Aging in Place: Evolving Architecture for an Aging Population within Established Inner City Neighborhoods in Calgary

by

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ABSTRACT

This thesis examines how current demographics and evolving family dynamics act as a catalyst for the evolution of a building in response to how the elderly can successfully age in place. Through the design of a residential building in an inner city neighborhood of Calgary, Alberta, this thesis explores the potential for architecture to accommodate diverse families (such as singles, couples, single parent families, and the elderly) in one development, maintaining existing relationships, promoting social cohesiveness, and providing an informal network of support for the elderly. The project investigates how architecture might facilitate the integration of the elderly through flexible relationships of building programme and unit variation.

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CHAPTER 1: INTRODUCTION

Canada's increasing life expectancy, improved health, and decreasing birthrates are contributing to an unbalanced population where seniors are representing the fastest growing population group in Canada (Health Canada, 2002). The impact of this shift is also influenced by the postwar wave of "baby boomers" reaching their golden years. The steady increase of the elderly in Canada requires sensitivity in defining appropriate integration, support, and respect within their communities. The evolving demographics create an opportunity to examine new patterns of living, working, and relaxation.

> A steadily lengthening life expectancy is one of several phenomena that have created new social problems for postindustrial societies. Until recently, life was short; people faced and feared the prospect of death while still performing significant social roles. But as more and more people survive beyond the time of their children leaving home, and live well beyond the age of retirement, and more are faced with becoming a widow, the fear of early death has been replaced by the fear of aging and its connotation of a living death. (Blau 1973, 176)

Although many older citizens hope to age in place, existing neighborhoods often lack the housing diversity, social support, and care facilities required in order for residents to remain in a neighborhood. As a population ages, the need to downsize from a traditional family home, due to decreased mobility, often leads to displacement. Deeply rooted relationships, daily routines, and community ties dissolve, resulting in social isolation for residents who live alone. Long-lasting relationships become harder to maintain due

to more complicated travel arrangements, yet most people want to age in a familiar environment close to family, friends, and a familiar network of acquaintances. This is an arrangement that facilitates social exchange and allows the elderly to continue to function as an integral piece of a community.

This thesis is an investigation into the living arrangements of the elderly in relation to autonomy, social integration, and the role that the elderly play in society. In *A Fresh Map of Life* (1991), Peter Laslett explains how the traditional phases of life have evolved in accordance to an increased life expectancy and advancements in health care. Traditionally, a lifespan was conceived as three distinct stages: childhood, adulthood, and old age. Laslett has restructured the paradigm of aging by redefining the third phase of life and adding a fourth phase. Laslett's new third age, described as a time of personal fulfillment and extended leisure activity, speaks to how contemporary society must evolve preconceived phases of life and expand upon past definitions of social roles and responsibilities in relation to the chronological aging of an individual. The redefinition of the third age implies a reformation in the way society views elderly stereotypes in relation to social, economic, and family roles. This redefinition alters the way we view the capabilities and societal contributions of the elderly and provides opportunity and flexibility in how and where the elderly choose to live.

> I question the wisdom of a society that allocates considerable resources and talent to prolonging human life but fails to provide meaningful social roles for older people. Our society has failed to assume any significant degree of responsibility for creating new and meaningful forms of social restitution. As a result enforced idleness and uselessness have become the fate of many older people. (Blau 1973, xii)

Thesis Question

How can architecture evolve in parallel with the aging of a population while maintaining deeply rooted community relationships in established inner city neighborhoods in Calgary?

Family Composition

In *Should We Be Concerned About Age Segregation?* Hagestad and Uhlenberg demonstrate the importance of family ties in relation to the creation of support networks between generations.

> The family realm is characterized by complex emotional bonds, and ties to younger generations have been found to mitigate isolation, institutionalization, and loneliness in old age. (Hagestad and Uhlenberg 2006, 649)

The relationship of family members between generations becomes the foundation for the creation of a larger network of meaningful intergenerational relationships and socialization between friends, family, neighbors, and the surrounding urban fabric. Changing family dynamics, organization, and demographics are challenging preconceived notions of how a family functions on a daily basis. Families are no longer individual units; they have become increasingly complex, with greater generational overlap, divorce, and remarriage. These are changing

family organizations and the amount of informal support available to the elderly. These changes to contemporary family structures beg the question of what constitutes a family, and where the elderly exist within this complex social organism.

> Of the two hardest problems with age the first is simply the lack of preparation, the lack of a natural or acquired provision of experience. We observe other people in the condition all our lives but fail to learn biologically from the spectacle, and somehow even fail to believe that the same can happen to us. (Blau 1973, 25)

Carstensen's theory of socioemotional selectivity suggests that "since older generations are increasingly aware of their limited lifespan, they become more emotionally selective in choosing whom they spend their time with" (Ajrouch, Akiyama, and Antonucci 2007, 47). The goal of a relationship is motivated by emotional and mental support. Carstensen argues that "the relationships that the elderly decide to keep are influenced by the family, friends, and neighbors they feel have a strong enough emotional connection with, while withdrawing from the relationships that they don't feel are as important" (Ajrouch et al. 2007, 47). These relationships are subject to the surrounding social and physical environment, which can challenge physical, mental, and perceived limitations, influence abilities of individual capacity, and afford opportunities in the establishment of a strong social support system.

Shrinking family support systems increase the chances that older people may not have any informal social ties to reduce the likelihood of institutionalization.


Figure 1: Nursing home. Photograph by Nada Skerly, From Skerly 1971.

Non-kin relationships amongst friends, neighbors, and other families are becoming a significant source of support and care-giving across multiple generations. "As the younger generation seeks knowledge and experience, the elderly require assistance" (Ajrouch et al. 2007, 47). This provides the opportunity of combining emotional, mental and physical support, and social networks through the sharing of knowledge and experience which creates a possibility for a mutually symbiotic relationship between generations.

This thesis questions how cross-family relationships can support and challenge the role of the elderly within a community and create an architecture that evolves in parallel to the aging process, embeds a network of social support within the surrounding urban fabric, and generates a casual exchange of intergenerational interaction.

Living Arrangements

This thesis required an understanding of contemporary living conditions available to the aging population in order to develop sensitivity towards programmatic and spatial relationships, appropriate integration, and development of medical and therapeutic requirements. It also required an understanding of the pertinent issues facing a population in transition in order to create a sensitive approach to the needs and requirements of an aging population.

Figure 2: Photomontage of Erlton, Mission, and Roxboro neighborhoods depicting the elderly within the home environment and demonstrating the attachment to home.

Figure 3: Exploded photomontage showing the elderly within the home context (top) in relation to issues of embeddedness (middle) and social isolation (bottom) within a neighborhood.

In *Aging, Autonomy, and Architecture* (1999), Schwarz and Brent define three models of care that categorize current housing types for the elderly. The home model of care (aging in place) enables an elderly individual or couple to remain at home. The social model (assisted living) is a hybrid type that offers many of the services and securities of a nursing home while retaining a sense of home through increased social support and allowing residents to bring personal possessions such as furniture, books, and collections in order to retain a sense of home and identity. The medical model of care (nursing home) facilitates the medical requirements of individuals who are physically and mentally unable to take care of themselves.

Aside from aging in place, which has its own constraints, current alternatives for receiving support require an individual or couple to relocate in order to receive the attention they need. There is a varying degree of support depending on the amount of attention required, including medical services such as physiotherapy and personal/supervisory care and non-medical services such as meal preparation, laundry, and housekeeping. Other factors such as privacy and independence also vary according to a model of care and can alter the way one's surroundings are experienced in terms of social relationships, flexibility of routines, and the availability of activities. Elderly individuals often find themselves in continual transition, moving to different facilities to receive particular services for specialized needs.

Home Model (Aging in Place)

In *Contemporary Environments for People with Dementia* (1993), Cohen and Day define aging in place as "the effect of time on a non-mobile population; remaining in the same residence where one has spent his or her earlier years and refers to the ideal condition of not having to leave one's home environment as a consequence of insufficient support services to respond to changing needs" (Cohen and Day 1993, 179). The home environment enables the creation of meaning through daily routines, memories, and life experiences. It becomes the physical evidence of the hidden personality that is formed through adaptation and interpretation of the world.

> Sediments of memory and meaning are laid down over time when we dwell in a place. … Ordinary events and actions are inscribed into the physical environment of the house. … The house as place becomes a mirror for the self. … Homemaking across a lifetime: the remembrance of special childhood places, inhabited and created and, sometimes, endured; leaving home and the associated developmental tasks of entering adulthood; the negotiation of territory among those who live together; the loss of home through divorce, death of another, or institutionalization. (Stafford 2009, 3)

An individual or couple aging in place usually relies on a combination of informal support through family, neighbors, and friends; and formal support through the use of an external caregiver in order to avoid institutionalization. Unfortunately, even with that support the death of a spouse and loss of income often establish feelings of helplessness and loneliness that reduce the feasibility of remaining at home. A decline in health, lack of social support, and disconnection

from society are also contributing factors in the decision to find alternative housing solutions (figure 2).

Social Model (Assisted Living)

Assisted living facilities, retirement communities, and congregate housing are changing the way society approaches the negative effects of relocation and transition to a care facility. Schwarz and Brent define assisted living as "a model of long-term care for people who conform to the same profile as a nursing home resident. What makes assisted living different is the way it delivers medical care and how it differentiates social and mental aspects of a care facility" (Schwarz and Brent 1999, 65).

While the medical model of care defines a resident's well-being through physical health, a social model of care addresses a wider range of issues. Social, mental, and emotional aspects of a resident's well-being are as important as physical health.

Schwarz and Brent describe the attributes of a successful assisted living facility through its ability to distance the nursing components and medical services from the on-site amenities and living arrangements. Assisted living facilities accommodate flexible routines and activity schedules that can be modified in response to changing individual needs, creating a sense of personalization and a reimagining of the home environment (Schwarz and Brent 1999, 45). While nursing homes limit choices associated with individuality and identity, assisted facilities tend to generate a sense of family, community, and

belonging (Schwarz and Brent 1999, 45). An added sense of comfort and security are the result of a formal network of support that can include full-time and part-time nurses, physical therapists, reception, and on-call physicians, depending on individual need. Although assisted facilities allow aspects of home to be transferred to a new environment, displacement of an individual or couple from their home environment into unfamiliar surroundings decreases the sense of permanence and separates them from their established social network.

Medical Model (Nursing Home)

Originally derived from hospitals, nursing homes rely on a medical model of care, where efficiency, schedules, and constraint often take priority over the social well-being of a resident (Schwarz and Brent 1999, 33). Sedentary lifestyles, accelerated mental and physical aging, and decreases in cognitive ability occur when care facilities fail to stimulate the body and mind.

> For the elderly, admission to a nursing home is an event which publicly demonstrates that one is no longer competent and is in need of others to rely on for care. Long-term care facilities exist to provide care for those who are physically or mentally unable to care for themselves...This means acceptance into a community where persons are defined as incompetent, in need of care, and for whom others have been employed to provide this care. (J. Posner, quoted in Foy and Mitchell 1990, 4)

Posner defines learned helplessness as a loss of control over the environment. A loss of ability, activity, mental capacity, physical and social ties, and a diminishing of opportunities and meaningful activ-

ities erode an individual's feeling of competence. Something that affects the majority of care facilities is a homogenization of resident demographics. In *Elderburbia*, Stafford observed a disturbing trend: "New residents of nursing homes try to make friends after they have begun to settle into the nursing home routine. But if a friend dies or becomes ill, the new resident learns that it is dangerous to make friends. Keeping interactions to a minimum protects the self against the emotional trauma of these losses" (Stafford 2009, 93).

Purposeful Integration

The opportunities and constraints presented through analysis of current living arrangements establish the framework for integrating a diverse demographic with the intent of creating an atmosphere that encourages aging in place by the elderly. This would provide a supportive environment to meet some of the needs of the aging residents and alleviate the need for constant moving between institutions by incorporating services that help provide a continuum of care.

This thesis proposes a hybrid network of informal support that emphasizes continuity of routines, promotes independence, and encourages personal development through purposeful integration amongst the elderly within the building and in the surrounding neighborhoods (figure 20). It would be naive to think that a building could be completely age integrated with a consistent distribution of age groups amongst the building population; the repurposing of

space within a building would allow for new people to be continually introduced, which would vary the degree of age integration over time and keep the demographic mix in a constant state of flux.

