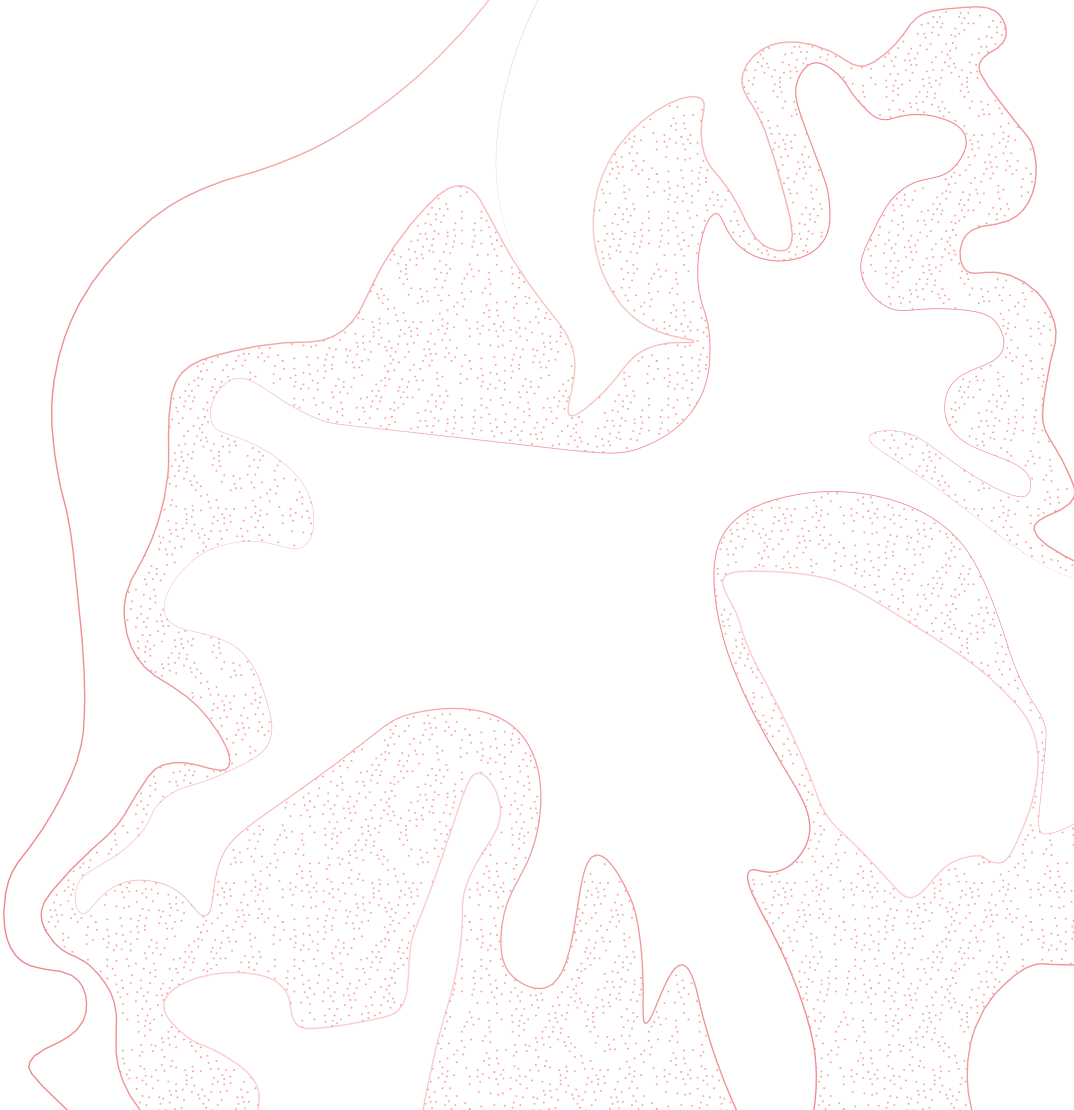
Master's Thesis by **Yeliz Erinc**

ENFOLDED IN CARE

Design Tools and Typologies for Dementia-Friendly Living



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Master's Thesis

Enfolded in Care: Design Tools and Typologies for Dementia-Friendly Living

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Abstract

The demographic shift towards an ageing population creates one of the most critical social and healthcare challenges of our time. Longer life expectancy presents a growing need for environments that can support the ageing process. This demographic situation is accompanied by a growing number of older adults with cognitive decline and dementia diagnosis. This creates a need to reconsider models of care and living to be more inclusive and community integrated in a supportive environment.

A significant portion of individuals with dementia are cared for by relatives at home. However, in the later stages of the condition, some eventually require transfer to long term care. Although recent models of residential care are designed to feel more home-like, a gap still exists between aging-in-place models and institutional care. The progression of dementia through its various stages that are prior to its late stage often extends over several years. During these years, it is important to continue supporting well-being. Older adults need innovative housing models that support healthy lifestyles and promote well-being, with the ultimate goal of delaying or avoiding to move into a care home.

This thesis, thus, aims to bridge the gap and explore how intermediate models of senior housing can be more dementia-friendly. The study focuses on how care can be reimagined through the lens of inclusivity and community support in senior housing designed for ageing-in-place.

In order to achieve this aim, the methodology is structured into different phases with the aim of forming a design toolkit that can act as guidelines for dementia-friendly design. These phases combine theoretical research, expert interviews, best-practice analysis, and study visits, which are synthesized into design tools in the form of design matrices. These tools then inform typological explorations that provide guidance on the design and planning of dementia-friendly and community-integrated housing models that support older adults through the progression of cognitive decline.

The results summarize a generative framework of experimental typology scenarios that implement parameters of different levels of staff presence, co-living and contextual conditions, along with some examples of dementia-friendly spatial organization of apartments.

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Introduction

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Problem Statement

In the context of the demographic shift that the world is experiencing, the population aged sixty and above is expected to increase even more each year. This rapid ageing of the population has brought common conditions experienced by older adults, such as dementia, into sharp focus as critical global public health challenges (World Health Organization, 2025).

Dementia is a progressive neurological disorder characterized by a decline in cognitive functions, such as memory, thinking, orientation, comprehension, and language; and it can be classified into various types of diseases (Brawley, 2006). It not only impacts the individuals who have it but also imposes significant physical, emotional, and economic burdens on caregivers, families, and the society. Not every patient has access to proper long-term care facilities and most of them continue living in their homes (World Health Organization, 2025). Innovative and sustainable solutions in various fields are needed as the economic burden of care is also expected to rise even more (Gauthier et al., 2022). It is becoming increasingly essential to develop dementia-friendly designs in all scales.

"Currently, over 55 million people worldwide live with dementia, and nearly 10 million new cases are diagnosed each year"

(World Health Organization, 2025).

Common public perception assumes that the older adults above eighty mostly reside in specialized residential care facilities, however more than half of this population continue living within the community (Brawley, 2006). In addition, around two thirds of individuals with dementia live at home. (Feddersen and Lüdtke, 2014) While there is a wide research for the optimized design of healthcare facilities for dementia, , there is limited understanding of the elements that enable older adults with dementia to successfully age in the community (Casola, 2024).

There is on-going research about housing models for the older adults that integrate private living environments with communal experiences. There is a need for further research for bridging the gaps between normal housing that people age in and long-term residential care homes, with a specific focus on dementia-friendly environments. Innovative living solutions for the ageing population should be considered, creating inclusive environments that take into account one of the most prevalent conditions occurring in the ageing population.

Without suitable spatial responses, this specific part of the population is risking early institutionalization, social isolation and reduced quality of life. This issue intersects widely with the principles of social sustainability. The main aim of social sustainability in design of buildings and urban spaces is to promote the social inclusion of the community while promoting well-being. The architecture shall integrate social, economical, cultural and health considerations to deliver long-term benefits (Ghisleni, 2023).

The problems tackled in this thesis align with several Sustainable Development Goals (SDGs) stated by the United Nations 2030 Agenda (United Nations, 2025). By addressing dementia-friendly senior housing scenarios, the thesis aims to contribute to:

- SDG 3 (Good Health and Well-Being) by supporting cognitive health, physical well-being, and emotional support through spatial environments that promote good living conditions.
- SDG 10 (Reduced Inequalities) by empowering the older adults and the cognitively impaired individuals by proposing inclusive housing alternatives.
- SDG 11 (Sustainable Cities and Communities) by researching typologies that enhance social inclusion and community integration for a vulnerable group enabling the built environment to adapt to demographic challenges.

Fig. 1 Sustainable development goals 3-10-11. Source: United Nations (2025)

Research Questions

Research Question

How can senior housing models be designed to enhance care, and community support through independent living while promoting cognitive health and overall well-being considering comfortable living conditions including individuals at various stages of dementia?

Sub-Questions

How can senior housing serve as a model for ageing in place with dementia while delaying the transition to long-term care?

Which design features support physical, psychological , social and cognitive well-being for seniors, including those with dementia?

What type of spatial scenarios can be used to guide the design of innovative dementia-friendly senior housing ?

Methodology

The methodology of this thesis is designed to create clear transitions from theoretical inputs, literature reviews and interviews, to mapping out practical strategies into a toolkit, and creating typology scenarios with the guide of the findings.

The theory part includes the literature reviews which is related to the conditions and needs of the older adults and also includes a more specific focus to dementia.

Followed with the practical part, a significant part of the method includes the comparative analysis of case studies and conducting study visits, followed by further literature studies with the aim of collecting design tools that reflect evidence-based design for dementia-friendly environments.

The toolkit is then translated into design matrices that act as guidelines for dementia and senior-friendly design of intermediate housing models for seniors.

All the previous phases are then resulting into some typology scenarios that are experimenting new living typologies, and are being tested out for meeting the needs of the target group.

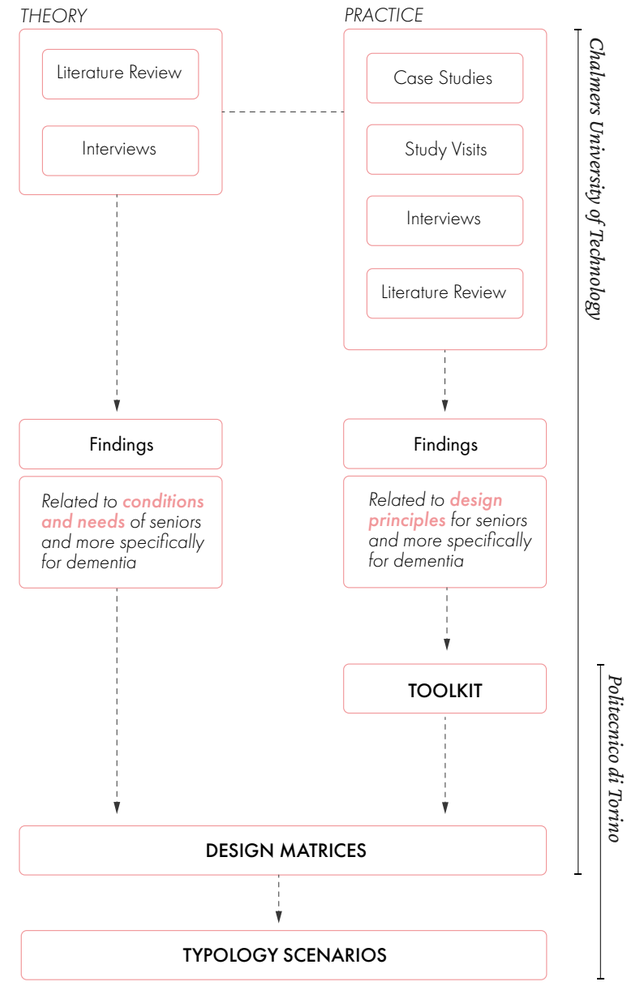


Fig. 2 Thesis methodology diagram. Source: Author

Thesis Structure

Following the methodology, the structure of the thesis is planned in order to make the findings more coherent.

The thesis consists of three parts that make up a sequence of phases:

Part I collects the conditions of the older adults and those with cognitive decline, and explores the key considerations to respond to the needs of the target group.

Part II creates a practical input with findings from case studies, study visits and interviews, with the addition of specific design tools that correspond to the key considerations that were established in the previous part.

Part III shows the typology scenarios that result from the main findings from previous parts.

The structure is designed to make the reading more clear, and is shown on the following page. Each chapter demonstrates results of the different phases.

This progressive arrangement makes explicit how each phase informs the design framework, allowing it to be adapted and applied to future design contexts.

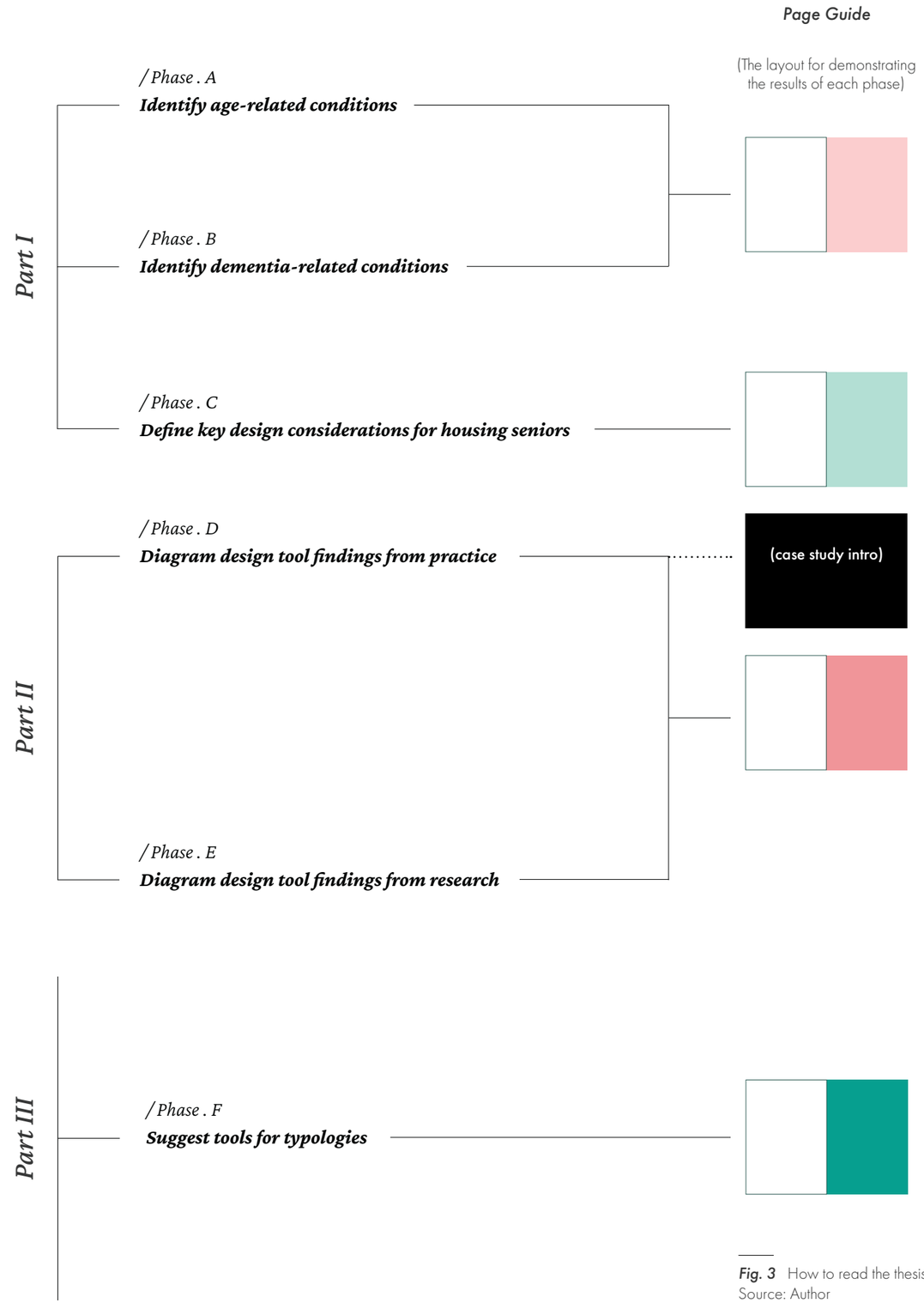


Fig. 3 How to read the thesis.
Source: Author

Theory

Part I

01

Ageing

/ Phase . A Identify age-related conditions

The chapter is the foundation of the theoretical input for understanding the characteristics of ageing. It is the source for informing design tools in response to analyzed conditions.

Fig. 4 Man and woman walking on road during daytime. Source: Photo by Micheile Henderson on Unsplash - re-elaboration of the author

1.1 Ageing Population and the Growing Need for Innovative Care for Older Adults

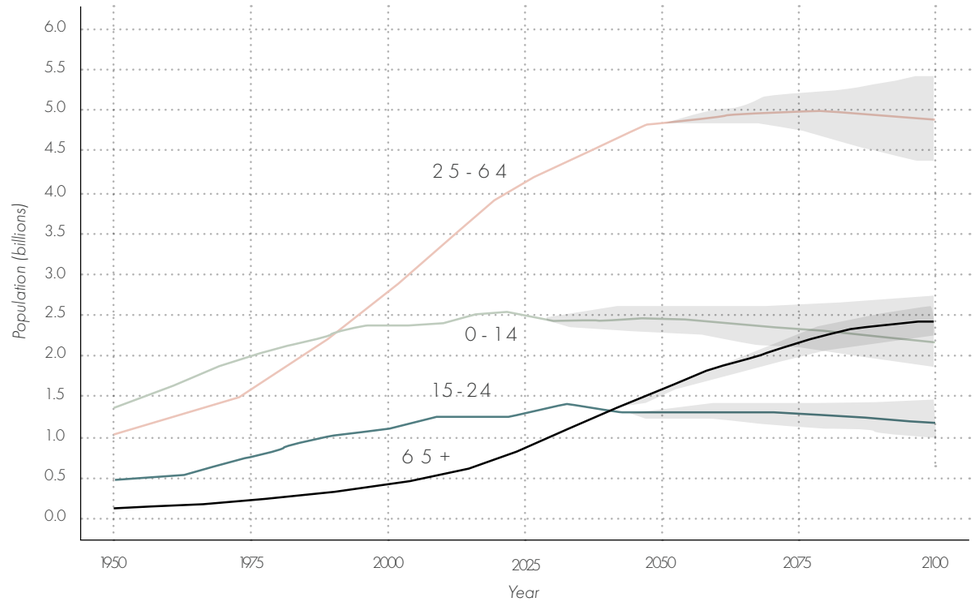


Fig. 5 Population by broad age groups.
Source: United Nations Population Division (2024) - re-elaboration of the author

1.1.1 Global Situation and Demographics

The expected change of population worldwide starting from the 1950s shows patterns of the seniors' population increasing at a significant rate ***(Fig.5)***. The number of those aged 65 and above is expected to surpass the number of those who are between 15 and 24, and later even exceed the number of those aged 0-14 by the end of the century.

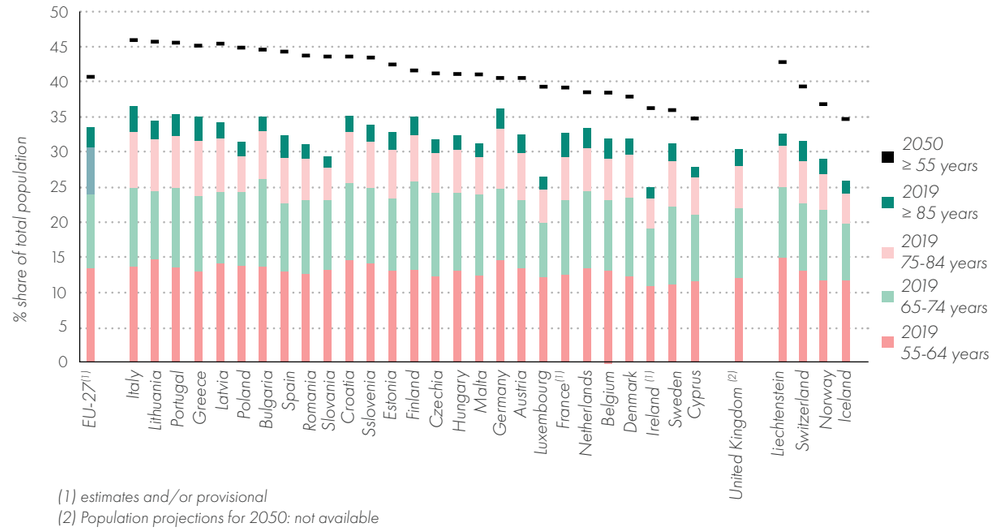
Influencing factors

There are many factors influencing this shift in the worldwide demographics. The increase in life expectancy and birth rates getting lower in some countries are considered amongst the main factors. Population ageing, which refers to the increasing proportion of older adults in the population, is not a slow or linear process. Instead, it is accelerating, and this trend will have significant social, economic, and policy implications worldwide (Lutz, Sanderson and Scherbov, 2008).

Situation in Europe

Additionaly, in Europe, similar patterns are following as the population of older adults is expected to be increasing over the years. The percentage distribution of population aged 55 years and above with data from 2019 and provisions for 2050 is demonstrated for the European countries ***(Fig.6)***.

Overall, in the European countries, the percentage of the older adults'



(1) estimates and/or provisional
(2) Population projections for 2050: not available

Fig. 6 People aged ≥55 years, by age class.
Source: *Eurostat (2020) - re-elaboration of the author*

population is expected to increase even more in the upcoming years by 2050. Comprehensive percentage for the EU-27 is expected as between 40 to 45 percent, whereas Italy is the country that is expected to have the highest ratio of numbers of older adults with a value between 45 and 50 percent. This situation highlights the need to ensure good health conditions in the environment considering the older adults' population, enabling people to live comfortably and maintain their well-being. Innovative senior housing and care is required as the environmental conditions need to adapt to this change in the population balance (World Health Organization, 2025).

1.1.2 Italian Context

As it was pointed out in the previous section, Italy is one of the countries that will see a significant increase in the number of older adults population in the upcoming years. Similarities to global trends for a population ageing can be observed. It is one of the countries in the world with a high percentage of older adults population. According to data from ISTAT, "Istituto Nazionale di Statistica", the current age distribution of the country is the following ***(Fig.7)***: 12.4 percent of the population is aged 0-14, 63.5 percent of the population is aged 15-64 years; and 24.0 percent is aged 65 years and up. The mean age of the country has risen to 46.4 years, and these demographics place Italy among the world leaders in demographic transition, coming immediately after Japan on the list and followed by countries like Portugal, Spain, Greece and Germany (ISTAT, 2024).

Main reasons in Italy

The main reasons for this demographic shift is the birth rates dropping down and overall life expectancy going higher. In Italy, according to the demographic indicators of the year 2023, the total birth rate is 1.20 which has decreased from 1.24 in 2022. The life expectancy at birth is 83.1 years

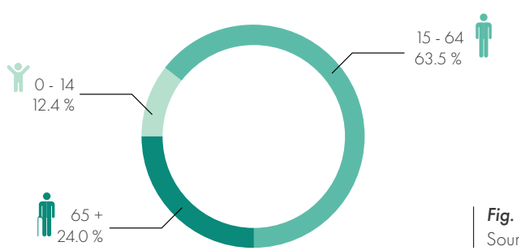


Fig. 7 Age distribution in Italy.
Source: ISTAT (2024) - re-elaboration of the author

which is adding up six months of additional life over 2022. The number of people living alone with age 75+ is also expected to increase in Italy with overall 4.1 million in 2043, which is an increase of 1.2 million when compared to the numbers in 2023. Living alone can affect the level of autonomy of the older adults, especially those that are above 75 years old. They are subject to specific needs and problems related to ageing.

As of the 2020-2021 data, with the exception due to the Covid-19 pandemic, the mortality rates show a decreasing pattern. The life expectancy at birth keeps increasing, as well as the mean age of the population with an increasing number of old inhabitants ***(Fig.8)***. The ratio of older adults' population increasing is also due to the low birth rates and lower number of children per woman compared to the previous years. The indicators are showing that the senior population is becoming more dominant, and necessary social and economic precautions need to be taken.

Change in family sizes & its impact on the senior population

These changes also foresee a reduction in the size of the families, because of the fall in the birth rates, meaning that there will be a big impact in the networks in family and relatives that can stay together with the older adults to help in the daily life chores. According to ISTAT (2018) 23.6 percent of people aged 65 living at home affirm that they have no one close to rely upon. Thus, the living conditions also need to consider the challenge of keeping the self-sufficiency of the older adults stable as long as possible even though they may experience a decrease in their autonomy as they get older.

	2010	2015	2018	2021	2023
Number of children per woman	**1.40**	**1.35**	**1.32**	**1.25**	**1.20**
Birth rate (per thousand inhabitants)	**9.2**	**8**	**-**	**7**	**6.4**
Mortality rate (per thousand inhabitants)	**9.7**	**10.7**	**10.5**	**12**	**11.2**
Life expectancy at birth (women-age)	**84.3**	**84.7**	**85.2**	**84.7**	**85.2**
Life expectancy at birth (men-age)	**79.1**	**80.1**	**80.8**	**80.1**	**81.1**
Life expectancy at birth (total-age)	**81.7**	**82.4**	**83**	**82.4**	**83.1**
Mean age of the population	**43.5**	**44.4**	**45.2**	**46.2**	**46.6**

Fig. 8 Demographic factors in Italy 2010-2023.
Source: ISTAT (2024) - re-elaboration of the author

1.2 Humans' Experience of Ageing

1.2.1 Definition of Ageing

Chronology vs. Experiences

Growing old can be viewed in different ways. It is not only about the number of years being spent alive. There are different perspectives into what growing old and ageing can mean (Morgan and Kunkel, 2016). It is important to consider the different meanings in order to understand the varying needs of the older adults.

The perspectives upon what growing old means are: chronological, which is the number of years counting from the birth; biological, which is caused by the cell changes affecting the functional capacity of the body organs; psychological, which is about the ongoing experiences and impressions of oneself; and finally social, which is related to changes in roles and positions during the life-span (Haak, 2006; Wijk, 2025). It is argued that although ageing may be commonly understood as growing older chronologically, as (Botwinick, 1978) is describing that what matters about defining ageing is not the chronological number, but it is the experiences and events that occur in the life-span. What is essential to understand the meaning of getting older is to take a look at the conditions, events and the environment in which humans age.

Challenging traditional understanding

Different categorizations for defining the phases are present in literature. Investigating how it is usually defined is useful to comprehend the implications of being a part of the older adults population. For instance, Höpflinger (2008) discusses the different phases that challenge the traditional social understanding of categorizing the working population as "young" and pensioners as "old." Instead, he presents this division in the following way:

Late adulthood (50+): It is the phase of life that people between the ages of 50 and 65 often face significant life transitions. This stage of life is marked by reflection, as earlier life choices have left lasting impacts, and individuals are confronted with emotional, social, and identity-related changes that shape their later years. They are still autonomous to lead their life routines.

Healthy retirement age: As the life expectancy increases, more people remain healthy after retirement. They do not have constraints from their early life and have active "late freedom".

Advanced age with increased fragility: Even if this group has had a healthy lifestyle, it is the phase that some limitations are inevitable. It is possible to be independent in the household but some limitations may be encountered.

Old age requiring assistance and the end of life: The risk of having to have intensive care increases. They are at risk of becoming more dependent and losing autonomy.

According to Wijk (2025) the traditional convention of considering those aged 65 and above as old is outdated now because of lifestyles that have changed a lot in the past fifty years. This is also the impact for increasing life expectancy. Now, 65 and above shall be considered as a middle range and not "old" (Wijk, 2025).

The research improvements are aiming at better defining the various aspects of successful ageing, which encompass the prevention of illness and impairment, active participation in life, and maintaining robust cognitive and physical capabilities (Rowe and Kahn, 1997). In order to point out clearly how successful ageing can be achieved through the design of the built environment, the investigations of common conditions of the older adults group are carried out following the perspectives for physical, psychological and social dimensions to be analyzed in order to understand the living conditions of people as they age.

"Age is only a way of marking human events and experiences; these events and experiences are what matters, not time itself"

(Morgan and Kunkel, 2016, p. 2).

1.2.2 Physical Dimensions of Ageing

As people age biologically, physical changes in the body occur depending on various factors. In order to provide comfortable living conditions for the ageing population, the physical challenges that this group is at risk of experiencing need to be reviewed.

As ageing is not a process that happens uniformly in every circumstance, the experience of change in physical capabilities may differ, too. The conditions usually vary between the individuals. However, it is certain that the most extreme conditions need to be taken into consideration in order to provide comfort and well-being for the older adults.

There is an old saying that states "feeling old is a state of mind". That is to say what defines the age is about how people feel it, and can be influenced by lifestyles. According to Brawley (2006) experts say that around 30 percent of physical ageing can be caused by genes and the rest is related to how humans choose to live their lives. Thus, the physical conditions that will be mentioned are the most common ones among the older adults, however it does not mean that every older adults is going to experience them.

Fig. 9 Active older adult.
Source: Hanna,n.d, p.245, cited in Morgan and Kunkel (2016)

Fig. 10 Frail older adult.
Source: Hanna,n.d, p.245, cited in Morgan and Kunkel (2016)

Functional limitation is one of the dominant physical dimensions of ageing. It is described as the measure of an older person's ability to perform daily activities without assistance, and could be influenced by any type of disability that could be present (Morgan and Kunkel, 2016). Notably, even without the presence of a specific disability, older people have significant loss of muscle strength causing frailty, limits of mobility and the risk of falling. Moreover, one of the most frequent types of accidents for those aged above 65 is falls (Bowling and Grant, 1992, cited in Woodrow, 2002).

Mobility restrictions

Another common condition is related to chronic diseases. Common health problems among the older adults population include arthritis, which can be described simply as "a group of inflammatory or degenerative diseases that makes joints stiff, swollen and chronically painful (Lueckenotte, 2000, cited in Woodrow, 2002)". It is incorporated with the functional limitations discussed previously. Some other common chronic conditions include cancer, diabetes and heart diseases. They are likely to arise as significant health problems that are influencing the lifestyles, however it is also discussed that they are the most preventable depending on exercise, diet and medication (Brawley, 2006). Dementia types such as Alzheimer's disease are seen as significant chronic conditions. The detailed aspects related to this matter is going to be discussed in the next chapter related to dementia, specifically.

Chronic diseases

Sensory functions

Considering various ways in which biological function changes within age is important in order to have an understanding of the challenges that the older adults may encounter in their daily lives. A notable aspect to mention among the studies is the changes in sensory function. A healthy sensory function consists of three steps: receiving, transmitting, and interpreting signals. Receptors pick up the signals, such as the taste of something, and the signals transmitted to the brain are interpreted. Sensory issues occur when any one of the phases are affected. The disruption is due to the declining nerve function and brain activity, which may affect sensory health (Woodrow, 2002).

Among the sensory disruptions, there are visual impairments or the complete loss of visual function. This matter significantly impacts the lifestyles of old people because they lose the essential ability to sense things, following signs, moving around and safety (Woodrow, 2002). Also, sensory problems lead to some level of decrease in the participation of daily life, and to social activities that provide mental well-being (Brawley, 2006)

Wijk (2025) mentioned that everyone is going to have a yellowing lens as they get older chronologically and it is almost inevitable and there is nothing to do to change it. It is limiting the ability to distinguish color nuances. For instance, it becomes very difficult to distinguish close colors like blue and green (Wijk, 2025). Additionally, the hearing sense may be affected by the degeneration of hearing with particular loss of higher pitches. A significant amount of people aged 60-70 have hearing impairments (Woodrow, 2002). These conditions impact daily life as they present limitations for independence and autonomy.

Fig. 11 Yellowing of eye lens with age.
Source: Sekuler (2003)

“ I think everybody is getting a yellowing lens and there isn’t anything you can do about it. So, what you have to do is to make the environment more supportive ”

(Wijk, 2025).

1.2.2 Psychological Dimensions of Ageing

As people get older, various factors can influence the psychological changes that can occur. As the changes related to ageing differ depending on the individual considering the biological and physical aspects, the same patterns are present when considering the psychological conditions. The general patterns that describe the conditions that may occur in psychological dimensions are related to emotional adjustments, mental functioning and the sense of self (Morgan and Kunkel, 2016). Despite the common occurrence of mental health issues among the older adults population, it cannot be considered as a normal part of ageing, and its treatment is possible in different ways, and it can help cope with other diseases in an effective way (Brawley, 2006). Mental and cognitive health as people get older biologically are crucial dimensions to be evaluated for succesful and healthy ageing.

Throughout their lives people accumulate experiences that shape their identity so their self perception as they get older may be influenced by looking back at the memories and life experiences. In this conflicting situation, they need to have choices presented. The possibility to withdraw or stay active is a preference and it should be provided (Wijk, 2025).

Depressive mood

Happiness in old age depends on many factors, but there is a risk that as getting older depressive feelings may take over. It is one one of the most common psychological problems experienced by the older adults. Although not everyone has to have it, it impacts the well-being and the quality of life of the individuals as it may also cause some physical complaints related to bowel problems, insomnia, or appetite. Thus, it is an important issue to be considered for the so-called “successful” ageing (Woodrow, 2002). Furthermore, there is a risk of increasing the feeling of anxiety which may be related to the changes in life conditions, the fear of losing someone and grief (World Health Organization, 2015).

Cognitive decline

The decline in cognitive functioning has physiological symptoms, but it is considered within the psychological dimensions. Just as significant loss of physical function is not inevitable or universal, so too memory and other cognitive skills may remain stable or even improve with age depending on many factors (Morgan and Kunkel, 2016). Wijk (2025) stated that everyone is going to experience cognitive decline as they age, but it is not pathological, instead it is a normal consequence of ageing. It becomes a disease like dementia if it is pathological (Wijk, 2025). The cognitive

functions are likely to decline at different rates with age. It is influenced by factors such as socioeconomic status, lifestyle and chronic diseases (World Health Organization, 2015).

