan Strickfaden, Professor, University of Alberta

Interview Guide: Families and residents in one of the following facilities: Points West Living Slave Lake, Points West Living Red Deer, and Points West Living Wainwright

Introduction

1. We are interested in your experiences of having your loved one stay in (insert facility name).
2. What is your relationship with your loved one?
3. How long have they lived here?

Material Environments

1. What is a normal day like for your loved one? What activities do they do?
2. Where do they do these activities? How do the environments support these activities? Could you please give me/us examples? Why do you think these environments are good?
3. Can you say this is a home for your loved one? Why or why not?
4. Which part of the building is your loved one's home? How about other parts?
5. Which spaces or places on-site do you and other family members spend time together with your loved one? Do you know if there is a place or space that allows your family member be alone?
6. What are the differences of the life in this place comparing to the place where your loved one stayed before (even if it's their home)? Which you do you like? Which do you think they like? Why?
7. How do the environments or things within (insert facility name) connect to the previous lives of the residents? What do you think it means to them?
8. How do the environments create a sense of belonging to your loved one?
9. What is your loved one's favorite area in this facility? Why?
10. What is your loved one's least favorite area in this facility? Why?

Meanings of Well-being

1. As a family member, from your perspective, what is the meaning of well-being of residents in this facility?
2. What qualities of the environments you think are important to affect residents' well-being? How?

Wrap-up

1. If you could improve anything about the design of this facility for residents, what would it be?
2. Is there anything in your home/in this place you want to show me?

Appendix C: Sample Information Letter

Information Sheet: Points West Living Red Deer
Material Environments as Metaphors: Enhancing the Well-being of People with Dementia

Principal Investigator:
Dr. Megan Strickfaden
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Co-Investigator:
Tori Hui Ren PhD Candidate
Department of Human Ecology
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Facility Manager:
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February 3, 2018

Research Project
This study is conducted with a research team from the University of Alberta, and two partner organizations, an architectural design company and a care provider. The purpose of this project is to offer insights into residents' lived experiences with material things in dementia care facilities, in order to inspire designers to incorporate the material environment into their design practices in the future.

How are we doing our research at Points West Living Red Deer?
Points West Living Red Deer is one of three residences for people with dementia that we are visiting and researching. Our team of 2-3 people will spend 5-7 days at Points Living Red Deer and conduct the following research activities:

1. Building analysis (5-7 days). The research team will look at the designed things within your building as a whole. We will take notes and sketches, and photograph the building including common spaces and some private spaces when permitted.
2. Filming (1-2 days). A videographer will spend 1-2 days in the facility to do filming of the building under the supervision of two researchers at all times.
3. Interviews with family members and residents (2-3 interviews, 30-90 minutes per interview). We hope to find out about how you feel about the building and its design.
4. Interviews with care staff (2-3 interviews, 30-90 minutes per interview). We hope to find out the role of building plays in providing care.

Participation
If you are reading this information sheet, the facility manager has contacted you as a possible participant in our research. Your manager will arrange the time and date that work for you to accept our interview. If you are a family member of resident, we hope to interview with you and your loved one who live in Points West Living Red Deer. If you are care staff, we will be interviewing you one-on-one.

Our interview questions will focus on the building features including the indoor and outdoor environments. We hope to walk while talking with you in 2-3 places to understand what you feel about them. We have interview questions that we will follow and we will audio record the interviews along the way. We will photograph the building features when we walk and talk with you. The photographs we take will not include people's faces because our focus in on the designed environment.

How long is the study?
At Points West Living Red Deer, the research team will conduct data collection over a 5-7 days period. Therefore you may see us in the building over this time in the mornings, afternoons and evenings. We will only film 1-2 days. Should you choose to do our interview it will take 30-40 minutes but could be as much as 90 minutes.

Benefits and Risks
This research will provide valuable information of residents' lived experiences related to design details within the dementia care facility they live in that will be relevant to designers (e.g. architectural, interior and/or landscape) involved in creating spaces and places for older adults. Our hope is that the summary of this research will inspire designers to conduct more person-centered design in the future, in order to enhance the well-being of people with dementia through design.

There is little risk to you and others in the building other than the inconvenience of having a small research crew present for full and part days over 5-7 days' period. When you take part in an interview, the only risk to you other is the time spent and a possibility that you may feel tired due to the interview process.