Context and Site

Site Selection

The dynamics of an aging population across Canada present a number of challenges and opportunities in relation to quality of life, provision and accessibility of public services and infrastructure, and how we approach the aging process. The City of Calgary is no different. An increasing number of elderly within the

area of
study
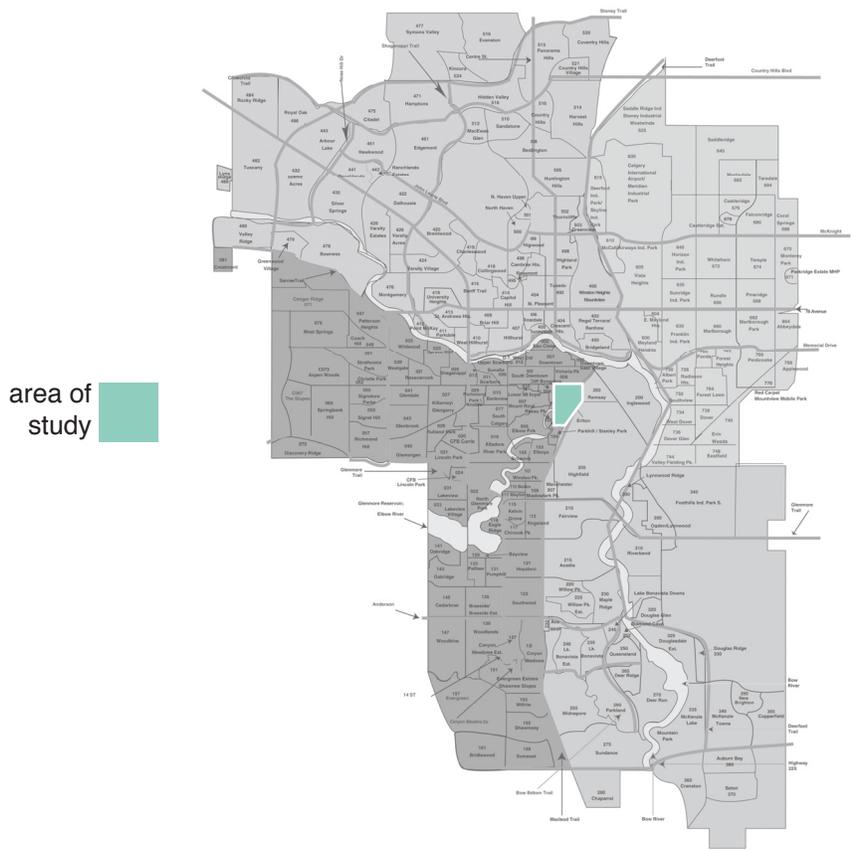
Figure 4: Locating the inner city neighborhood of Erlton within the greater city limits of Calgary. From Calgary Real Estate Board Co-operative Limited.

MISSION

Age	Value
0-19	ONE HUNDRED & TWENTY
20-44	TWO THOUSAND SIX HUNDRED & SIXTY SEVEN
45-54	FOUR HUNDRED & NINTY TWO
55-64	THREE HUNDRED & FORTY SEVEN
SENIOR POPULATION	SIX HUNDRED & EIGHTY SIX
65-74	TWO HUNDRED & EIGHTY ONE
75+	FOUR HUNDRED & FIVE

TOTAL PERSONS IN HOUSEHOLDS 4540
FAMILY 1815
TOTAL NON FAMILY 2730
RELATIVE 100
NON RELATIVE 575
ALONE 2045

TOTAL PERSON LIVING ALONE 2045
SENIORS LIVING ALONE 255

TOTAL CHILDREN AT HOME 300

TOTAL FAMILIES WITH CHILDREN 250
SINGLE PARENT FAMILIES 65

ERLTON

Age	Value
0-19	ONE HUNDRED
20-44	SIX HUNDRED & SIXTY SIX
45-54	TWO HUNDRED & TWO
55-64	ONE HUNDRED & FIFTY EIGHT
SENIOR POPULATION	EIGHTY SIX
65-74	FORTY NINE
75+	THIRTY SEVEN

TOTAL PERSONS IN HOUSEHOLDS 1250
FAMILY 750
TOTAL NON FAMILY 500
RELATIVE 30
NON RELATIVE 140
ALONE 325

TOTAL PERSON LIVING ALONE 325
SENIORS LIVING ALONE 60

TOTAL CHILDREN AT HOME 130

TOTAL FAMILIES WITH CHILDREN 105
SINGLE PARENT FAMILIES 40

ROXBORO

Age	Value
0-19	ONE HUNDRED & TWENTY TWO
20-44	EIGHTY NINE
45-54	NINTY SIX
55-64	SIXTY SEVEN
SENIOR POPULATION	FIFTY FOUR
65-74	TWENTY FIVE
75+	TWENTY NINE

TOTAL PERSONS IN HOUSEHOLDS 415
FAMILY 405
TOTAL NON FAMILY 10
RELATIVE 0
NON RELATIVE 0
ALONE 10

TOTAL CHILDREN AT HOME 145

TOTAL FAMILIES WITH CHILDREN 85
SINGLE PARENT FAMILIES 20

Figure 5: Demographics of the surrounding neighborhoods. (City of Calgary, 2010). Aerial photograph from Google Maps.

city will require a range of healthcare, social support, and transportation alternatives in order to remain active and socially integrated.

Calgary is the largest city in the western province of Alberta, Canada. With a steadily increasing population of over one million people, making it the fourth largest metropolitan area in Canada, Calgary has established itself as a highly adaptable city capable of providing additional services in order to accommodate the shifting population.

The thesis examines tightly knit, inner city neighborhoods in Calgary that meet key requirements of location, amenities, services, and demographics in order to integrate the elderly within the surrounding neighborhood (figures 4 and 5). The site is intended as a testing ground in order to illustrate how interaction can occur between multiple neighborhoods. The importance of inserting this project within an inner city neighborhood is the range of amenities and public services such as medical facilities, grocery stores, and leisure centres that already embedded within the community (figure 6). The local amenities are what enable the elderly to thrive within a neighborhood without having to drive long distances to amenities and services required on a daily basis.

25th Avenue

4th Street

health
wellness

education
culture

grocery
shopping

activity
leisure

Figure 6: Amenities within a twenty-minute walk from the site.
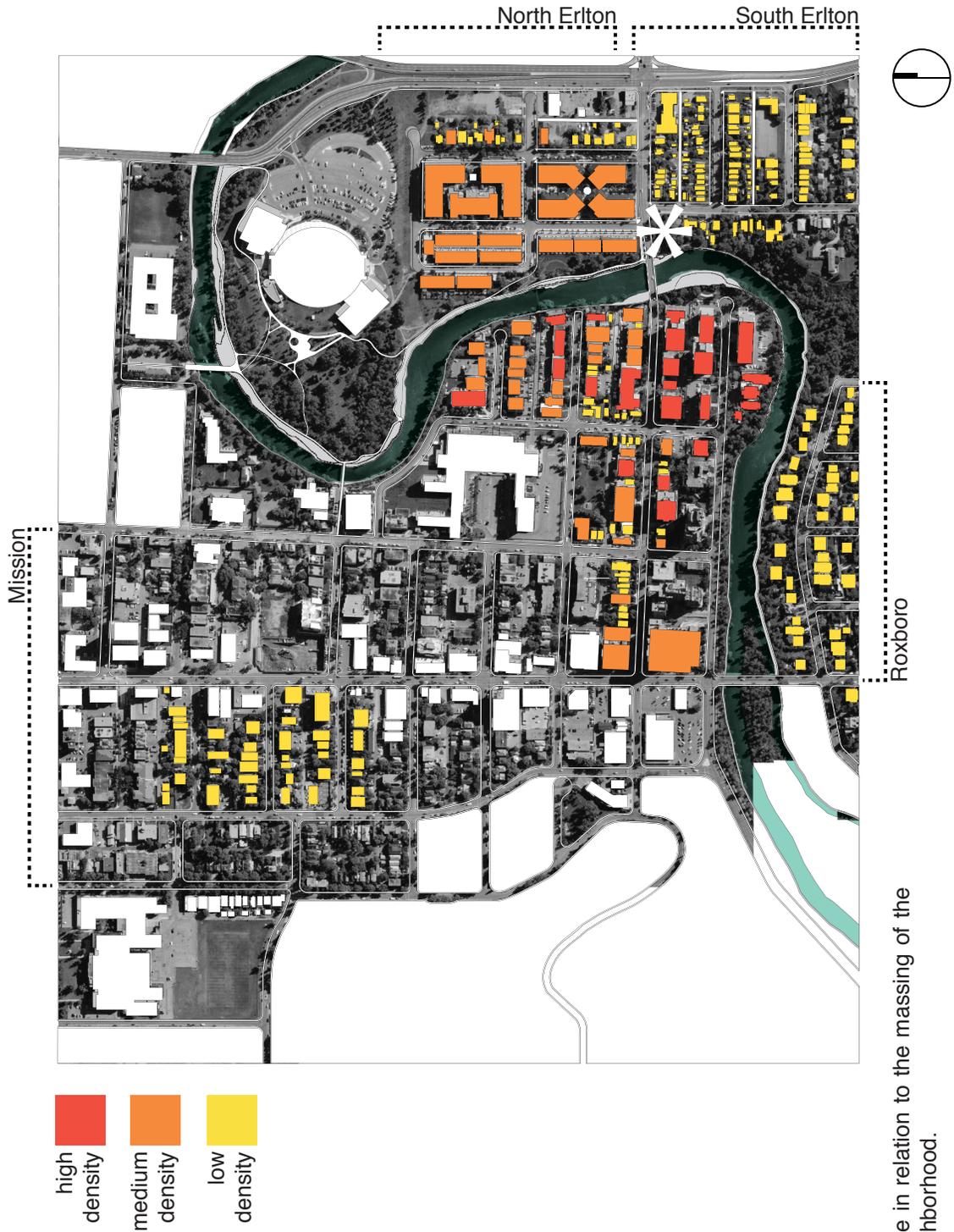
Figure 7: The site in relation to the massing of the surrounding neighborhood.

Site Analysis

Erlton and the surrounding neighborhoods are located in the boundaries of inner city Calgary and within a ten-minute walk of downtown. New zoning that encourages higher density around Erlton has divided the neighborhood. While South Erlton has a traditional low-rise residential character that the older residents refuse to alter, North Erlton has moved forward and developed into a denser multifamily development (figure 5).

The tension between the two neighborhoods has not only halted any potential development but has also severed ties with the surrounding neighborhoods and newer residents. As a result of such a strong opposition to change, the Erlton neighborhood lacks any unifying community gathering or event space.

The proposed site is situated at an intersection of these three neighborhoods, immediately surrounded by: a single family residential district to the south and east (South Erlton), midrise multifamily residential to the north (North Erlton), and the Elbow River to the west (figure 5 and 7). An extensive park system exists along the Elbow River; the Roxboro (south) and Lindsey Park (north) pathways have the potential of weaving these neighborhoods together (figure 8). This network of pathways not only connects the different neighborhoods to the site, they also provide a link to the city centre. Pedestrians enjoying the river walk can seek this building out as a destination for community events and services.

interrupted
pathway

Figure 8: The existing pedestrian disconnection between Lindsey Park (01) and Roxboro Park (02) and the surrounding neighborhoods.

There is a bus route down 25th Avenue that connects the residents to the grocery stores and cultural district; the C-train station along McLeod Trail connects residents to the rest of the city (figure 9). Across the river lies the Mission neighborhood, which has welcomed higher density along the river that has added much needed activity and livability in the area through the diversification of demographics, a flourishing entertainment and shopping district, and annual outdoor markets. The Holy Cross Center is also located in Mission, which offers a variety of medical facilities such as oncology, eye care, dentists, adolescent treatment and family therapy, a chronic pain clinic, surgical services as well as radiology. Northeast of the site is a recreational facility which offers amenities for professional and amateur athletes and a full sports medicine staff. Within a twenty-minute walking radius there are both public and private elementary and high schools available (figure 9).

Currently, the site is an underutilized open space bordering both North and South Erlton (figures 10-13). The site presented an opportunity for fulfilling additional needs of the community that are not currently met through the establishment of a central gathering space and opening lines of communication between the residents and the community. Overlapping activity through the reintegration and extension of the public walkways and current pedestrian connections enables the site to become a hub of activity for the surrounding neighborhoods.

LEISURE
(RECREATIONAL
FACILITY)

LEISURE
(WALKING PATH)

GROCERY
(INGREDIENTS)

RESTAURANT
(ALL READY
MADE)

MEDICAL
(HOSPITAL
CLINIC)

CARE FACILITY
(OLD AGE
HOME)

SINGLE (YOUTH
ORIENTED)

COUPLE (YOUTH
ORIENTED)

FAMILY (FAMILY
ORIENTED)

ENTERTAINMENT
(THEATRE)

TRANSPORT
(PUBLIC
TRANSPORT)

LEARNING
(SCHOOL
LIBRARY)

WORK (DAY JOB)
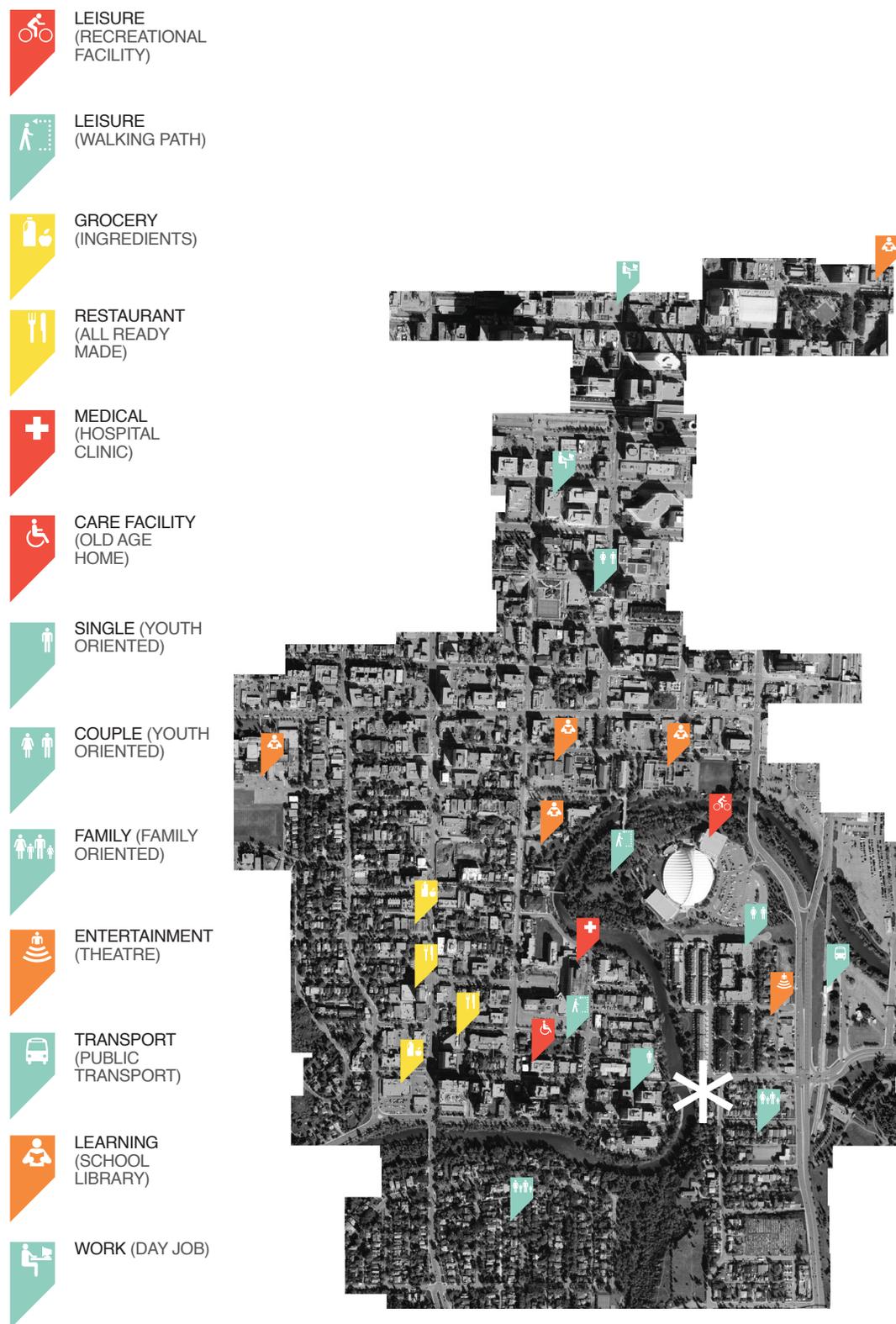
Figure 9: Aerial view of neighborhoods, showing amenities within a twenty-minute walk-
ing radius. Aerial photograph from Google Maps.