Considering some psychological changes that may occur with ageing, it is important to consider environments that support the mental health and well-being of the older adults. It is a major consideration to make their lives comfortable.

1.2.3 Social Dimensions of Ageing

The social dimensions of ageing are regarding the role of the older adults in the society and within their close surroundings. It is the way they are viewed by others and about the way that they interact with society (Woodrow, 2002).

The issue when the older adults are divided from other groups is usually based on the view that old age is considered as a special situation in later life (Huber, 2008; Duggan et al., 2008). In addition, considering the pension situation and the stereotypical view that old people are not among the working society, and also take less part in activities causes social isolation (Huber, 2008). The condition of being in social isolation is harmful as it shortens lives and reduces the quality of life with mental and physical outcomes (World Health Organization , 2021).

Social isolation

In addition, as the older adults population loses connections with the surrounding family, friends, neighbors, the older adults population tends to get lonely. This issue has an impact on the feeling of loneliness (Woodrow, 2002). It is more likely to experience lonely lives as family and friends move away or pass away. The loneliness impacts the gradual increase of psychological conditions and accelerate ageing within the stressful conditions that may occur (Brawley, 2006). These conditions are influencing many other factors as demonstrated by World Health Organization (2021) (Fig. 12). Social isolation and loneliness can eventually affect mortality, health conditions, behavioural situations and intrinsic capacity. All of these factors influence economic costs of healthcare and long-term care.

Loneliness

As long as the older adults are provided with appropriate living conditions in their physical environment, this can have a positive impact on health outcomes, the participation in the society with more activities, later life occupations and civic engagement (Brawley, 2006).

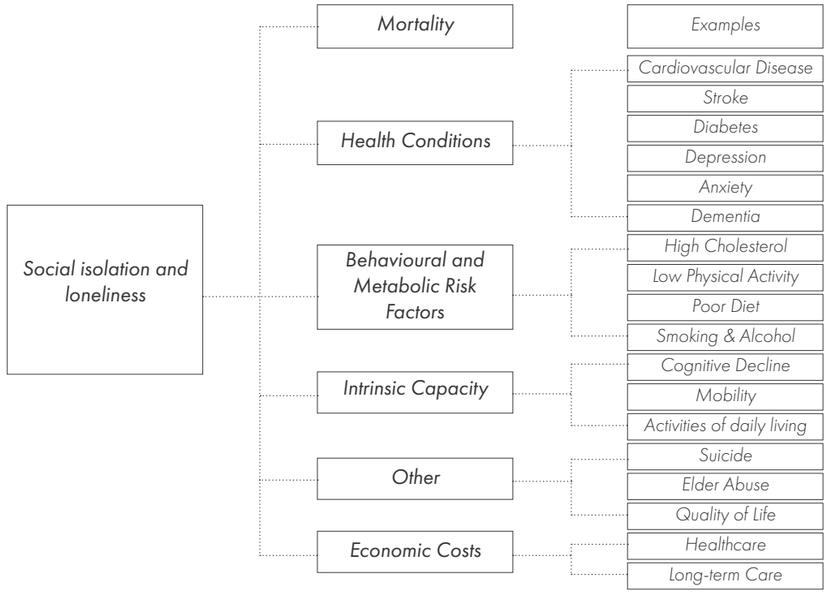


Fig. 12 Consequences of social isolation and loneliness. Source: World Health Organization (2021a, p.6) - re-elaboration of the author

/ Phase . A

Identify age-related conditions

In examining the different dimensions of ageing, this phase identified the conditions prevalent among the older adults that encompass physical, psychological and social aspects that may affect older adults.

It is important to note that none of these conditions are inevitable consequences of being an older adult. However, design considerations for housing the older adults need to consider all potential risks in order to provide the well being of a broad range of users within the target group depending on different levels of autonomy.

The collection of the conditions guides the research for design principles related to mobility issues, mental health and the role of the target group in the community context.

The conditions are interdependent among each other. For instance, limited mobility may increase social isolation, and cognitive decline may influence further sensory impairments.

Therefore, the design framework must anticipate these interactions, and adapt to needs by increasing overall quality of life.

The specific condition of cognitive decline is considered specifically in this thesis as it is a global health issue that is increasingly prevalent among the ageing population.

Next phase takes the step to go further into cognitive decline and establish dementia-related conditions as foundation for design framework.

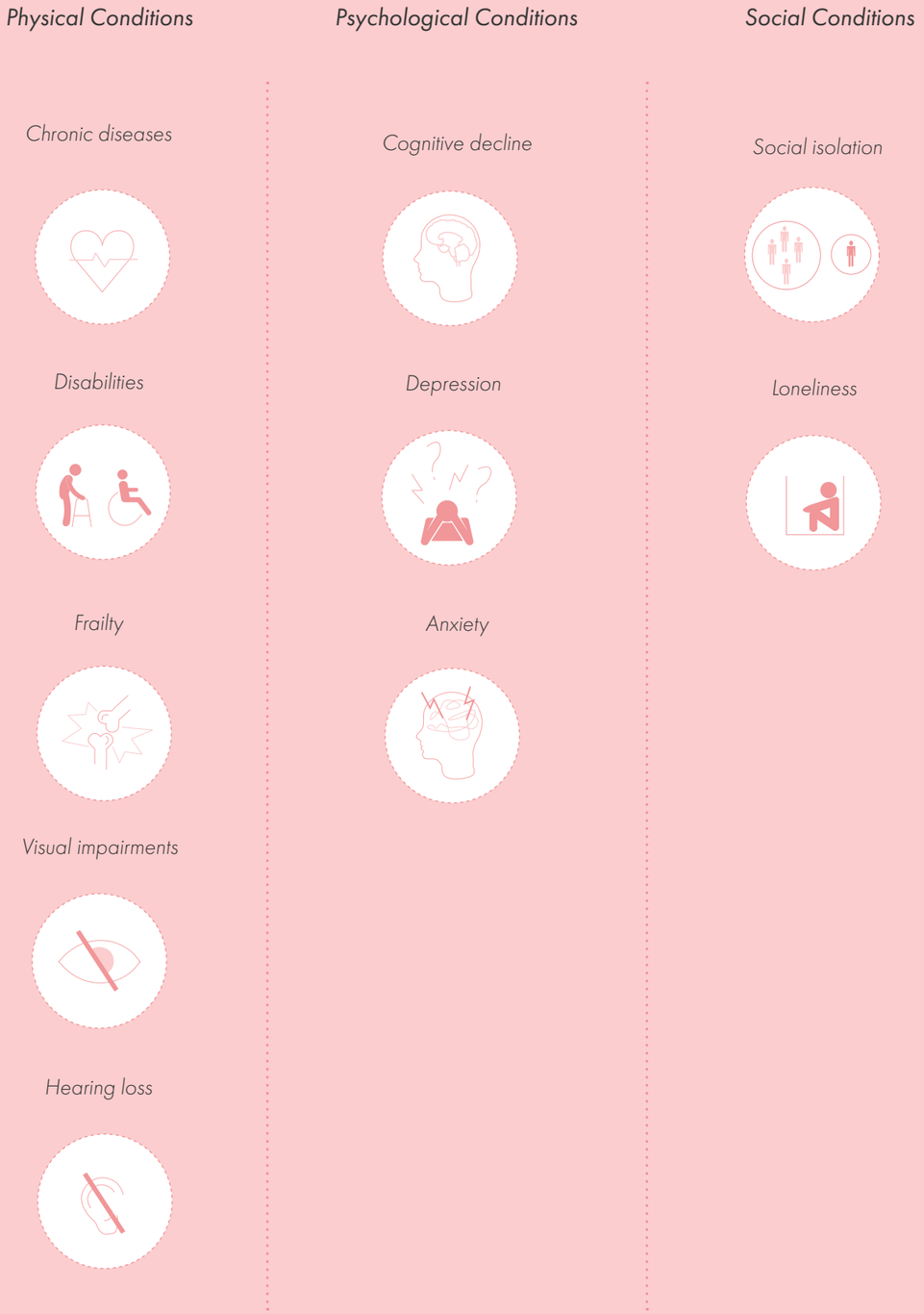


Fig. 13 Diagrams of age-related conditions. Source: Author

02

Dementia

/ Phase . B Identify dementia-related conditions

The chapter is the foundation of the theoretical input into the characteristics of dementia. It is the source for informing design tools in response to analyzed conditions.

Fig. 14 Woman sitting on wheelchair. Source: Photo by Steven HWG on Unsplash - re-elaboration of the author

2.1 Dementia as a Global Health Issue

As the global population is facing an acceleration in ageing, the issues related to health conditions are becoming more prominent, too. One of the negative impacts of the population ageing is the rising number of people with dementia (World Health Organization, 2021b). It was discussed previously that the older adults are at the risk of having cognitive decline, and it can reach various stages. According to the World Health Organization (2025) , in 2021, 50 million people worldwide has had dementia. The total number is expected to reach 152 million in 2050 ***(Fig.15)***.

Dementia statistics rise

Every year, there are approximately 9 million new cases. In Italy specifically, Alzheimer's disease and other types of dementia are the 4th top cause of deaths for women and 6th cause of deaths in men according to data from World Health Organization (2021b). One of the burdens of this public health issue is related to costs of healthcare (World Health Organization, 2012).

Awareness & misconceptions

There are studies for increasing awareness around becoming more dementia friendly on all levels, however the reality is that usually eighty percent of the public still thinks that it is a normal consequence of ageing. This opinion includes even 65 percent of healthcare professionals, too (Gauthier et al., 2024).

Opportunities for prevention

Although dementia is considered as a serious condition in its late stages, the number of people who are not diagnosed, yet, but show early signs are expected to accelerate as well with the growing older adults population. This situation shall encourage giving particular importance to those years spent before reaching the severe stages. It is stated that although the progression of the condition is uncertain and is most likely accompanied by other age-related health conditions, there is a significant number of people with cognitive decline that continue to experience relatively good physical health (Duggan et al., 2008). Wijk (2025) also mentioned that although it is almost inevitable if the person is going to have dementia because that depends on many factors during the life course of the person, it is possible to consider the years before its late stage, and to think about how to prevent the progression to severe conditions. Thus, it is important to establish a more dementia-friendly society and environment to support those people as much as possible for spending their lives focused on well-being and support.

For this reason, the following section focuses on understanding the condition of cognitive decline and its diagnosis as dementia, and the impact on the lifestyles of those who are affected by it.

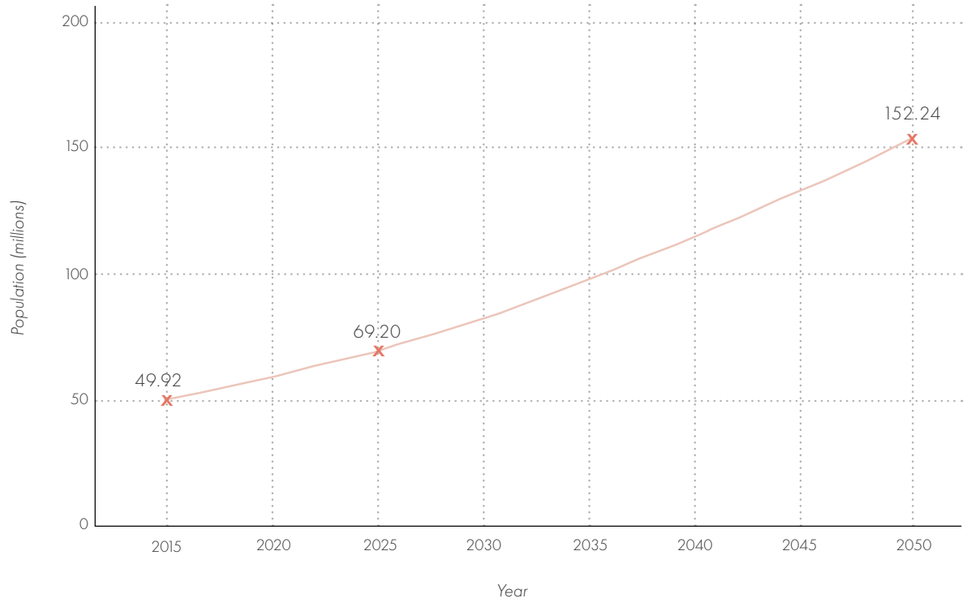


Fig. 15 Worldwide numbers of people with dementia. Source: Guerchet, Prince and Prina (2020) - re-elaboration of the author

2.2 *Understanding Cognitive Decline*

2.2.1 *What is dementia?*

Dementia is defined as a progressive neurological condition that affects memory, behaviours, lifestyles and emotions (Gauthier et al., 2024). As Wijk (2025) mentioned, everyone is going to experience cognitive decline as they get older. However, that is the normal consequence of ageing. Dementia disease differs from that situation as it is a pathological cognitive decline (Wijk, 2025). This pathological condition is one of the most common causes that the older adults population needs special care and gradually becomes dependent on others as it progresses to late stages (Gauthier et al., 2024).

Dementia is not a disease itself, but it encompasses a collection of symptoms that accompany certain diseases that show long term failures in brain function (Grealy, McMullen and Grealy, 2005). Alzheimer's disease or vascular dementia is the most common cause of it which will be defined more in detail in the section related to the different types of dementia.

Biological changes

As humans age biologically, the nerve cells in the brain start to be lost at a slow rate (Tsekleves and Keady, 2021). However, when it comes to dementia, many neurons stop functioning, lose connection with others and die. Due to the impact of an undetermined cause, protein deposits called "plaques"

Fig. 16 *Main parts of the brain affected by Alzheimer's and their main roles. Source: National Institute on Aging (2024) - re-elaboration of the author*

develop in parts of the brain and prevent transmissions between the brain nerve cells, and cause them to respectively die (Feddersen and Lüdtke, 2018). At first, those neurons that control the memory are lost, including hippocampus and related structures ***(Fig.16)***. When the neurons in the hippocampus stop functioning, the failure of conducting basic and familiar tasks occurs. Then, a later attack starts in the cerebral cortex, the particular area that is responsible for language and reasoning. Eventually, some behavioural and emotional changes occur that slowly makes the individual with the disease unresponsive to the outside world (Brawley, 2006). An example of a PET scan of a patient with Alzheimer's disease is demonstrated ***(Fig.17)***.

Treatment & Research

There is currently no permanent cure for dementia. Yet, common treatment processes include medicine and cognitive therapies, also with the aim of increasing the quality of life for slowing down the progression of its stages (Feddersen and Lüdtke, 2018). Although the definitive cure for dementia types has not been discovered yet, the ongoing medical research about the possible advancements has been promising. There is now more information about neurodegenerative diseases in later life, brain functions of the older adults, and how to provide healthy lifestyles and improve the prevention of cognitive decline (Brawley, 2006). World Health Organization (2012) also promotes the effort to support people with dementia and their caregivers by improving their lives. There is a growing role of the environment as a nonpharmacological approach to treating the symptoms of dementia, and thanks to these solutions it is possible to manage the condition more effectively (Brawley, 2006).

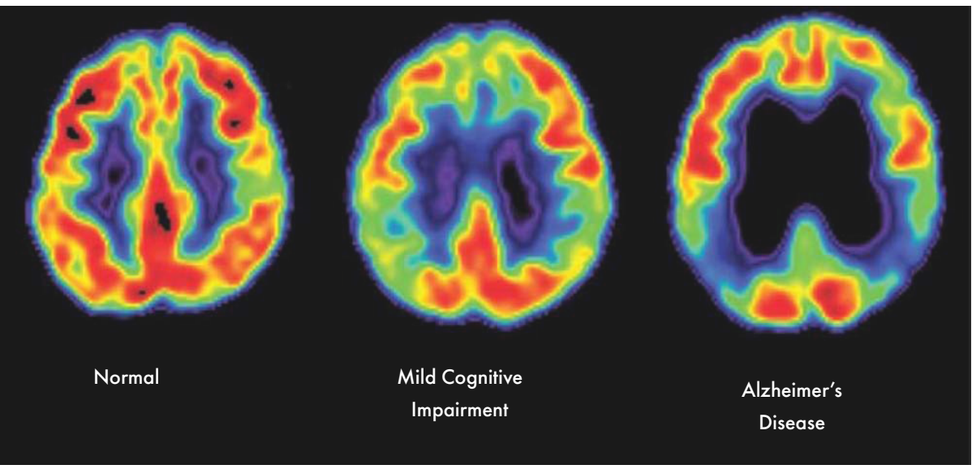


Fig. 17 PET Scans of the brain in different phases of Alzheimer's. Source: Rauf (2019).

As an "umbrella" term, dementia covers many different diseases, and the symptoms can vary depending on the type. However, there are the most common ones, which are crucial to understand in order to be more aware of how to design to reduce the impact of negative effects of these symptoms.

2.2.2 Dementia Types

The general knowledge related to dementia is constrained more towards considering the Alzheimer's disease. However, dementia condition includes more types and when dementia is considered it should be inclusive of different types as much as possible.

Dementia is diagnosed following medical models that identify the brain pathology, and in terms of cognitive and behavioural deficits that has an impact on the activities of daily life (Charras et al., 2025). The medical model establishes certain categorization of dementia subtypes, which may have various conditions and impact design needs (Charras et al., 2025). When they are overviewed within the order of frequency they are diagnosed on people, they are defined as Alzheimer's disease, vascular dementia, dementia with Lewy bodies and frontotemporal dementia; but although they are categorized as subtypes mixed pathologies can also be seen on patients (World Health Organization, 2012). These common types are described by Quinn (2013), a professor of neurology, and can be briefly summarized as follows:

Alzheimer's Disease:
The primary symptoms of Alzheimer's disease typically presents a progressive decline in memory functions, which eventually impacts "executive function and visuospatial function" that are related to planning, problem solving, recognition of objects and whereabouts. To diagnose Alzheimer's, a person must have memory problems and also trouble with at least one other type of thinking skill—like making decisions, understanding space, using language, or focusing. In addition, the progression of cognitive impairment needs to be affecting function, which is different from mild cognitive impairment.

Vascular Dementia:
What is distinct about vascular dementia is that the diagnosis is confirmed with the presence of stroke and the reason for cognitive decline is established with vascular events. It can have more physical constraints, but it can be diagnosed as a type of dementia if there is also brain damage other than other symptoms.

Lewy Body Dementia:
It is a type of dementia that includes cognitive decline with problems related to movement, similar to Parkinson's disease. A distinct symptom is the visual hallucinations that are not caused by any medication. People with this dementia usually show fluctuations in alertness. They also have trouble judging space and encounter sleep problems.

Frontotemporal Dementia:
This type is significant to show up in two ways: with a language problem and behavioural change. People can lose the understanding of words and objects. It starts at a younger age than the other types and it can cause changes in behavior, such as lack of empathy, impulsive actions, or repeated behaviors.

2.2.3 Common Symptoms

The different types of dementia present various conditions, however there are ones that are considered most common. In order to investigate the necessary design principles that would provide better lifestyles and cognitie health, the common symptoms encountered by patients need to be clarified. They are indicated by the Alzheimer's Disease International with the report by Gauthier et al. (2024). They can be outlined with the points indicated:

1- Memory loss
The most common early sign of dementia. It mostly occurs by forgetting very recently learnt information and an increasing frequency of information that is being forgotten.

2- Difficulty performing familiar tasks
The most basic and familiar daily tasks become too difficult to perform without assistance.

3- Problems with language
The individuals usually forget the basic words or cannot form meaningful sentences which would make it difficult to communicate with others.

4- Disorientation to time and place
People with dementia can get lost even in the most familiar settings. There is a chance that they will forget their location and how they got there.

5- Poor or decreased judgement
They have difficulty performing actions in a logical way.

6- Problems with abstract thinking
They may have difficulty understanding complex signs, text, and numbers.

7- Misplacing things
They may place things in the wrong places so it is important to make their environment as clear as possible.

8- Changes in mood and behaviour
They may present changes in behaviour and sudden mood swings for no reason.

9- Challenges understanding visual and spatial information
They may become extremely confused when it comes to the perception of visual information.

10- Withdrawal from work or social activities
They would become very inactive and away from interactions.

The described common symptoms can show different levels and types depending on the stage of the disease. Wijk (2025) mentioned that usually dementia is considered as a severe disease, however it takes approximately 10-15 years for it to reach the late severe state, and those 10-15 years before are important to minimize its progression as much as possible. The following section demonstrates an overview of different stages.

2.2.4 *Stages of Dementia*

Although the progression of the conditions differs depending on the type and personal experiences of the individual, an overall image for the different stages can be drawn to have a more concrete understanding of the needs on different levels. This general framework can help guide the design of supportive environments that are responsive to the evolving cognitive, physical, and social needs of individuals at each stage.

Importance of early years

Wijk (2025) mentioned that usually dementia is considered as a severe condition, however it takes approximately ten-fifteen years for it to reach the late severe state, and those years before are important to minimize its progression as much as possible. Thus, it is essential to consider the changes from its very mild state to the most severe.

World Health Organization (2012) indicates a model for planning dementia services from its "pre-diagnosis" state to the" end of life palliative care", and mentioned that by increasing the public awareness of the condition and its symptoms, people can understand better what type of help they need to get in different stages. As the symptoms' occurence accelerates more intensive community services and continuing care is needed while supported by informal caregivers.

Mild cognitive impairment

Apart from all the different stages of dementia, the period preceding that, or in some cases for the individuals that may never develop any type of dementia, is referred as "mild cognitive impairment", which describes the low level of decline in cognitive function in healthy older people. This situation is not dementia. While dementia involves a broad loss of cognitive abilities, age-related memory decline is primarily a deficit in the ability to recall simple daily experiences. Mild cognitive impairment is neither of these cases. It can be summarized as a very early stage of dementia, but may not progress into being diagnosed as one (Brawley, 2006).

Progression of the condition

The various stages of dementia are summarized into a table. Early signs include short-term memory loss, which typically progresses to more severe memory impairment in later stages. Motor skills also decline increasingly as the condition advances. Mood swings and agitation become more evident, and language abilities continue to decline (Grealy, McMullen and Grealy, 2005). Although symptoms can differ depending on the individual, the primary goal of research in this field is to prevent cognitive decline and develop more effective treatments (Bowes and Dawson, 2019).

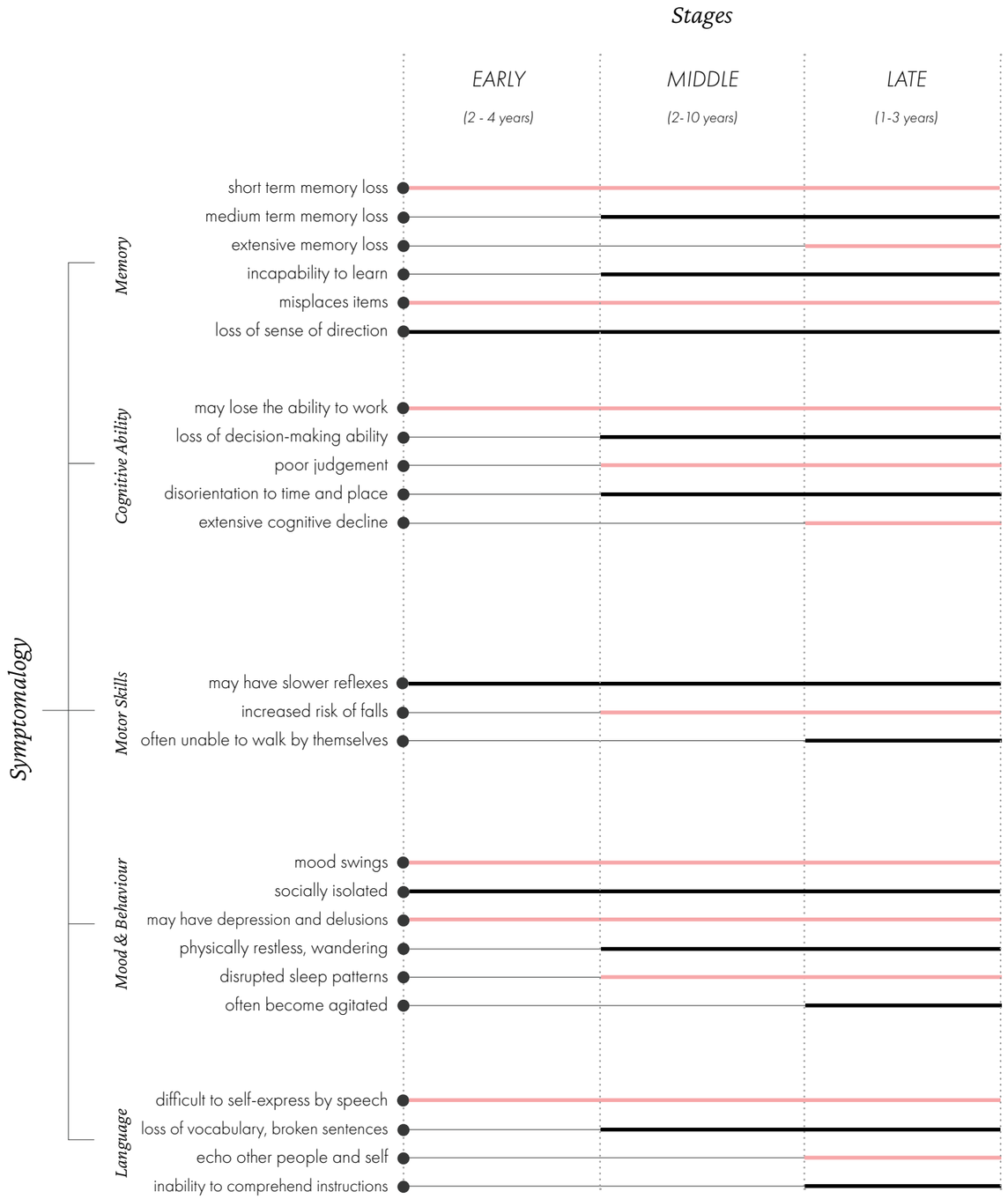


Fig. 18 Dementia stages.
Source: Grealy, McMullen and Grealy (2005)
- produced by the author according to the source

/ Phase . B

Identify dementia-related conditions

The chapter related to dementia provides the different conditions that may be experienced by those who have it or who are in risk to have it.

The collection of the related conditions provide a deeper level into understanding one of the main conditions that the older adults may suffer from as it was pointed out in the previous chapter.

Taking into consideration the areas of discussion, the uncertainty about the cause of the condition, being unable to treat it with a definitive cure, and having multiple types of dementia makes it more difficult to manage.

In order to provide well-being of the older adults with cognitive decline and more specifically dementia, more dementia-friendly design is needed. This factor requires thoughtful, evidence-based, and inclusive design strategies.

In addition, creating dementia-friendly spaces is not merely about mitigating symptoms, but about enabling a higher quality of life, reducing anxiety and confusion, and ensuring that older adults can continue to participate actively in their communities for as long as possible.

Thus, in order to provide the opportunity of having a better life quality for the target group, the main symptoms collected from research are demonstrated (fig.19).

The next phase involves a more architectural understanding to respond to these conditions by investigating the types of senior living and their design.

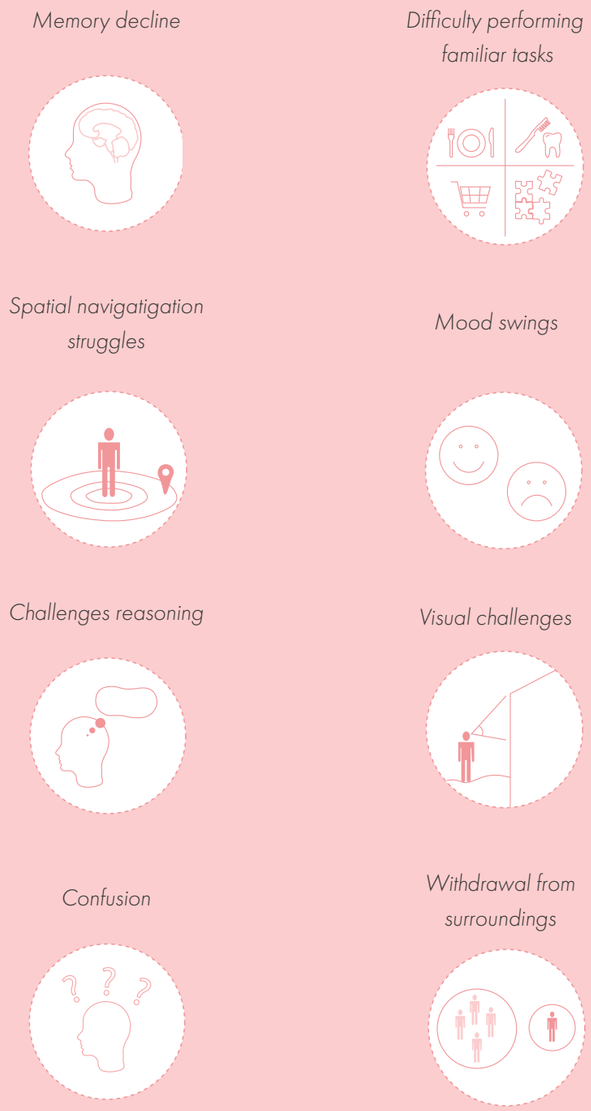


Fig. 19 Diagrams of dementia-related conditions. Source: Author

03

Senior Living

/ Phase . C Define key design considerations for housing seniors

The chapter is structured to analyze the state of the art in the living typologies dedicated to the target group, and provide the foundation for key considerations into the design.

Fig. 20 Elderly woman cleaning vegetables. Source: Photo by CDC on Unsplash - re-elaboration of the author

3.1 Typologies of Housing & Care for Seniors

Emerging senior housing needs

With the extending older adults population, new demands in housing arise. It is usually because the overall residential design is not able to meet some needs for the comfort of the this target group. The discussion around this topic is divided into two aspects (Huber, 2008): First, how the design of all buildings can provide proper living conditions for all so that people can continue to age in place. Second, how innovations in the housing solutions designed for seniors can be improved for better living conditions. Generally, the second point is criticized as it tends to isolate the group of seniors, and more innovative solutions for that need to be explored (Huber, 2008).

Considering the higher life-expectancy, and the fact that older adults face problems later in their life than before, it is important to figure out how proper residential solutions can be designed to make living comfortable as long as possible. Having said that, more people want to continue staying independent at home. Yet, there are now more options to provide independence even with the presence of certain conditions. A growing number of older adults are open to communal living instead of living alone or having to move into nursing homes (Schenk, 2008).

Supporting ageing in place

Most people stay independent in their own homes, and prefer to stay so without having to move into an institutional setting (Schenk, 2008).

The requirements to consider how a home environment can be supportive of that as long as possible shall be further investigated (Duggan et al., 2008). There is a growing need to explore housing solutions that support healthy ageing (Höpflinger, 2008). Furthermore, Charras et al. (2025) suggests that possibly all new homes should be designed as age and dementia friendly.

Actions on care models

The World Health Organization (2017) suggests that every country shall take actions on providing systems that qualify effective long term care at home, in the community and in the institutions. The demographic shift also intensifies the caregiver burdens, and a broader community and policy response become essential. Hence, a crucial step is to understand how different models of care can meet the evolving needs of the current demographic situation, with a special focus on cognitive decline. Some traditional and more innovative models exist. The following sections investigate various typologies of senior housing and care places, and aims to grasp what they are and how they work.

Since one of the main aims of the thesis is to understand what type of housing shall be designed in order to fit into the needs of seniors and be also dementia-inclusive, it is a useful step to understand the state of the art into the living environments specifically designed with the idea to accommodate this specific target group.

The end of the section presents a comparison of different models that investigate different levels of independence, medical care, type of living environment, target user group, key features and dementia friendliness. This comparative approach provides significant insights into how each model can address different needs, and help to identify best practices that could advise future, more inclusive housing solutions, with the consideration of becoming more dementia-friendly.

“...the assumption that families alone can meet the needs of older people with significant losses of capacity is outdated and neither sustainable nor equitable”

(World Health Organization, 2017).

3.1.1 Long-Term Care-Based Models

Long term care based models generally involve both medical and non-medical type of care for the older adults population that is no longer able to care for themselves but at the same time do not need treatment in a hospital setting. Eastman (2013) lists these facilities according to different types of systems and focus groups. Apart from the care focused program of the facilities, the long-term care facilities also present some additional services such as providing food and cleaning. Sometimes the complex includes inpatient care in a separate part. They include common areas with different functions such as common rooms, restaurant, library, swimming pool, outdoor areas etc (Feddersen and Lüdtke, 2018). Traditionally, long-term care facilities were characterized with a primary focus on the medical needs of the residents, however now, there are more innovative approaches to increase the feeling of home-like space and non-institutionalized environments (Schittich (2007); Eastman, 2013). These facilities can be categorized in different ways (Eastman, 2013):

Nursing Homes:

Nursing homes or long term care facilities are for the very frail and dependent older adults that usually have one or more chronic diseases or type of mobility restrictions that need care and support by the staff 24/7. Typical programs of the spaces include resident rooms, common areas, care and medical spaces, staff spaces and services. Some facilities can integrate short-term units that facilitate patients to transition to home after recovery in a hospital, so it acts as rehabilitation.

Memory Care Units:

They are usually integrated into other types of long-term care and it is a specific area that is focusing on the care for people with dementia.