What about confidentiality and withdrawal from the research?
This research focuses on the material and designed environments rather than people. During the interview process, there will be no filming and the photography taken will include material things and spaces rather than you and other people. For the interview, your name(s) will not be associated with the interview; you will be given a pseudonym and the interview will be coded to ensure anonymity. We will stop interviewing, note-taking, sketching, audio recording and photographing if you (or your loved one) want to stop the interview during the interview process. You (and your loved one) may also request withdrawal from the interview for up to TWO WEEKS after the research team has done the interview.

The research team will take photos and do filming of the environment at your facility. We will avoid recording any people and will blur them out if anyone is visible on the photos and films. The research team will send the film to your facility manager to review. You will be informed to do review as well if any sections/pictures of the film relate to you. You may request to withdraw these sections/pictures up to TWO WEEKs after your facility manager receives the film.

The audio recordings, anonymous transcripts of the interviews, photographs, and film footages will be kept by the research team on secured computers or in a locked cabinet for a minimum of five years after the completion of study. All efforts under the guidance of the University of Alberta's Research Ethics Board are made to protect participant's information.

If you have any further questions about this study, please contact **Dr. Megan Strickfaden**. Contact information is above.

If you have any questions about your rights as a participant, please contact the University of Alberta Research Ethics Board at 1.780.492.2615

Thank you so much for your participation and support.

Sincerely,

Megan Strickfaden, PhD
Associate Professor of Material Culture & Design Studies
Department of Human Ecology, University of Alberta

Appendix D: Consent Form and Assent Form

Consent Form
Material Environments as Metaphors: Enhancing the Well-being of People with Dementia

Principal Investigator:
Dr. Megan Strickfaden; megan.strickfaden@ualberta.ca; 780.492.3012
Co-Investigator: Tori Hui Ren
University of Alberta Research Ethics Board: 780.492.2615

Do you understand that you have been asked to be in a research study?	Yes	No
Have you read and received a copy of the attached Information Sheet?	Yes	No
Do you understand the benefits and risks involved in taking part in this study?	Yes	No
Have you had an opportunity to ask questions and discuss this study?	Yes	No
Do you understand that your participation is voluntary?	Yes	No
Has the issue of confidentiality been explained to you?	Yes	No
Do you understand who will have access to your information?	Yes	No

I agree to take part in this study.

Participant name: _____ (please print)

Participant signature: _____ Date: _____

Witness name: _____ (please print)

Witness signature: _____ Date: _____

Pro00076848 Material Environments as Metaphors February 3, 2018

Assent Form
Material Environments as Metaphors: Enhancing the Well-being of People with Dementia

Principal Investigator:
Dr. Megan Strickfaden; megan.strickfaden@ualberta.ca; 780.492.3012
Co-Investigator: Ms. Tori (Hui) Ren
University of Alberta Research Ethics Board: 780.492.2615

We want to tell you about a research study we are doing. A research study is a way to learn more about something. We would like to find out more about your daily lives in the building you are living and how you like or dislike this building. You are being asked to join the study because we want to know your real thoughts as a resident in the building.

If you agree to join this study, you will be asked to accept our interview. This interview will be around 30 minutes but we are happy to talk with you longer if you want to share us more of your lives in the building. One of your family members will be together with you when we conducting this interview. This interview can be in any place that you feel comfortable in the building and you are welcome to show us the places that you use everyday. When you take part in the interview, the only risk to you is the time spent and a possibility that you may feel tired due to the interview process.

This study will help us learn more about residents' lives and feelings of living in your building. This learning will help designers create better living environment for the people like you in the future.

You do not have to join this study. It is up to you. You can say okay now and change your mind later. All you have to do is tell us you want to stop. No one will be mad at you if you don't want to be in the study or if you join the study and change your mind later and stop.

Before you say **yes or no** to being in this study, we will answer any questions you have. If you join the study, you can ask questions at any time. Just tell the researcher that you have a question.

If you have any questions about this study please feel free to contact **Dr. Megan Strickfaden**. Contact information is above.

If the resident is able to read the assent form, please select the "Yes" or "no" and sign his/her name. The person who obtained assent needs to sign below as well.

Yes, I will be in this research study. No, I don't want to do this.

Person's name	Signature	Date

Person obtaining Assent	Signature	Date

If the resident is not able to read the assent form, the person obtaining assent will use the content in this assent form to conduct verbal assent. Please read the following statement and sign your name below.

I have discussed this research study with ___ using language which is understandable and appropriate for the participant. I believe that I have fully informed him/her of the nature of the study and its possible risks and benefits. I believe the participant understood this explanation and assent to participate in this study.

Yes, he/she will be in this research study. No, he/she doen't want to do this.

Person obtaining Assent	Signature	Date