Figure 10: Photograph of the project site, facing south. Existing conditions along 25th Avenue.

Figure 11: Photograph of the project site, facing east. Existing conditions along the Elbow River.

Figure 12: Photograph of the project site, facing west. Existing conditions along Erlton Street SW.

Figure 13: Photograph of the project site, facing west. Existing conditions along 25th Avenue.

CHAPTER 2: DESIGN

The issues pertaining to the integration of the elderly are addressed at the urban, building, and dwelling scale in order to create a holistic outlook of how multiple networks of formal and informal support can exist.

Urban scale: The local amenities, public services, and demographics of the surrounding neighborhoods provide insight as to the situation of the building on the site, the layout of the programme in relation to views from the building, vehicular and pedestrian traffic patterns, and environmental conditions.

Building scale: The supportive elements of the building allow the elderly from within the neighborhood to interact with building residents and receive community assistance through increased awareness of community events, classes and activities, and medical advice for the elderly, organized by the assisted living facility and respite care staff that address needs and special requirements.

Dwelling scale: The flexibility and adaptation of units afford the elderly, as well as singles, couples, families, and single parent families, the opportunity to adjust their unit in relation to personal desire, neighborly requests, or necessity.

Urban Scale

This thesis proposes an integration of the elderly through social embeddedness and interconnected networks of support that combine family and neighbors in order to extend the continuum of care that allows elderly residents to confidently age in place. This is addressed not only through the integration of the residents that depend on the building for the majority of daily activities, but through the integration of the surrounding neighborhoods as well.

The building serves as fertile ground for social integration, meaningful activity, and the incorporation of the elderly within the surrounding urban fabric. This is accomplished by providing a balance of private amenities and publicly accessible services that facilitates a dynamic flow of ingoing and outgoing pedestrian traffic through the building. This creates a self-supporting atmosphere that embeds the elderly into the social fabric, affording them the opportunity to age in place while receiving the proper amount of care through a combination of formal and informal support networks. This type of support extends the continuum of care, while avoiding institutionalization and the mental and social stigma of being removed from society in order to receive adequate care.

26

Mcleod Trail

25th Avenue

27th Avenue

Erlton Road SW

Erlton Street SW

Erlton Street SW

Erlton Street SW

Elbow River

Elbow River

24th Avenue

25th Avenue

26th Avenue

First Street SW

Figure 14: Site plan in urban context.

Figure 15: Aerial view from the northwest, showing the building in relation to the surrounding residential scale of South Erlton.

Figure 16: Aerial view from the northeast, showing the relationship of the building mass to 25th Avenue, and across the river to the Mission neighborhood.

Figure 17: Aerial view from the southwest, showing the courtyards, landscaped berms, and terrace.
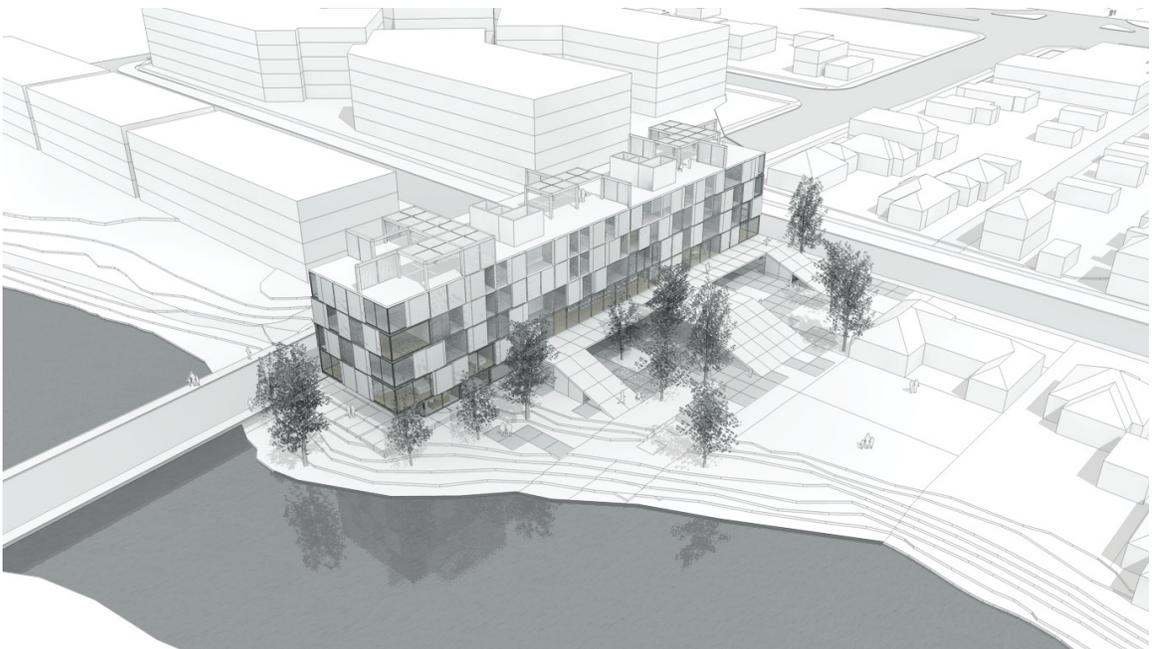
Figure 16: Aerial view from the southeast, showing the surrounding residential scale of North Erlton.

Erlton Street

25th Avenue

Elbow River

Figure 19: Ground floor plan in site context, showing its relation to North/South Erlton and the Elbow River.

At an urban scale, a building that is able to adapt to the changing needs of the population as they age requires a range of programmatic elements that accommodates community gathering and recreational uses with the intention of revealing daily routines and identities of the elderly residents.

Building Scale

The programme was developed through analysis of the residents' needs, daily routines, and activities in relation to their age, family responsibilities, and abilities. The supporting facilities reflect the demographics that continue to change in the surrounding neighborhood and the building population. The programmatic requirements of the building are shared and can be expanded, contracted, or redistributed in response to the evolving building and urban population. The transparent nature of the first two floors is intended to visually display and broadcast activities into the surrounding neighborhood, animate the façade, and embed a presence in the neighborhood (figure 21).
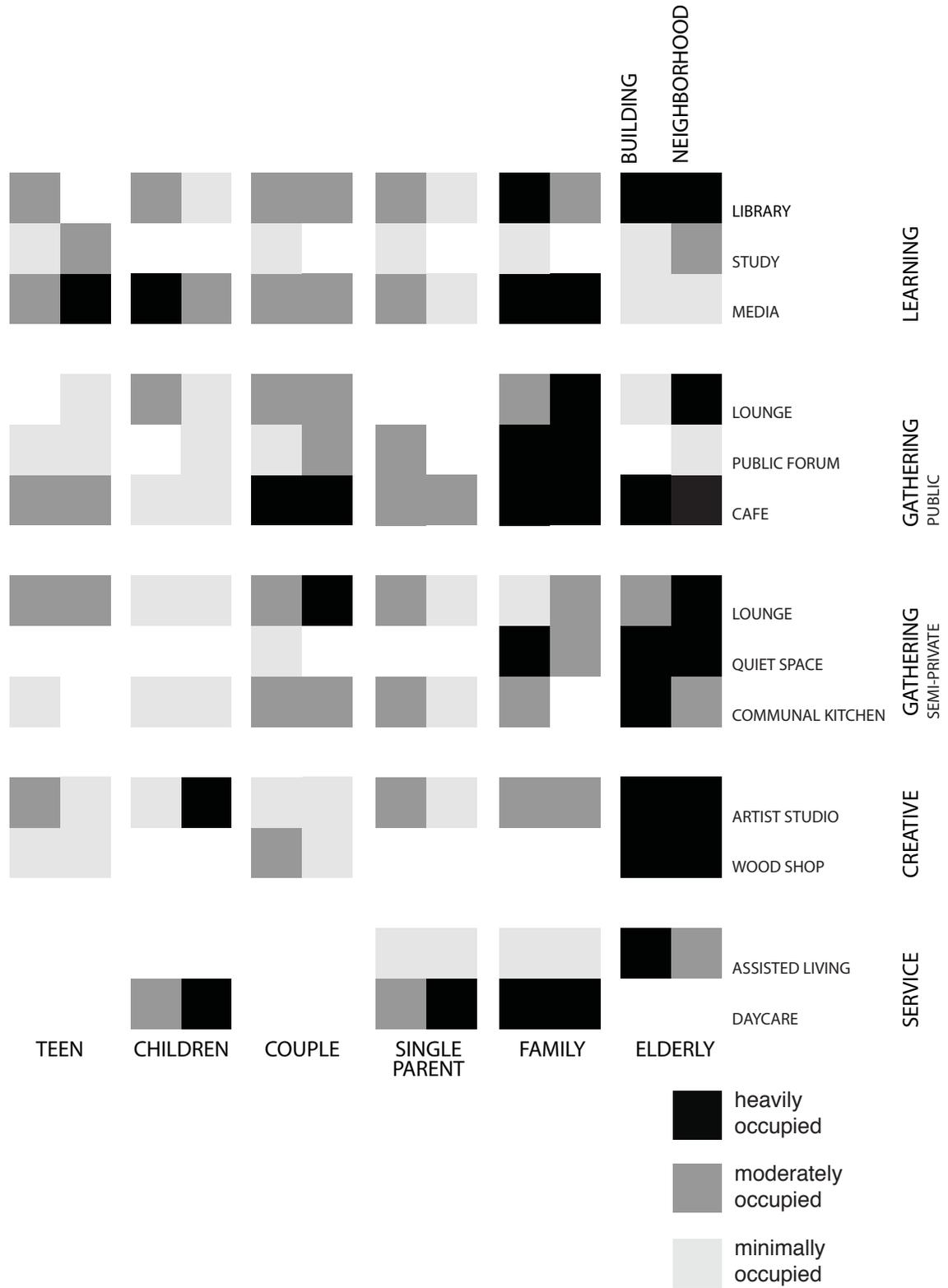
Figure 20: Programme matrix. showing potential areas of overlap and interaction between residents and the surrounding neighborhood through the supporting programme, different generations, and the frequency of their occupation.

Figure 21: North side of the building, showing the event space that exposes activities within the building.