Alzheimers/ Dementia Care:

It is for people who have significant cognitive impairments and are not able to continue independent living anymore, often also combined with other conditions that present the need for intensive care. This is actually considered as one type of long term care facility with a focus on dementia or sometimes specifically Alzheimer's Disease. The innovation in these facilities include attention to creating a non-institutionalized feeling. The design of these residential facilities focus on moving away from the conventional institutional model, such as central nursing stations or hospital-like interior design, and instead focus more on creating comfortable living environments for those with the condition. Some innovative models exist which will be discussed in the next sections.

End of Life Care/ Hospice:

When the individuals arrive to the point in their illnesses that a recovery is no longer possible, hospice care provides support to patients and their relatives. The typical program is similar to long term care facilities with skilled nursing. The difference is usually on the time of stay and the larger staff and care needs, as well as the higher amount of psychological burden on both patients and the visitors.

3.1.2 Assisted Living Model

Assisted-living model is a type of living with integrated services. The residents maintain their autonomy while having the possibility to have some type of assistance. What makes them different from nursing homes is that these facilities are usually for people who no longer can leave alone but do not require a high level of healthcare like the one provided in nursing homes (Eastman, 2013).

The principle of this type of housing is that every person lives in their own private space. The design of spaces should take into account the needs of old people, for instance with the consideration that old people may have mobility restrictions. The housing is complemented with a series of assistive services such as nursing care, and can be requested when needed with additional fees (Feddersen and Lüdtke, 2018).

This type of facility may have some different organizations that present flexibilities. Some employ external service providers who deliver outpatient health and nursing care. Some have their own staff with outpatient care. Other types can be with their own nursing facilities or next to a nursing home (Feddersen and Lüdtke, 2018).

These facilities often include special units for dementia patients, too and the increasing innovations in the design make them preferable for those who do not prefer to be in a healthcare setting (Eastman, 2013).

3.1.3 Continuing/ Integrated Care Models

These models provide the users with a combination of various services as well as housing and healthcare that support them to remain in their own residence in the community as long as possible. They offer private living units, and in addition they may provide some functions such as social programs, housekeeping, meal services and so on (Campbell, 2015). They can be Continuing Care Retirement Communities (CCRCs). As the residents age or experience increasing disability, they can transition to higher levels of care within the community (Campbell, 2015).

3.1.4 Community Based Care Models

Adult-Day Care:

Adult day care is a community based service that offers group programs focused on social and health support services. They operate with daily working hours and target the older adults groups who are functionally or cognitively impaired (Eastman, 2013).

These facilities can be independently located or be a part of larger organizations such as nursing homes. They provide a structured environment where the older adults can socialize, receive care and engage in activities while also giving relief to family caregivers. They can provide focused activities for dementia care, too. They include medical and social services.

A typical functional layout of the adult day care service can be observed. Social activities aim at reducing isolation and stimulating cognitive function, and can consist of group meals, games, music, workshops, gardening etc (Eastman, 2013). The center also includes therapeutic services like physical therapy, occupational therapy and cognitive exercises. It can also act as a social hub between the residents and the neighborhood.

Ageing-in-place (Home Care):

Ageing in place refers to the ability of individuals to continue living in their current home as they grow older (Eastman, 2013). It is the most preferred way as mentioned before as the older adults do not want to move. However, when they face physical challenges or cognitive decline, they need more support from the community and the surrounding services (Eastman, 2013).

3.1.5 Independent Living Models

Senior Co-Housing:

Traditional senior housing models have the risk of causing isolation and reducing community participation. The alternative approach of senior co-housing offers the possibility of living in a private home within a socially connected neighborhood, actively participating in the design and planning, and benefiting from a supportive model of care that moves away from the conventional institutional framework (Durrett, 2009).

Cohousing originated in the 1970s, evolving from earlier collective housing models in Sweden and Denmark. Senior co-housing is an alternative housing type that combines private and communal living, and it is based on the idea that neighbors should be able to help one another and form more social interactions (Huber, Hugentobler and Walthert-Galli, 2008). There is the flexibility of the residents to decide the amount of communal time they would like to spend, as they also have private apartments with necessary functions. So far these types of housing have been mostly initiated privately, and not constructed ready to be inhabited by commercial companies or nonprofit institutions (Huber, Hugentobler and Walthert-Galli, 2008).

Although they are usually self-organized, there are also those increasing in number that are professionally-run (Feddersen and Lüdtke, 2018). There are a variety of arrangement options. For instance, there are cases where the residents all have their own apartment but are sharing some common areas. In other cases, it is possible that every resident has their own living space but is sharing the apartment and the common areas with others. This can present alternatives to nursing homes and prolong the need for moving into a long-term care facility (Feddersen and Lüdtke, 2018).

Senior co-housing consists of arrangements of multiple apartments that have access to common amenities, so it is a living type that enhances community support. Residents also actively cooperate in planning and management.

One of the aims of this type of housing is to solve the problem that today the built environment tends to isolate the seniors. Senior co-housing encourages cooperation and creates a sense of community in a neighborhood atmosphere (Durrett, 2009).

The number of this type of initiatives is still considered low in Italy, and they are usually private initiatives and not public support. While senior

co-housing is an alternative living to an institutional setting, it can also accommodate some types of services (Carrera, 2020).

Extra-Care/ Sheltered Housing:

Extra care and sheltered housing type is an alternative to assisted living that provides independent living opportunities with flexible support services. The difference from normal assisted living is that there is no 24/7 staff available for constant care. However, it is designed keeping in mind the needs of the older adults that span from providing more accessible layouts to having common areas for social activities.

This alternative is studied in this thesis, as it was introduced during the exchange period in Sweden. Some study visits were conducted which will be demonstrated in the further chapters of this thesis. The model means "safety housing" and is defined as en extra care housing (Abramsson, 2015 cited in Lindahl, Andersson and Paulsson, 2017). A common international definition for extra care housing is not defined (Tinker et al., 2007).

In the existing examples, the apartments are usually small and rented. They are usually aimed for those 65 years and older, however it is possible to live with other family members, too. Differently from traditional residential care, residents live in their own homes and can manage daily activities themselves, while also benefiting from safety features and social connections. (Lindahl, Andersson and Paulsson, 2017).

3.1.6 Innovative Models

Dementia Villages:

Dementia villages are an innovative approach to long-term care for people living with dementia. The typology originated in the Netherlands with De Hogeweyk in Weesp, which will be further discussed in the chapter related to best practice of this thesis.

The intention of this model is to move away from the institutional feeling of normal long term dementia care facilities. As the name implies, a dementia village is organized like a "village" with mixed functions that blend residential and communal spaces (Adams and Chivers, 2021).

The typology usually provides a secure parameter for the residents to walk around freely, and feel more like normal living. The dementia village is basically a "village" typology that provides a secure and familiar environment for its residents (Adams and Chivers, 2021). The freedom of movements provided, along with other types of support integrated into a familiar human-scaled environment aims to support the autonomy of the residents and emphasize normal activities of daily living while also engageing in social interactions in the common areas provided.

Inter-generational Living:

Intergenerational housing model is a co-housing solution that brings together different generations. These buildings or communities house residents of different ages, from older adults to younger residents, and aims to find solutions to social challenges related to the ageing society (Kazak, 2023).

The building program integrates living solutions adapted for different generations' needs. The difference from traditional senior living models is that it relies on mutual community support rather than constant staff presence like in an institution, and it is aimed for self-sufficient adults (Schittich, 2007).

3.1.7 Models' Comparison

Fig. 21 Comparisons of senior living and care typologies. Source: Author

3.2 *Promoting Well-Being in Senior Living*

The role of the lifestyle in reducing the risks of facing impacts of ageing can be managed with the investigation of healthy ageing and maintaining cognitive health. Thanks to a lecture that was attended in the process of this thesis by Helle Wijk and later also mentioned in the interview that was conducted with her (Wijk,2025), the research done for the thesis study has been expanded to investigate the "FINGER model" in order to understand how can healthy lifestyles be promoted to encourage healthy ageing and discourage the progression of cognitive decline. Some of these principles to be mentioned are influential in terms of understanding how the built environment can support this lifestyle for the older adults and provide comfortable and healthy living conditions.

A model for dementia prevention

The "FINGER model" also known as the Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability was established as the first model to prevent or slow down cognitive decline in at-risk older adults individuals through lifestyle changes (FBHI, 2025). After it was established, studies continued to expand it to a worldwide network called the world-wide FINGERS network (Kivipelto et al., 2020). The model shows that by modifying the lifestyle of the older adults into healthier direction, it is possible to maintain cognitive abilities and prevent cognitive decline among at-risk older adults. The list of principles that would encourage this healthy lifestyle is demonstrated with an illustrationx. They are a healthy diet, physical activity, cognitive stimulation, social activities, and the monitoring of risk factors related to cardiovascular disorders.

Although it is a medical model, it has implications for design. Innovative approaches to architecture and care should be combined to design spaces that support people's social and spatial needs. It defines a search for new forms of well-being and contributes to a higher quality of life even in older age (Gromark et al., 2021). Enhanced living conditions that adapt to the needs and comfort of the seniors that support living with care while ageing increases the possibility of improvement in physical, mental and cognitive well-being that would eventually reduce the reliance on hospitalization (Gromark et al., 2021).

Salutogenesis

Salutogenesis is a theory that was first established by medical sociologist Aaron Antonovsky (1979), and it is a theory that is focusing on the factors that promote human health and well-being instead of the factors that cause disease, providing a more humanistic understanding of health. According to this theory a person's health is a "continuum" as a state between being healthy and ill (Levasseur and Naud, 2022). Salutogenesis influences many areas, but its implication for architectural design points out the empowerment of the users' abilities through the design of the physical environment to promote their well-being (Elf, Kylén and Marcheschi, 2021). It is a ground for understanding how people can stay healthier even in conditions they are experiencing and how the environment can be designed with systems that support that process. With the consideration of what could be the challenges older people and those with dementia may encounter, the focus should be more towards strengthening their perception of the environment, so the shift is from preventing disease to supporting health and well-being.

All things considered, the aim of the next sections of this chapter is to understand the needs and requirements for promoting well-being in senior housing with the aim of considering various levels of autonomy of the older adults, and a dementia- friendly approach.

Fig. 22 FINGER Model. Source: FBHI (2025)

3.1.1 *Safety & Accessibility*

A significant aspect that makes the older adults housing more considerate for its specific user group is the principles of safety and accessibility. Considering some mobility related physical dimensions of ageing, it is a crucial matter to further look upon in order to promote comfortable living conditions in the living environments for older adults. It has been discussed with Möhn (2025), Björn (2025), and Feenstra (2025) during the interviews conducted for this thesis that considering both physical and emotional safety is needed when designing for the target group. The focus on the design of senior housing has been on the safety and the accessibility of its residents and mostly based on universal design principles and ensuring that the built environment serves people of all abilities (Burzynska and Malinin, 2017). Accessibility supported with universal design makes the built environment an open and safe place for everyone including the older adults with mobility restrictions or disabilities.

Features to enhance physical safety and accessibility should be considered in design. It can be related to more furniture scale and also some considerations related to materials and the spatial layout of the surroundings (Bowes and Dawson, 2019). Visual aids and clear paths contribute to safety as well (Charras et al., 2025).

According to Möhn (2025) the feeling of safety is important because when the users feel safe they can relax and be themselves. This can also reduce the impact of some of the psychological conditions related to ageing and dementia. Creating a home-like feeling is also impacting the sense of security (Eastman, 2013).

The feeling of safety can be obtained through various architectural elements in the environment. It is provided through the perception of the space to feel safe, and contrasts in various levels can provide that (Björn, 2025).
Once a space is safe and accessible, it has to be easy to navigate, too. Wayfinding thus contributes to increasing the feeling of safety which is described in the following section.

“When they have their identity and feel safe, that’s the foundation of everything. Then, you see a kind of empowerment in people” *(Möhn, 2025).*

3.1.2 *Wayfinding*

Wayfinding is a commonly mentioned principle especially related to cognitive decline. Considering that many conditions such as visual impairment, challenges in reasoning and struggles in spatial navigation may occur; it is important to consider design elements that would facilitate orientation. The design of the spatial layout of the building and outdoors considering this aspect is found to be useful for increasing the orientation and recognition abilities of the users (Marquardt, Bueter and Motzek, 2014).

The common perception when it comes to improving wayfinding is the addition of clear signs. However, its meaning extends to more spatial strategies. According to Brawley (2006) *“wayfinding is the cognitive process that allows a person to navigate to a particular place and back again.”* That’s why the design should lead the way.

Wayfinding is related to the feeling of safety and autonomy. As a result of some conditions related to ageing which includes conditions related to dementia, too, some daily movements of the users can get affected. Wayfinding defines the process of determining a destination or following a path starting from the origin and aiming to reach the destination. It is important in a building and its surroundings to provide a system of a layout that strengthens the users comfort and safety. Wayfinding is not only supported by signs, but it should be provided with spatial cues that enable to find in an effortless manner (Eastman, 2013)

Careful design of the spatial layout, colors, materials and the use of natural light can support wayfinding in the environment. Opportunities for meaningful wandering shall also be integrated (Calkins, 2025, cited in Charras et al., 2025).

3.1.3 *Privacy, Autonomy & Comfort*

With enabling easy navigation comes opportunities for supporting the personal control and preferences. Although the older adults population is facing more problems with loneliness and isolation, they are still in need of basic considerations for living related to the privacy aspects. In addition, for the older population, and especially those with dementia, it is still important to have personal decisions and spaces that help reduce anxiety and contribute to mental well-being. Wijk (2025) stated that even when humans get older,

they need to be able to have choices. Choosing to stay more isolated in private space or going out to have more interactions should be considered. That is why presenting options and giving opportunities to choose from is an important design consideration. This can be managed with flexibility in the design of spaces for the users.

According to Möhn (2025), it is essential to consider different preferences when designing spaces. For those who prefer to be alone, there is a need to provide space so that they can be alone without being forced to interact with others. Also, Eastman (2013) states that the environment should support the independence and privacy of the users. It is an essential part of the lives of everyone in those years spent before old age, and it should not be overlooked especially for a place to feel like home.

According to the experience of Björn (2025) in designing older adults homes, the users usually do not prefer to stay in their private space as they have now more limitation to go somewhere out of their close surroundings, and they just want to spend time outside their private space and feel like they went somewhere else. It is also one of the aspects that some people just prefer to not be alone, and does not give so much importance to their privacy. However, this factor also depends on the different levels of autonomy of the older adults population. Consideration of this factor in the spatial layout of the design is important to maintain the users' well-being as much as possible. Promoting diversity in the public spaces provides connection to community, a place to share with the neighbor also overcomes the feeling of loneliness and isolation, however the home and the places to stay isolated by preference should still value privacy.

Comfort on various levels is also considered among the essential key aspects while designing for this specific user group as part of ensuring environmental and psychological well-being. This includes comfort on various types, such as visual, acoustic, thermal, and olfactory comfort, all of which should be addressed through appropriate design strategies (Spadolini and Tosi, 1995).

As a result, in order to meet varying needs and maintain required privacy of the residents, design strategies should focus on how to manage a variety of preferences and encourage the autonomy of its users as well as maintaining their privacy. Enabling independence in the basic daily activities and designing for keeping privacy as well as keeping the connection to the surrounding community is essential to achieve the positive outcomes of this key consideration.

3.1.4 Social Interactions

Working with community support and the integration of social interactions is a key consideration to combat the conditions of older adults and those with dementia related to loneliness and social isolation. The condition that the older adults population tends to get less socially active due to life circumstances can be resolved with effective implementation of functions that support social interactions among the users of the housing, both within the neighbors and the wider community.

The isolation and loneliness were identified as common conditions of older adults and those who develop dementia. Wijk (2025) stated that many older people feel like they start to not fit in, however the way the society sees the older population should also change and there should be more inclusion that can be provided with opportunities for integration and maintaining the activities from young age (Huber, 2008).

The established negative impacts on the health and living conditions of those experiencing loneliness and social isolation were also discussed in Chapter 1 of this thesis. Thus, the positive impacts of designing spaces for social interaction in the living environment of the older adults shall be discussed as a key consideration for design.

According to the World Health Organization (2012), integration to the community with necessary support would delay the older adults and those with cognitive decline to have more and longer opportunities to stay in a home setting rather than rely on residential care with high costs. The importance given to designing for social engagement in residential care has been a major topic of discussion in literature, however being in a more household-like environment is foreseen to also encourage social engagement, and inspire to initiate activities (Bowes and Dawson, 2019).

Also established as one of the "fingers" in the FINGER model as an approach to maintaining cognitive health, social interactions show benefits to health and well-being of the older adults and those with dementia related to both physical and mental health aspects. Engageing in social interactions nurtures meaningful relationships with the community, contributes to maintaining independence, reduces stigma and increases cognitive stimulation helping to slow down the progression of dementia. Meaningful activities in social engagement enhance the emotional, mental and physical well-being (Charras et al., 2024).

Designing the living spaces in clusters with access to common areas, implementing spaces for social activity not only within the residents community but also the neighborhood in the outdoors contribute to bring social interactions into the daily lives of the older population (Day, Carreon and Stump, 2000). Designing common spaces that are easily accessible and inviting such as shared living rooms and other types of activity spaces encourages participation and promotes active lifestyles for the older adults and those with dementia (Brawley, 2006).

3.1.5 Connection to Nature

Healthy ageing and cognitive function is supported by connection to nature. There is a widely accepted concept that humans have innate attraction to natural environments supported by the biophilia hypothesis (Wilson, 1984, cited in Mmako, Courtney-Pratt and Marsh, 2020) It is argued that connection to nature is a requirement to have complete physical, emotional and social development.

Some benefits include sensory stimulation and orientation, encourageing movement and exercise, relaxation and reducing depressive mood, improving appetite, sleeping patterns and memory, thus delaying the onset of dementia (Chalfont and Walker, 2013).

International research and practice demonstrates that designing with nature promotes mental, physical, emotional and spiritual well-being (Garuth and Ulrich, 2021). It is evident that architectural features need to support the connections with nature, meaning what is happening outside the building, through providing good physical and visual connections to outside.

Connections to outside can also be obtained with designing for access to natural light in the spaces. In all the interviews conducted for this thesis, the interviewees mentioned the importance of getting natural light as much as possible for the well-being of the older adults (Björn, 2025; Feenstra, 2025; Möhn, 2025; Wijk, 2025). Natural daylight regulates circadian rhythms and sleeping cycles (McNair, 2014) and as also stated by Björn (2025) being in contact with natural light in the early morning and late evening has health benefits.

Connections to nature contributes to mental well-being. Designing with nature reduces the mood swings and agitation (Whear et al., 2014). According to a study conducted by Whear et al. (2014) in nursing homes, engageing with nature for residents with dementia also provided opportunities for interaction with the surroundings. It also stimulates memories. Being connected to nature both physically and visually can have a therapeutic effect with facilitating reminiscence and sensory stimulations. Being outdoors physically also encourages physical activity and it is linked to a slower rate of cognitive decline (Whear et al., 2014).

Contact with green spaces for people living with dementia especially in the community setting has a positive impact as it also expresses opportunities to use shared spaces with the community and enhance communication. Green spaces provide diverse social opportunities, too (Mmako, Courtney-Pratt and Marsh, 2020) .

Thus, the design strategies should focus on how to create this through various tools. It is essential to maintain the well-being of the users and enhancing the quality of life in the living environment.

3.1.6 Sensory Experiences

Designing sensory experiences in the built environment is a tool for the comfort of its users. As it was discussed previously that with ageing the sensory perception changes, and especially with cognitive decline sensory cues become more important. Visual cues, controlling sounds, tactile variety, familiar smells and thermal comfort contribute to enhancing sensory experiences. With ageing and the potential progress in cognitive decline, the recent memories start to fade away and what makes it important to perceive the space becomes more about direct sensations (Feddersen and Lüdtke, 2014). According to Huber (2008), there are many technical rules, standards, and assessments to help architects design housing that is functionally suitable for older adults (like accessibility, safety, etc.). But there's a lack of equivalent guidance on how to design for emotional and sensory well-being in the atmosphere that enhances mood and acts as an aid. Acoustic and tactile experiences designed with material choices can enhance sensory experiences (Huber, 2008). Disruptive sounds should also be prevented (Möhn, 2025).

Considering the various sensory conditions encountered by the older adults like the visual and hearing impairments, design solutions need to focus on how to adapt to daily lives of the users.

3.1.7 Physical Activities & Healthy Nutrition

Movement and active engagement at old age, whether they are planned activities or are integrated informally into the daily movement, support overall health and cognitive well-being. Physical activity is crucial in order to reduce the risks of health problems while getting older. There are many studies in the medical area that provide evidence to the contribution of being physically active to healthy sleeping patterns, and the delay of cognitive decline (Ahrentzen and Tural, 2015). The opposite of being physically active, which is presenting sedentary behaviour, is considered to cause many problems related to cardiovascular function, diabetes, cognitive decline and mental health (Balboa-Castillo et al., 2011).

Although studies show that physical activity is necessary to reduce the risk of health problems, according to the World Health Organization (2010), in many countries participation in physical activities is particularly low in older adults. In this sense, active living needs to be promoted for a healthy lifestyle, and delay any conditions that would reduce the quality of life of the older adults population. As it is stated that older adults people spend approximately eighty percent of their time at home or in close surroundings (Klepeis et al., 2001, cited in Ahrentzen and Tural, 2015), physical activities are a significant consideration at a micro-scale in the built environment. This factor contributes to providing a more independent lifestyle to the older adults, and can even prevent the advancement of cognitive decline (Middleton et al., 2011).

Despite the need for understanding the role of the home for active behaviours of older adults, it is usually understudied. The aspects of the physical environments that promote a more active and less sedentary lifestyle need to be established in order to promote health ageing (Brookfield et al., 2015).

The role of the outdoor environments, and the organization of indoor spaces is significant in order to increase the level of physical activities (Brookfield et al., 2015).

The significance of and value attached to being physically active for people with dementia has attracted increasing attention and is reported by Duggan et al. (2008) that going outside is valued for exercise, fresh air, meeting neighbours, enjoying the countryside and emotional well-being: as dementia develops, opportunities to enjoy these benefits can decrease, leading to decreased quality of life. Thus, opportunities to maintain the increased level of physical activity are needed.

It is part of the FINGER model that cognitive decline can be mitigated through mental training and physical activity. These highlight the need for designing activity spaces and encourageing physical engagement within the environment to support individuals with cognitive decline (World Health Organization, 2015).

Another aspect that is also mentioned in the FINGER model is the importance of healthy eating. Keeping up with healthy eating habits and physical activities brings many improvements to chronic problems that the older adults may experience (Brawley, 2006). Design strategies shall be implemented to support this function as well.

The reserach related to the impact of healthy nutrition to the advancement of cognitive decline imply that the task of the architects and designers is to design to encourage healthy diet habits and physical activity (Bowes and Dawson, 2019). This could possibly include common kitchens that are easy to find, gardening activities, and opportunities to walk and exercise. Providing spaces for carrying out these healthy habits is a key factor to facilitate a healthy lifestyle that can play a crucial role in delaying cognitive decline and improving the quality of life for the ageing populations.

In summary, designing environments that encourage movement and support healthy lifestyle habits is essential for promoting the well-being of the senior population that is experiencing cognitive challenges or to prevent it.

“Encourageing users to walk regularly helps improve physical activity, and it is also a strategy to promote social interactions by creating instances for communication outside of the private environments”

(Brawley, 2006).

/ Phase . C

Define key design considerations for housing seniors

The chapter investigated various living typologies for seniors, and went on with the identification of key design considerations that are commonly discussed in literature.

This step defines the basis for identifying the design strategies and tools to achieve healthy lifestyles for the older adults and especially for the risk of the advancement of cognitive decline.

Safety and accessibility principles establishes the fundamental needs for designing for the target group along with wayfinding and the emphasis on maintainin privacy and autonomy.

Furthermore, the community engagement is investigated, and resulted as a key step to combat loneliness and social isolation.

For the further enrichement of the opportunities in the built environment are connection to nature, physical activities and sensory experiences that support variuos considerations for the promotion of healthy ageing and cognitive function.

These findings shall lead the findings related to design strategies and the formation of the toolkit in Part II.

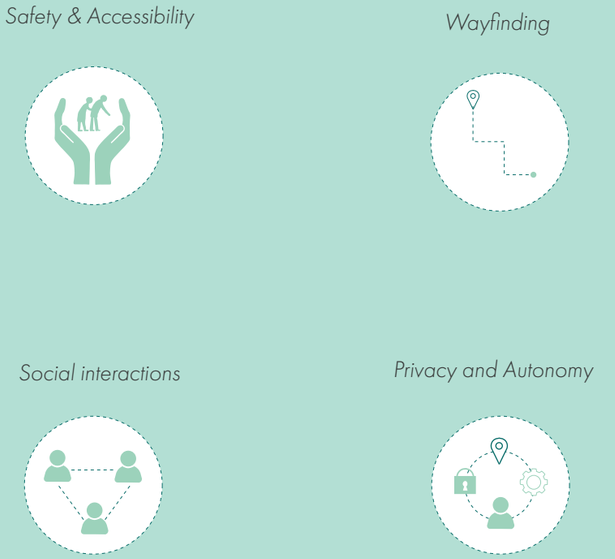


Fig. 23 Key considerations.
Source: Author

Toolkit

Part II

04

Best Practice

/ Phase . D Diagram design tool findings from practice

The chapter is the tool to map out design findings from practical examples and experiences.

Fig. 24 Zierik 7 room view. Source: Gortemaker Algra Feenstra (2025) - re-elaboration of the author

4.1 Interviews

Semi-structured interviews were conducted with professionals who have experience in the field. Three of them are architects working on projects in the field of healthcare and more specifically with older adults as their target group. One of them is a nurse and professor who provides an interdisciplinary contribution to understanding the needs and requirements for designing spaces for the seniors.

Different set of questions were prepared for every interviewee as they all had expertise in different aspects, although some of the questions were same. The common focus of the discussion was about understanding from their experience the important elements for design and their methodologies in the real life design context. Some focus areas included the design methodology, person-centered approach, safety, use of spaces, and additional suggestions to design strategies.

The lessons-learned from the discussions are used and cited in different parts of this thesis as the variety of responses contributed to different sections of this thesis. The background introduction of the interviewes and some highlights from the responses are reported.

The transcripts of the interviews are documented in the appendix section.

"I think the most important thing is to understand how they feel".

(Möhn, 2025)

"... if we could locate somehow housing for people with dementia more into a neighborhood where we know that people, where there's a society which knows there are five houses that people with dementia live in, they are completely adapted for people so that they can live there, but it's part of the community and we take care of those people."

(Feenstra, 2025)

"There was this older man who had a really hard time speaking. He saw the card with the sun, and he just started crying. He kissed the card, held it up to his face, and said, "I love the sun! I love the sun!" People still have strong feelings about their environment".

(Björn, 2025)

"Dementia-friendly and age-friendly cities and housing are really big now worldwide".

(Wijk, 2025).

Fig. 25 Key quotes from the interviews. Source: Author

Interviewee	*Interview Date*	*Relevance*	*Interviewee Background*	*Topic of Discussion*	*Results*
Andrea Möhn	*(30/03/2025)*	*Architect & Professor*	Andrea Möhn, principal architect of AM Andrea Möhn Architects in Rotterdam, is also a lecturer at Delft University of Technology and the Academy of Architecture and Urbanism. Her work focuses on how the built environment shapes human behavior, with an emphasis on person-centered design and mental health.	• Architecture & mental health • Person-centered design • Design methodology and process	The findings from the interview include insights into person-centered approach in design for vulnarable groups. Thanks to the suggestions by Andrea Möhn for observing the living conditions of the target group, study visits were organized to try to apply this suggestion as much as possible within the restrictions of being a master's thesis student.
Linda Björn	*(31/03/2025)*	*Architect*	Linda Björn is a partner architect who is working on the senior housing projects at the architecture firm "Marge Arkitekter" in Stockholm. The firm is recognized with projects including private, commercial and public projects, and has designs with the target group as older adults.	• Housing for older adults • Design methodology and process • Design principles • Case study: The Gardens Care Home	The interview provided useful information from the real-life experience of the architect while designing older adults homes. The importance of safety, organization of spaces and relationship to context were discussed. The interviewee also provided examples from the projects she worked on and feedback from the users.
Femke Feenstra	*(16/04/2025)*	*Architect & Interior Designer*	Femke Feenstra is one of the founding partners, architect and interior designer at "Gortemaker Algra Feenstra" in Rotterdam, the Netherlands. The firm has a research-based design methodology for healthcare design.	• Dementia care design • Design methodology and process • Design principles • Case study: Zierik 7	The conversation resulted on some information related to the design methods in working with healthcare related project and specifically dementia care facilities. The importance of safety, organization of spaces and relationship to context were discussed in relation to dementia. The interviewee also provided examples from the projects she worked on and feedback from the users.
Helle Wijk	*(23/04/2025)*	*Geriatric Nurse & Professor*	Helle Wijk is a registered nurse, senior lecturer and professor at Gothenburg University and Sahlgrenska University Hospital. She is also visiting professor at Chalmers University of Technology in the Architecture and the Built Environment and the principal investigator for the research group Care Environment at Gothenburg University. Her research focus is the care environment, geriatrics and dementia.	• Conditions of ageing & dementia • Design for ageing & dementia	The interview was a follow-up of a lecture that was attended on April 10th, 2025 that was called "The Ageing Process and the Physical Environment" given by Helle Wijk herself at Chalmers University of Technology. The interview then resulted in some findings related to the conditions of ageing and dementia. As her research includes the environmental aspects as well, she provided some research findings about designing for the target group.

Fig. 26 Interviews overview table. Source: Author

4.2 Case Studies Overview

The housing for the use of older adults requires specific attention to many aspects of design. Especially, the specific needs for the users in various stages of dementia needs important considerations in professional practice of the design of these types of housing.

In order to understand the concepts and principles from the real practice of these cases, a number of case studies were chosen to be analyzed following a created template using the overall introduction of the case, investigation of different scales ***(Fig.27)***, and how the design corresponds to some principles identified in the previous parts of the research presented in Part I. They are highlighted on some photos of the projects and the floor plans by annotations that match the description in the table ***(e.g. Fig.36)***. Then, a typological analysis is added that investigates the building typology, typological strategies and the spatial distributions ***(Fig.27)***.

The diagram ***(Fig.28)*** on the following page demonstrates the geographical locations of the case studies in the European context where the projects are categorized in terms of typologies. Then, they are presented in chronological order within the grouped typology apart from the ones that study visits were conducted, which is presented in a dedicated section in the chronological order of the visit date.

The criteria to choose the case studies was have variety of examples from different typologies, some being specifically related to dementia care, some examples of long-term care, and more independent living typologies.

Study visits were conducted in order to have conversations with some staff members and have direct observations of how the spaces are organized, if there are specific considerations for design, and how the space is experienced by the users. The remarks from the visits are presented with some photos, obsrvations and some remarks from the conversations with the staff or the architects during the guided tours.

Then, the analysis of case studies and the study visits are combined in a table of comparisons . Qualitative and quantitative information related to each project is combined and compared to summarize the lessons learned. The analysis also includes a scale and typology comparison of the case studies.

Finally, the findings from practical examples are gathered in diagrams of findings. They are then presented in a form of matrix to connect with the theoretical findings that were presented in Part I, which makes up the Phase D of this thesis.

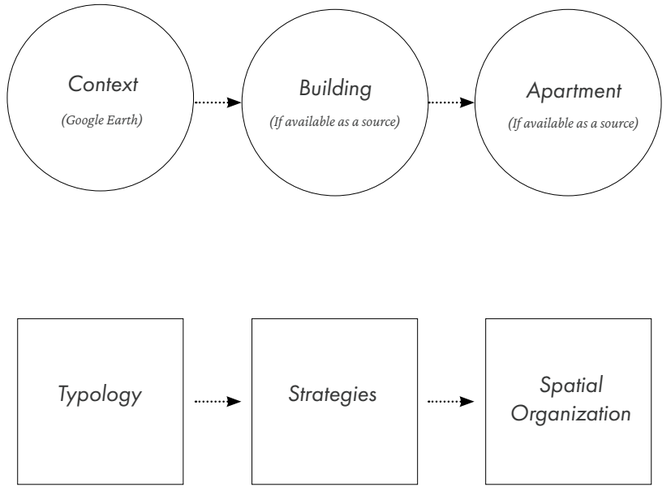


Fig. 27 Case study and study visits analysis method.
Source: Author

Dementia Villages & Dementia Focused Care Homes

7

Dronning Ingrids Hage, Arkitema, Oslo, Norway, 2019-2021

8

Villa Videbeck, Link Arkitektur, Lidköping, Sweden, 2023

1

De Hogeweyk, Buro Kade Architects, Weesp, The Netherlands, 2009

2

Zierik 7, Gortemaker Algra Feenstra, Zierikzee, The Netherlands, 2022

Care Homes & Assisted Living

3

The Gardens Care Home, Marge Arkitekter, Örebro, Sweden, 2018

4

Older Women's Co-Housing, Pollard Thomas Edwards, London, UK, 2016

Senior Co-Housing & Extra Care Housing

10

Trygghetsboende Bifrost, Tengbom, Gothenburg, Sweden, 2017

9

Bon Top, Kanozi Arkitekter, Molyncke, Sweden, 2021

Combinations

5

Eltheto Housing and Healthcare Complex, 2by4 Architects, Rijssen, The Netherlands, 2015

6

Borgo Assistito Figino, Giacomo Penco + Matteo Rossetti, Milano, Italy, 2014 - 2016

study visits conducted

Fig. 28 List of selected projects. Source: Author

4.3 Case Study Analysis

1 *De Hogeweyk*

2 Buro Kade Architects
Weesp, The Netherlands
2009
3 Dementia Village

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De Hogeweyk is the first example of the concept of dementia village. It is a nursing home that hosts older adults with advanced dementia that need support all the time through their living in the concept of a village.

It was designed as a normal residential area to create a familiar, everyday life for dementia patients. The concept focuses on salutogenesis, promoting health rather than treating disease (Dementia Village Associates, n.d.).

It is a low rise complex with 23 homes with reflection of different lifestyles. There are 6 residents per home and each reflects the design of a familiar environment, which is a regular Dutch house.

The environment prioritizes safety and well-being by providing a secure yet non-restrictive atmosphere, ensuring that residents feel safe and respected, minimizing distress. Additionally, the integration of local art and a focus on historical town planning elements, such as squares, streets, gardens, and water, enriches the environment, creating a vibrant and community-driven space (Dementia Village Associates, n.d.).

CONTEXT

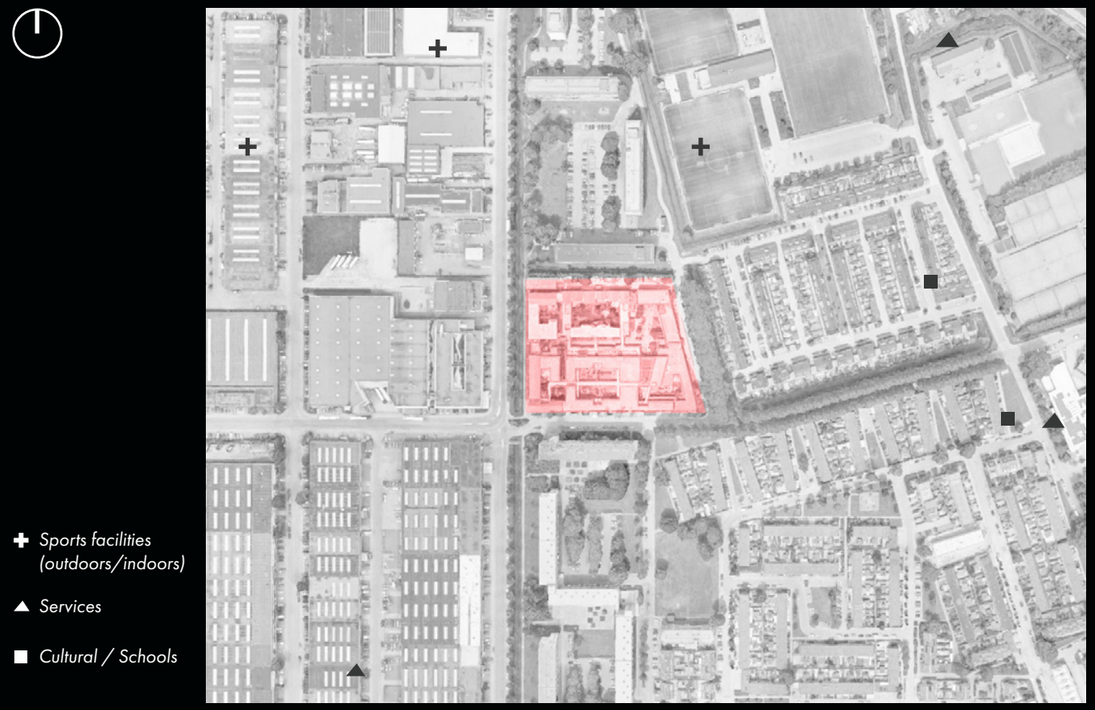

Fig. 29 Location of De Hogeweyk (Scale - 1:5000). Source: Google Earth - re-elaboration of the author

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Fig. 30 De Hogeweyk garden.
Source: Dementia village associates (n.d.)

Fig. 31 De Hogeweyk market.
Source: Dementia village associates (n.d.)

3 5

5

Fig. 32 De Hogeweyk garden.
Source: Dementia village associates (n.d.)

3

Fig. 33 De Hogeweyk garden.
Source: Dementia village associates (n.d.)

BUILDING

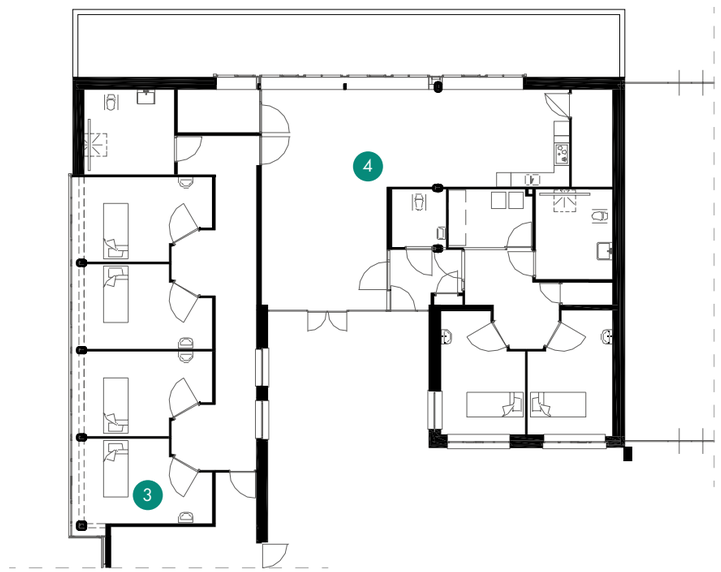
1

Apartments

Common Areas

Fig. 34 De Hogeweyk Ground Floor Plan (Scale - 1:1000).
Source: Building Types Online (2021)

APARTMENT



Rooms

Common Areas

Fig. 35 De Hogeweyk Ground Apartment Plan (Scale - 1:200).
Source: Building Types Online (2021)

SAFETY & ACCESSIBILITY	1 2	*There is only one entrance to the complex and residents can move freely inside the perimeter. The courtyards support the sense of security as they act as clustered open spaces for a number of apartments, and provide a safe perimeter.*
SENSORY EXPERIENCES	—	*There is only one entrance to the complex and residents can move freely inside the perimeter. The courtyards support the sense of security as they act as clustered open spaces for a number of apartments, and provide a safe perimeter.*
PRIVACY, AUTONOMY, COMFORT	3	*The bedrooms inside the apartments are private, and are designed as a personal space for the residents.*
WAYFINDING	4	*The complex is integrated with clear signs that help wayfinding. The central location of important functions such as the common areas in the apartments help provide easy navigation and encourage participation.*
SOCIAL INTERACTIONS	5	*Common areas for residents and also visitors include the pub, restaurant, theater, the supermarket or one of the many offered clubs. The visitors are welcome and are encouraged to share spaces with the residents for social interaction and connection to the community. There is evidence that visitors and community members participate in activities (Anderzhon*
CONNECTION TO NATURE	6	*The courtyards each present different characteristics, and since they are located right outside the apartments, they provide more connection to nature both by providing participation to outdoors and more natural light inside the buildings.*
PHYSICAL ACTIVITY & HEALTHY NUTRITION	4 5	*The courtyards and common areas include encouragement for activity. The common functions iclude sports activities. The presence of a supermarket and common kitchens promote the continuation of healthy nutrition.*

— *Not directly representable through the photos or drawings*

Fig. 36 Case study analysis table (De Hogeweyk).
Source: Author

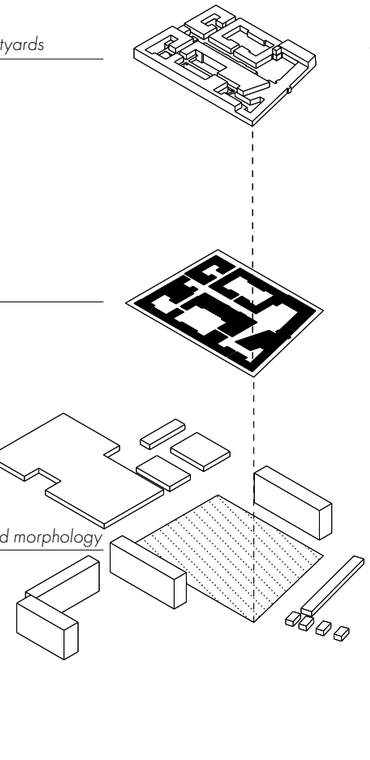
BUILDING TYPOLOGY

1

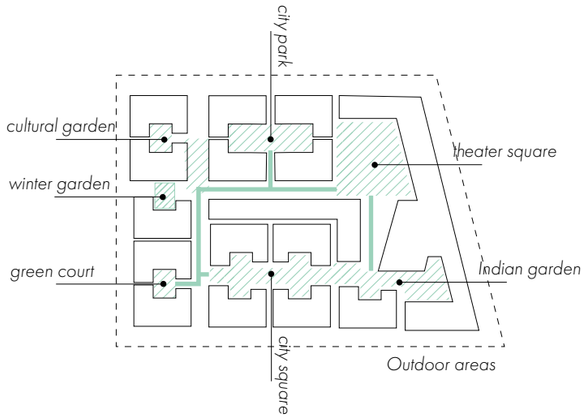
low rise / clustered courtyards

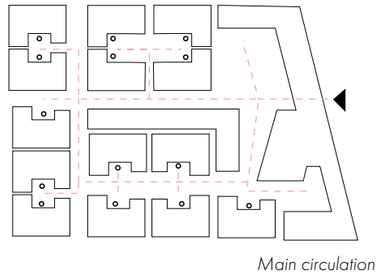
≈50 % site coverage

suburban context /mixed morphology

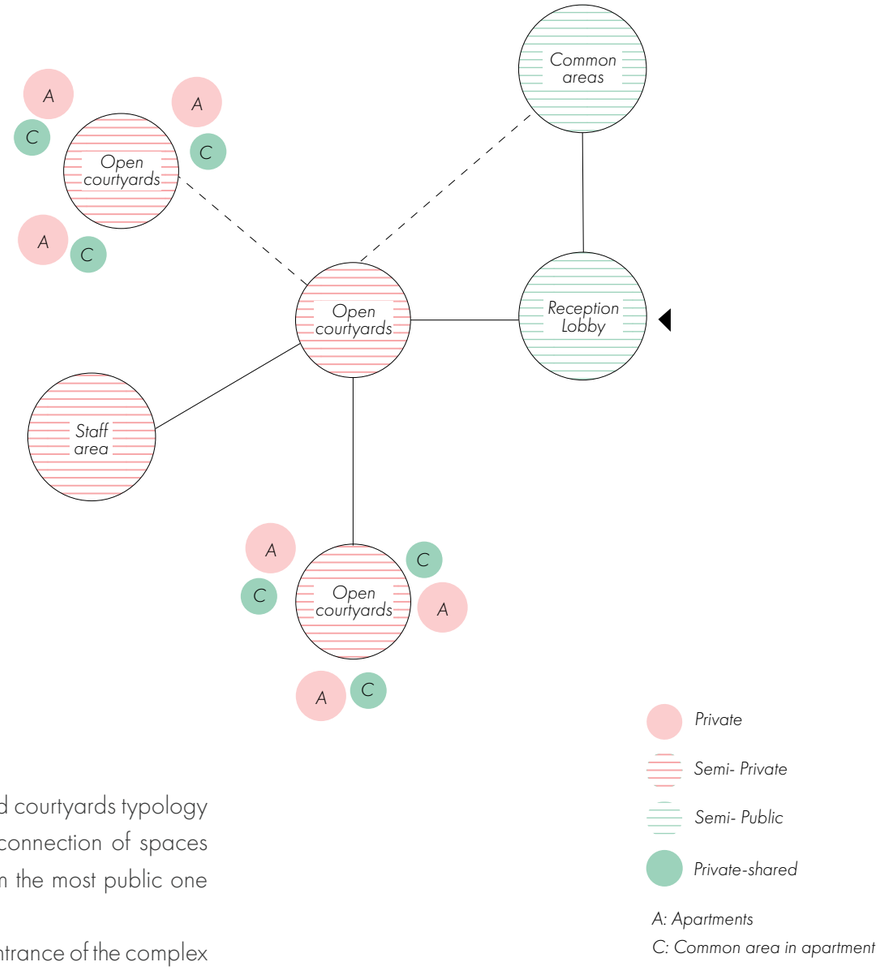


TYPOLOGY STRATEGIES





SPATIAL ORGANIZATION



The area can be considered a mix of residential and more industrial.

The building layout consists of house-like blocks which can be considered villas that are forming courtyards that emphasize the safety in using outdoor spaces. The outdoors all have different purposes of design for different preferences. The building blocks are connected through some bridges in some parts.

The single entrance is connected to a main courtyard that is connecting to other courtyards of the blocks, providing the village-like atmosphere as a spatial strategy.

The clustered courtyards typology provides a logical connection of spaces with a transition from the most public one to the most private.

The single entrance of the complex is in the vicinity to most common functions, as well as the area dedicated to the staff. They present indirect connections through courtyards to the different apartments.

The apartments have different characteristics, but overall they have private rooms with shared bathrooms with other residents. In the apartments, there are shared living rooms and kitchens, as well as areas for staff (Dementia Village Associates, n.d.).

Fig.s 37, 38, 39 Typology analysis (De Hogeweyk). Source: Author

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Zierik 7

3

Gortemaker Algra Feenstra
Zierikzee, The Netherlands
2022
Residential Care Center for Dementia

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Zierik 7 is a residential care center for various stages of dementia. The complex was designed for the healthcare organization called Allévo.

The main concept of the complex is that instead of being a traditional institution-like layout for the rooms with access from the corridors, the architects were asked to design houses for the residents that have their front door, too. In the interview with Femke Feenstra (2025), she stated that the staff commented that with this type of concept, the care typology does not feel like a nursing home, but rather home care. She mentioned that this should be the new vision for designing for "living with care".

The building is a star-shaped volume that provides the immersion with the public park that it is located on. It has 93 homes, and 30 rooms for short-term care.

The design was awarded with the first prize in the "Design for Health and Wellness" category and a "Highly Recommended" award in the "Interior Design and Arts" category at the European Healthcare Design Awards (Allévo, 2025; Gortemaker Algra Feenstra, 2025).

CONTEXT

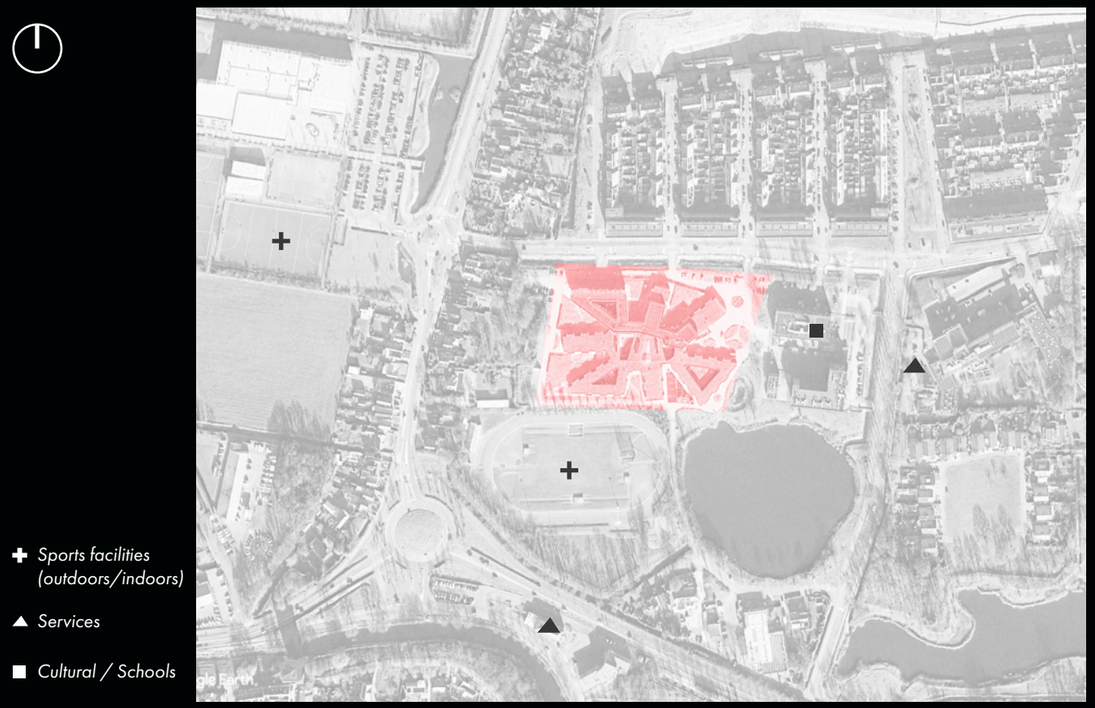

Fig. 40 Location of Zierik 7 (Scale - 1:5000).
Source: Google Earth - re-elaboration of the author

5

Fig. 41 Zierik 7 view.
Source: Gortemaker Algra Feenstra (2025)

Fig. 42 Zierik 7 room view.
Source: Gortemaker Algra Feenstra (2025)

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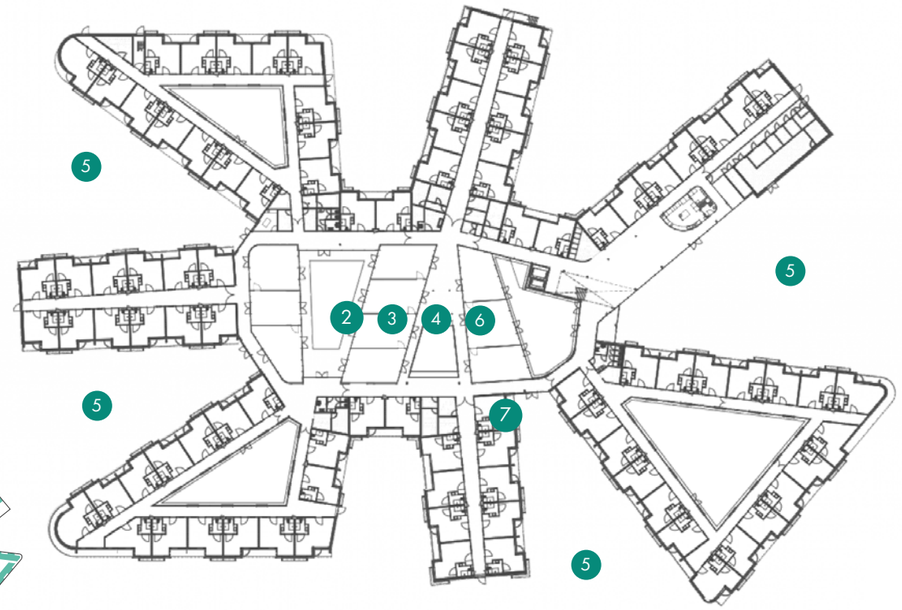
Fig. 43 Zierik 7 view.
Source: Gortemaker Algra Feenstra (2025)

Fig. 44 Zierik 7 view.
Source: Gortemaker Algra Feenstra (2025)

1

BUILDING

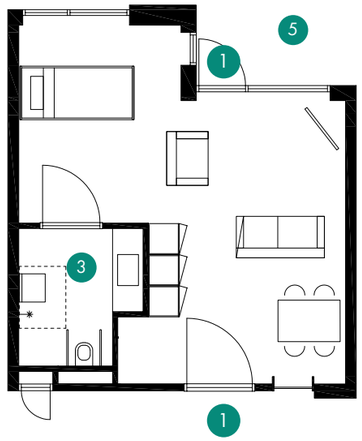


Apartments

Common Areas

Fig. 45 Zierik 7 ground floor plan (Scale - 1:1000).
Source: Gortemaker Algra Feenstra (2025)
- re-elaboration of the author

APARTMENT



Living

Bathroom

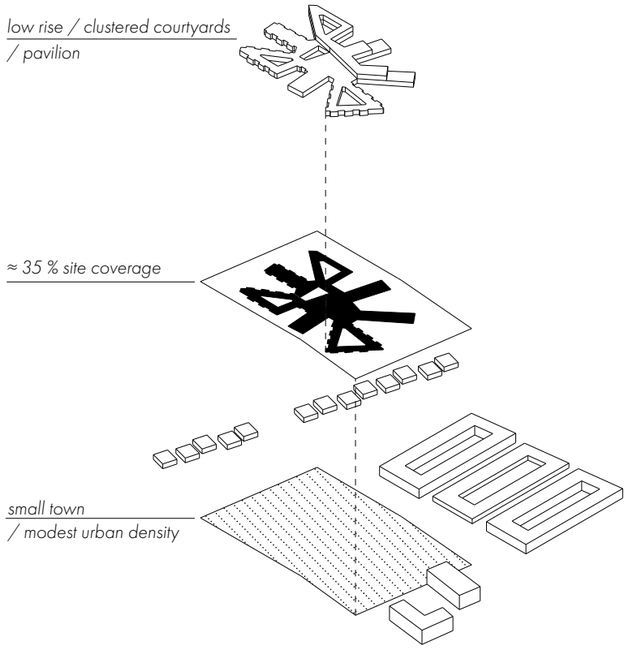
Fig. 46 Zierik 7 apartment plan (Scale - 1:200).
Source: Gortemaker Algra Feenstra (2025)
- re-elaboration of the author

SAFETY & ACCESSIBILITY	1	*The aparments have two access points, one from the corridor and one from the garden making more accessible residential units even though it is a residential care facility.*
SENSORY EXPERIENCES	2	*Feenstra (2025) mentioned the importance of getting natural light in the building, and the overall design of windows and the volume provide enough natural light in the facility and more connection to nature.*
PRIVACY, AUTONOMY, COMFORT	1 7	*The apartments all have two entrances, one from the garrden and the other from the corridor; providing both care and autonomy. Feenstra (2025) mentioned in the interview: "We made it like a more star-shaped building where people just live on their own and they can go outside and they can come back to their own home " So the apartments, or as they call "studios" have two entrance doors.*
WAYFINDING	3	*The common areas are all located in a central position of the building which makes wayfinding more simple for the residents. The bathroom is also clearly visible in the living unit.*
SOCIAL INTERACTIONS	4	*Communal spaces provide social interactions for the residents, and there are eleven points for interaction. There is a garden room, the music room, the communal kitchen, and the game room.*
CONNECTION TO NATURE	5	*The building is integrated into the landscape, and also presents courtyards and semi-courtyards. The apartments all have access to the garden.*
PHYSICAL ACTIVITY & HEALTHY NUTRITION	6	*The building layout encourages walking in order to reach the central core, as well as the landscape has paths for walking.*

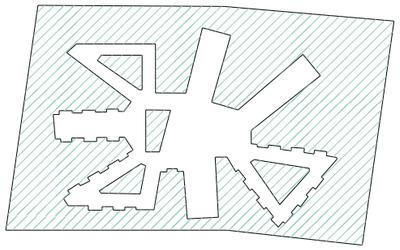
— *Not directly representable through the photos or drawings*

Fig. 47 Case study analysis table (Zierik 7).
Source: Author

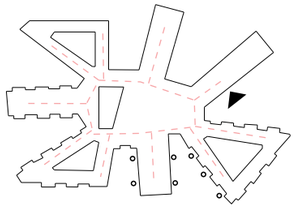
BUILDING TYPOLOGY



TYPOLOGY STRATEGIES

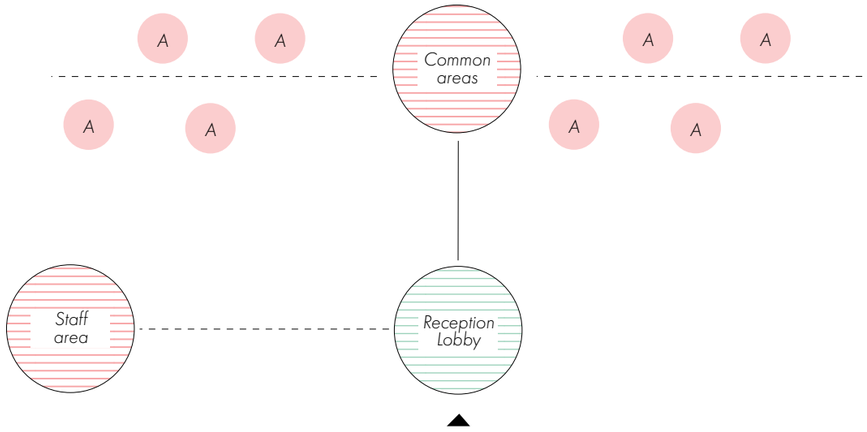


Outdoor areas



Main circulation

SPATIAL ORGANIZATION



Private

Semi- Private

Semi- Public

A: Apartments
C: Common area in apartment

The location for the new construction of the residential care center for the healthcare organization Allévo is situated on the northern side of Zierikzee. It is in a public park, so people can come into the garden where the residents are going out to.

The building layout provides the immersion with the surrounding landscape and provides semi-courtyards for the gardens of the 93 "houses". Majority of the parts of the building is made up of one floor, and makes the connection to the environment in a smooth way. This integration is further emphasized through the incorporation of semi-courtyards.

The spatial organization strategy is based on collecting together different common areas in the central core of the building and providing corridors that lead to the individual apartments.

Short term-apartments and the staff area are located on the first floor while most of the functions are distributed on the ground level with direct accesses to the outdoors.

Fig.s 48, 49, 50 Typology analysis (Zierik 7). Source: Author

The Gardens Care Home

Marge Arkitekter
Örebro, Sweden
2018
Older adults Care Home

The Gardens Care home is a older adults care home that was designed with prioritizing the well-being of its residents.

The main concept is to provide connection to nature as much as possible by working on the easy accessibility to the outdoor space. Having direct views to the courtyards increases the sense of safety in the environment (Marge, 2025).

Due to varying budgets of the residents, different types of apartments were designed with different sizes following the basic needs in a care home.

Social interaction is one of the main strengths of this housing because architects created many spaces for interactions with the neighbors, visitors, staff etc. Specifically, some areas for staff are not separated from areas with residents. One of the spatial strengths of the project is that the rooms access the common areas that are placed around the corridor directly. This aspect helps wayfinding (Marge, 2025).

The architects also made just one entrance for everyone from staff, to residents, the aspect that makes the place more normal and not like a special facility (Björn, 2025).

CONTEXT

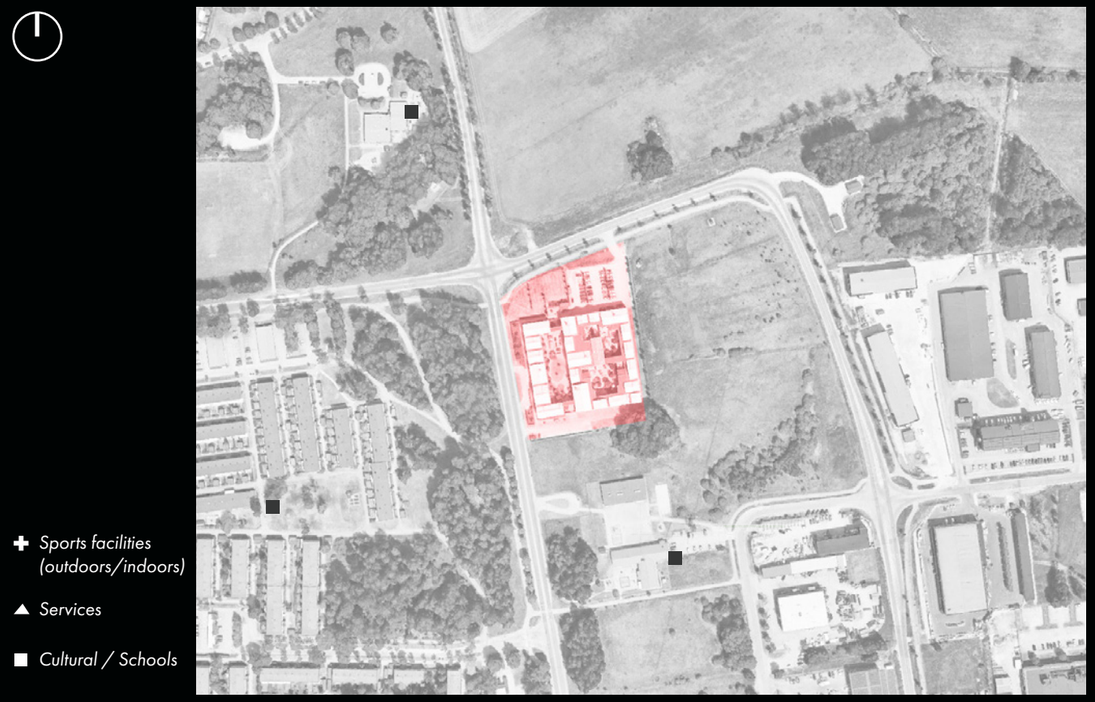


Fig. 51 Location of The Gardens Care Home (Scale - 1:5000). Source: Google Earth - re-elaboration of the author

Fig.52 The Gardens Care Home view.
Source: Marge (2025)

3

Fig.53 The Gardens Care Home view.
Source: Marge (2025)

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Fig.54 The Gardens Care Home view.
Source: Marge (2025)

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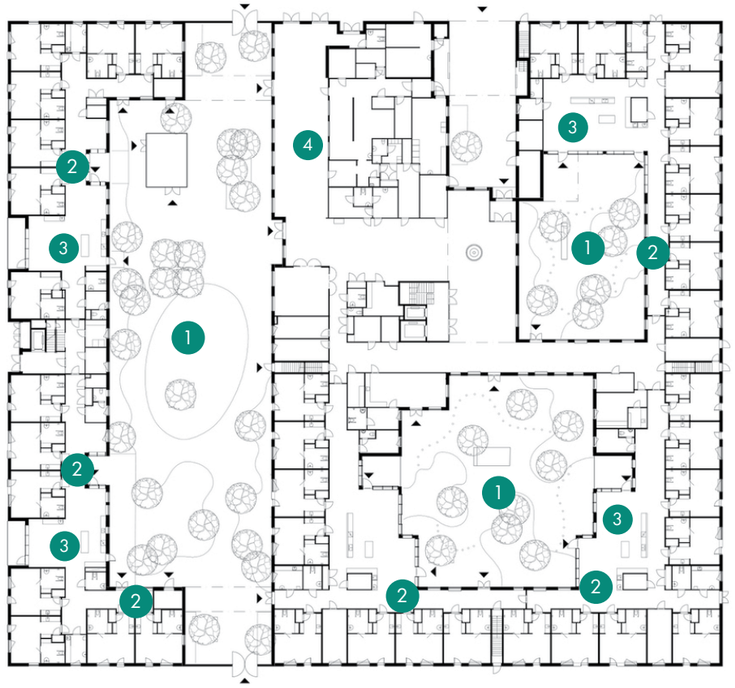
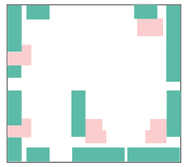
Fig.55 The Gardens Care Home view.
Source: Marge (2025)

BUILDING



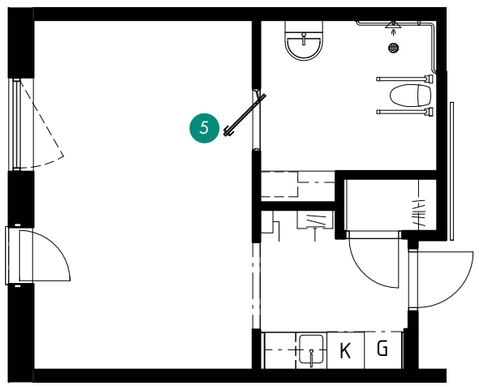


Apartments

Common Areas

Fig. 56 The Gardens Care Home ground floor plan (Scale - 1:500).
Source: ArchDaily (2022)

APARTMENT



Living

Bathroom

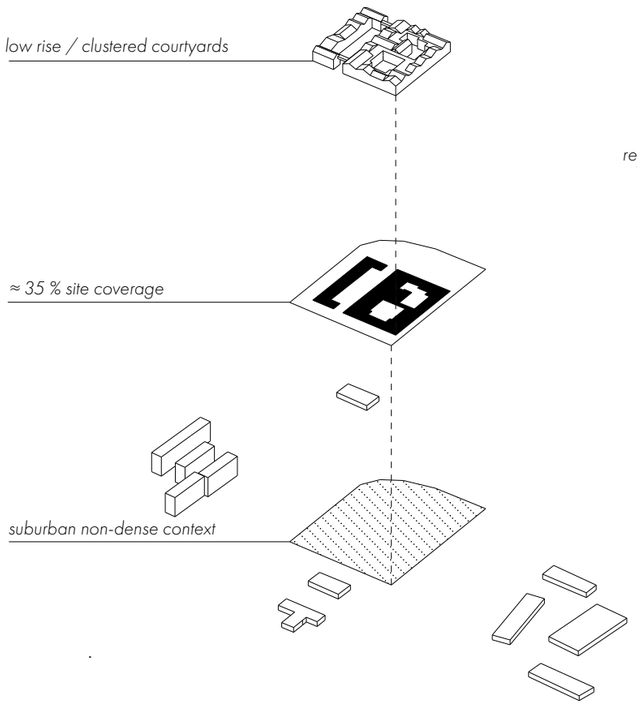
Fig. 57 The Gardens Care Home apartment plan (Scale - 1:100).
Source: Orebro Kommun (2025)