Supporting Programme

Ground Floor

The ground floor contains the programmatic requirements that are used on a daily basis by the elderly, although they are also accessible to the public in order to reach out to the community (figure 20). The programme hosted on this floor is viewed as a common resource amongst the surrounding population, a place to receive assistance attaining groceries, either through formal programs or by friends and family, upcoming community events, or simply finding someone to talk to. The main entrance to the building is accessed from Erlton Street, passing by the artist studio and workshops, and through the public courtyard. From the street, a visiting neighbor has a clean view through the building framing the Elbow River. The lounge and event space are centres of activity within the building. They link the two residential circulation cores, allowing an informal monitoring of who is accessing the building.
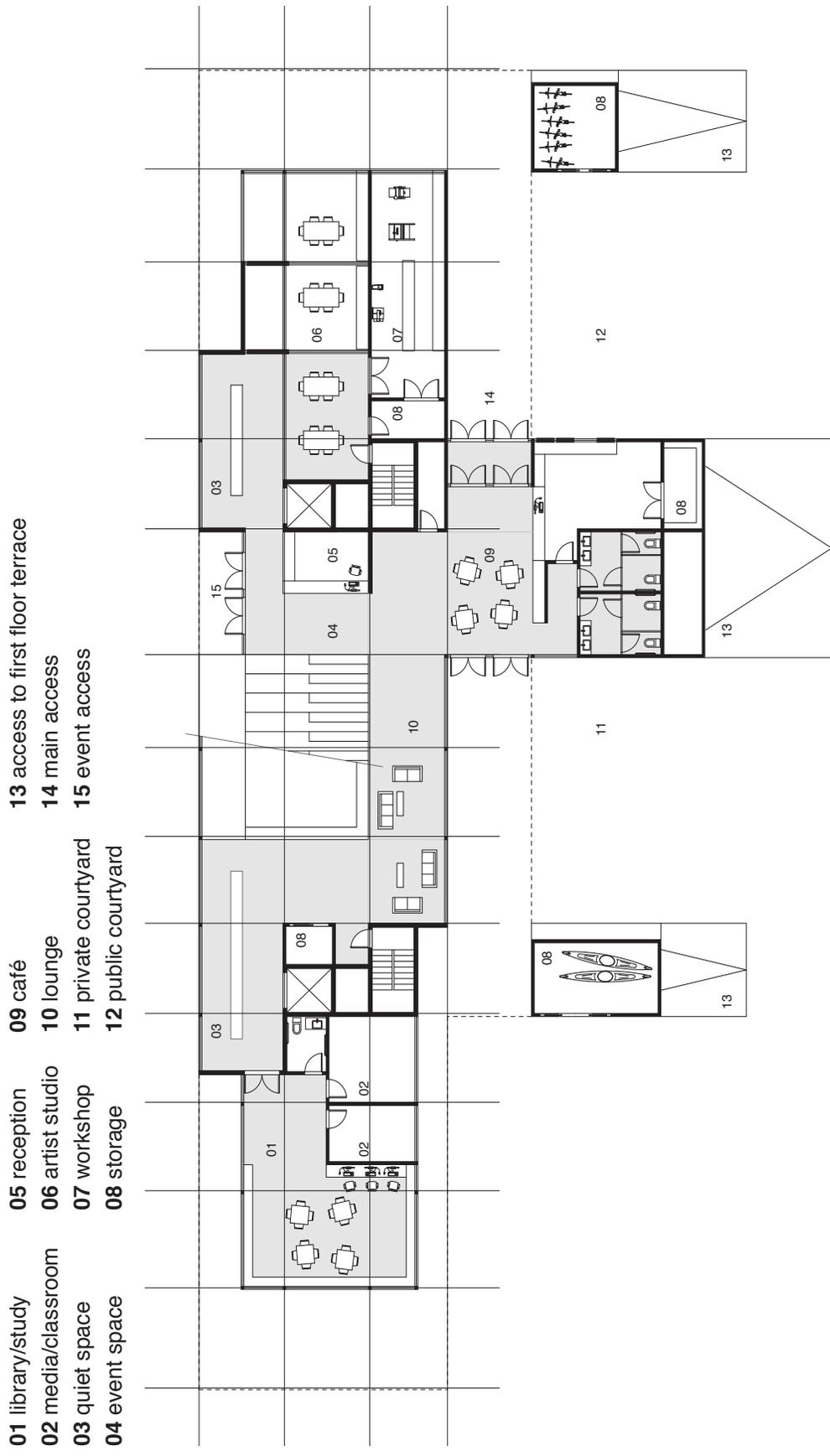
01 library/study   **05** reception   **09** café   **13** access to first floor terrace
02 media/classroom   **06** artist studio   **10** lounge   **14** main access
03 quiet space   **07** workshop   **11** private courtyard   **15** event access
04 event space   **08** storage   **12** public courtyard

Figure 22: Ground floor plan. Programmatic requirements interact with the surrounding neighborhood and provide meaningful activity for the elderly.

Variation in living space throughout the building enables the elderly to choose the amount of exposure desired in relation to interaction between multiple generations occupying the same space. Providing a wide range of living spaces throughout the building respects the private sphere and independence of residents (figure 22). Floor to ceiling shelving screens exist throughout the building and slice through the widened circulation space, creating niches with varying degrees of private and public seating throughout the building. The screens are intended for the display, storage, and exchange of items from the residents. The accommodation of personal items and reminiscences of the past shape informal dialogue.

Figure 23: South side of the building, showing the public courtyard next to Erlton Street and the landscaped access to the upper terrace.

Below the landscaped slopes on the south side of the building are a café and storage spaces with direct access to the courtyards. These slopes create intermediate zones of inhabitation. In the summer they become an amphitheatre and a place to lie in the sun. In the winter they provide a respectable tobogganing hill.

The transitional ground planes enable the building to weave into the surrounding neighborhood, transferring the mass from the residential block to the terrace, courtyards and the urban fabric.

Terrace: A stage for activity, used as an outdoor overflow space for the daycare, it creates an additional layer of outdoor space, providing the front yard along the sunroom.

Figure 24: View of the private courtyard and the landscaped access to the upper terrace.

Public courtyard: Situated along Erlton Street, the public courtyard is intended for community events, a hangout for children and teenagers to inhabit after school or on weekends for recreational use (figure 24). A storage space under the slope is provided for equipment and residents' bicycles.

Private courtyard: The café acts as a mediator between the two courtyards. The outer courtyard is for public use, intended for children and larger community events. The inner courtyard along the river is meant for a more intimate experience for the residents, the elderly in particular.

Figure 25: View through the private courtyard, catching glimpses of 25th Avenue through the event space.

The variations in outdoor space enable multiple uses to occur simultaneously. This is essential in order to provide choice in offering residents varying degrees of exposure and interaction with the surrounding neighborhood.

Café: The café takes on different roles, depending on the user. It acts as a concession for the daycare, supports community activities for the neighborhood, and provides convenience items for the residents. It is an informal meeting place for the residents and surrounding neighborhood to intermingle.

Café/event lounge: Intended as additional seating for the café, it also provides an open space for communal gatherings. It provides direct access to the private courtyard, allowing occupants a sheltered view of the surrounding foliage and Elbow River.

Studio/workshop: In response to the needs of the elderly, spaces for informal theatre, music, and art studios are incorporated. Facilities for woodworking

Figure 26: North side of the building, along 25th Avenue, showing how the widened circulation forms quiet spaces that open up to pedestrian activity.

and larger-scale interests are provided in order to facilitate the acquisition of new skills, interests, and new technologies to enable the elderly to pursue life-long learning. The workshop allows views from the street for curious pedestrians.

Event space: This communal gathering space facilitates functions for the building residents, as well as the surrounding community. This space creates opportunities for hosting larger community events such as lectures, film screenings, and community meetings.

Library/reading room: Situated along the river, the library is a quiet space surrounded by dense foliage with glimpses of the river and pedestrian traffic along the bridge. These interstitial spaces are intended for quiet reflection and shared conversation by passing residents. They animate the building throughout the day.

01 administration
02 assisted living
03 intensive care
04 media support

05 sun room
06 event space
07 communal gathering
08 communal kitchen

09 daycare support
10 multi-purpose
11 daycare check-in
12 outdoor terrace

13 landscaped slope down to courtyard below
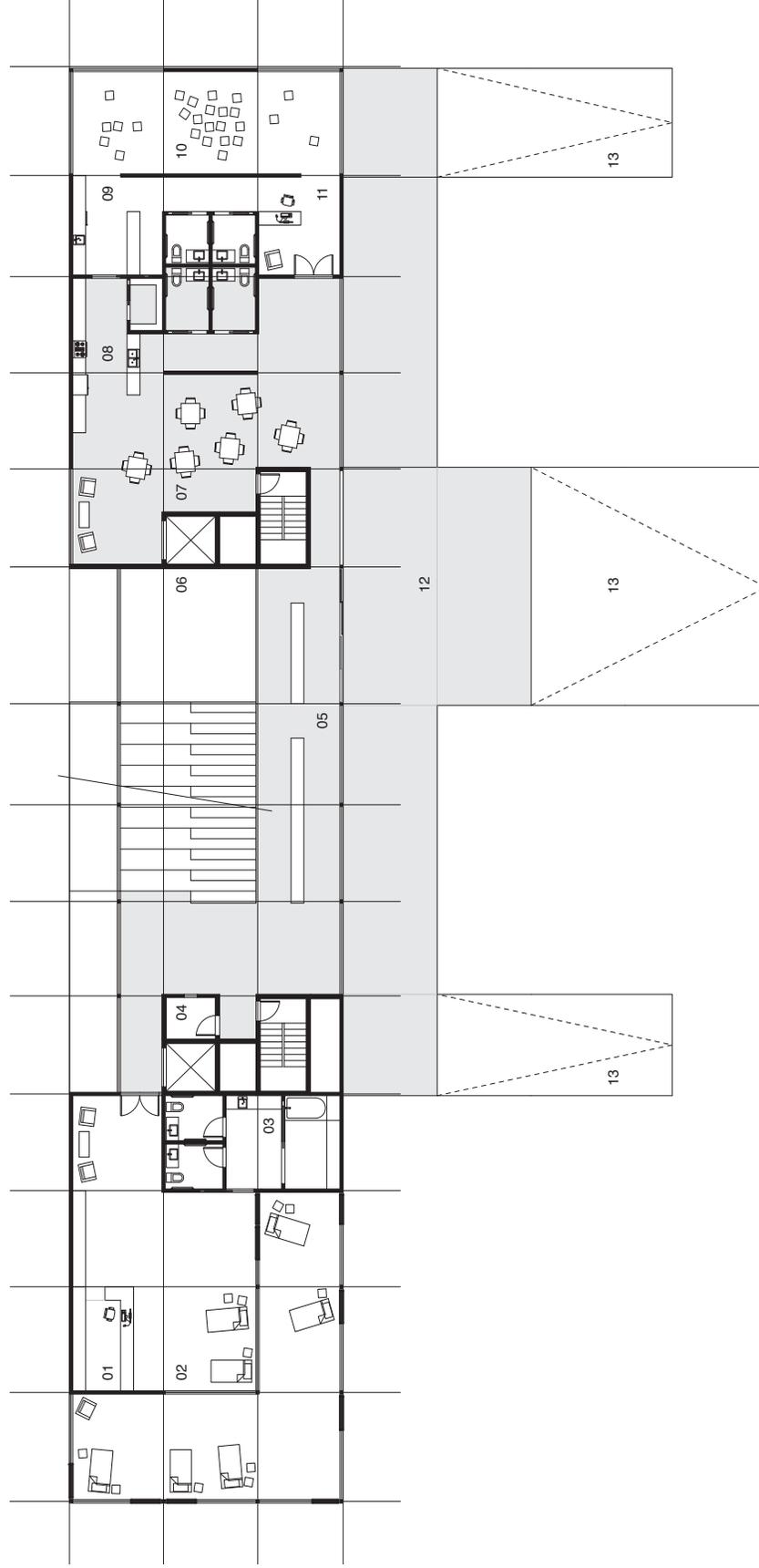
Figure 27: First floor plan, with care facilities (daycare, respite care, and assisted care) and the supporting programme (communal kitchen and dining area).

First Floor

The first floor contains a number of care facilities: daycare, respite care, assisted care, and a supporting programme associated with each facility. The overlap of function and programmatic requirements of the assisted living, drop-in lounge, and daycare allows for a redistribution of space according to the demand (figure 27). The space that is shared between the extended care for the elderly and the daycare can be expanded or contracted in order to accommodate an increase or decrease in elderly residents.

Daycare: The daycare program serves both the residents and the surrounding neighborhoods, providing an environment that enables community involvement through socialization, participation, and support.

Drop-in lounge (respite care): This program assists with in-home care. Respite care enables families of an elderly parent to access social support and care. This service provides a form of relief and reduces the burden for families that are responsible for an aging family member.

Sunroom: This space links the communal kitchen and dining with the assisted living facility. The widened circulation enables residents to access the communal kitchen and daycare or take advantage of the southern orientation by pulling up a chair for the afternoon, sharing a conversation or reading a book. A shelving screen divides the circulation space into two zones. The main circulation runs along the public atrium space, while the remaining space has

the same characteristics as a front porch. It has the ability to open up in the summer onto the terrace, providing a comfortable atmosphere that interacts with the activity associated with the courtyard.

Communal kitchen: Providing an open forum between the assisted living and daycare, the dining hall and kitchen could be used on a daily basis for formal dining for the elderly. It could also become an informal communal kitchen that is shared by the residents, used by the daycare, or used for community events.

Figure 28: Partial first floor plans demonstrating how the assisted living facility is able to open up through the use of a double facade of sliding panels. The interior space is also able to divide in order to provide different amounts of privacy and attention.

Medical care: This facility ranges from part-time caregivers providing occasional care and supervision to comprehensive care and medical treatment with full-time registered nurses and administration staff. Space is also provided for administration staff and resident doctor, nurse, or caregiver visits. The assisted living includes a southwestern terrace that

is able to transform from an enclosed winter garden into an open-air terrace in the summer (figure 28). As daily routine, health and wellness, and personal development dictate where we spend our time, this transformable space is intended for the residents in the assisted living section and provides a private space for those with reduced mobility, or those that require supervision, to enjoy the outdoors.

Opportunities for interaction are presented through an overlaid programme that encourages the crossing of daily routines amongst the building population. As the building population shifts, so does the opportunity for the alteration and configuration of the supporting space throughout the building, which facilitates a range of activities, from quiet activities of playing cards or coffee with friends to more boisterous events such as a sociable game of billiards.

Dwelling Scale

The residential units can be tailored to the individual needs of the occupant, while the flexible infrastructure encourages interaction through continual reconfiguration of space amongst neighbors (figure 30). Residents have a choice of units, all of which have the core elements of kitchen, living, sleeping, and bathroom modules. Both the housing and supporting facilities are interlaced with communal spaces that are capable of engaging multiple activities.