SAFETY & ACCESSIBILITY		1	*Having direct views to the courtyards increases the sense of safety in the environment. This design consideration helps residents with mobility restrictions to feel safe and connected to their environment even if they cannot go outside frequently (Björn, 2025).*
SENSORY EXPERIENCES		2	*According to Linda Björn (2025), although the residents are very ill, they still have senses, and it is important to consider how they sense their environments and how they want to live. The building maximizes natural light and views to the outdoors from corridors, providing sensory stimulation and creating a feeling of going somewhere when residents step out of their rooms.*
PRIVACY, AUTONOMY, COMFORT		—	*Different types of apartments with various sizes were designed to accommodate residents' differing budgets, following basic care home needs. Since it is in another level, it is not directly visible on the floor plan presented.*
WAYFINDING		3 5	*One spatial strength is that rooms access common areas directly from corridors, aiding wayfinding. The absence of traditional corridors and the design choice of corridors facing gardens help residents orient themselves better within the building. Rooms view bathrooms directly.*
SOCIAL INTERACTIONS		3 4	*Architects created many spaces for interactions among neighbors, visitors, and staff. Staff areas are not separated from residents' areas, encourageing more frequent social contact and a sense of community.*
CONNECTION TO NATURE		1 2	*The main concept is to provide as much connection to nature as possible through easy accessibility to outdoor spaces. Direct views to courtyards and natural light are integral to the design, supporting residents' connection to nature (Bjorn, 2025).*
PHYSICAL ACTIVITY & HEALTHY NUTRITION		1	*Although not explicitly mentioned, the accessibility to courtyards and outdoor spaces implies encouragement of physical activity.*

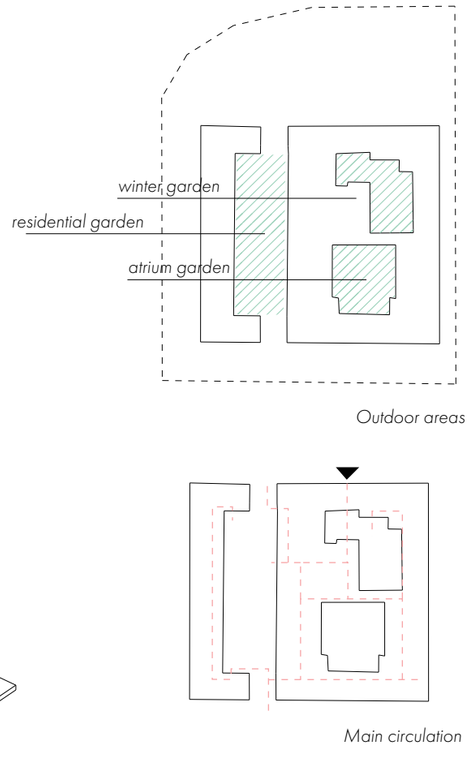
— *Not directly representable through the photos or drawings*

Fig. 58 Case study analysis table (The Gardens Care Home).
Source: Author

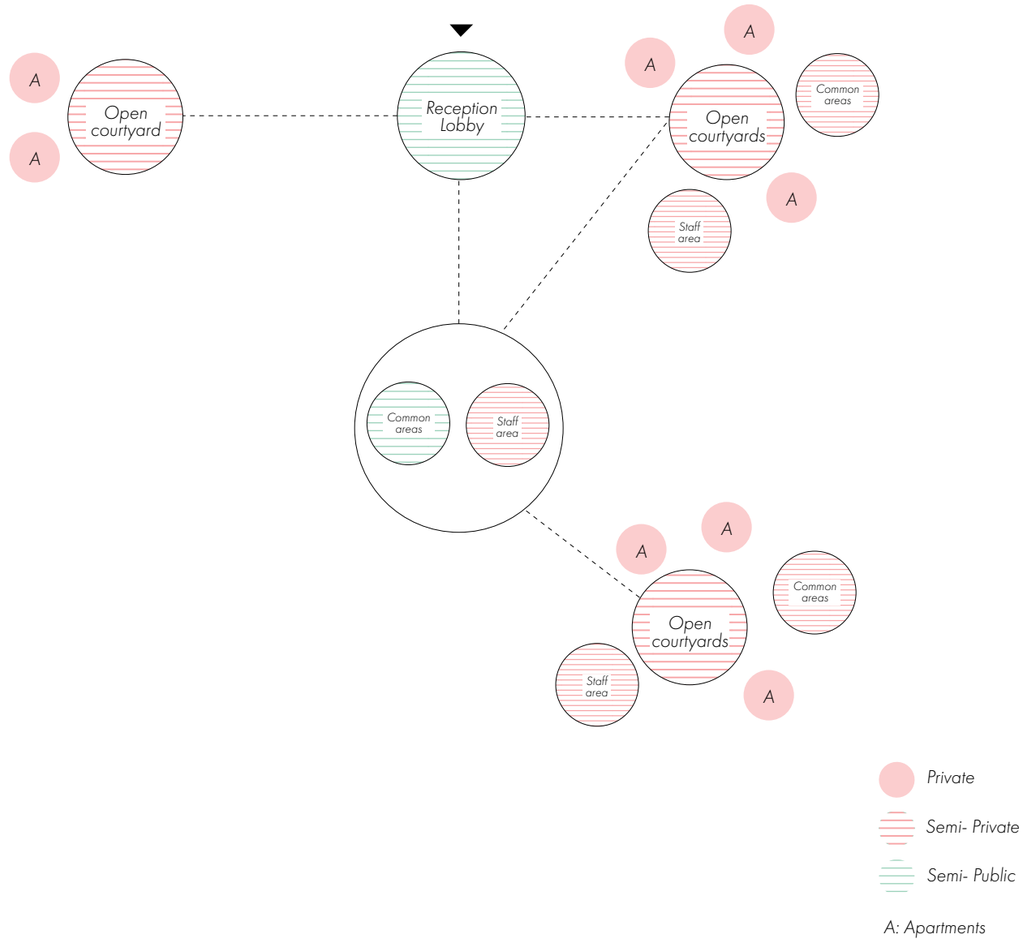
BUILDING TYPOLOGY



TYPOLOGY STRATEGIES



SPATIAL ORGANIZATION



The building is in a non-dense part of the suburbs of the city of Orebro. According to Björn (2025), initially the municipality stated that there would be some development in the area. However, currently there is still no new development around the care home.

This typology provides secure garden access and opportunities for increasing views to the gardens. It also provides a circular circulation around the different spaces of the building.

The spatial organization strategy is based on clustering the different functions around the courtyards of the building volume. This way, the visibility increases and traditional corridors are eliminated by providing clear access to common areas and also views to outside.

Fig.s 59, 60, 61 Typology analysis (The Gardens Care Home). Source: Author

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4 *New Ground Co-Housing*

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Pollard Thomas Edwards
London, The UK
2016
6 Senior Co-housing

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New Ground Co-housing Community is a result of participatory planning that has seen the architect and future residents define together what would be their future residence. Twenty women have thus given life to the first English Senior Cohousing complex. They were involved for years in a participatory design process. This process helped architects to make sure they include the future residents' aspirations for privacy and social interactions.

Each resident can rent an independent apartment, with1, 2 or 3 bedrooms and a living area, and including eight socially rented homes. The residents span a range of ages from their 50s to 80s, allowing for different levels of support and activity.

The site for the project was secured by Hanover, a not-for-profit retirement housing provider, and the group partnered with the architects. This type of housing encourages autonomy at old age and take active participation in manageing one's own living environment. By offering a dignified alternative to institutional care, it demonstrates how architecture and community design can empower older people (New Ground Co-housing, 2024; Hudson Architects, 2022).

CONTEXT

Fig. 62 Location of New Ground Co-Housing (Scale - 1:5000). Source: Google Earth - re-elaboration of the author

Fig.63 New Ground Co-Housing view.
Source: New Ground Cohousing (2024)

Fig.64 New Ground Co-Housing view.
Source: New Ground Cohousing (2024)

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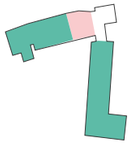
Fig.65 New Ground Co-Housing view.
Source: New Ground Cohousing (2024)

BUILDING

4



Apartments

Common Areas

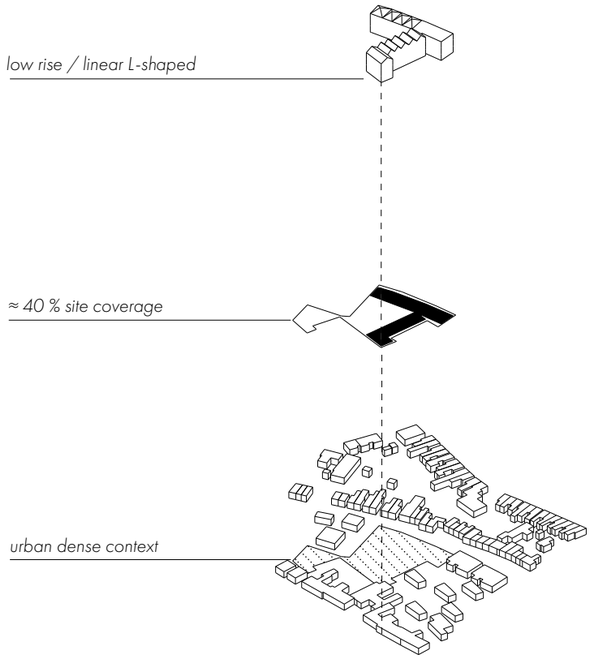
Fig. 66 New Ground Cohousing ground floor plan (Scale - 1:500). Source: Hudson Architects (2022)

SAFETY & ACCESSIBILITY	—	*Safety principles are not specifically mentioned however the community living concept provides a sense of security and care network between the neighboors.*
SENSORY EXPERIENCES	1	*The garden space can provide sensory support.*
PRIVACY, AUTONOMY, COMFORT	2	*Each household has its own private home, but communities share common facilities, combining neighbourly support with modern comforts and personal privacy. The model appeals particularly to older people who seek independence without isolation, offering a supportive alternative to conventional retirement housing.*
WAYFINDING	2	*The typology of the building provides easy wayfinding and central garden is visible.*
SOCIAL INTERACTIONS	3	*The organization of activities open to the neighborhood in the common areas also allows the community of this cohousing not to become isolated and to keep contact with the community.*
CONNECTION TO NATURE	—	*The T-shaped layout of the building provides access to sunlight for all apartments, and provides views to the garden.*
PHYSICAL ACTIVITY & HEALTHY NUTRITION	4	*The garden provides opportunities for physical activities, and the presence of a community garden encourages healthy eating habits.*

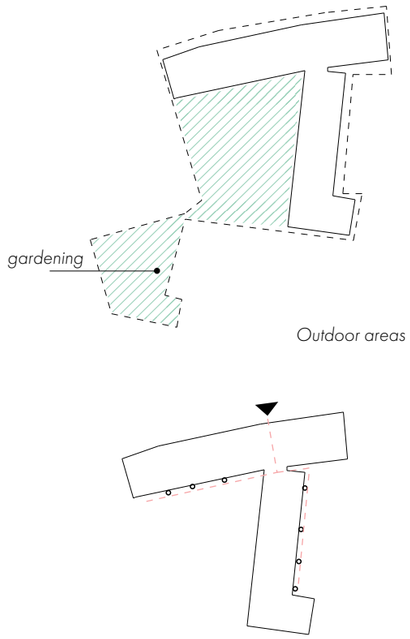
— *Not directly representable through the photos or drawings*

Fig. 67 Case study analysis table (New Ground Cohousing). Source: Author

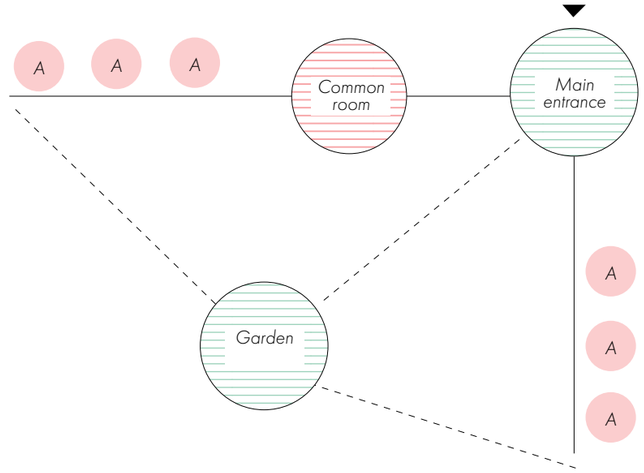
BUILDING TYPOLOGY



TYPOLOGY STRATEGIES



SPATIAL ORGANIZATION



The building typology presents an L-shaped building with a south facing central garden. The area is a quite dense urban context, so the use of the garden is very important to create connections to nature. This configuration also encourages social interaction by guiding residents through central shared spaces in their daily routines.

The main circulation is clear, and directed to two different directions from the main entrance.

The main entrance opens directly into the shared communal areas. The emphasis on the social interactions can be observed with the integration of common functions such as the meeting room, kitchen and dining areas.

The apartments are distributed to the building and all have access to garden views.

The spatial organization and the small scale of the development supports accessible and safe living.

Fig.s 68, 69, 70 Typology analysis (New Ground Cohousing). Source: Author

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Eltheto Healthcare & Housing Complex

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2by4 Architects
Rijssen, The Netherlands
2015
Senior Healthcare & Housing

The Eltheto Housing & Healthcare Complex is a mixed-use development consisting of four blocks. The concept was born from an idea that opposes seeing the older adults people as a group that is out of society and in need of care. The concept of the complex challenges the idea of designing older adults housing like a healthcare institution. That is why the programs of healthcare and housing were separated. The central innovation of the Eltheto complex lies in its separation of housing and healthcare functions; however they stay integrated to serve better life quality for its residents.

The main focus of the concept is the quality of life and the housing blocks are designed according to various levels of autonomy. The architectural choices that were made for the different blocks reflect the various levels of autonomy being divided into spaces for more independent older adults, social oriented older adults, and the older adults in need of care. They are connected together with a public space.

The architects emphasize the importance of research that was conducted about the different needs and the characteristics of the older adults (2by4-architects, 2015).

CONTEXT

Fig. 71 Location of Eltheto Housing & Healthcare (Scale - 1:5000). Source: Google Earth - re-elaboration of the author

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Fig.72 Eltheto Housing and Healthcare Complex view.
Source: Archdaily (2015)

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Fig.73 Eltheto Housing and Healthcare Complex view.
Source: Archdaily (2015)

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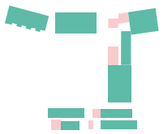
Fig.74 Eltheto Housing and Healthcare Complex view.
Source: Archdaily (2015)

BUILDING



Apartments

Common Areas

Fig. 75 Eltheto Housing & Healthcare typical floor plan (Scale - 1:1000). Source: 2by4 Architects (2015) - re-elaboration of the author

APARTMENT

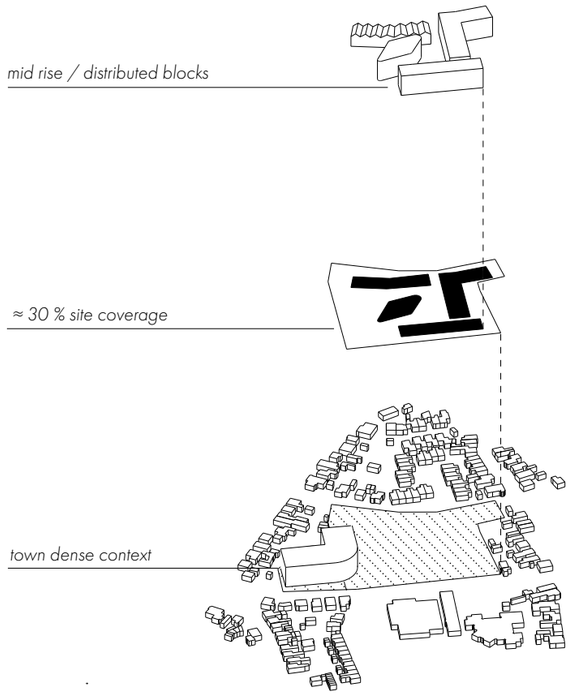
Fig. 76 Eltheto Housing & Healthcare apartment plans (Scale - 1:200). Source: 2by4 Architects (2015) - re-elaboration of the author

SAFETY & ACCESSIBILITY	— 1	*The goal of this complex is to keep older adults as a part of the society and provide healthcare and housing solutions that support well-being in terms of safety and accessibility.* *The design decentralizes healthcare facility typology whereas keeping to provide health services in the vicinity.*
SENSORY EXPERIENCES	2	*The garden space can provide sensory support.*
PRIVACY, AUTONOMY, COMFORT	3	*Integration of blocks for different purposes emphasize varying levels of autonomy, and opportunities for continued care. It is possible to adapt to different levels of needs so that if the residents need care they can move into another type of housing within the same complex, and they will stay within the same neighborhood.*
WAYFINDING	—	*The buildings have simple layouts that are easy to follow. The complex is composed of distinct volumes that make navigation and wayfinding easier, and since the areas are clearly defined it decreases confusion (ArchDaily, 2015).*
SOCIAL INTERACTIONS	2 4	*The common areas have programs such as communal gardening, outdoor events and meeting spaces.* *The complex of buildings are integrated through the public space that they share aimed to increase social interactions with the neighboors. The centre incorporates many public services, such as a restaurant, a library, a shop for daily groceries, a meditation centre, day care, hair salon and numerous activity areas and office spaces.*
CONNECTION TO NATURE	2	*The choices in the garden were carefully done considering the healing aspect of the connection to nature.*
PHYSICAL ACTIVITY & HEALTHY NUTRITION	2	*The garden provides opportunities for physical activities, and the presence of a community garden encourages healthy eating habits.*

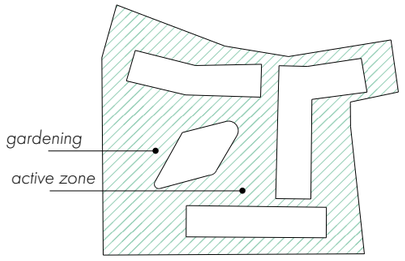
— *Not directly representable through the photos or drawings*

Fig. 77 Case study analysis table (Eltheto Housing & Healthcare Complex). Source: Author

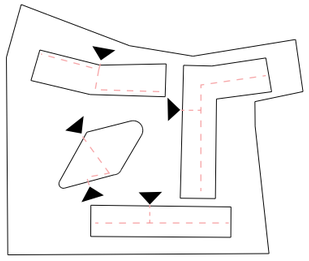
BUILDING TYPOLOGY



TYPOLOGY STRATEGIES

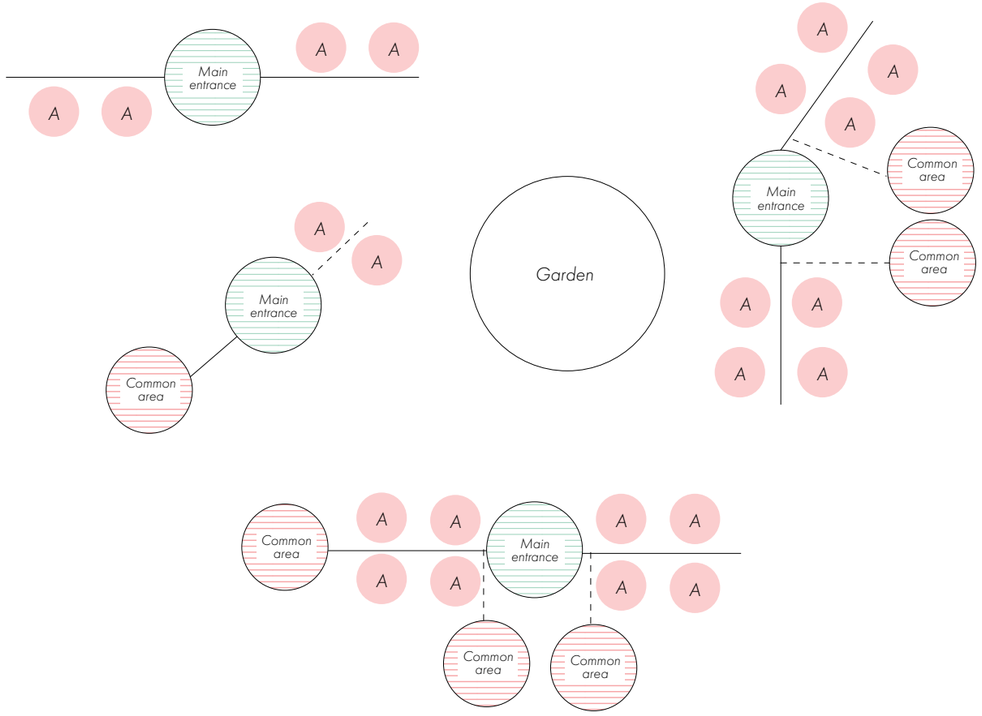


Outdoor areas



Main circulation

SPATIAL ORGANIZATION



The complex is situated in a small town with a dense surrounding morphology. The buildings are midrise scattered blocks that correspond to different typologies.

The distributed blocks on the site each present distinct but similar spatial organizations, most commonly organized in a linear layout that consists of common areas in-between the apartments. The interesting feature of this complex is that the blocks function independently, but are still related to each other through the design of the public space.

Fig.s 78, 79, 80 Typology analysis (Eltheto Housing & Healthcare Complex). Source: Author

Borgo Assistito Figino

Giacomo Penco + Matteo Rossetti
Figino, Italy
2014-2016
Assisted Living with Day Care Center

This case study was chosen to present an innovative example in the context of Italy. Borgo Assistito Figino is part of a large social housing project located in the Figino district of Milan called "Borgo Sostenibile". The aim of the whole project is to be a model of sustainable, inclusive, and intergenerational living. The integration of residential spaces with services designed also to support the older adults contributes to community engagement.

The layout of the social housing complex is characterized by a central pedestrian avenue that is surrounded by buildings, courtyards, gardens and public spaces. Unlike conventional older adults care facilities that are often isolated from urban life, Borgo Assistito is fully embedded within a mixed-use residential neighborhood, allowing older adults residents—many of whom have reduced autonomy or dementia—to live in close connection with a broader, multigenerational community. The choice to have the ground floor entrance with full glazing displays the effort to connect the services with the community (Giacomo Penco | Proginvest, 2019).

In addition to the assisted living facility, a plan of the senior co-housing is also presented in the following page.

CONTEXT

Fig. 81 Location of Borgo Assistito Figino (Scale - 1:5000). Source: Google Earth - re-elaboration of the author

Fig.82 Borgo Assistito Figino view.
Source: Giacomo Penco | Proginvest (2019)

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Fig.83 Borgo Assistito Figino view.
Source: Giacomo Penco | Proginvest (2019)

3

Fig.84 Borgo Assistito Figino view.
Source: Giacomo Penco | Proginvest (2019)

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Fig.85 Borgo Assistito Figino view.
Source: Giacomo Penco | Proginvest (2019)

Fig.86 Borgo Assistito Figino first floor plan (Scale - 1:500).
Source: Giacomo Penco | Proginvest (2019)

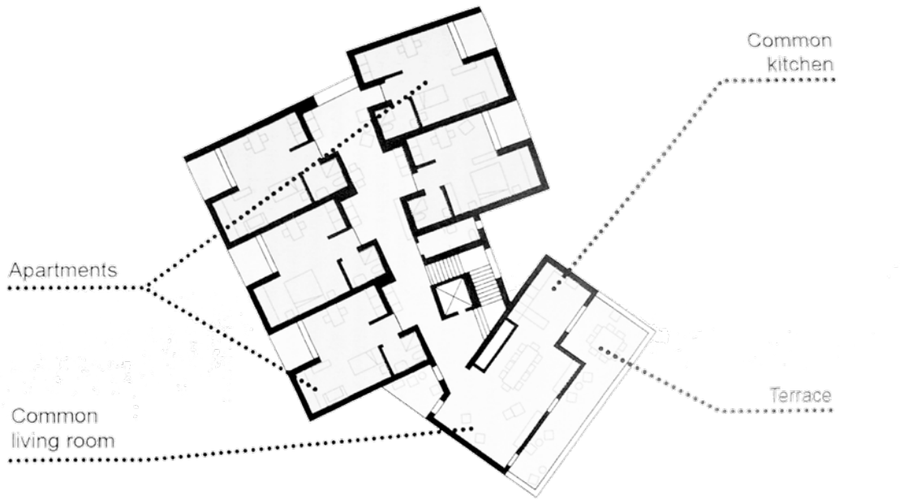


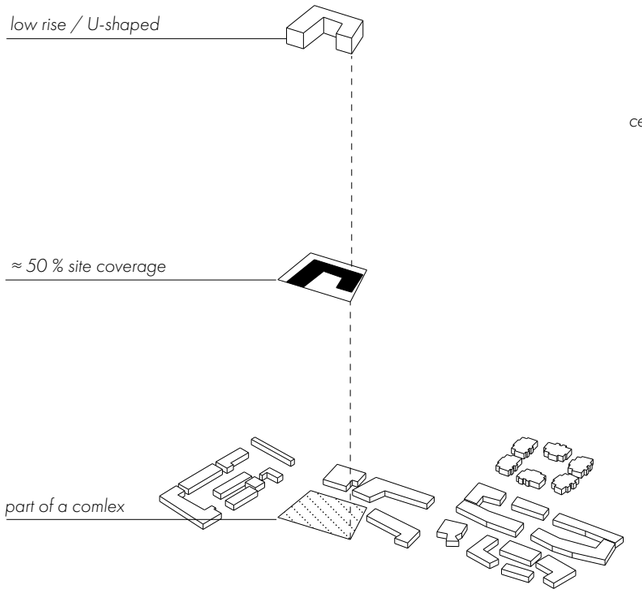
Fig.87 Borgo Figino senior co- housing floor plan (not to scale).
Source: Giofrè, F. and Porro, L. (2021)

SAFETY & ACCESSIBILITY		—	*Borgo Assistito is an assisted living facility located in one of the buildings of the complex. It aims to support older adults autonomy with care. The design emphasizes accessibility and inclusivity enabling the older adults residents to live independently while having access to support services.*
SENSORY EXPERIENCES		1	*The central yard can provide sensory support.*
PRIVACY, AUTONOMY, COMFORT		2	*The various room typologies consist of double or single bedrooms with private bedrooms.*
WAYFINDING		—	*The simple layout of the building makes wayfinding easier.*
SOCIAL INTERACTIONS		3	*The integration of the facility within the broader community allows residents to take part in social interactions and participation in communal activities. The ground floor of the building includes a day-care center for the treatment of Alzheimer's disease and an assistance center for disabled people.*
CONNECTION TO NATURE		1	*The U-shaped layout of the building allows for a central garden facing south to support connection to nature with activities like gardening and walking around.*
PHYSICAL ACTIVITY & HEALTHY NUTRITION		—	*The complex that the building is situated in can provide opportunities for physical activitiy.*

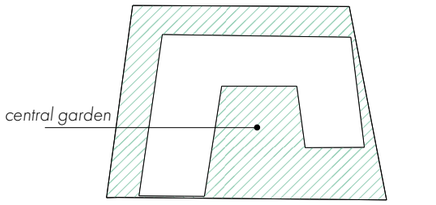
— *Not directly representable through the photos or drawings*

Fig. 88 Case study analysis table (Borgo Assistito Figino).
Source: Author

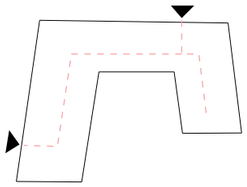
BUILDING TYPOLOGY



TYPOLOGY STRATEGIES

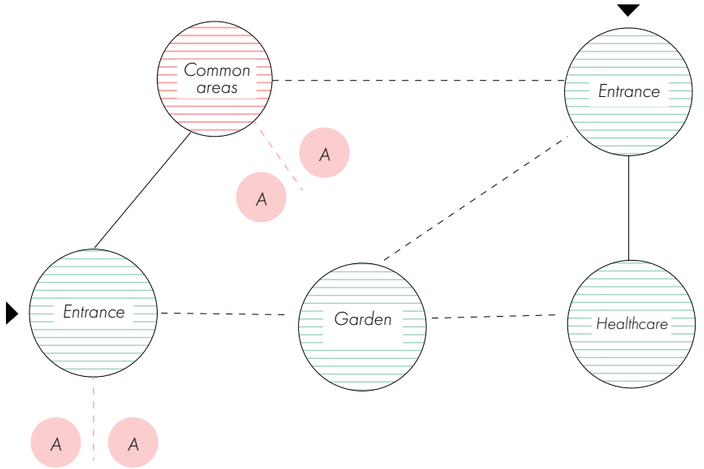


Outdoor areas



Main circulation

SPATIAL ORGANIZATION



Private

Semi- Private

Semi- Public

A: Apartments

6

The complex is located in a non-dense area which presents some forms of functions but is relatively more isolated, that's why the "Borgo Sostenibile" is designed with mixed uses to support necessary functions.

The outdoors do not present any designated uses, and the main circulation system is following a single cenral corridor.

The spatial organization connects care services with the community with the goal of enhancing the typology's goal for both providing assistance to residents and the surrounding community.

The residential units are located on the upper floors while the ground floor is for care and some common areas.

Fig.s 89, 90, 91 Typology analysis (Borgo Assistito Figino). Source: Author

4.4 Study Visits

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Villa Videbeck

LINK Arkitektur
Lidköping, Sweden
2019
Dementia Care Housing

Villa Videbeck is a dementia care housing facility that was built in order to meet the needs of residents with dementia in the best way possible.

It offers housing for people with dementia, short-term stays, day care, home care services, support for families. The building is specially designed for people with dementia, with spaces like a garden, orangery, large balconies, and areas that help with relaxation, activity, and movement (Lidköping Kommun, 2022).

The facility is designed to foster a sense of freedom, safety, and self-determination for residents with dementia. The layout encourages movement and interaction, with multiple communal areas and easy access to outdoor spaces (Lidköping Kommun, 2022).

The apartments are around 30 square meters each and are equipped with a private bathroom, kitchenette and a washing machine.

During the visit to the facility, some important observations were made as well as some crucial information was obtained from the head of the unit who provided the guided tour in the facility. Some remarks from the visit are summarized on the following page.

CONTEXT

Fig. 92 *Location of Villa Videbeck (Scale - 1:5000). Source: Google Earth - re-elaboration of the author*

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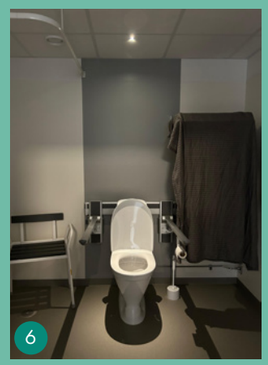
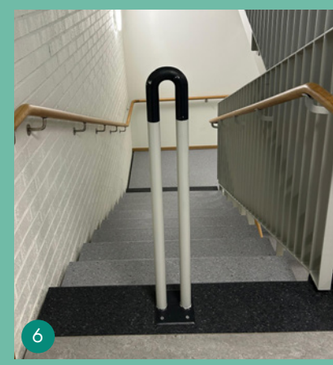
Fig.93 Villa Videbeck view.
Source: Projektlaget (2024)

Fig.94 Villa Videbeck view.
Source: Projektlaget (2024)

Fig.95 Villa Videbeck study visit photos.
Source: Author

STUDY VISIT REMARKS





Visit date: March 21st, 2025

OBSERVATIONS

A	B	C
D	E	F

A Staff offices were in a more isolated area however still accessible by the residents

B The restaurant area is commonly used as shared space when residents have visitors

C Kitchenette in bedrooms without stove or oven

D Common rooms and winter gardens are the frequently used spaces by the residents

E Use of lights to point at important directions

F Dark first and last steps signal danger and the bar is for wheelchair safety

CONVERSATION WITH STAFF

- One of the challenges of dementia is that it can cause passivity, meaning that the patients do not want to do anything.
- The common rooms with different functions are important. For instance, the sensory room is used as a calming space in case of attacks.
- The facility is not gated as some technological advancements that they use with bracelets help them find the location of patients in case someone with a late stage goes out. However, according to the experience of the staff, not being locked in helps to prevent anyone escaping because they feel they are free.
- Different colors used on every floor help for way-finding, but most of the patients do not have a lot of confusion about where they need to go. They know where their room is.

BUILDING

Apartments
Common Areas

Fig.96 Villa Videbeck ground floor plan (Scale - 1:1000).
Source: Drawing provided directly by the facility

APARTMENT

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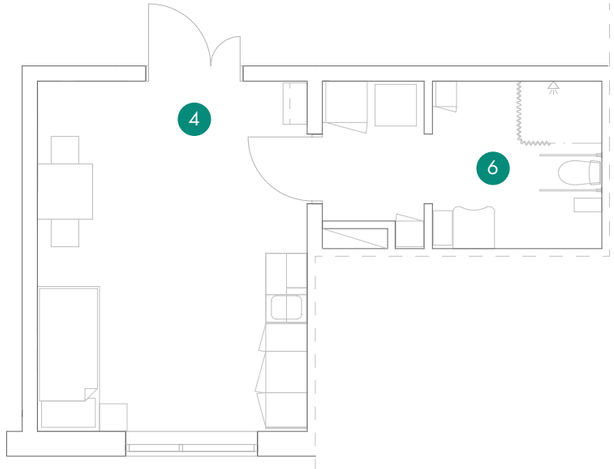
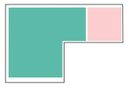




Zone living
Bathroom

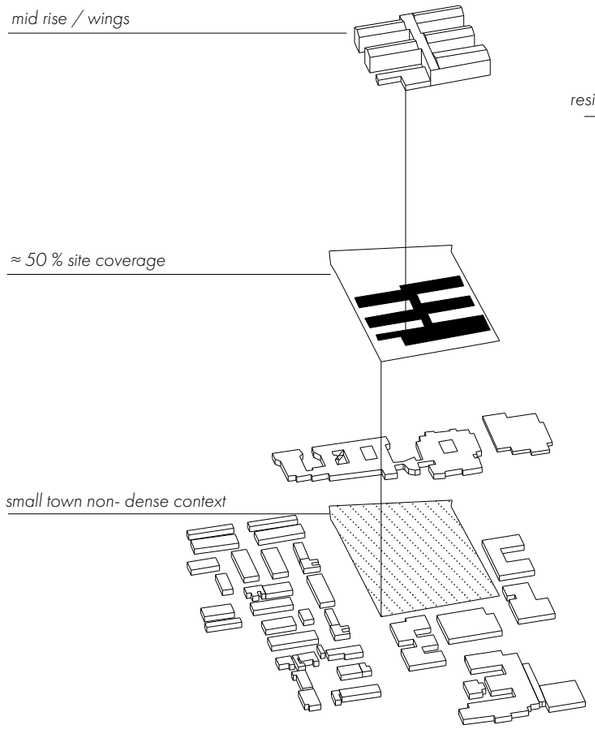
Fig.97 Villa Videbeck apartment plan. (Scale - 1:100).
Source: Drawing provided directly by the facility
- re-elaboration of the author

SAFETY & ACCESSIBILITY	1 6	*There is a single entrance, but it is not a gated facility so the residents can go out freely. This also somehow increases their sense of safety. The staircases are also designed with safety features, and bathrooms and kitchens integrate safety functions.*
SENSORY EXPERIENCES	2 3	*The facility has a multi-sensory room. There is also a large, easily accessible park for all the senses creating a connection to nature*
PRIVACY, AUTONOMY, COMFORT	1 4	*The residents have private rooms with private bathrooms. Also, the freedom of movement increases sense of autonomy.*
WAYFINDING	—	*Every floor is distinguished with a different color for easy wayfinding.*
SOCIAL INTERACTIONS	5	*There are several different social areas that invite its users to move freely inside the building and out in the gardens.*
CONNECTION TO NATURE	3	*The typology of the building integrates outdoor space with the building. There is also the large residential garden that the residents use when the weather is good. In various places, there are winter gardens, too.*
PHYSICAL ACTIVITY & HEALTHY NUTRITION	3 7	*The goal is for the environment to be calming and inviting for walks and spending time outdoors regardless of the season so it can encourage physical activity. The residents also wander around in corridors. There is also a gym.*

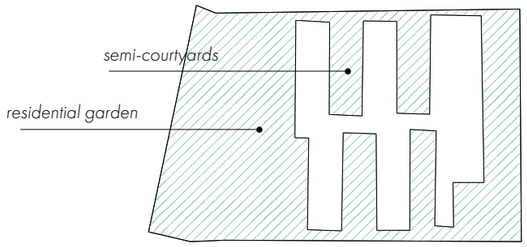
— *Not directly representable through the photos or drawings*

Fig. 98 *Case study analysis table (Villa Videbeck).*
Source: Author

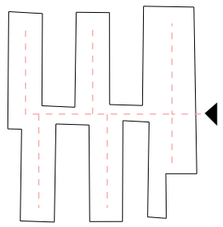
BUILDING TYPOLOGY



TYPOLOGY STRATEGIES

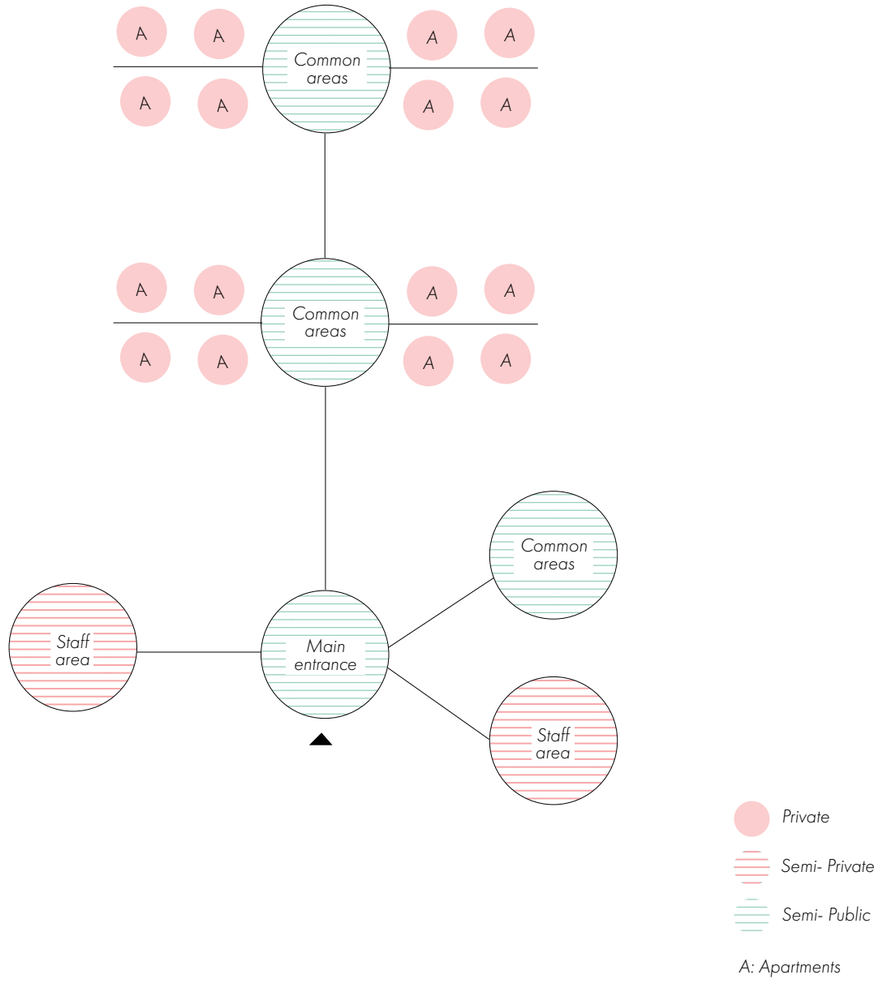


Outdoor areas



Main circulation

SPATIAL ORGANIZATION



The wings in the volume make a cluster of corridors along with the integrated common areas to accommodate the needs of its users. Each cluster is divided with a garden area that is enclosed like a semi-courtyard.

On the ground floor close to the entrance, there is the administrative wing along with some common areas such as the restaurant, hairdresser, supermarket etc. The staff area is not locked away either. Everywhere in the building can be accessed by the residents.

Fig.s 99, 100 101 Typology analysis (Villa Videbeck). Source: Author

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Dronning Ingrids Hage

Arkitema
Oslo, Norway
2021
Dementia Village

Dronning Ingrids Hage (Queen Inrids Garden) is another example of dementia village situated in Oslo, Norway. It is designed to meet the complex needs of people with dementia. It presents a human-centered approach and a human centered care (Arkitema, 2019).

Just like De Hogeweyk, the concept resembles a village typology or a small neighboorhood in order to create a homely and familiar environment.

The village consists of 130 rersidential units that are divided into smaller living clusters of 8-10 residents in an apartment. Each cluster includes shared living areas, kitchens, and dining spaces. Each resident has a private room with a private bathroom.

The three different courtyards each present their own concept and the residents can move around the gardens and the facility freely and in a safe environment (Arkitema, 2019).

The building complex also integrates solar panels on the rooftop for its electricity production. Although, there are no published floor plans of the building layout and the apartments available, the study visit provided extra insights about the important design elements.

CONTEXT

Fig. 102 Location of Dronning Ingrids Hage (Scale - 1:5000). Source: Google Earth - re-elaboration of the author

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Fig.103 Dronning Ingrids Hage view.
Source: Arkitema (2019)

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Fig.104 Dronning Ingrids Hage view.
Source: Arkitema (2019)

Fig.105 Dronning Ingrids Hage study visit photos.
Source: Author

STUDY VISIT REMARKS

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Visit date: April 2nd, 2025

OBSERVATIONS

A	B	C
D	E	F

A The outer facade is designed like any other building in the neighboorhood

B The restaurant is open to public as well as the staff and the residents

C The multipurpose room can be rented out for events to encourage interactions

D The rooftop is a terrace that forms a path for wandering

E There is a cafe that feels like a usual cafe on the street

F Dementia friendly colors are used to point out important spaces

CONVERSATION WITH STAFF

- Most of the areas are not dedicated to only one group of users, but can be accessed by both staff and the residents.
- The residents are encooouraged to take part in their daily routines such as cooking and doing laundry.
- Rooms for commercial activities are designed to rent out and also serve the residents.
- Providing freedom to the residents is a risk, but it is necessary. For instance, during the tour, there was a lady who kept walking around without limitations.
- Everyday and even every hour is new for people with dementia, so it is important to make their small experiences meaningful.

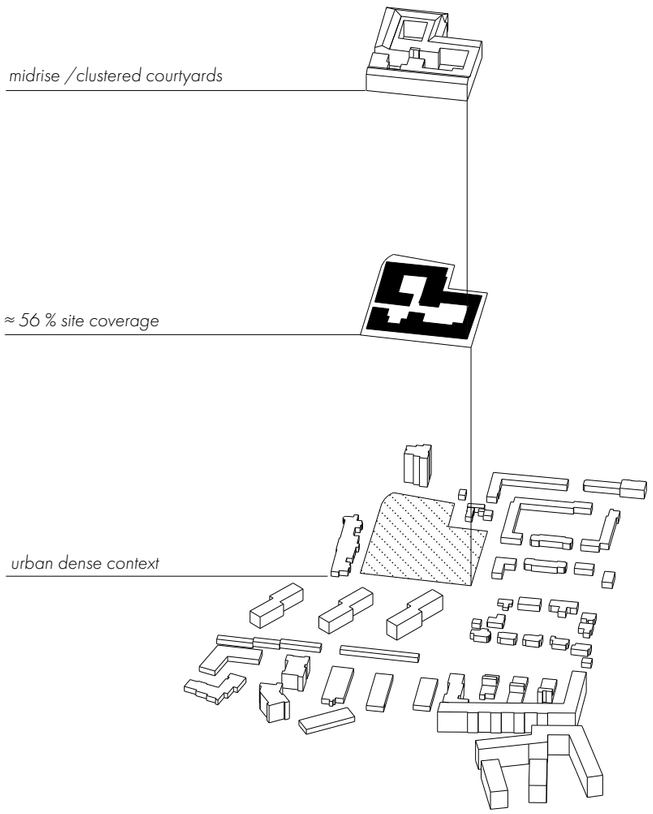
Fig.106 Dronning Ingrids Hage view.
Source: Arkitema (2019)

SAFETY & ACCESSIBILITY		1	*There is a single entrance and the residents are not able to go out, but the buildings are located around courtyards and secure gardens for secure circulation.*
SENSORY EXPERIENCES		1 2	*The building typology encourages the connection with the courtyards, and increases senosry engagement. Also, some cladding materials use dementia-friendly colors that make the spaces distinguishable.*
PRIVACY, AUTONOMY, COMFORT		—	*The apartment types encourage layers of privacy. Residents have their own room, but engage with others in the common areas.*
WAYFINDING		1	*The landscape itself becomes a wayfinding tool and a key contributor to residents' sense of well-being as it allows wandering.*
SOCIAL INTERACTIONS		3	*Some common areas in the building are open to the neighboorhood, so residents can interact with others. Also, every cluster has their own common kitchen and living room.*
CONNECTION TO NATURE		4	*Large windows provide views of the gardens, offering a constant visual connection to nature and natural light. Also, the rooftop is a terrace that residents like wandering in.*
PHYSICAL ACTIVITY & HEALTHY NUTRITION		1	*Walking around in the garden encourages physical activity. The facility has a supermarket that residents "buy" supplies, and cook together with the staff in the common kitchen that reminds eating activities.*

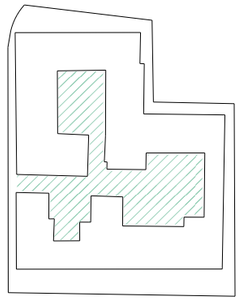
— *Not directly representable through the photos or drawings*

Fig. 107 Case study analysis table (Dronning Ingrids Hage).
Source: Author

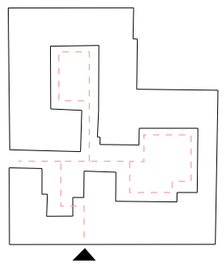
BUILDING TYPOLOGY



TYPOLOGY STRATEGIES

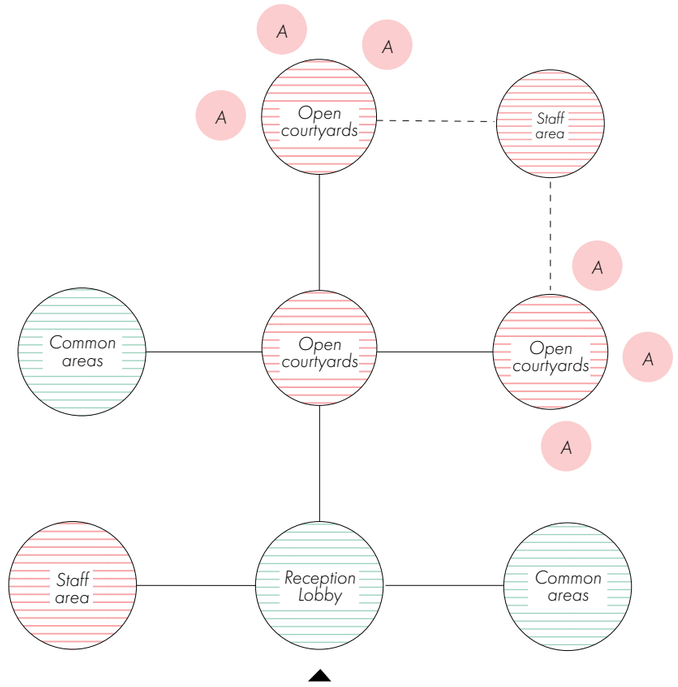


Outdoor areas



Main circulation

SPATIAL ORGANIZATION



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The village is in a neighboorhood close to the city center of Oslo consisting of some residential buildings in the surroundings. The clustered courtyards in the typology creates safe outdoor environments for the residents, and inside the complex, it feels like a neighboorhood in itself.

On the ground floor close to the entrance, there is the administrative wing along with some common areas such as the restaurant. Then, there is the passage to the courtyard with other common functions on the ground floors along with entrances to the apartments.

Fig.s 108, 109, 110 Typology analysis (Dronning Ingrids Hage). Source: Author

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Bon Top

Kanozi Arkitekter
Molyncke, Sweden
2019
Extra-care Housing

Bon Top is an example of a type called "extra-care housing" in Sweden. The project is based on the situation that there are many older people who lack a natural, social context for various reasons. The solution to this problem is housing that provides the conditions for a social and active life.

It is a senior housing that is aimed for housing people aged 55 and above. It is possible to move into the 2-bedroom apartments that have entrance from the central area.

The project combines residential units with communal functions and shared interior gardens. The architectural and spatial strategies reflect a focus on enabling aging in place.

The main concept is the creation of a subtropical garden in the central space that becomes a shared space between the residents. The glass roof that was specially designed for this function helps keep the warm climate in the garden space.

The building is like normal housing with commercial activities also integrated. That contributes to urban design strategies of the project by integrating a function that can be used by the community in the neighboorhood (Kanozi Architects, 2022).

CONTEXT

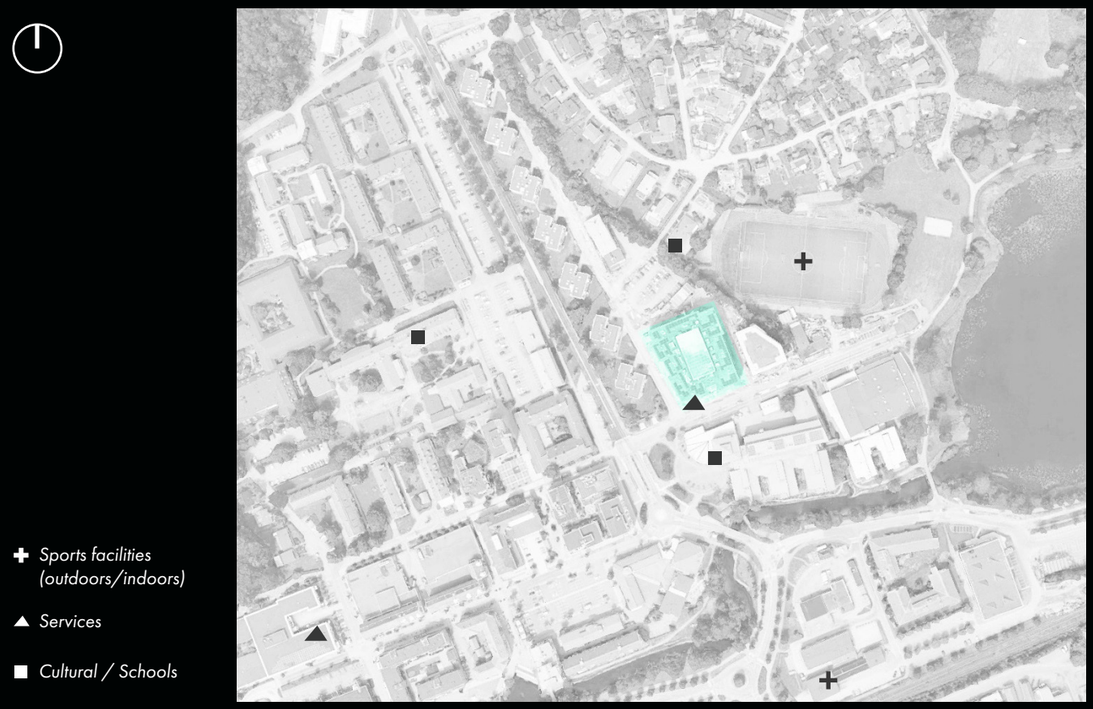

Fig. 111 Location of Bon Top (Scale - 1:5000).
Source: Google Earth - re-elaboration of the author

Fig.112 BonTop view.
Source: Kanozi Architects (2022).

Fig.113 BonTop view.
Source: Kanozi Architects (2022).

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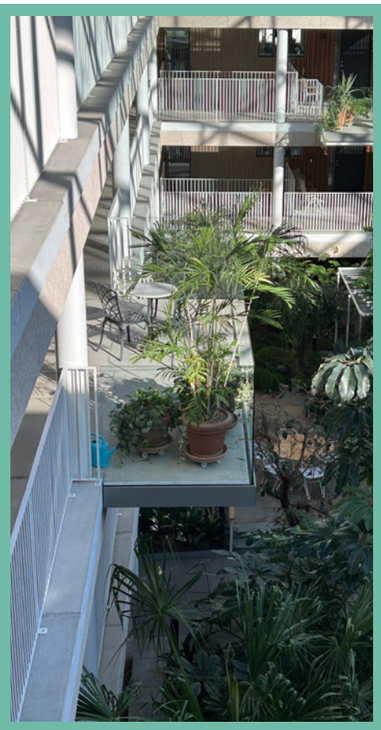
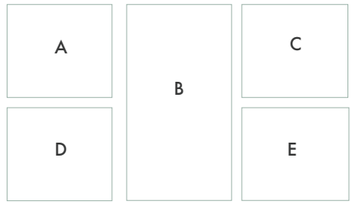
Fig.114 BonTop study visit photos.
Source: Author

STUDY VISIT REMARKS



Visit date: April 3rd, 2025

OBSERVATIONS



A — The outer facade resembles a normal type of residential building and the ground floor is commercial with parking for residents

B — The protrusions of the hallway forms balconies for gathering with neighboors

C — There are common facilities, and this room is used for gatherings, parties etc.

D — The skylights in the hallway provide extra natural light on all floors

E — There are common facilities, and this room is integrated with a common kitchen

PRESENTATION BY THE ARCHITECT

- In 2019 the municipality approved the project, and the plan went legal.
- Apartments have their own balconies apart from the shared terraces.
- It is a technically advanced building with lots of appliances for lighting, ventilation etc.
- The comfort of the users was the main focus.
- The average age of the residents is 71-72 years and some of them have home care.
- 60 percent of the residents live as couples, and the rest live single.
- The aspect that the residents are mostly satisfied with is the garden and the common areas, while being able to stay in their private homes.
- Some residents moved from their houses just to be in a secure social environment.

BUILDING

Apartments
Common Areas

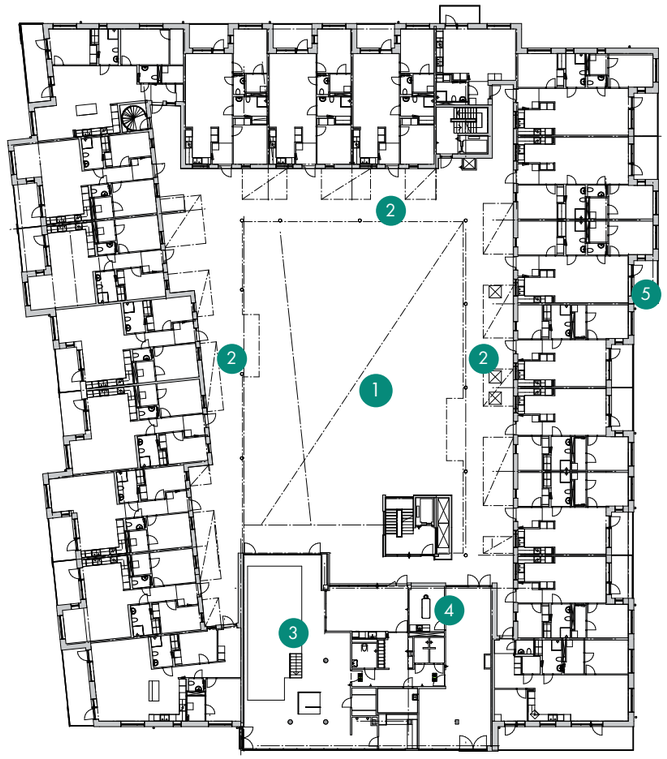
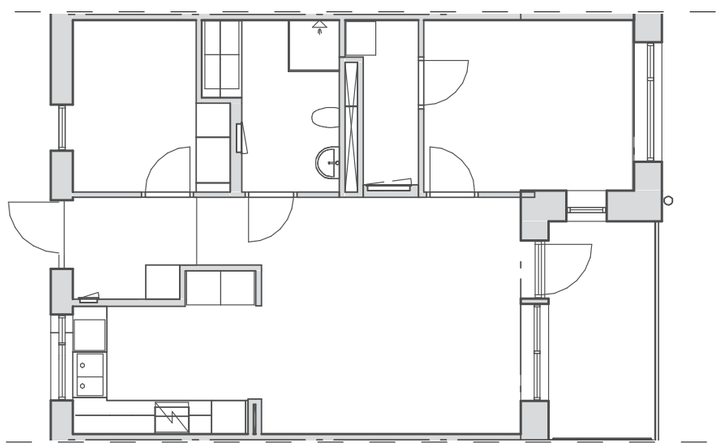


Fig.115 BonTop first floor plan (Scale: 1:500).
Source: Drawing provided by the company
- re-elaboration of the author

APARTMENT



Zone living
Bathroom
Bedroom

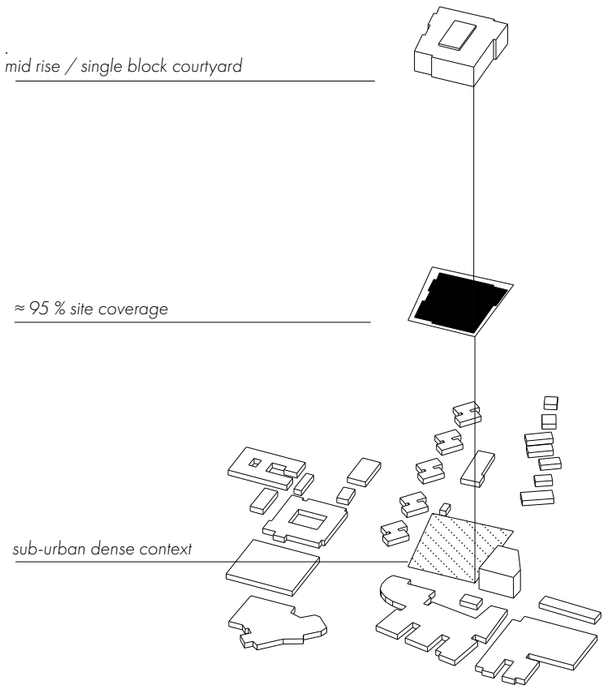
Fig.116 BonTop apartment plan (Scale: 1:100).
Source: Drawing provided by the company
- re-elaboration of the author

SAFETY & ACCESSIBILITY	—	*The design is aimed to focus on creating a secure environment for the residents.*
SENSORY EXPERIENCES	1	*The covered garden with year-round greenery provides multi-sensory stimulation—visual (plants, light), auditory (water, rustling leaves), and olfactory (flowers, soil).*
PRIVACY, AUTONOMY, COMFORT	—	*Communal areas are flexible and optional, allowing residents to choose when and how they engage socially.*
WAYFINDING	1 2	*Internal visual connections (balconies, walkways overlooking garden) provide intuitive cues to navigate and locate activities.*
SOCIAL INTERACTIONS	3 4	*Integration with commercial premises allows daily casual contact with the wider community.* *The common spaces include wellness areas to a doctor room for visits.*
CONNECTION TO NATURE	1 5	*The central garden provides direct connection to natural elements and sunlight.*
PHYSICAL ACTIVITY & HEALTHY NUTRITION	3	*Onsite gym, pool, and sauna promote regular movement.*

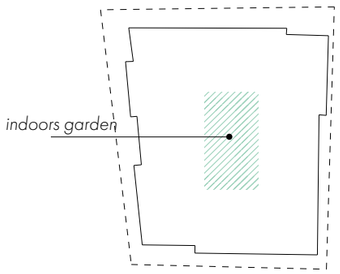
— *Not directly representable through the photos or drawings*

Fig.117 Case study analysis table (BonTop).
Source: Author

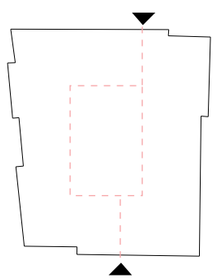
BUILDING TYPOLOGY



TYPOLOGY STRATEGIES

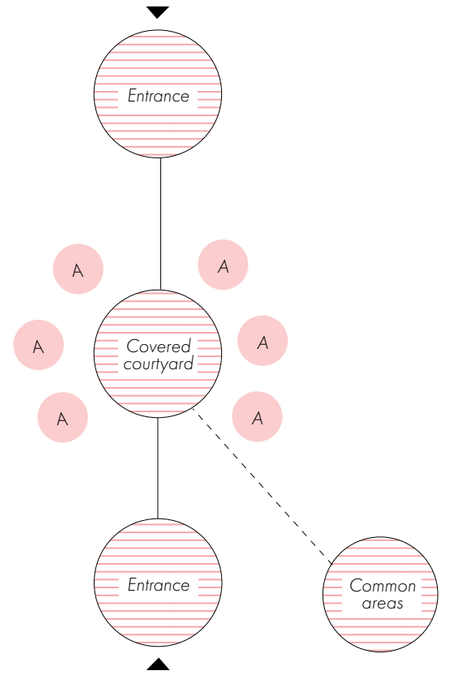


Outdoor areas



Main circulation

SPATIAL ORGANIZATION



Private

Semi- Private

Semi- Public

A: Apartments

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The building is located in a sub-urban context with close connections to Gothenburg. The building typology is similar to normal housing in the area. The typology strategies point out a covered courtyard that creates a large shared spaces for the residents, and created a looped circulation that also has clear visual outlines.

Spatial organization of this housing complex consists of two entrances, one from the street, one from the back side of the site with access to the common covered courtyard in the middle of the building.

The apartments and the common areas are arranged around the courtyard with a separate circulation. This arrangement gives the feeling of each apartment having their own entrance space from the garden or from the corridor with the garden view.

Fig.s 118, 119, 120 Typology analysis (BonTop).
Source: Author

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Trygghetsboende Bifrost

Tengbom
Bifrost, Sweden
2017
Extra-care Housing

Trygghetsboende Bifrost is also an example of extra-care housing that consists of 66 apartments that can be rented.

The apartments are designed for accessibility adaptation, and they are intended for residents that at least one member of the household is aged 65 or older.

The common spaces in the housing complex are designed for encouraging social interactions, and they consist of a lounge area combined with a library and living room with kitchenette, gym, sauna, relaxation area, communal rooftop terrace, and a reception/office area for a safety host.
The building concept is spread across two buildings connected by a welcoming entrance and lounge area with an access to outdoors where there is a gardening area and boules court.

In this complex, residents live just like in a regular rental apartment, and they take care of themselves or have home-care service.

The apartment types range from 1-bedroom to 3-bedroom apartments where some of the apartments can be adapted to get separated in a home-care situation.

CONTEXT

Fig. 121 Location of Trygghetsboende Bifrost (Scale - 1:5000).
Source: Google Earth - re-elaboration of the author

Fig.122 Fig.122 Trygghetsboende Bifrost view.
Source: Mölndalsbostäder (2017)

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Fig.123 Trygghetsboende Bifrost view.
Source: Mölndalsbostäder (2017)

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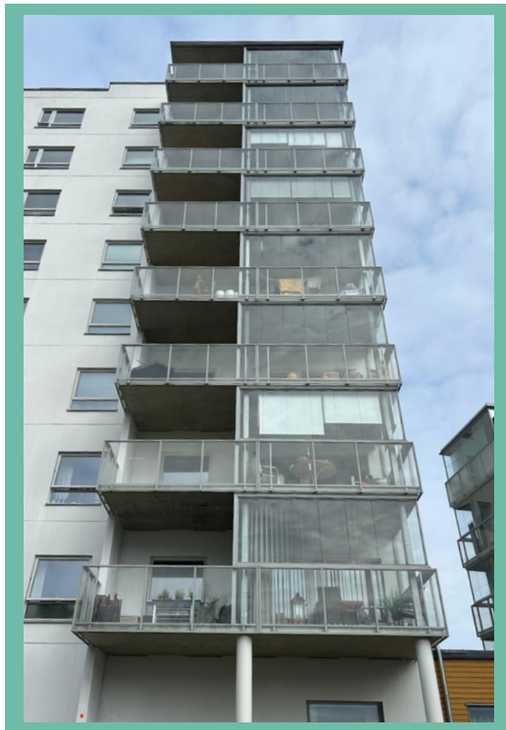
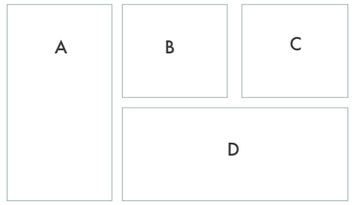
Fig.124 Trygghetsboende Bifrost study visit photos.
Source: Author

STUDY VISIT REMARKS



Visit date: April 8th, 2025

OBSERVATIONS



A Balconies are semi-covered so that there is the opportunity to both stay inside and go outside

B There is a common kitchen on the ground floor

C The entrance lobby is also designed for spending time in.

D There is a rooftop terrace with views to the neighboorhood

PRESENTATION BY THE ARCHITECT

- The rule to move in is for one person in the household to be at least 65 years old, so if a couple is moving it is enough that one of them is 65 or above.
- There are some activities organized for residents and usually 25-30 residents join out of 66 apartments.
- Even though people enjoy living in this complex, sometimes there can be conflicts between the residents, and they wish for more service.
- With this type of alternative older adults housing, the pressure on healthcare costs can be reduced.
- The complex is designed with enhanced accessibility.
- Common areas are a part of the rent.