Upper Floors

Communal life does not only exist within the public realm of the ground and first floor, it extends throughout the upper residential floors as well. While the living arrangements and configuration of space change within the units, the functionality and use of the common spaces on each of the residential floors also transform to reflect the needs of the residents. The circulation throughout the building is better described as a series of informal living rooms. Varying in width and height, the space is intended for social activity through informal inhabitation. The single-loaded corridor doubles as the communal space, creating a buffer to the north, while allowing the units to benefit from the southern orientation. The communal space takes on different relationships and meanings as residents continue to reevaluate the allocation of space in relation to their age, current relationships, and responsibilities to immediate and extended family, friends, and other residents.

Figure 29: Cross-section (from left to right), showing Erlton Street, the artist studio, reception, and the event space on the ground floor, with the day-care and sun room on the first floor.

Figure 30: Cross-section (from left to right), showing the event space and library on the ground floor, with sunroom, quiet spaces, and assisted living facility on the first floor. The residential floors show different variations. The roof terrace affords views of the Elbow River and the City Centre.

Figure 31: Cross-section (from left to right), showing the library and assisted living facility in relation to the extended pathways along the Elbow River.

FOUR BEDROOM APARTMENT
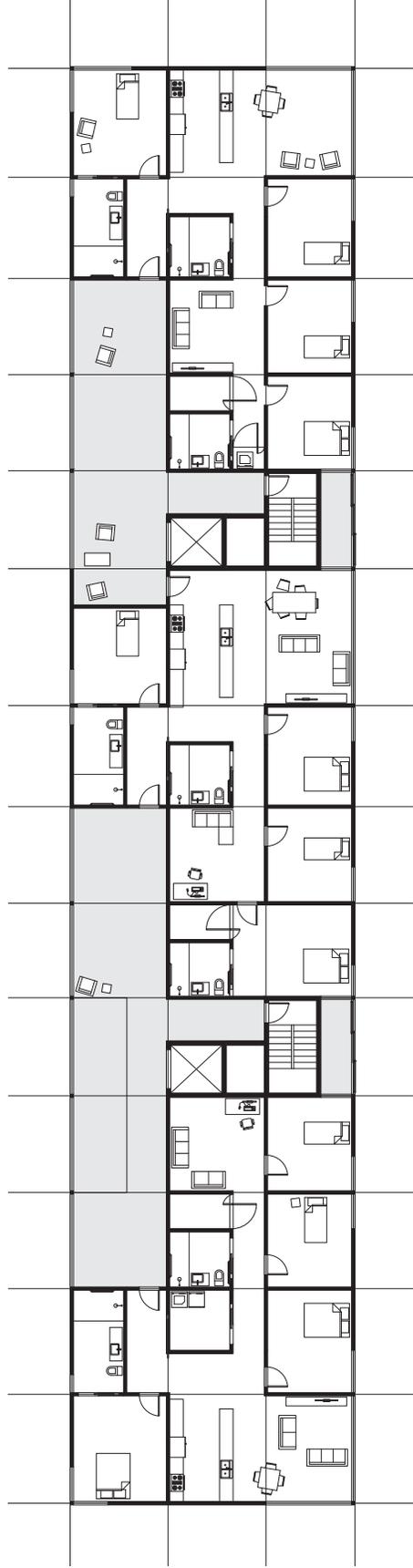
Figure 32: Typical upper floor plan. Variation 1: large apartments.

Variation 1: Large Apartments

The large apartment variation demonstrates how a floor plan might initially be divided into three principal apartments (figure 32). They could be inhabited by a couple that currently does not require the whole apartment, but is aware of the potential to subdivide in order to pay down the mortgage; or a couple starting a family and anticipating a need for additional space.

Figure 33: View of how the communal space takes on the role of additional play space.

The communal space outside the units might be viewed by an established family with children as additional space for an overflow of activities, transforming into a backyard where parents can let their children play while maintaining indirect supervision.

Variation 2: Various Apartments

This variation is a snapshot in the evolution of the units that includes: three apartments that have grown vertically, an apartment with a live-in caregiver or aging parent, and three studio apartments divided from the principal apartment (figure 35). This variation is showing the ability for units to expand and contract, both horizontally and vertically.

Figure 34: Variation in communal space showing casual social gathering of younger generations.

The communal space outside the units might be viewed by children as a large play area. Teenagers and young adults might transform the space into a recreational space, as social interaction is important. The gradual introduction and collection of board games and couches would create a casual hangout. Parents also would have a sense of comfort and security, knowing the communal space allows for indirect supervision.

STUDIO AND BATHROOM
ONE BEDROOM
TWO BEDROOM

Figure 35: Typical upper floor plan. Variation 2: various apartments.

Figure 36: Typical floor plan. Variation 3: small apartments.

Variation 3: Small Apartments

Established couples whose children have begun to move out and don't require the same amount of space are able to downsize while collecting additional income (figure 36). A retired elderly couple could make room for a live-in caregiver.

Figure 37: Residential communal space furnished by downsizing families creates informal living spaces alongside the units.

The communal space outside the units might be viewed by parents as an opportunity for larger group activities, interpreting the space as a shared playroom. The young couple might interpret the space as a place to gather for events, group meetings, classes and informal exchange of ideas, life experience, and friendly advice. Informal introductions would be made and established relationships are expanded upon when residents of the building gather.

Variation 4: Assisted Living Units

The floor plan is subdivided into twelve private studio apartments. The three principal apartments become spaces for the communal kitchen, dining, and living rooms (figure 39).

Figure 38: Communal kitchen in the assisted living adaptation, looking out onto the terrace and courtyards.

While the communal space outside the units, along the north side of the building, might be viewed as a lounge or hobby space, the spaces on either end of each floor (east and west) are used for louder group activities such as an exercise class. They can also be partitioned for more private functions such as a private dinner when extended family or friends visit.

STUDIO AND BATHROOM
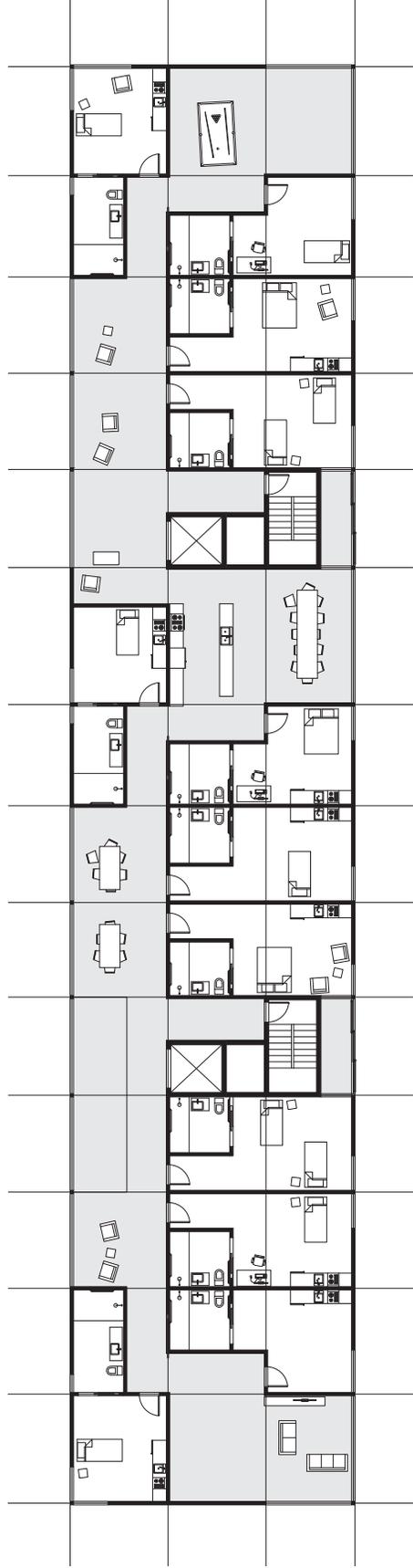
Figure 39: Typical upper floor plan. Variation 4: Assisted living units.

Variation 5: Palliative Care Facility

The floor plan allows for more variation and division of communal space through the contraction of the twelve private studio apartments into private bedrooms (figure 41). This creates intermediate zones of communal space once occupied by the entrances to the studio apartments.The three principal apartments become spaces for the communal kitchen, dining, and living rooms.

Figure 40: View of how the palliative care adaptation is able to create large communal spaces.

The space between the communal bathrooms divides the private bedrooms from the common lounge, forming semi-private spaces that can be closed off from the lounge in order to form more intimate places for quiet conversation and visitation when family and friends visit.

STUDIO AND BATHROOM
PRIVATE BEDROOM
BATHROOM

01 public
02 semi-public
03 semi-private
04 private
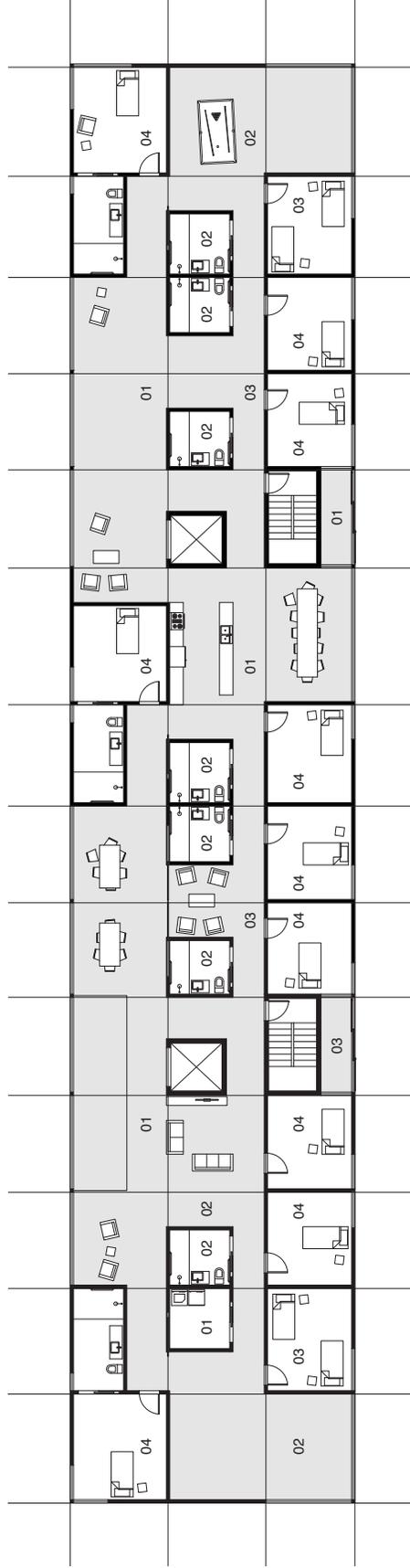
Figure 41: Typical upper floor plan. Variation 5: Palliative care facility, showing the transition of space and zones of privacy and exposure to other residents. The private rooms allow for feelings of ownership, with varying degrees of interaction.

Figure 42: Cross-section, showing the café, lounge, and event space on the ground floor, with the sunroom and shelving screen linking the assisted living and communal kitchen.

Figure 43: Cross-section, showing the front entrance, workshops, and artist studio on the ground floor, with the daycare linking to the upper terrace and communal kitchen.

Unit Flexibility

Initial Studies

Initial studies of unit flexibility required a space that was capable of transforming its function in accordance with the evolution of a family. This led to the creation of a service wall that contains the necessary utilities to facilitate a kitchen, bathroom, bedroom, and living room. The modular units not only created an efficient transition of functionality, but also allowed for universal design of each component in order to facilitate wheelchairs and reduced mobility. Adjustable counter and toilet heights, no-threshold showers, and built-in furniture enable a resident to maintain universal access.
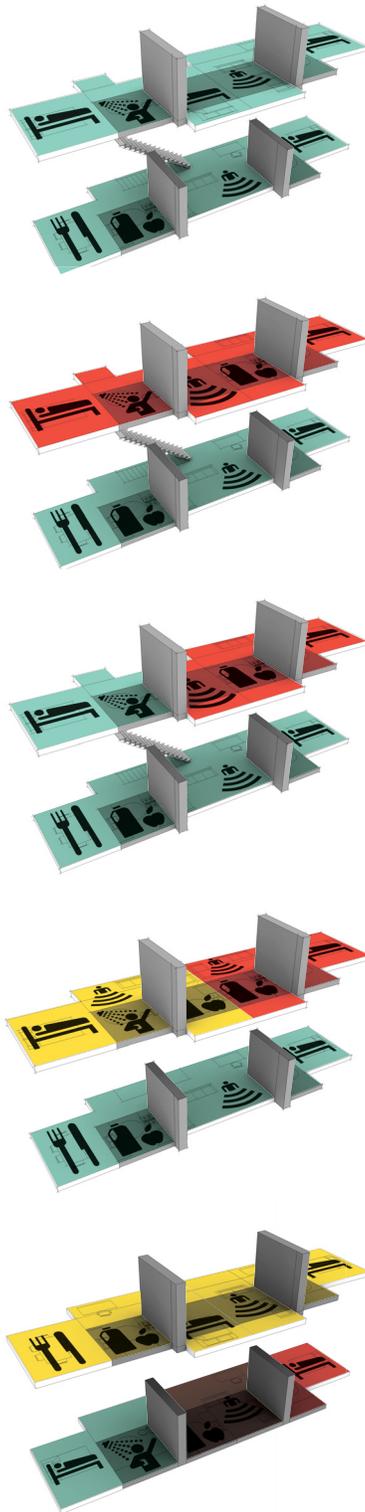
Figure 44: Sectional model. Initial studies in unit variation and possible arrangement.
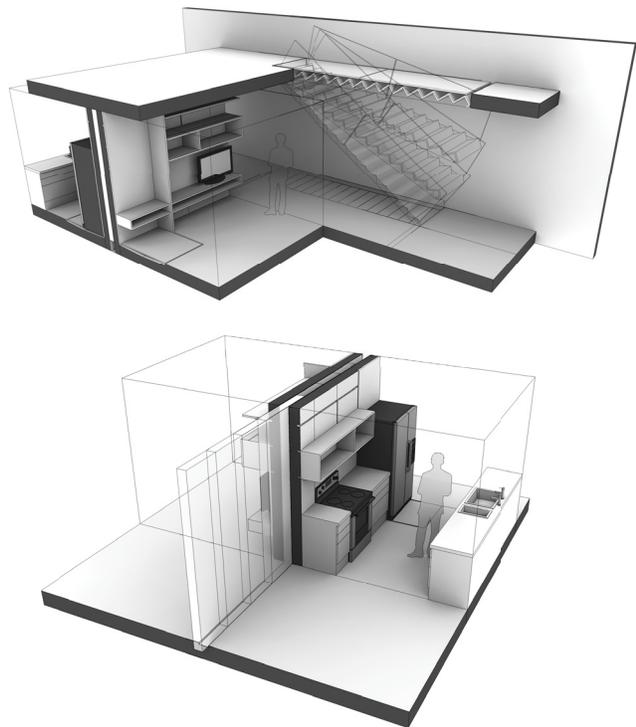
Figure 45: Sectional model. Initial studies in vertical and horizontal integration and division of units.

FIXTURES
(BEDROOM)

Bed
Night stand
Dresser
Desk
Chair

FIXTURES
(BATHROOM)

Toilet
Shower
Sink
Toothbrush
Hair dryer

INFRASTRUCTURE
(SYSTEMS)

Water
Waste water
Grey water
Electrical
HVAC
Communication

FIXTURES
(UTILITY)

Washer/dryer
Vacuum cleaner

FIXTURES
(KITCHEN)

Stove
Refrigerator
Microwave
Dishwasher
Sink
Coffee maker
Toaster

FIXTURES
(ENTERTAINMENT)

Television
Stereo
DVD player
Speakers
Telephone
Computer

Figure 46: Sectional model. Analysis of overlapping building utilities in order to limit redundancy in HVAC, plumbing, and electrical infrastructure to allow a conversion of a space into a kitchen, bathroom, or living room

FUNCTION & USE
(LIVING)

Resting
Learning
Gathering
Celebrating
Entertaining

FUNCTION & USE
(BATHROOM)

Hygiene
Relaxing

FUNCTION & USE
(KITCHEN)

Nutrition
Resting
Gathering
Teaching
Learning
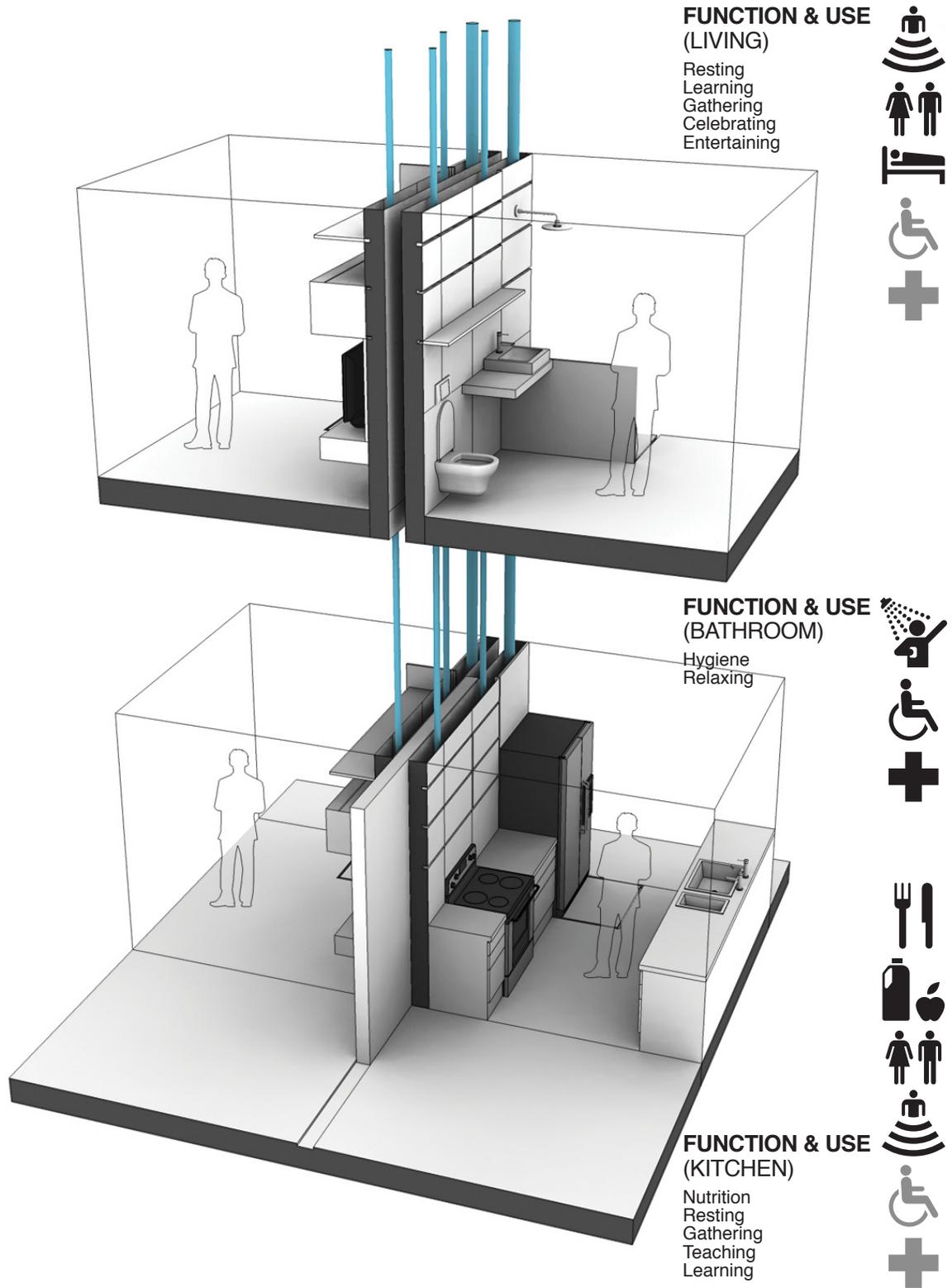
Figure 47: Sectional model, demonstrating the adaptability and flexibility of the service wall within a unit that accommodates multiple functions.

studio apartment   private bathroom   common space

private bedroom   semi-private space   common space

living room   kitchen   in-law suite
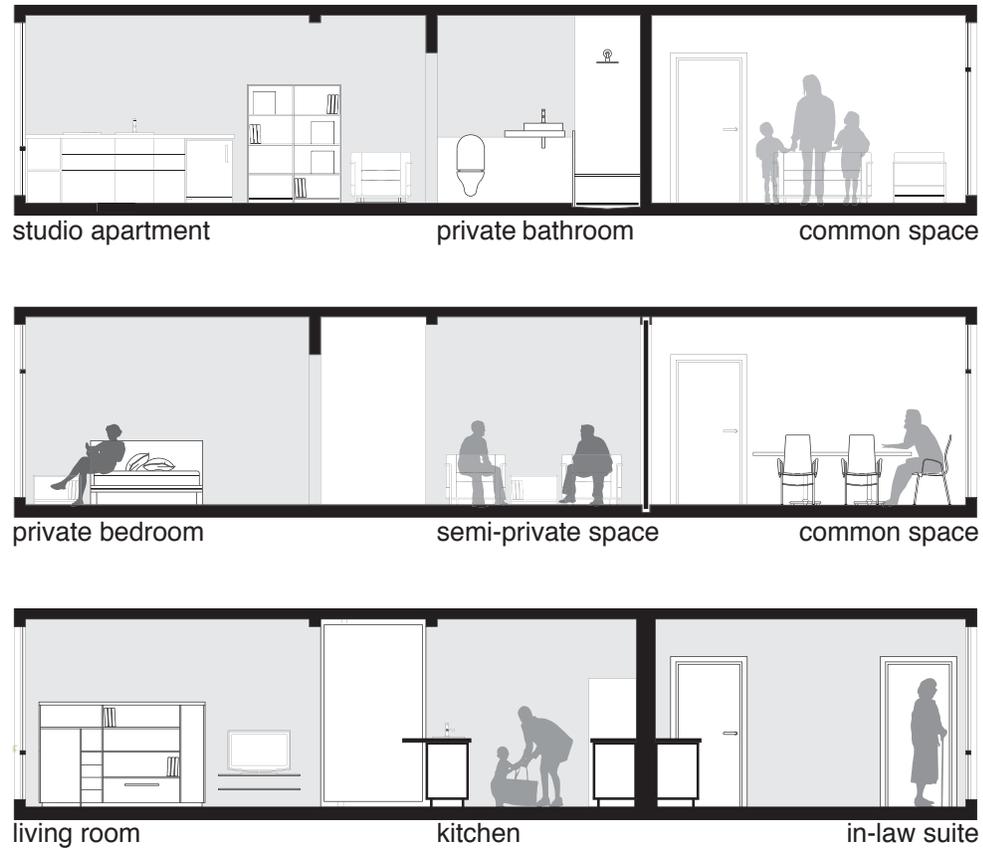
Figure 48: Partial cross section of a unit, demonstrating how a space can change from private, semi-private, to public inhabitation within the constraints of a unit.

Programme Variation Within a Unit

The flexibility of each unit allows every resident the freedom to adapt in relation to changing needs. Each unit uses a modular building grid with flexible interior infrastructure that allows for alterations to be made in response to the present and future building population. The units have the capability of containing kitchen, bathroom, and storage modules.

| private bedroom | storage | common space |
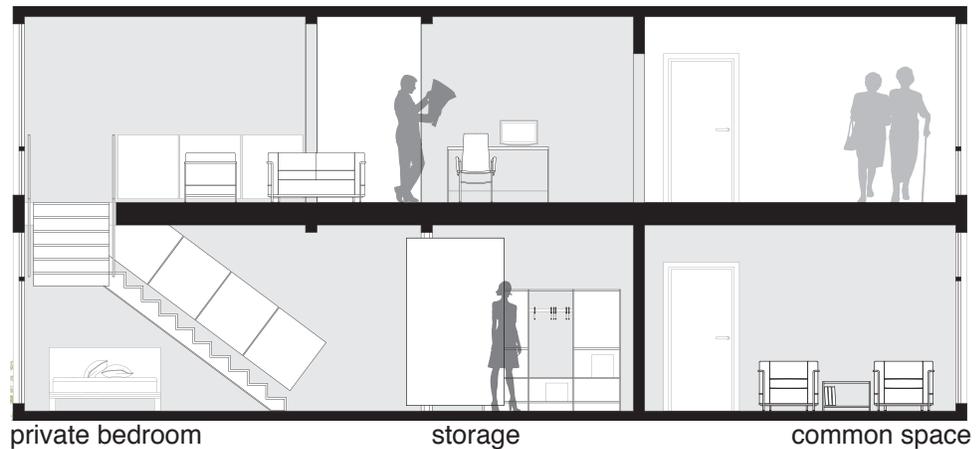
Figure 49: Vertical expansion of a studio apartment into a one bedroom.

Unit Variation

Each unit is able to expand and contract vertically and horizontally in order to fulfill family requirements. This is possible through the development of multi-purpose modular furniture units capable of facilitating bath, kitchen, and furniture requirements. Vertical expansion is possible through removable modules in the floor assembly that can facilitate the addition of a stair to the adjoining unit.

There are a variety of units. The smallest is a single room with a bathroom, intended for a single elderly resident, a young student, or perhaps an emerging professional. The next larger size is a small one bedroom apartment, including a private bedroom and bathroom, that is intended for a young couple without children, or an elderly couple who has recently downsized their living arrangements. The principal apartments are arranged in order to create an in-law suite that is linked to the principal unit with the possibility of being independent and ranging in functional-

ity from a spare room, home office, or an in-law suite for immediate or extended family, which includes a private bathroom and is capable of installing a kitchen module. The in-law apartment is capable of having an entrance independent of the principal unit if it is used as a rentable unit. All the apartments can expand horizontally up to a maximum of four bedrooms and three bathrooms, and can also add space vertically. That same space can accommodate four independent rooms with private bathrooms, wrapped in a framework of interstitial spaces that vary in privacy from a communal kitchen and living room to intimate spaces for quiet conversation.

FAMILY IN TRANSITION
350 + 1600 + 370 - FT 2

**LARGE FAMILY**
1600 + 750 - FT 2

WIDOW
350 - FT 2

Figure 50: Partial upper floor plan, demonstrating how a single unit can grow and accommodate large families, allowing an extended family to exist within the same apartment while keeping their own space.

MARRIED + PARENT
850 + 350 - FT 2

YOUNG COUPLE
370 - FT 2

STUDENT
350 - FT 2

MARRIED + PARENT
850 + 350 - FT 2

MARRIED
750 - FT 2

MARRIED + PARENT
850 + 370 - FT 2

MARRIED + CHILD
750 + 370 - FT 2
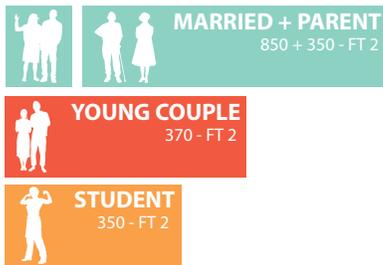
Figure 51: Partial upper floor plan, accommodating a new couple, a family, a retired couple, and an elderly person with a live-in caregiver.