BUILDING

Common Areas

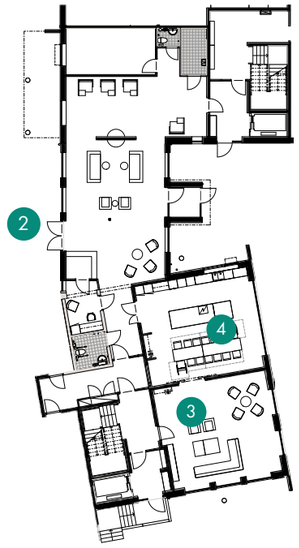


Fig.125 Trygghetsboende Bifrost ground floor plan (Scale - 1:500).
Source: Drawing provided by the company

APARTMENT

Zone living
Bathroom
Bedroom

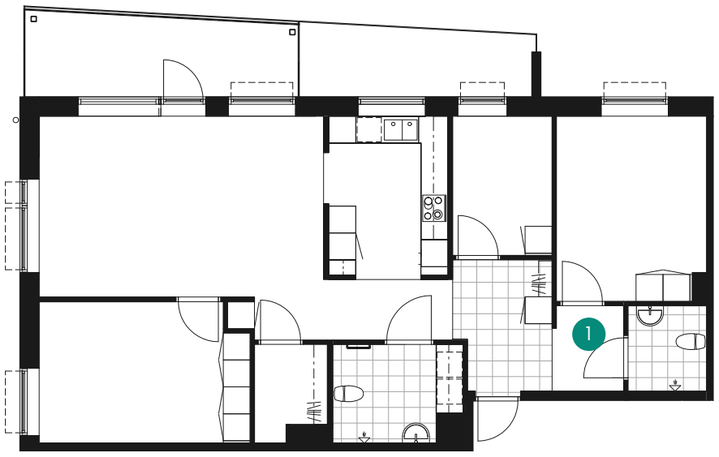


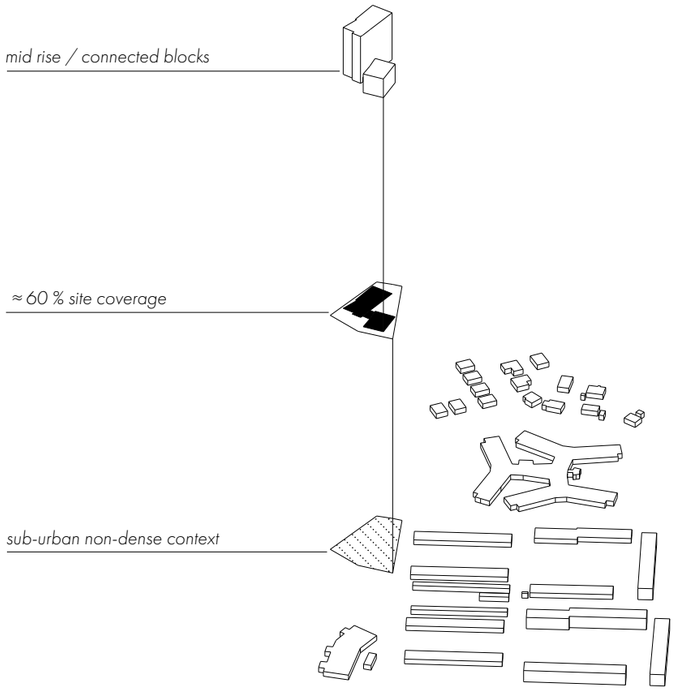
Fig.126 Trygghetsboende Bifrost apartment plan (Scale - 1:200).
Source: Drawing provided by the company

SAFETY & ACCESSIBILITY	1	*The apartment types range from 1-bedroom to 3-bedroom apartments where some of the apartments can be adapted to get separated in a home-care situation. And, more accessible features were added into design.*
SENSORY EXPERIENCES	2	*The access to the garden and overall design of the shared spaces encourages sensory engagement.*
PRIVACY, AUTONOMY, COMFORT	1	*Overall, the style of normal housing provides the required privacy.* *Some apartments that can be separated in care situations aim to keep the privacy of the private space, and use one bathroom and bedroom for the care situation.*
WAYFINDING	—	*No explicit strategies were wayfinding were noticed, however the simple layout is easy to follow by the residents.*
SOCIAL INTERACTIONS	3	*Common areas are distributed to the ground and top floors, and consist of common room, common kitchen, gym, conference room and a shared terrace. The lobby space also creates opportunities for interactions.*
CONNECTION TO NATURE	2	*The complex has access to its own shared outdoor space.* *At the apartment level, each unit has a private balcony or terrace, creating individual outdoor access. This arrangement maintains a connection to the outdoors.*
PHYSICAL ACTIVITY & HEALTHY NUTRITION	4	*The complex has a gym for encouraging physical activity, and a shared kitchen that can encourage activities for eating.*

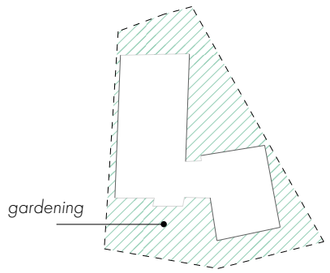
— *Not directly representable through the photos or drawings*

Fig.127 Case study analysis table (Trygghetsboende Bifrost).
Source: Author

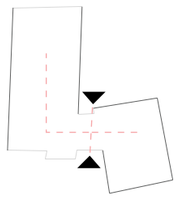
BUILDING TYPOLOGY



TYPOLOGY STRATEGIES

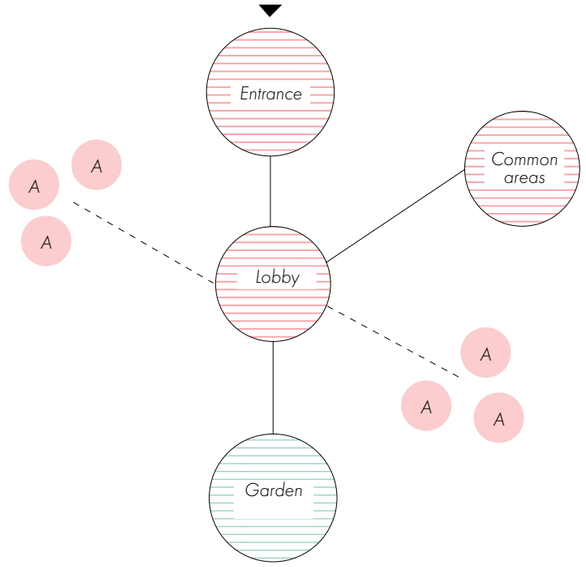


Outdoor areas



Main circulation

SPATIAL ORGANIZATION



Private

Semi- Private

Semi- Public

A: Apartments

10

The housing complex is located in the region of Bifrost in Gothenburg with strong connections to the center. One side of the building is a forest so it is integrated with nature views. The layout is small-scaled and provides a simple circulation.

The spatial organization emphasizes creating opportunities for social interactions as the central lobby space is designed as a common area. It connects to the vertical circulation core and leads to the apartments.

Fig.s 128, 129, 130 Typology analysis (Trygghetsboende Bifrost).
Source: Author

4.4 Comparisons

The case studies and study visits include examples from different types of housing for older adults. The critical point is that although the main target group is the older adults, varying levels of autonomy was considered as examples included from normal housing for seniors to long-term care facilities such as for dementia.

It is useful to take into consideration the varying conditions of the older adults and what type of housing is designed for them considering different or similar types of design strategies.

The findings from the analysis and visits are thus combined into three tables of comparison . They guide the understanding of different scales, andsprovides input into quantitative and qualitative aspects of the chosen cases.

The quantitative comparison ***(Fig.131)*** is structured into following sections:

1) Number of residents: The values for number of residents are estimate as some facilities also include apartments for short-term care. However, comparing this information is useful in order to establish a relationship between the scale and the possibility to house how many residents. As some cases are normal apartments for the older adults, they have an average minimum presented as more family members are welcome to move in.

2) Typology of apartments: This section is useful to understand the main needs when it comes to designing different types of apartments within the same scale.

3) Average apartment size: Establishing the average apartment size gives an idea about the general requirements of private space for this target group. This factor may vary in different countries based on different regulations.

4) Average bathroom size: Establishing the average bathroom size gives an idea about the general requirements of accessible bathrooms for this target group. This factor may vary in different countries based on different regulations.

5) Common/ private areas ratio: Analyzing the common-to-private area ratio helps evaluate how the space balances social interaction and personal space.

The qualitative comparison ***(Fig.132)*** is structured into following sections:

1) Types of common areas: Although according to the interviews with architects in practice for this thesis resulted that certain programs are provided by the clients or regulations for projects, the design or addition of the common areas can depend on increasing the quality of living.

2) Features of outdoors: All of the cases analyzed or visited included some type of outdoor space. For this reason, this section on the table shows comparisons for certain aspects of the outdoor spaces.

3) Connection to surrounding: The category is used to define what type of spaces provide connection to the surroundings in the projects.

4) Presence of staff: It is useful to understand the level of support provided.

Finaly, the scale and typology comparison ***(Fig.133)*** is used to compare the sizes of the different cases analyzed in order to have an understanding of space requirements depending on types.

Although the case studies differ in their respective programs, common themes and strategies emerged as a result of the overall comparisons.

4.4.1 Quantitative Comparison

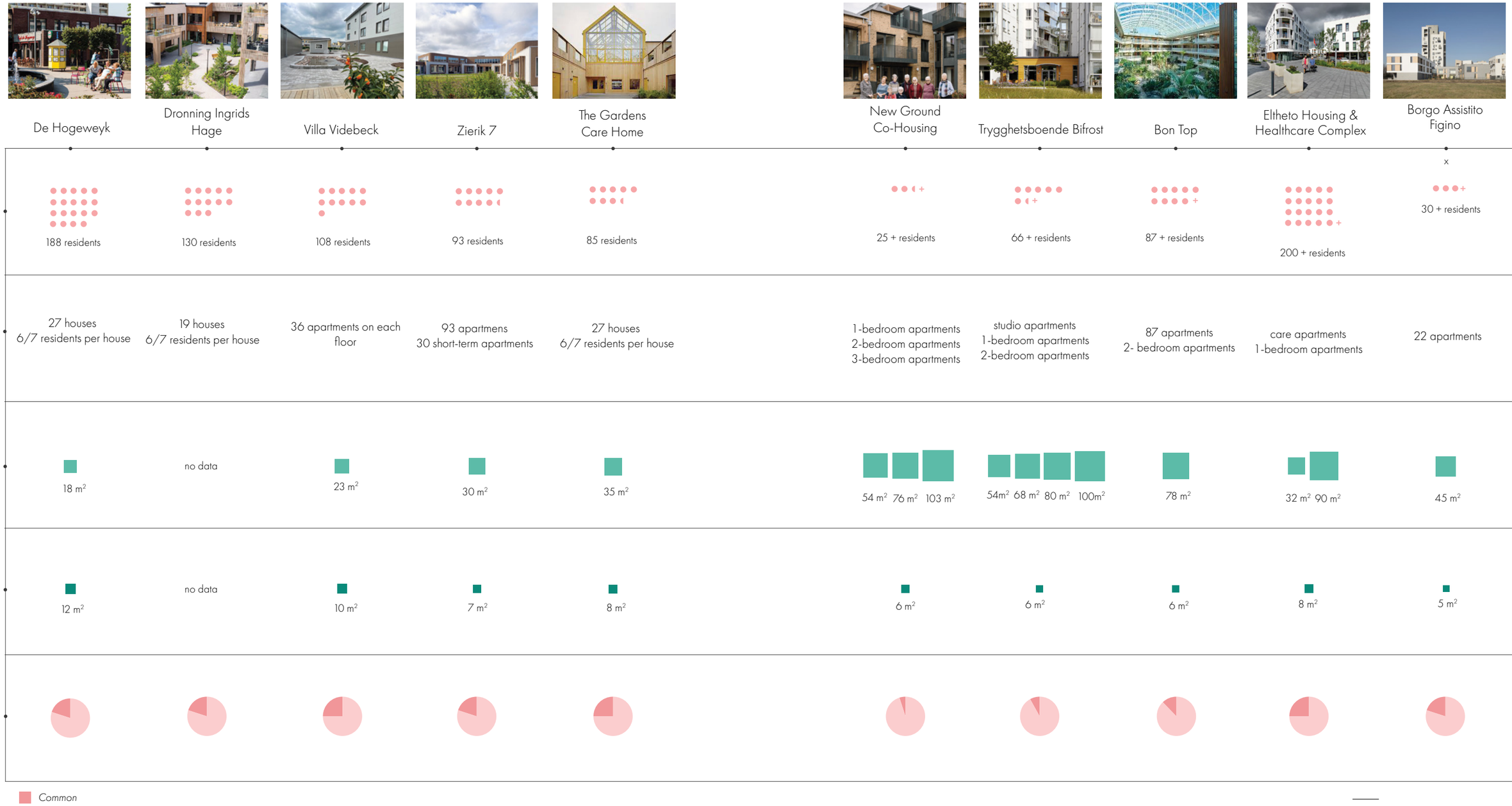
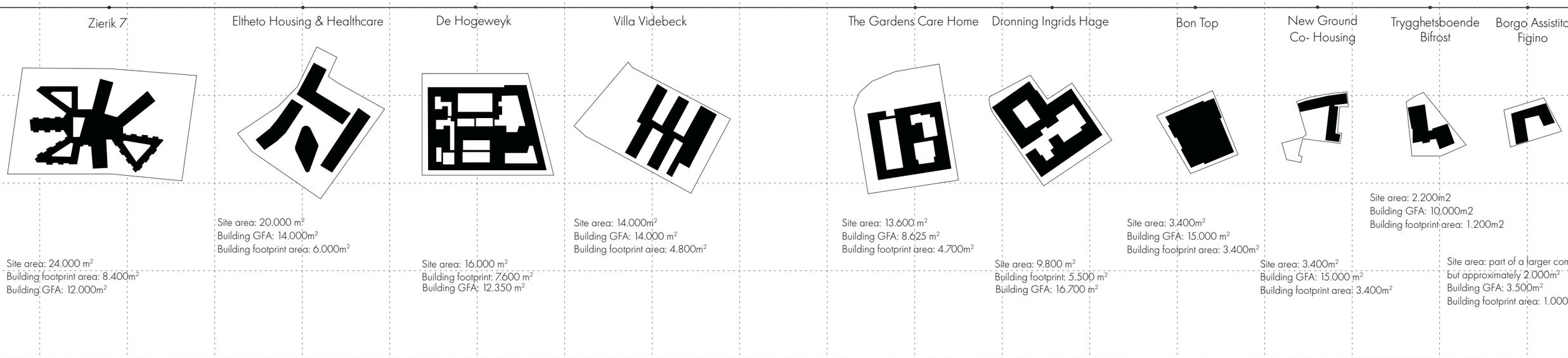


Fig.131 *Case study quantitative comparison. Source: Author*

4.4.2 Qualitative Comparison

Fig.132 Case study qualitative comparison.
Source: Author

4.4.1 Scale & Typology Comparison



Note: The values are approximations but the scales are accurate.

Fig.133 *Case study scale comparison. Source: Author*

/ Phase . D

Diagram design tool findings from practice

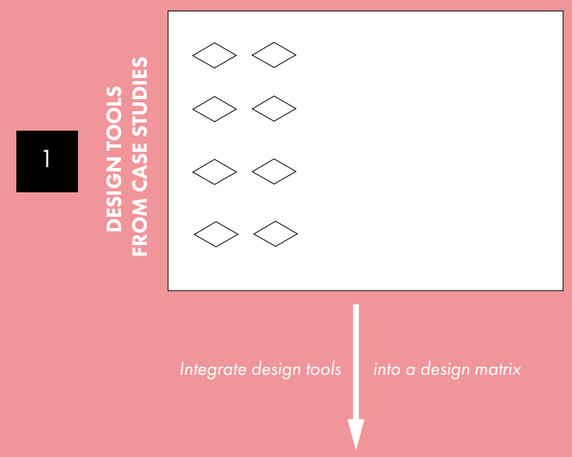
One of the aims of this thesis is to provide tools for design based on the research. This step is the first in the process that establishes the findings from the practical examples analyzed in this chapter related to the best practice.

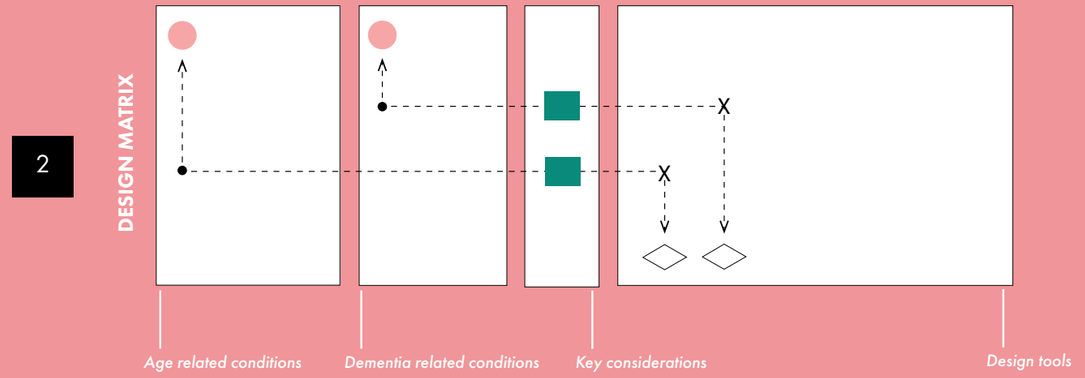
For each case study, two key findings were identified. These findings contribute to the creation of design matrices that link theoretical research on ageing and dementia with two elements: first, the key design considerations previously established, and second, the specific design tools informed by the case studies.

The instructions for how to read the next pages are demonstratedx.

Instructions on how to interpret the following pages are provided to guide the reader through the structure of the matrices.

As a result, the matrices serve as a bridge between theory and practice, helping to translate abstract principles into concrete design strategies tailored for dementia-friendly environments.



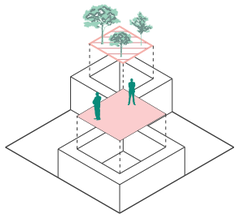


HOW-TO-READ
Find the " age-related" or "dementia-related" conditions,
and see the relations with key considerations and the design tools or vice versa

Fig. 134 How to read design matrices.
Source: Author

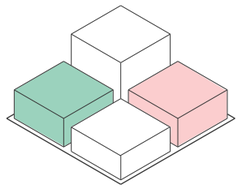
De Hogeweyk

A



Different typologies of courtyards creating outdoor spaces

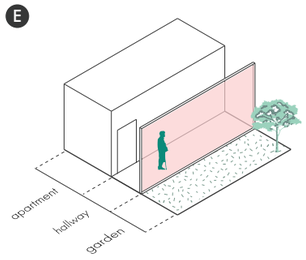
B



Different types of apartments according to preference of lifestlye & memories

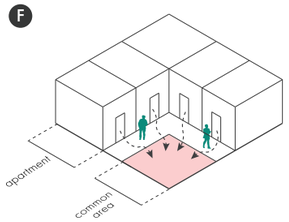
The Gardens Care Home

E



Hallways to create direct connections to outdoors

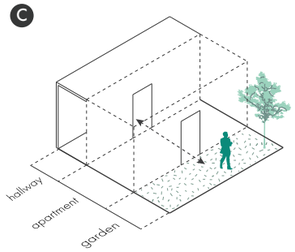
F



Common areas in open areas that are directly accessible from apartments

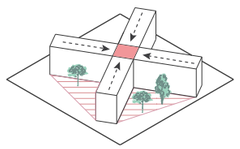
Zierik 7

C



Entrance to the apartments both from the indoors & the garden

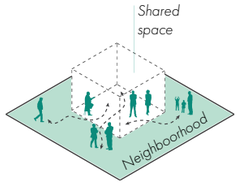
D



Use of the building volume to point to the central space with common areas

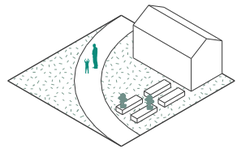
Older Women's Co-Housing

G



Common areas open to activities in the neighboorhood

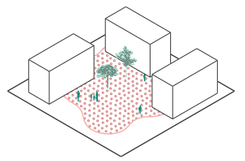
H



Community garden

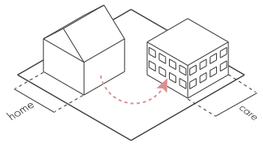
Eltheto Housing & Healthcare Complex

I



Buildings connected by public space

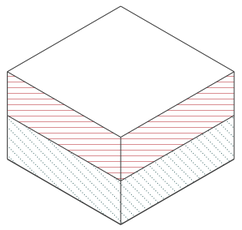
J



Possibility to transition to long-term care from home

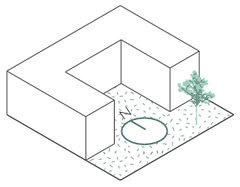
Borgo Assistito Figino

K



Ground floor for public healthcare function & upper floors with residences

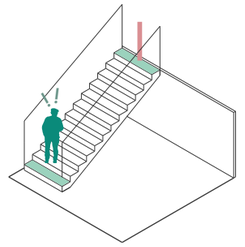
L



South facing gardens

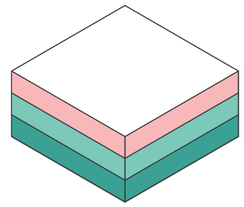
Villa Videbeck

M



First and last steps of the staircase with dark color material & barrier for wheelchairs

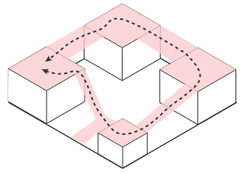
N



Different colors used on each floor for orientation

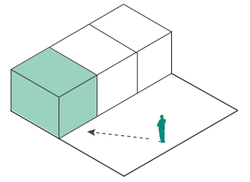
Dronning Ingrid's Hage

O



Rooftop as a network of terraces

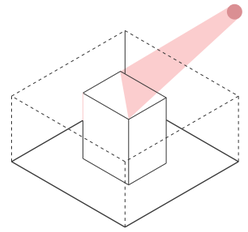
P



Dementia-friendly colors used for distinguishing some buildings

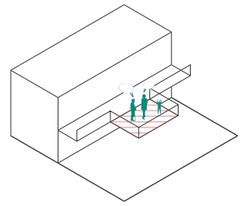
Bon Top

R



Indoor shared space with access to natural light

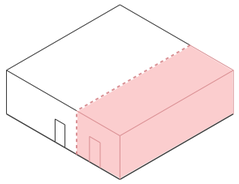
S



Pockets in the hallway as balconies for social interactions

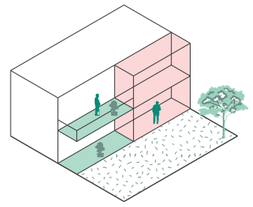
Trygghetsboende Bifrost

T



Possibility to separate a part of the apartment in a home-care situation

U



Open & covered balcony spaces

Fig. 135 Design tools from case studies. | Source: Author

AGE-RELATED CONDITIONS

DEMENTIA-RELATED CONDITIONS

KEY CONSIDERATIONS

DESIGN STRATEGIES

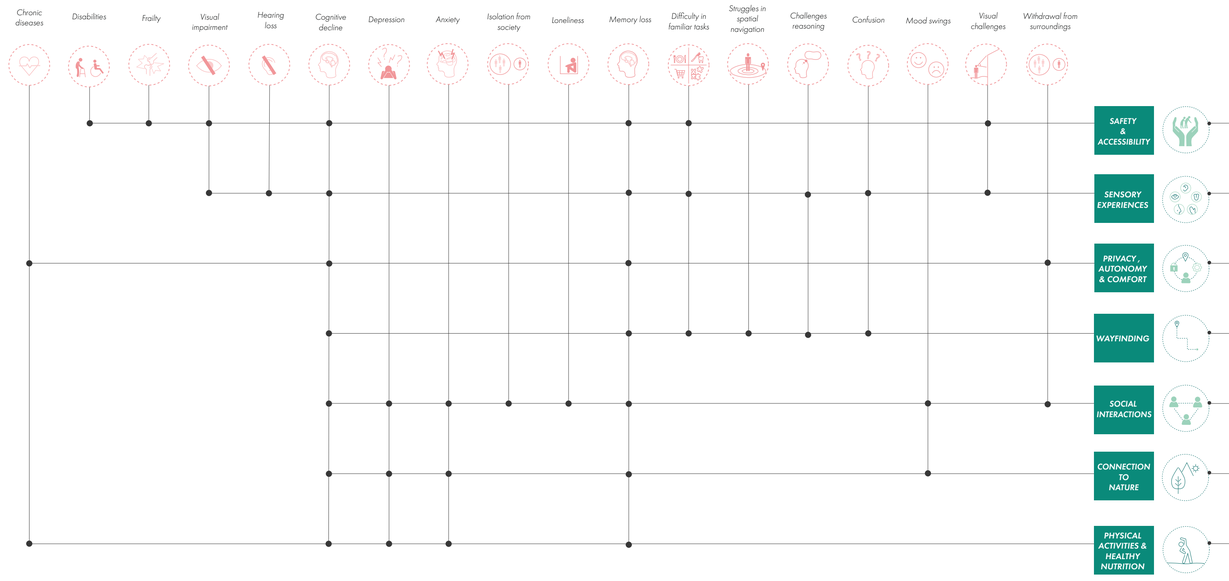
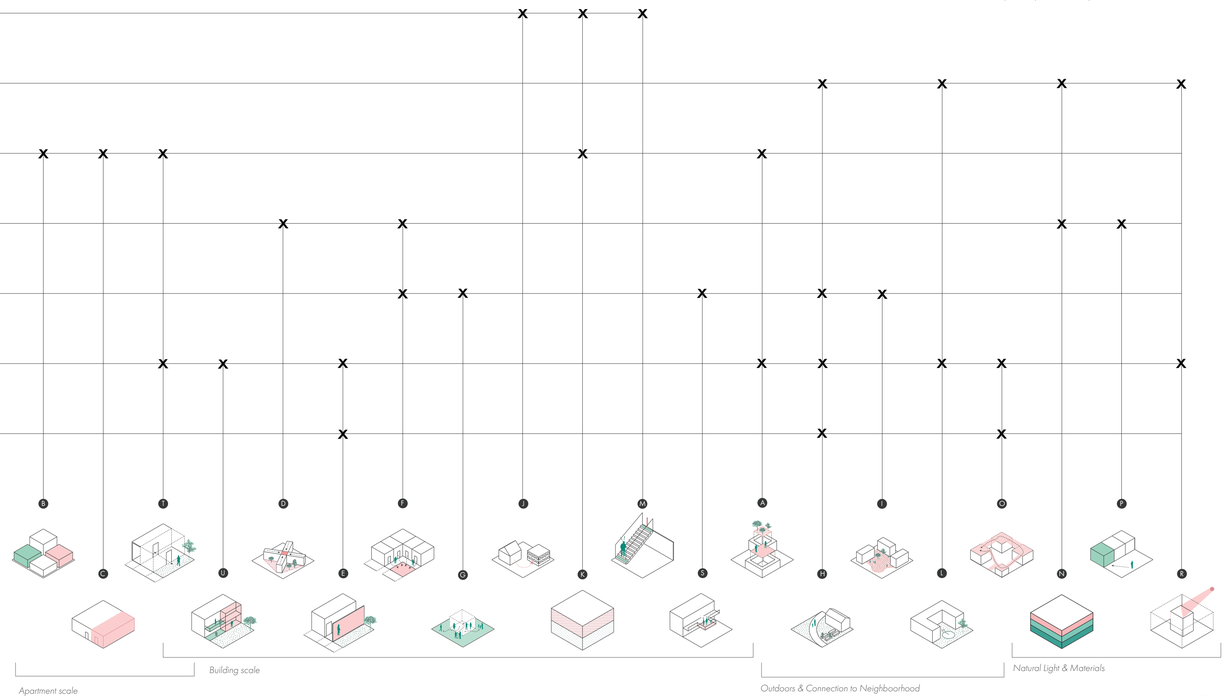


Fig. 136 Design matrix from practice.
Source: Author

According to the numbers of connections between the conditions and the key considerations, the importance of sensory experiences, wayfinding and social interactions is emphasized.

The majority of findings from case studies focus on strategies related to connection to nature, followed by wayfinding and privacy, autonomy and comfort.



05

Design Strategies

/ Phase . E Diagram design tool findings from research

The chapter is the tool to map out design findings from further research.

Fig. 137 Les malades d'Alzheimer ont un havre de sérénité dans ce village landais. Source: Olivier Arendel (2020) - re-elaboration of the author

5.1 Spatial Organization

The following sections are the continuations of the collection of design strategies that were reported as findings from case studies and study visits in the previous chapter. The additional strategies are reported in relation to key considerations that were established in chapter 4 that include safety and accessibility, privacy and comfort, social interactions, connection to nature, sensory experiences, physical activity and healthy nutrition, and wayfinding.

The collection of design strategies consist of those mentioned in literature through guidelines, practical studies and post-occupancy evaluations. Some findings are also supported with information collected from the interviews that were conducted with professionals for this thesis. This chapter results in a design matrix that presents additional design strategies to meet the needs and requirements of the target group.

Key considerations that were established highlight the essential needs and requirements for a senior housing to be a comfortable living space for the older adults and those with cognitive decline or dementia in Chapter 3. The spatial layout of senior housing shall promote engagement in activity and social interactions, as well as meeting the other requirements (Burzynska and Malinin, 2017).

5.1.1 Apartments & Building Layout

The strategies into spatial organization of senior housing with a special focus on dementia inclusiveness is related to how the private and common spaces, and the circulation in the building can be organized in order to meet the needs and requirements for the well-being and comfort of its users.

In terms of the size of the spaces and how much is their impact for comfortable senior living, Brookfield et al. (2015) discusses that larger rooms may make the movement easier, however smaller rooms feel provide more safety in terms of having the availability to hold on to somewhere easily in case of loss in balance or when the person gets tired. It is stated as a more cost-effective solution as well. Andersson, Granath and Nylander (2021) also mention that functionality of the space whether it is an apartment or a private bedroom for a care resident, is important in terms of functionality rather than the size of the spaces. The layout and connections between spaces are more important than having many rooms (Andersson, Granath and Nylander, 2015).

Consideration of spaces for storage that can keep memories is a possible aspect to enhance the use of the space. storage spaces shall be provided for keeping the belongings and memories and this improves psychological well-being as the users can keep memories and furniture from their past lives easily (Burzynska and Malinin, 2017). These findings provide more opportunities to focus on the spatial and functional quality of the spaces rather than the perception that accessible spaces should be large for easy movement and comfortable use. Flexibility is an important matter in this aspect, meaning that the designed spaces should have opportunities for a layout that is open to changes and arrangements.

Bedrooms

The privacy and comfort of the users can be managed with the proper design of the bedroom space. Incorporating elements of flexibility and considering a gradient for privacy is important. When the older adults continue to age in a home environment, there is the possibility that they will need home care at some point. Considering this matter, in order to keep the privacy in the apartment, it is more effective if one bedroom is positioned close to the entrance area. Andersson, Granath and Nylander (2021) mention in their studies that the bedroom should be possible to furnish in a care situation

and possibly accessible easily from the entrance of the apartment. In addition, in the interview with Linda Björn (2025), she also mentioned that "When you design the rooms, you want to be able to put to bed in three different places. You can choose to have your bed and look out the door. You can choose to have the bed somewhere that they can't see if someone opens the door". Adaptability when a home care situation is needed is a strong consideration for the privacy of the users. This can be managed if at least one bathroom and bedroom is located close to the entrance so that it is easy to reach without disrupting the privacy of the other parts of the apartment (Gromark et al., 2021).

Bathrooms

Following the spatial recommendation, one of the bathrooms should be close to the entrance for easier use in a home care situation. It is also important that they should be easy to locate whether inside the apartment or in a common space. Users should be able to easily locate the bathroom (Wijk, 2025). This aspect increases safety and accessibility as well as supports easier wayfinding, considering that keeping up with usual daily activities is one of the difficulties that individuals with dementia come across. Especially, at night the bathroom becomes hard to locate, so a simple and clear location is useful for better wayfinding purposes (Brawley, 2006).

Since bathrooms are one of the rooms in a house that create more risks of hazard, extra safety measures are essential to consider. The use of showers on a lower level instead of having to step up to a bathtub is essential for reducing the risks of falling (Brawley, 2006). Making the bathroom appliances easier to use with proper heights prevents the risks of falling as much as possible. The installation of handrails to aid the use is a key design strategy in this matter (Brookfield et al., 2015).

Kitchens

A centrally placed kitchen encourages eating and healthy nutrition and acts as a memory cue for normal daily activities (Lüdtke, 2014). Kitchens are one of the two places in the home, along with bathrooms, where the highest frequencies of hazards or obstacles to self-care activities are found. The cupboards in kitchens should be placed lower and should be less deep to allow easier access without the need for climbing up that could lead to safety issues (Brookfield et al., 2015).

Common Areas

Accessible design and clear environmental clues are focal points for the well-being of the older adults users that may have certain conditions, including the risk of having dementia (Brookfield et al., 2015). Common areas encourage social interactions, however in order to also encourage physical activity and promote the users to spend time in those areas, they need to be situated highly visible and welcoming within a close proximity from the apartments (Burzynska and Malinin, 2017). Multifunctional common rooms can create confusion, so it is better to designate a specific use for the common spaces (Eastman, 2013). Although providing common spaces for social interactions are encouraged, it is still essential to consider the privacy and autonomy of the users, so it can be solved with the strategic design of a progressive privacy in the living environment.

5.1.2 Circulation

Considering some conditions encountered by the older adults and with cognitive decline related to orientation, a simple and intuitive circulation structure becomes critically important. Wayfinding plays a critical role in ensuring comfort for the residents who may feel disoriented in complex environments. For individuals experiencing cognitive decline or mobility limitations, circulation systems must be designed with a simple system (Eastman, 2013).

The organization of different spaces that were mentioned in the previous section into a meaningful and clear system is essential for wayfinding purposes. The circulation system can also encourage physical activity by facilitating moving around with some strategies that increase the safety and accessibility of the spaces (Balboa-Castillo et al., 2011).

Studies indicate that destinations of interest and key points of the building should be clearly findable, possibly in the ending point of a path or distinguishable along the path (Ahrentzen and Tural, 2015). It is also favorable if the critical functions are located in central positions. Circular paths and good visibility to the surroundings make wayfinding easier (Ahretzen and Tural, 2015).

5.2 Outdoors & Connection to Neighbourhood

Connection to nature and the physical activities are established as essential qualities of the environment that older adults live in including those with cognitive impairments. The design of the outdoors and transitions from indoors to outdoors are needed in order to promote mental well-being for the users. There are studies that show that being in well-designed outdoors is beneficial for individuals with cognitive decline (Wulf, 2018).

Transition zones are those that make the connection between what is indoors and what is outdoors. Spaces designed as buffers between indoors and outdoors such as porches, loggias, winter gardens increase the quality of the indoor space and make a visual connection to outdoors as well as the opportunity to access more natural light (Whear et al.,2014). This creates proximity to the outdoors and encourages the tendency to use an outdoor space (Whear et al.,2014). The covered intermediate space that can be described as the transition zone provides space for outdoor connections even when the weather does not allow it to go out. Examples of transition spaces include porches and entry lobbies that are designed as safe transitions between indoor-outdoor environments and help the vision adjustments to adapt to the new atmosphere (Brawley, 2006). It is also important to provide access to more private outdoor space like a balcony or terrace in the apartments (Pollock, 2014). Getting outside encourages physical activity in all aspects, that's why it should be an attractive feeling to spend time outdoors (Brawley, 2006). Developments in promoting or inhibiting older adults' sedentary behaviour and promote active lifestyles include spending time outdoors (Ahrentzen and Tural, 2015). The corridors can be used for connections to the outdoor space by providing covered walkways that provide views to the outdoors and strengthen the connection to nature (Gromark et al., 2021).

One of the most important aspects of the design of the outdoor space is related to orientation. Wayfinding is considered as essential for the safety of the users and the opportunity to use the space comfortably as discussed in the previous sections of this thesis. The pathways should be clearly organized with a flat and uniform surface material, and should be in a loop for wandering, similar to how the circulation needs to be designed inside the building, and possibly lead back to a certain destination such as the entry point of the buildings (Eastman, 2013). Also, the type of the trees and vegetation can be useful for orientation by increasing the level of sensory experience (Wulf, 2018).