YOUNG FAMILY 1200 - FT 2
YOUNG ADULT 370 - FT 2
WIDOW 350 - FT 2

COUPLE 350 - FT 2
SINGLE 350 - FT 2
WIDOW 370 - FT 2
SEPARATED 370 - FT 2

COUPLE 350 - FT 2
SINGLE 170 - FT 2
**SINGLE** 170 - FT 2
SINGLE 170 - FT 2
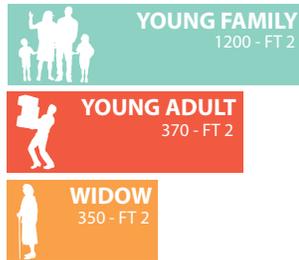
Figure 52: Partial upper floor plan, accommodating an elderly person with a live-in caregiver and a palliative care facility, where residents have a private room in addition to communal facilities.

CHAPTER 3: CONCLUSION

This thesis draws attention to the issues and barriers facing the elderly's ability to age in place, and how they will continue to be a topic of concern as the senior population in Canada continues to grow.

This thesis proposes a set of principles that forms a framework for integrating the elderly into a neighborhood by establishing formal and informal networks of support. This is accomplished through an on-site supportive programme that maximizes independence, counteracts social isolation and segregation, and promotes mental and physical well-being that allows the elderly to comfortably age in place.

The principles include: accessibility and equality of use, flexibility and simplicity of unit adaptation, type and variation of space and programme, availability and access to multiple networks of support, importance of the site in relation to local amenities, and the provision of community facilities to create a stronger network of informal social support.

Accessibility and proximity to the city centre and essential amenities is important in order to provide what is needed on a daily basis, such as pharmacists, physicians, grocery stores, and access to cultural events and entertainment.

Through an analysis of the current and proposed site conditions, the supporting programme has to be created in close collaboration with the surrounding community in order to incorporate community facili-

ties that create an awareness and sense of belonging and integration of the elderly within a community.

Because this thesis is dealing with a diverse population, integration of universal access throughout the building is essential. All the units, as well as the supporting spaces, are barrier-free. A resident can confidently age in place with a sense of comfort and security, knowing that the unit can accommodate changing needs as they age and require assistance, either through the accommodation of a live-in caregiver or the addition of assistive aids such as a wheelchair, walker, or hospital bed.

The supporting programme demonstrates the importance of interstitial space throughout a building that facilitates appropriate degrees of privacy and interaction. A variation in space gives residents the ability to inhabit different spaces in relation to personal preferences concerning the frequency of interaction and exposure between generations.

It is also important to recognize the limitations of the on-site facilities in relation to the intensity of care provided for the elderly. As the elderly reach a point where the amount of daily assistance extends past the capacity of the services offered on-site, the proximity to the hospital allows for on-call doctors and visiting practitioners to extend the range of medical services available. Although intensive care is beyond the capabilities of on-site facilities and staff, patient recovery from a hospital procedure within the home environment is encouraged, in order to promote a

positive atmosphere of health and well-being. This is well within the scope of the assisted living facility, on-site staff, and neighbourly assistance.

The establishment of guiding principles allows for future development with the intent that this new housing type can be replicated in other neighborhoods. This increases the opportunities for life-long learning, sharing of knowledge and experience, and facilitating meaningful activity for future generations. This thesis provides insight into the issues and challenges facing the elderly and presents a basis for future advancement in the area of aging in place.

APPENDIX: ANALYSIS OF EXISTING LIVING ARRANGEMENTS

The realization of the thesis project required the mapping of different old age facilities in order to understand and create a building structure capable of accommodating a variety of configurations, depending on the building population. It was also important to assess what programmatic elements, staff-to-patient ratios, schedules, and medical facilities were being provided in relation to each building type.

This is a small selection of projects concerning the current state of assisted living, nursing homes, and serviced apartments. It provides a commentary concerning their positive and negative aspects in relation to programme, management, unit type, and supporting facilities.

STADTCARRE:
ASSISTED LIVING & APARTMENTS
Bad Rappenau, Germany. 2007.

ASIRarchitekten, Assisted living facility. From Fredder-sen, *Living for the Elderly: A Design Manual.*

Figure 53: Site in context

Figure 54: First floor
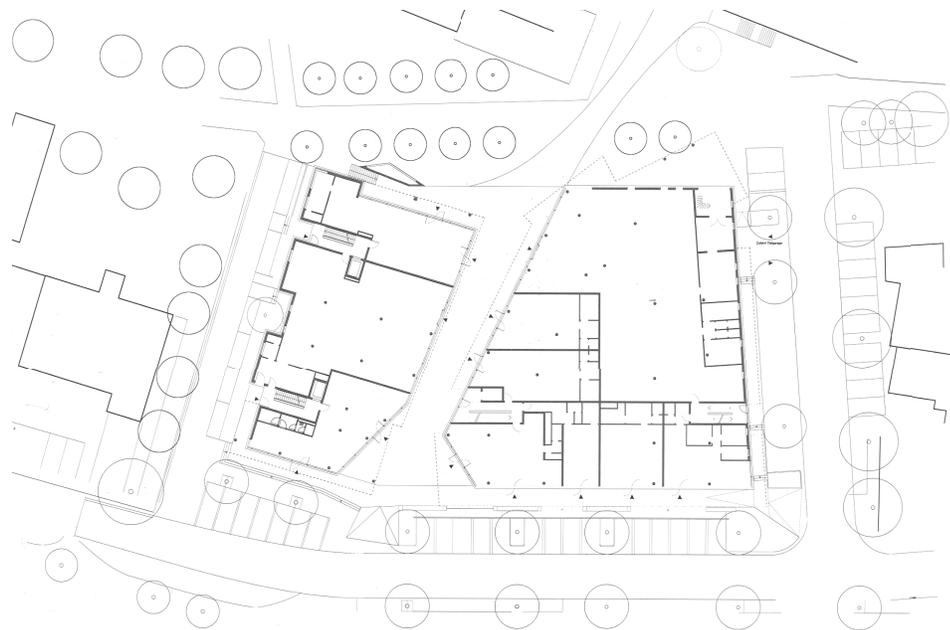
Figure 55: Ground floor

Location
• close to local shopping facilities
• immediate neighborhood is existing urban fabric

Building layout
• single loaded corridor
• wrapped around a covered courtyard
• mix of public and private programme
• public amenities located on main storey
• private apartments located above
• assisted living apartments for elderly located above

Room layout
• independent private apartments separated from the main building, which is occupied by the assisted living arranged around the covered courtyard

Number and type of dwellings
• 36 assisted living apartments
• 15 apartments suitable for the elderly

Programme
Care assistance is provided by a social care centre in the area, which has an office, kitchen, and therapy pool on site. Communal space on main floor is used for the residents to gather, and serves as a rentable conference space.
• assisted living
• dining hall and kitchen
• communal rooms
• recreational rooms

Comments
Since the courtyard is lifted off the ground level, it becomes more of a private space that is mostly used by the assisted living residents. This allows for a varied amount of integration and interaction that is decided by the assisted living residents in the independent apartments. The apartments are also barrier-free, for comfort and flexibility in moving between the two types of living arrangements.

COMPETENCE CENTRE:
ASSISTED & NURSING
Nuremberg, Germany. 2006.

Feddersenarchitekten, Plan of Competence Centre for People with Dementia. From Freddersen, *Living for the Elderly: A Design Manual.*
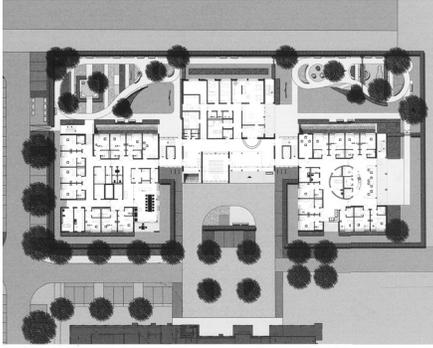
Figure 56: Site in context
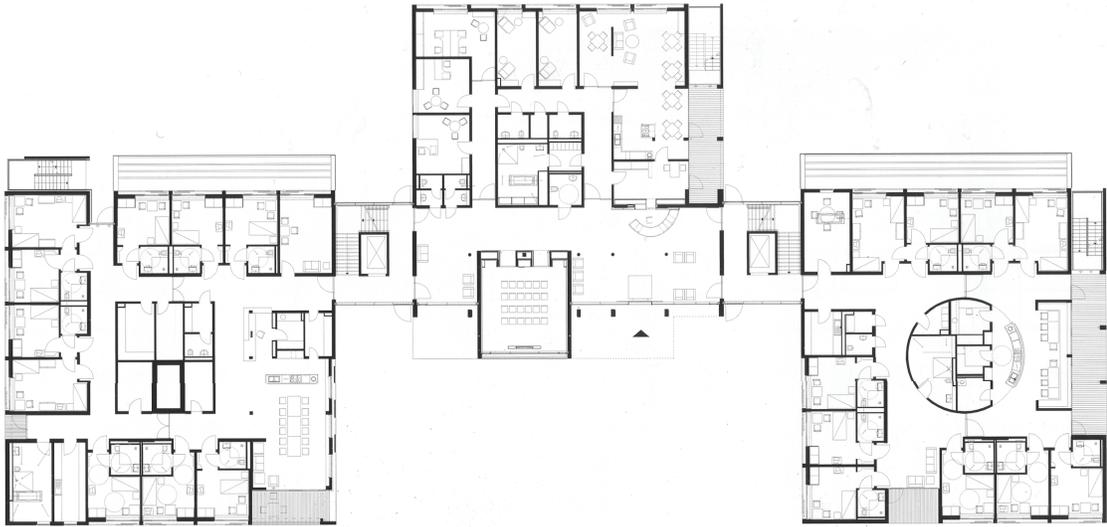
Figure 57: First floor
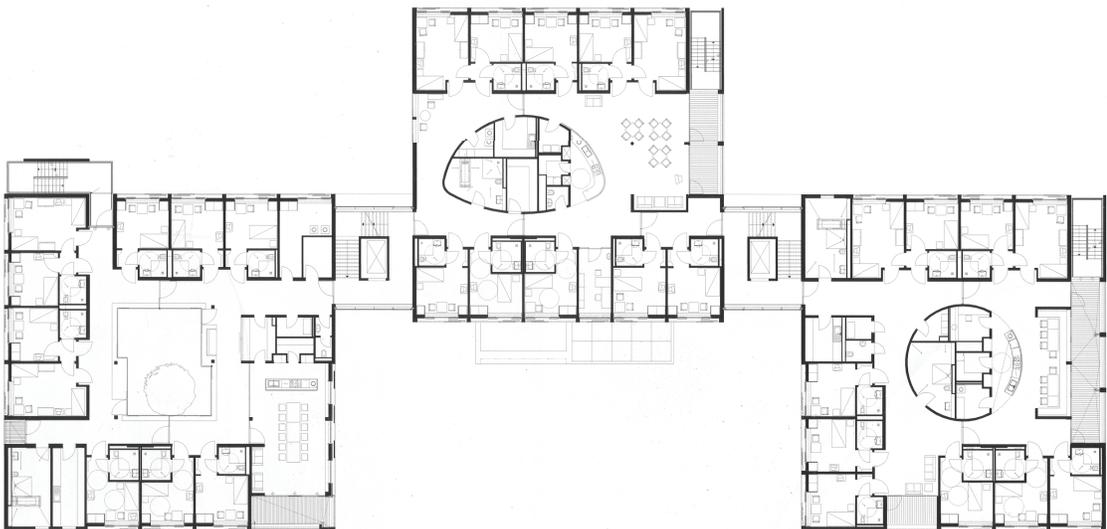
Figure 58: Ground floor

Location
• developed urban fabric
• immediate neighborhood has additional support facilities
• five-storey assisted living

Building Layout
• rooms arranged around periphery
• three buildings connected by communal area
• arrangement of the buildings creates smaller outdoor courtyards
• rooms create central indoor area that denotes a public communal function
• each floor consists of eight rooms that are organized around the communal facilities
• wide yet minimal corridors create informal gathering space

Room Layout
• individual residences
• bathroom
• bedroom

Number and Type of Dwelling
• 96 units in 8 households (including short-term care)
• 12 residents with day care

Programme
• communal kitchen/dining
• communal living room
• private gathering/sociable rooms
• chapel
• day care

Support
• specialized clinics for geriatric medicine, dental medicine, and natural medicine
• assisted bathroom/shower
• central administration located at main entrance

Comments
The facility is not just a care centre for people with dementia, it also is used as an educational facility for support and for friends and family. The smaller grouping of residents in a large complex allows for more intimate relations between residents and staff as well as a greater sense of belonging.
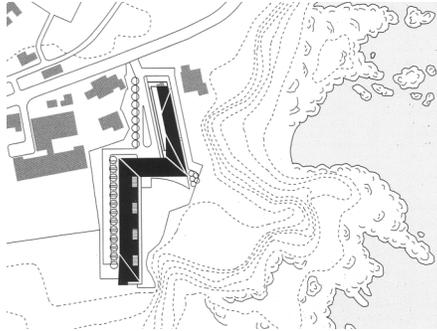
KENYUEN HOME FOR THE ELDERLY: ASSISTED & APARTMENTS
Wakayama, Japan. 2001.

Motoyasu Muramatsu, Plan of Home for the Elderly. From Freddersen, *Living for the Elderly: A Design Manual.*

Figure 59: Site in context
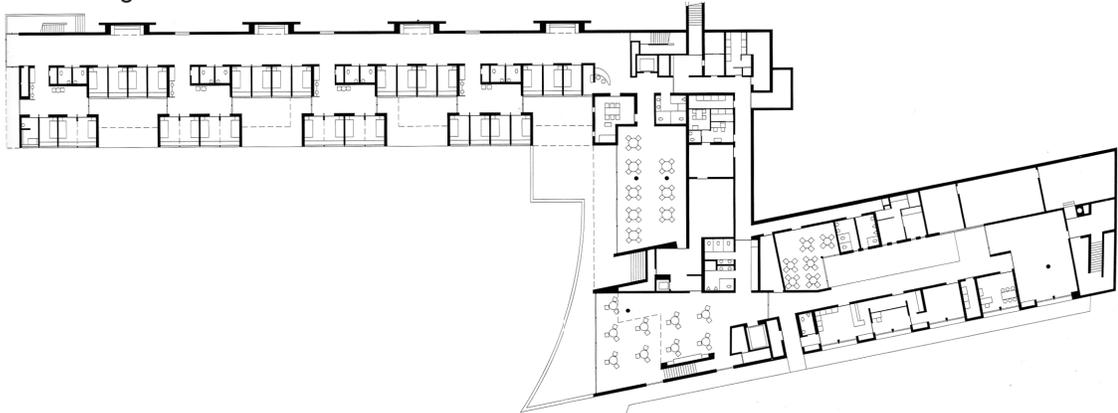
Figure 60: Floor variation
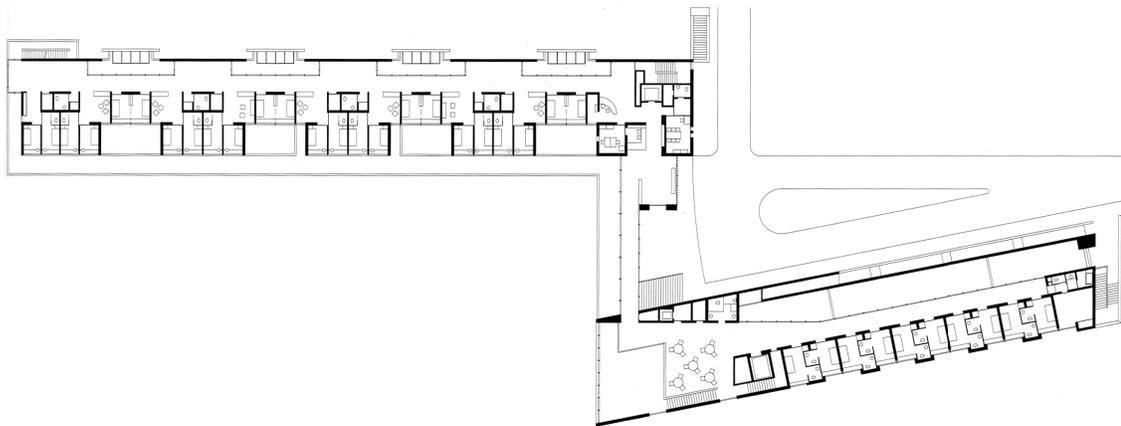
Figure 61: Floor variation
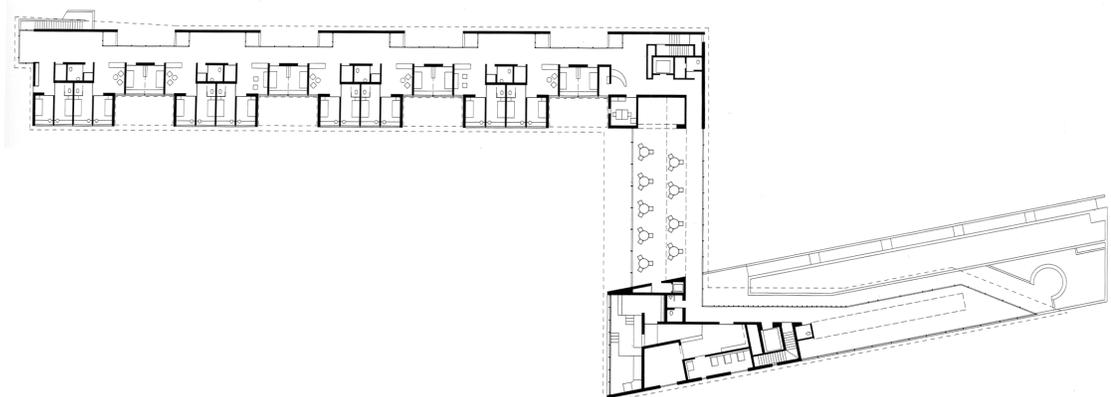
Figure 62: Ground floor

Location
• situated against the Wakayama Regional Park and the Pacific Ocean and within driving distance of the city.

Building Layout
• single loaded corridor divided into two wings
• communal area connect the two wings
• living corridor is used as circulation and is large enough for informal gathering space, as well as spaces for private reflection

Room Layout
• 75 care places; individual residences consist of a bedroom, with shared bathrooms
• 20 flats, shared public space
• individual bedroom and bathroom

Number and Type of Dwellings
• 20 flats
• 75 care places
• 62 single, 13 double

Programme
• communal outdoor terraces
• reception hall
• communal kitchen/dining
• public/private terraces

Support
• therapy facilities: gymnastic room, swimming pool, bathing room
• reception desks at intersection of living arrangements and communal areas
• administration located at main entrance

Comments
The creation of space with minimal restrictions allows different dimensions and degrees of intimacy and public openness, providing the opportunity for private retreat throughout the building. It has semi-public and public communal areas which allow residents to retain some independence.
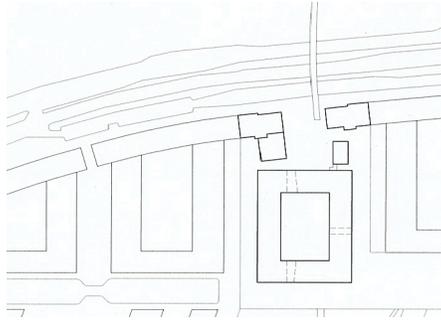
Figure 63: Site in Context

MULTI-GENERATIONAL HOUSING IN VIENNA
Vienna, Austria. 2001.

Franziska Ullmann and Peter Ebner, Plan of Multi-Generational Housing. From Schittich, *In Detail: Housing for People of all Ages.*


Figure 64: Residential floor
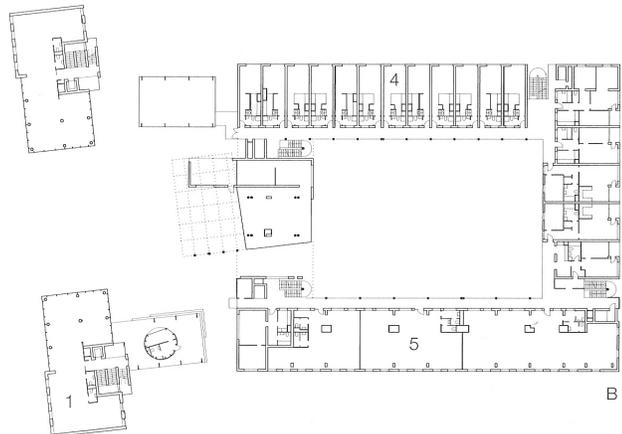
Figure 65: First floor
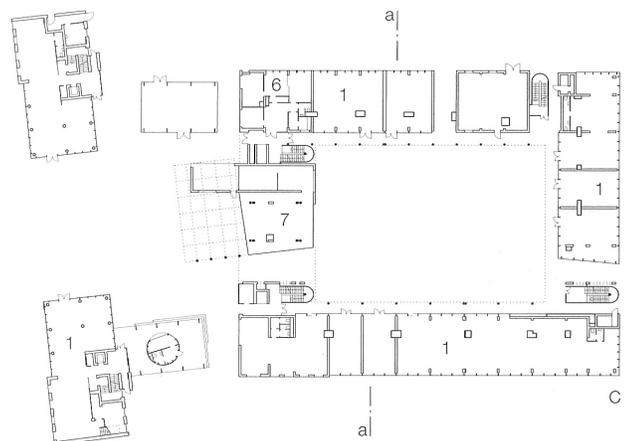
Figure 66: Ground floor

Location

The new building is situated in an already dense street frontage takes on the role of a district centre consisting of tighty-woven structure of shops, medical practices, and dwelling typologies for multiple generations

Building Layout

Public facilities are situated along the street edge. The progression from the street and public amenities of the office space, café, and shops creates an open public plaza, and shelters the residential units from the busy thoroughfare beyond. The commercial component provides residents with daily requirements, initiates interaction, and transitions the public plaza into a more private courtyard surrounded by the residential units. The medical and temporary apartments are on the same floor, while the family maisonettes are located on the upper floors

Number and Type of Dwelling

- 30 assisted living units
- 12 mini-lofts
- 6 maisonettes
- 26 two-room apartments
- 13 three-room apartments

Programme

- public shops
- cafe
- offices

Support

- dedicated medical practice and facilities

Comments

A combination of living arrangements creates various degrees and zones of interaction. The medical facilities allow different degrees of dependence upon the facilities located on site.

REFERENCES

Abbott, Pauline, Nancy Carman, Jack Carman, and Bob Scarfo, ed. 2009. *Re-creating Neighborhoods for Successful Aging*. Baltimore: Health Professions Press.

Ajrouch, J. Kristine, Hiroko Aklyama, and Toni C. Antonucci. 2007. Cohort Differences in Social Relations among the Elderly. In *New Dynamics in Old Age: Individual, Environmental, and Societal Perspectives*, ed. Hans-Werner Wahl, Clemens Tesch-Römer, and Andreas Hoff, 43-63. Amityville, NY: Baywood Publishing.

Blau, Zena Smith. 1973. *Old Age in a Changing Society*. New York: New Viewpoints.

Calgary Real Estate Board Co-operative Limited. Calgary Real Estate Districts (map). http://www.calgaryinvestmentrealty.com/calgary20district20map.htm

City of Calgary: Advisory Committee on Accessibility. 2010. *Access Design Standards*. Retrieved June 20, 2010. http://www.calgary.ca/docgallery/bu/dba/development/access_design_standards.pdf

City of Calgary. 2010. *Community Social Statistics*. Retrieved June 14, 2010. http://content.calgary.ca/CCA/City+Hall/Business+Units/Community+and+Neighbourhood+Services/Social+research+policy+and+resources/Community+profiles/Community+Profiles.htm

City and Community Plan Division. 2008. *Erlton Area Development Plan*. Retrieved July 10, 2010. http://www.calgary.ca/planing/landuse

Cohen, Uriel, and Kristen Day. 1993. *Contemporary Environments for People with Dementia*. Baltimore: The John Hopkins University Press.

Foy, Sandra, and Marlys Mitchell. 1990. Factors Contributing to Learned Helplessness in the Institutionalized Aged: A Literature Review. *Physical and Occupational Therapy in Geriatrics* 9, no. 2: 1–23.

Fredderson, Eckhard, and Insa Ludtke. 2009. *Living for the Elderly: A Design Manual*. Berlin: Birkhauser.

Google Maps. Inner city neighborhoods, Calgary (map). http://maps.google.ca/maps

Hans-Werner Wahl, Clemens Tesch-Römer, and Andreas Hoff, ed. 2007. *New Dynamics in Old Age: Individual, Environmental, and Societal Perspectives*. Amityville, NY: Baywood Publishing

Hagestad, Gunhild O., and Jenny de Jong Gierveld. 2006. Perspectives on the Integration of Older Men and Women. *Research on Aging* 28: 627-637.

Hagestad, Gunhild O., and Peter Uhlenberg. 2006. Should We be Concerned about Age Segregation?: Some Theoretical and Empirical Explorations. *Research on Aging* 28: 638-653.

Health Canada, Interdepartmental Committee on Aging and Seniors Issues. 2002. *Canada's Aging Population*. Ottawa: Division of Aging and Seniors.

Huber, Andreas, ed. 2008. *New Approaches to Housing for the Second Half of Life*. Berlin: Birkhauser.

Laslett, Peter. 1991. *A Fresh Map of Life: Emergence of the Third Age*. London: George Weidenfeld and Nicolson Limited.

Maria de Lapuerta, Jose, ed. 2007. *Collective Housing: A Manual*. Madrid: ACTAR.

Public Works Canada. 1985. *Barrier Free Design: Access to and use of Buildings by Physically Disabled People*. Ottawa: Public Relations and Information Services.

Rubinstein, Robert L., Janet C. Kilbride, and Sharon Nagy. 1992. *Elders Living Alone: Frailty and the Perception of Choice*. New York: Aldine De Gruyter.

Schittich, Christian, ed. 2007. *In Detail: Housing for People of all Ages: Flexible, Unrestricted, Senior-friendly*. Berlin: Birkhauser.

Schwarz, Benyamin, and Ruth Brent, ed. 1999. *Aging, Autonomy, and Architecture: Advances in Assisted Living*. Baltimore: The John Hopkins University Press.

Skerly, Nada. 1971. Nursing Home (photograph). *The Aged in Sweden: Rich in Goods, Poor in Love*. http://aliciapatterson.org/APF001971/Skerly/Skerly04/Skerly04.html

Stafford, Philip B. 2009. *Elderburbia: Aging with a Sense of Place in America*. Santa Barbara, CA: ABC-CLIO.

Statistics Canada. 2010. *Estimates of population, by age group and sex for July 1: Canada, provinces and territories, annual (CANSIM Table 051-0001)*. Ottawa: Statistics Canada.

Valins, Martin. 1988. *Housing for Elderly People: A Guide for Architects, Interior Designers, and their Clients*. New York: Van Nostrand Reinhold Company.