The accessibility is important for easy navigation in the outdoors.. In terms of the feeling of safety, one of the strategies is to provide a secure walking path that the residents can spend time in. This increases the feeling of control and autonomy when they can choose to be in a safe perimeter (Fleming and Purandare, 2010).

In terms of the organization and the function of different outdoor spaces, various strategies can be followed. In order to promote the use of the areas for social interactions, outdoor spaces should include seating areas which are shaded; and designing playgrounds can promote possible interactions with other generations (Marcus and Sachs 2014; Ulrich 1999; Sherman et al. 2005 in Garuth Chalfont and Roger S. Ulrich). Björn (2025) also mentioned how important it is to treat the context in order to establish meaningful connections. The outdoor space for the housing can become an urban park and meeting and activity place for the neighborhood. Integrating public-facing functions (e.g., cafés, daycare centers) allows seniors to stay connected with broader society and invites intergenerational interaction. However, these spacees for activity and rest should be distinguished well (Whear et al.,2014). Offering different types of spaces for quiet, active and

social functions improve the sense of autonomy and choice so that users can choose according to their mood and abilities (Mmako, Courtney-Pratt and Marsh, 2020).

When it comes to the material choices for the outdoor spaces, natural patterns and materials work because they are correlated with reducing stress (Twedt, Rainey, and Proffit 2016 in Chalfont and Ulrich, 2021) . It is also important to consider the sensory experiences, meaning that the design should aid the observing, listening, smelling, tasting and remembering. The use of elements of wood, water and stone also contribute to the diversity in sensory experiences in the garden (Wulf, 2018).

Gardening can contribute to the positive impact of horticultural therapy for the older adults and especially those with cognitive decline (Brawley, 2006). It helps to enhance mood, stimulate senses and create social connections. Designing community gardens to plant vegetables, flowers and herbs is useful to create this impact (Brawley, 2006). These solutions also empower people with dementia and create a sense of autonomy. Increasing access to gardens that provide horticultural activities promotes appetite, contributing to continuing healthy nutrition (Brawley, 2006). Gardening opportunities not only present a way of spending time outdoors and reduce stress levels, but also acts as a bridging activity with the community in different levels (Noone and Jenkins, 2018). Multisensory planting provokes sensory experiences. Variety of colors, scents and the addition of edible plants is useful (Harries et al., 2023).

Wulf (2018) points out that smooth surfacing along the pathways makes circulation easier and safer for the users with dementia. Views to landmarks that are unobstructed also help guide the users back to an important point. This can be managed with plants or different use of materials to differentiate destinations. These strategies help improve comfort of the users by increasing their autonomy. Providing areas of different activities and independent preferences is also essential (Wulf, 2018).

A sensory and/or therapeutic garden for dementia is a specially designed outdoor space aimed at engageing the senses, and is specifically designed to be safe and accessible for people with dementia. These gardens integrate therapeutic strategies to help improve overall and cognitive well-being of the individuals. Design of gardens with a therapeutic approach has a significant positive effect on the quality of life for residents with dementia, but also other users without dementia, too and it should be a "standard" element of the designing of environments considering cognitive decline (Hernandez, 2007). All the strategies mentioned in the previous parts of this section help improve the therapeutic quality of the outdoor space.

In order to strengthen the connection of the housing community to the neighboorhood, the open spaces play an important role. In addition, some integration of areas and services that could serve the wider community can increase possibilities of integration of the users to the society. According to Kaplan et al., (2020), integrating places that provide instances for the residents to interact with the local community is as important as providing necessary services to the residents of the senior housing.

"For people living with dementia, who often express feelings of loneliness, the notable ability of the garden to empower participants to generate social capital may be fundamental to promoting a more positive lived experience of the condition"

(Noone and Jenkins, 2018, p.887)

5.3 Natural Light & Materials

When designing for a target group that is in old age, natural lighting and the use of materials become important. It was discussed that natural light created connection to nature and also manages healthy circadian rhythms and sleep patterns. Materials are important in terms of wayfinding and sensory experiences. For the older adults and the cognitively impaired poor lighting can create problems especially because of the inevitable visual impairment that they are experiencing (Bowes and Dawson, 2019). The sensory experiences, connections to nature as well as wayfinding are supportable by strategies related to lighting, with more focus on natural light, and the choice of materials such as the colors. The aim of this section is to explore how natural light and material choices can support spatial orientation, comfort and well-being in senior housing.

It is a requirement that the spaces where people are encouraged to spend more time have access to a lot of natural light (Burzynska and Malinin, 2017). The strategies related to integrating natural light into the design of the housing include to use daylight whenever possible but to control it with needed shading devices to prevent glare and thermal discomfort (McNair, 2014) especially because some people may experience more discomfort when in contact with direct light coming into eyes (Wijk, 2025). Skylights are useful to provide access to natural light in the spots of the building that need more illumination but that are not close to the facade and a usual window (Eastman, 2013). Designers most commonly use strategies that combine proper use of shading systems and window typologies to introduce natural light into buildings and distribute it throughout the interior, while also minimizing glare (Brawley, 2006). Visual comfort can be managed with sufficient natural daylight to prevent any source that can cause disorientation such as shadows or dark environments. Artificial lighting shall also support the natural daylight sources where necessary (Spadolini and Tosi 1995).

Considering that cognitive decline causes orientation issues and sensory deficits, materials play a key role in supporting the users. Flooring materials, for example, can be strategically varied in color or texture across different floors or functional areas to help residents distinguish one zone from another (Eastman, 2013). Design elements such as colored borders around important zones such as the vertical circulation, and integrated artwork contribute to a system of orientation and wayfinding (Eastman, 2013). It is also essential to consider use of natural materials and natural color contrasts, as well as to pay attention to shades that are not clearly distinguishable for the visually impaired. Andrea Möhn (2025) mentioned that it is better to use natural materials and not artificial ones, and to design contrasts in a natural way and not too strong. As well as providing aid for physical conditions of ageing and dementia, natural patterns and materials are correlated with reducing stress (Gromark et al., 2021).

The spatial orientation and wayfinding of the users can be facilitated with the choice of colors. Red and yellow are usually more distinguishable for the visually impaired (Wulf, 2008). According to Wijk (2025), it is difficult to distinguish blue and green as they are very close colors and there is not enough contrast between them. Using different materials or colors to make a contrast between the walls and floors is a strategy to help provide the correct perception of space (McNair, 2014).

To conclude, the strategies for integration of natural light and careful planning of materials is essential in the physical environment to support comfort and orientation for the well-being of the seniors, especially those experiencing cognitive decline. Natural lighting is a key element that supports healthy circadian rhythms and plays an important role in having clear visual ability and perception. On the other end, the strategies related to material usage present slight but effective contributions to the space that aid the creation of supportive spaces for the well-being of the residents.

/ Phase . E

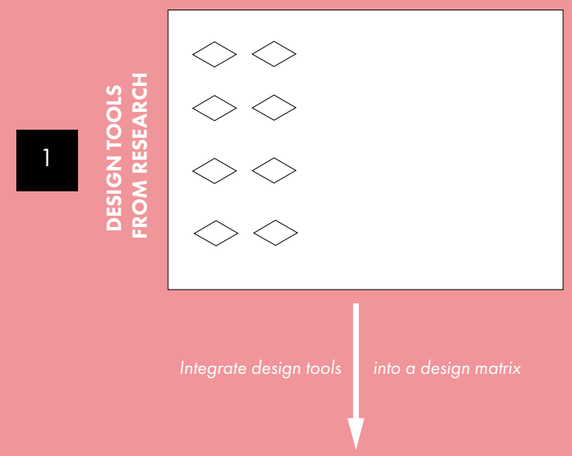
Diagram design tool findings from research

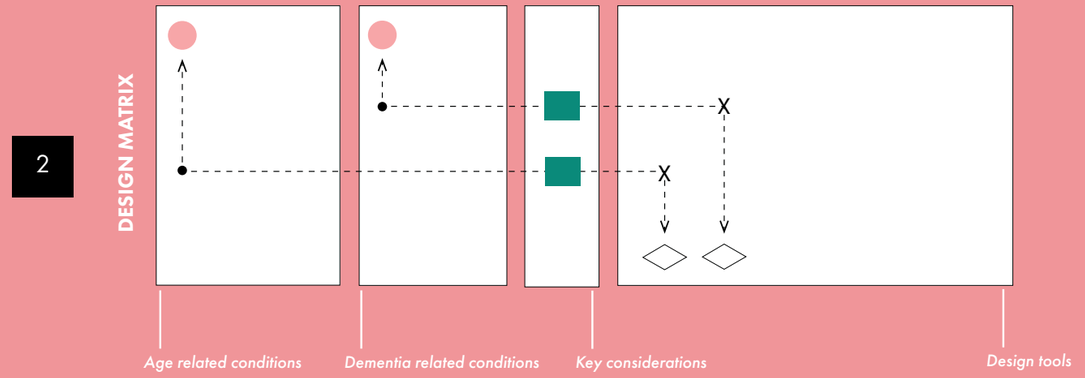
Following up the matrices presented for the case studies, this step is the continuation of the process that establishes the findings from the practical examples with further research in literature and interviews about strategies.

The consideration of different scales on spatial layout and outdoors design along with the addition of design details related to the use of lighting and materials helped collect new tools. These findings contribute to the creation of design matrices that link theoretical research on ageing and dementia with two elements: first, the key design considerations previously established, and second, the specific design tools informed by the research related to design strategies in spatial and material aspects.

The instructions for how to read the next pages are demonstrated.

The more connections are established in the matrices, it means that that design consideration is the most important to consider in the design phases.

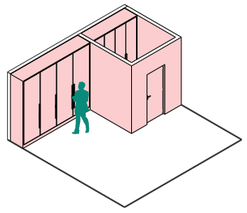




HOW-TO-READ
Find the " age-related" or "dementia-related" conditions,
and see the relations with key considerations and the design tools or vice versa

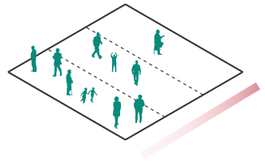
Fig. 138 How to read design matrices.
Source: Author

A



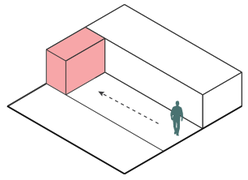
Integrating storage areas

E



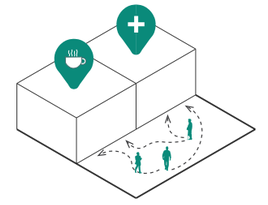
Gradient of privacy

I



Clear destination in the end of the corridor and no dead ends

M

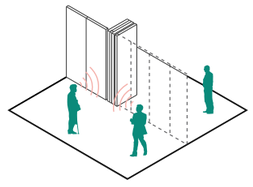


Access to neighboorhood services/ commercial areas

R

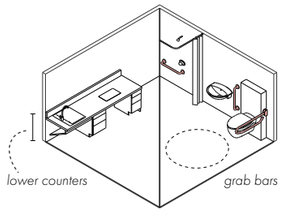
Therapuatic sensory gardens

B



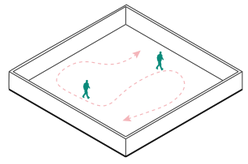
Flexible rooms to isolate when necessary

F



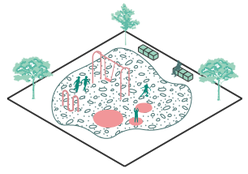
Barrier free kitchen & bathroom

J



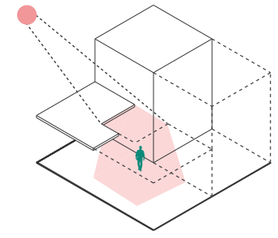
Freedom of movement in a secure perimeter

N



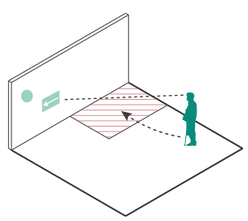
Kids playgrounds to be integrated in the surroundings

S



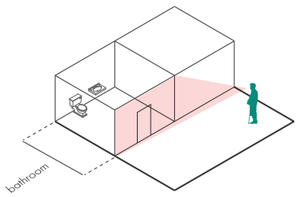
Skylights for getting more natural light

C



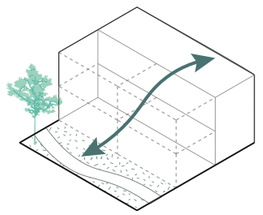
Personalizable space and signs for navigation

G



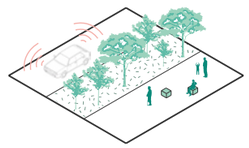
Bathroom is visible and easy to locate

K



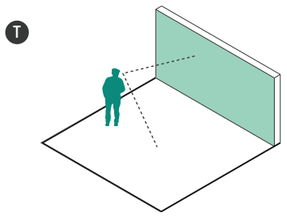
Transition spaces to outside

O



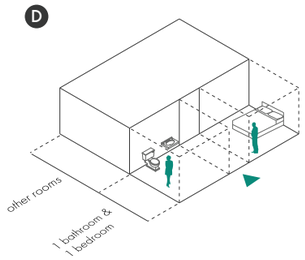
Buffer green zones to protect from unwanted noise

T



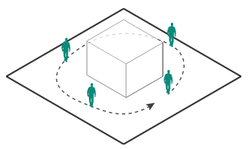
Contrast on flooring and walls for visual distinction & non-slippery material

D



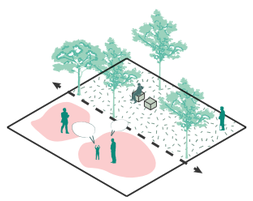
1 bedroom & 1 bathroom close to the entrance

H



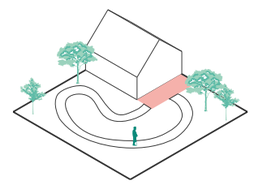
Circulation on a path that is a loop & central location of important functions

L



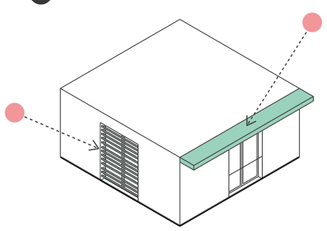
Clear distinction between active/calm space in the outdoors

P



Distinct features of the main buildings for easy navigation

U



Shading for thermal comfort and no glare

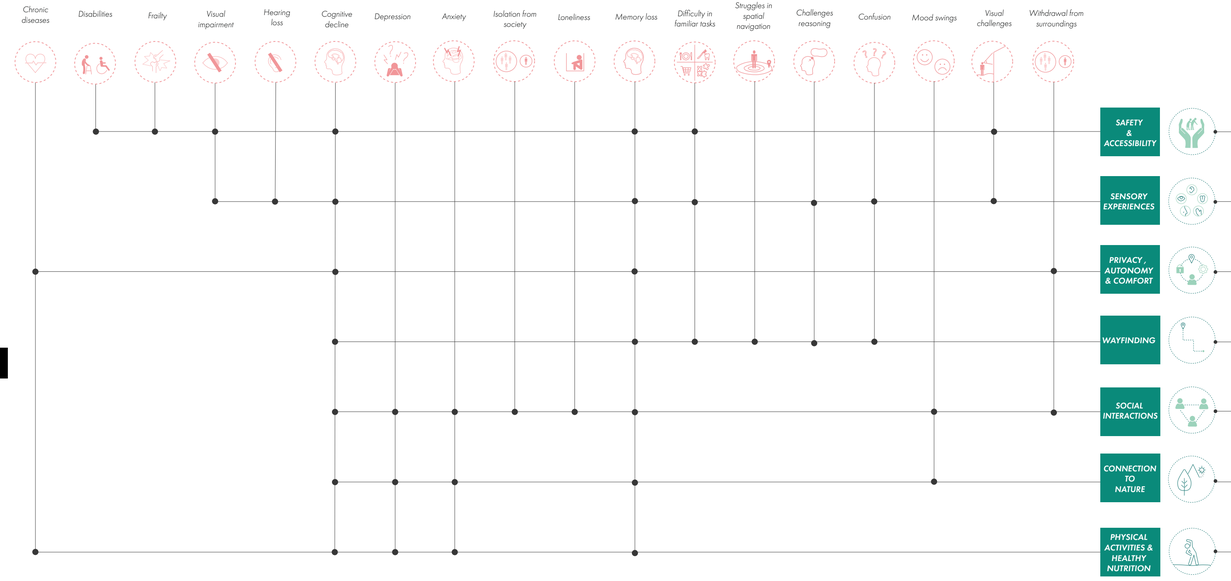
Fig. 139 Design tools from research. Source: Author

AGE-RELATED CONDITIONS

DEMENTIA-RELATED CONDITIONS

KEY CONSIDERATIONS

DESIGN STRATEGIES



According to the numbers of connections between the conditions and the key considerations, the importance of sensory experiences, wayfinding and social interactions is emphasized.

The majority of findings for design strategies cover solutions for privacy and autonomy, followed by safety and accessibility and the wayfinding aspects.

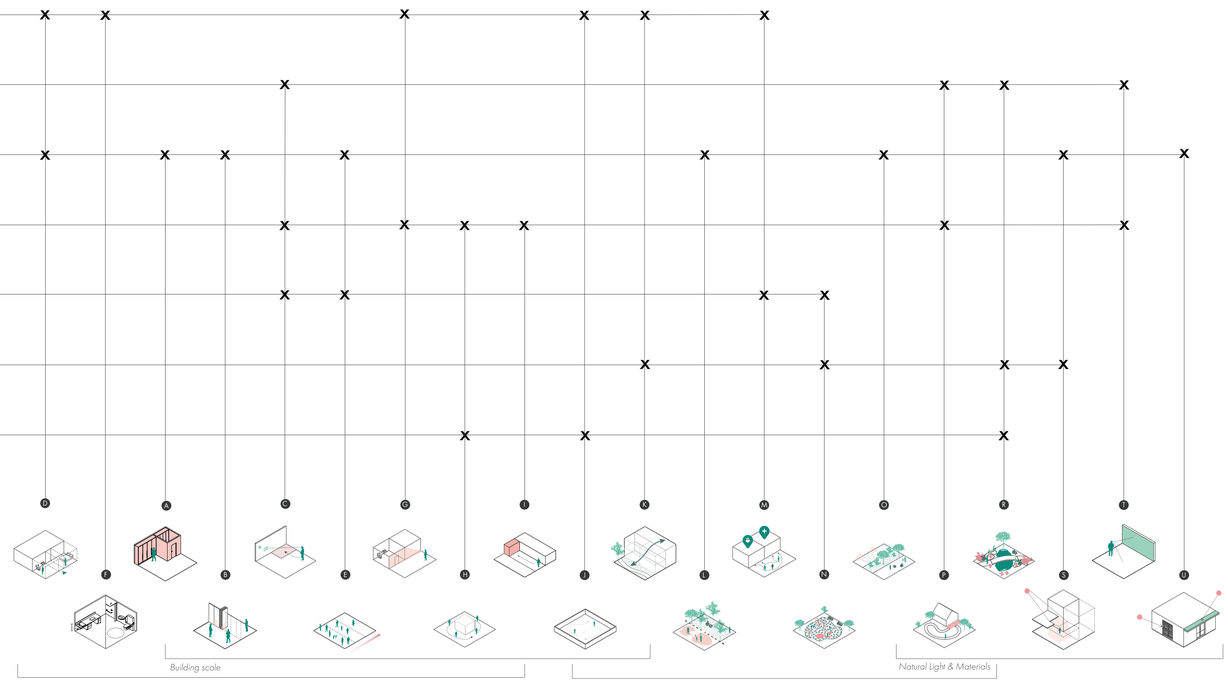


Fig. 140 Design matrix from research.
Source: Author

Scenarios

06

Experimental Typologies

/ Phase . F Suggest tools for scenarios

The final chapter consists of experimental typology scenarios and apartment layout schemes that follow and suggest the design tools.

Fig. 141 Peter Rosegger Nursing Home / Dietger Wissounig Architekten. Source: Paul Ott (2014) - re-elaboration of the author

6.1 Exploring Intermediate Housing Models for Dementia Care

The final chapter of the thesis draws from the overall research that was done and synthesized into design matrices that recommend design tools for the application of more dementia-friendly principles into senior housing. Since, one of the aims of this thesis is to investigate the potential of developing guidelines for innovative senior housing models that act as an intermediate solution between the so-called ageing in place and the long-term care models, the following sections present a number of typology scenarios that are not finalized designs but rather act as a testing ground for the application of the tools. Thus, the aim is to propose these typologies that could be examples to be followed in the further phases of design projects as illustrative cases of how the toolkit adapts.

The exploration of the scenarios present an experimental approach, since none of the best practices that were analyzed demonstrated clear examples of the specific design of autonomous living environments that the older adults and those with the risk of cognitive decline that are focused on dementia-friendly design integrations. Thus, the scenarios shall explore how a dementia-friendly senior housing model might be implemented in practice, despite the fact that such models remain rare and underdeveloped.

The different phases that followed up to this point of the research presented various needs and requirements of the target group with the connection to the different conditions that they may experience with advancing age. These findings have been summarized as illustrative tools, in Part II. In addition, a table is created to summarize the main needs and requirements of the users, some keywords related to these aspects and a collection of statements that make up some main design strategies that can be adapted in design projects ***(Fig.142)***.

The main focus is to provide a safe living environment through the supportive layout of these living environments, and integrate wayfinding elements. By keeping in mind the importance of privacy, autonomy and the comfort of the users, the independent and comfortable living conditions are to be supported. Creating connections to nature and providing spaces for social interactions both within the housing community and the surrounding neighboorhood is essential.

By creating independent living models, the possibility of multi-generational living in a supportive environment is considered. While the typologies are designed specifically to meet the needs of older adults, just like in the best practice examples of BonTop and Tryghetsboende Bifrost from Chapter 4, which are senior-focused but have the possibility to live with relatives.

The proposed scenarios for intermediate housing models for dementia care of the older adults mainly follow the summarized findings from ***(Fig.142)*** as well as the illustrated tools from the design matrices from Part II. In order to limit the typology scenarios, a refined strategy is used to define parameters that can be altered from one scenario to another ***(Fig.144)***.

In addition to the three typology scenarios that will be presented, some scenarios for dementia-friendly layouts in the apartments are proposed as well. Each typology scenario is then demonstrated with how the tools are implemented and can be suggested for use in different situations in the application. They act as flexible models that can be adapted to different design scenarios in a design project of an intermediate senior housing model.

Although these scenarios remain conceptual, they offer an experimental framework for imagining future senior housing models that move beyond the binary of ageing in place and institutional care. The scenarios also aim to contribute to future policy discussions related to creating more innovative models that also support independent living with dementia.

Needs / Requirements	*Keywords*	*Main Strategies*
SAFETY & ACCESSIBILITY  Ensuring both physical and emotional security is essential for older adults and people with dementia, who often experience reduced mobility.	• Sense of security • Easy mobility • Clear circulation	1 *Spatial configuration shall support the feeling of security* – Layouts should minimize confusion and allow clear visual access to exits and important areas. 2 *Secure borders to wander in* – Safe and enclosed outdoor paths let residents move freely without risk of getting lost. 3 *Support elements in kitchens and bathrooms* – Installing grab bars, non-slip flooring, special fixtures with adjusted heights to reduce accidents and support independence.
SENSORY EXPERIENCES  Dementia can affect perception, so stimulating the senses in positive, non-overwhelming ways helps residents engage with their surroundings and feel oriented.	• Light • Texture • Familiarity • Orientation	1 *Access to natural light* – Daylight integration supports circadian rhythms and emotional well-being. 2 *Material choices to increase sensory engagement* – Tactile, familiar, and color-contrasted materials help with recognition, comfort, and spatial orientation. 3 *Design outdoors for sensosry engagement* – Different plants, and safe paths with natural feelings encourage sensory experiences.
PRIVACY, AUTONOMY, COMFORT  Respecting users' personal space and decision-making ability preserves their dignity and encourages continued independence despite cognitive decline.	• Independence • Comfort	1 *Respect comfort*– Design should apply measures of comfort on all levels for the residents' well-being. 2 *Apply design elements that promote autonomy* – Clear organization of spaces and using appropriate materials for guidance. 3 *Careful design of public/private areas* – Gradual transitions and clear zones distinguish personal space from communal areas.
WAYFINDING  Spatial navigation struggles and confusion is a major challenge for people with dementia. Spatial cues and clear navigation help reduce stress, improve safety, and support memory.	• Orientation • Signage • Memory cues • Visual contrast	1 *Use of color coding and landmarks for easy navigation* – Appropriate material choices and symbolic cues help residents remember and recognize spaces. 2 *Clear sightlines and visual access to key areas* – Designing with open views reduces disorientation and supports memory of the space. 3 *Designing paths in a circular loop or clear destination-* Circulation routes should form intuitive loops or lead to recognizable destinations without dead-ends.
SOCIAL INTERACTIONS  Social inclusion fights loneliness and isolation, encourageing emotional well-being and a sense of belonging within the community.	• Community • Inclusion	1 *Shared spaces designed for small group interactions* – Shared spaces for interactions with the others in a safe environment. 2 *Designing connections to surrounding community -* Integrating functions to attract the community. 3 *Centrally positioned common areas-* Clear visual access and paths encourage to use these spaces.
CONNECTION TO NATURE  The therapeutic benefits of being in contact with nature helps improve mental health and prevent the progression of cognitive decline.	• Outdoor access • Greenery • Natural light	1 *Easy access to gardens, patios, and natural views* – Direct contact with nature supports relaxation, orientation, and health. 2 *Safe walking paths in natural settings* – Shaded paths encourage outdoor activity and sensory experiences in a secure environment. 3 *Design of openings to navigate natural light-* Maximize daylight exposure, support circadian rhythms, provide visual connection to the outdoors.
PHYSICAL ACTIVITY & HEALTHY NUTRITION  Physical movement supports health, prevents decline in mobility, and can positively influence mood and cognition in people with dementia. Healthy eating supports healthy lifestyles.	• Movement • Exercise • Healthy eating	1 *Provide looped/direct walking paths indoors and outdoors* – Also promotes engagement on physical activities. 2 *Include accessible exercise spaces* – Simple, supported spaces promote movement and increase well-being. 3 *Encourage eating through spatial layout* –Strategic placement of areas such as kitchens and gardens that remind nutritional needs.

Fig. 142 Summary table of needs and strategies. Source: Author

6.1.1 Parameters for Typology Scenarios

The refined strategy includes the establishment of certain parameters that guide the formation of the different spatial scenarios and functional choices. These are demonstrated in ***(Fig.144)*** and are listed as follows:

- Level of staff presence: It determines the level of supervision and assistance provided to the residents. While higher presence ensures a safer living environment, lower presence can allow more autonomy and home-like atmosphere.
- Amount of co-living: It defines how much of the daily living is shared by the residents.
- Presence of services in the context: The availability of the surrounding services means the presence of shops, healthcare services, and public spaces in the nearby of the complex, and also determines if the complex is more isolated or has access to surroundings.

Following these parameters, three scenarios are established. The process follows a method that emphasizes the logical spatial arrangement of the necessary functions, and it starts with a zoning concept that results into spatial typology schemes ***(Fig.143)*** . Then, some variations of layouts are proposed in order to show flexible arrangements that meet the same needs. The demonstrated shapes to illustrate the typology scenarios indicate frameworks for spatial arrangements, and do not necessarily represent the exact forms in a design situation as spaces need to be adapted to other conditions during subsequent design steps in specific contexts.

A number of common conceptual considerations for the scenario proposals are introduced in the following section ***(Fig.145)***.

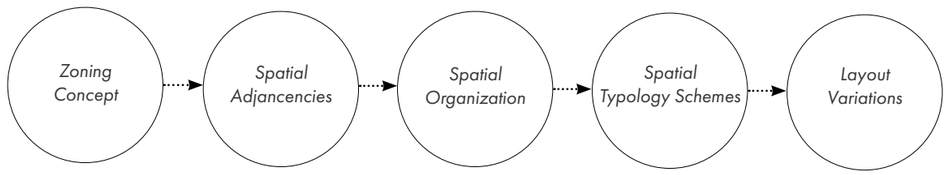


Fig. 143 Method for typology scenarios.
Source: Author

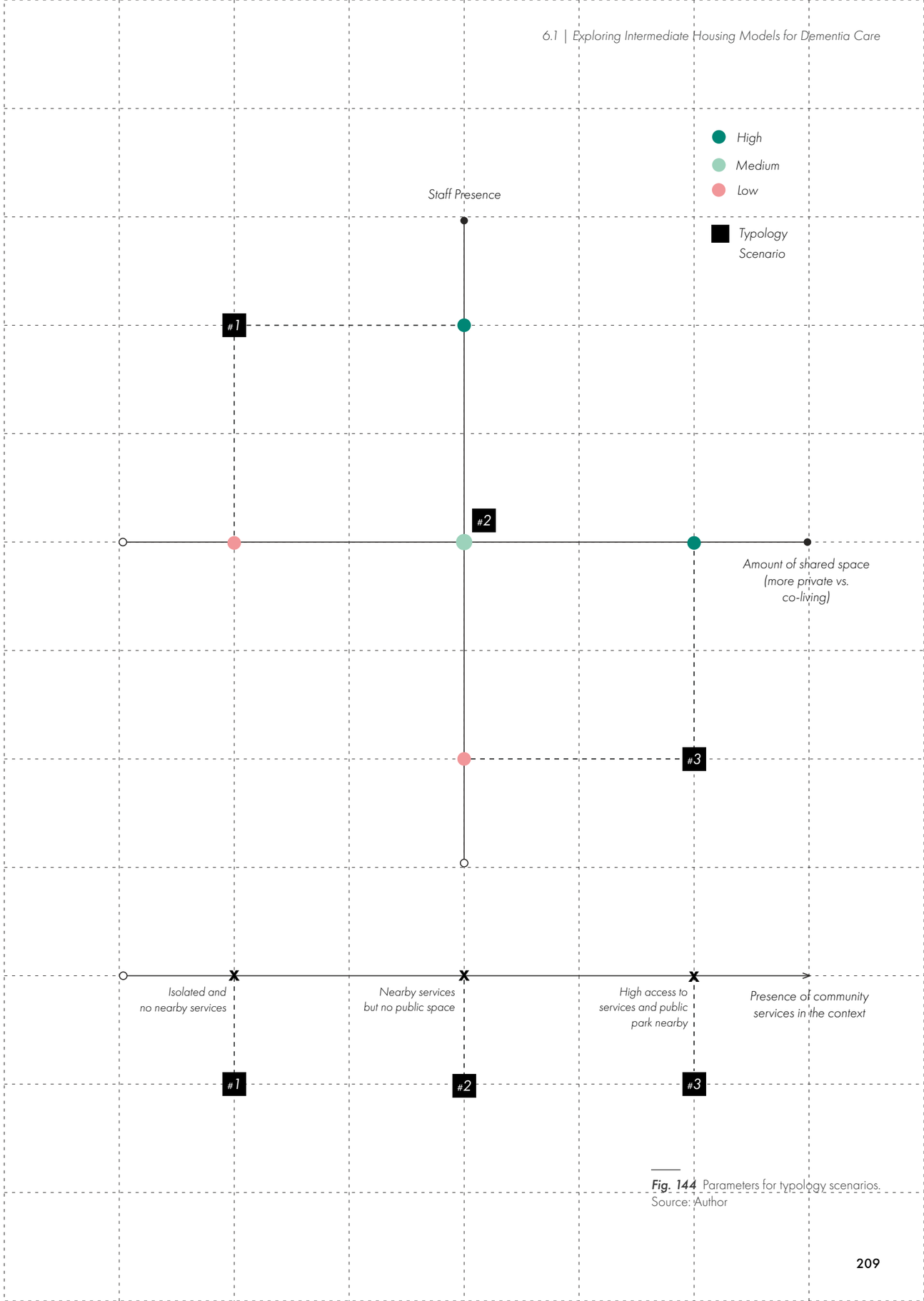


Fig. 144 Parameters for typology scenarios.
Source: Author

6.1.2 Common Conceptual Pillars

The wide range of tools that were established during the research provide a source for design strategies that could be selected to apply on the design of the typology of an intermediate model of senior housing for dementia care when needed. However, certain main conceptual pillars were defined depending on the influence of the strategies on the design and on its users. They form a set of common criteria for defining the typology scenarios.

Looped Circulation and/or direct no dead end paths:

As a result of the wayfinding principles, this common pillar was defined in order to maintain the clarity of the spatial organization and the circulation elements. Continous and looped paths can reduce confusion and create opportunities for a continous circulation, as well as provide wider view points. Also, the integration of simple and direct paths without dead-ends decrease frustration and help waydinding to a space that the users are encouraged to attend.

Central and visible attractions:

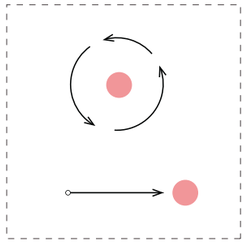
Creating functions that act as atrractions for healthy habits or social interactions is crucial to maintain the comfort and well-being of the users, so each scenario should focus on some type of strategy to manage that. These attractions aim to serve as landmarks in the daily life of residents, offering both a point of orientation and a reason to move through the space.

Visual and physical access to outdoors:

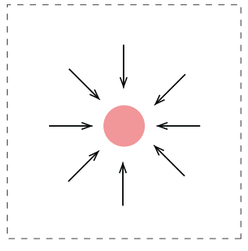
Connection to nature is essential for both physical and psychological well-being for the olders adults and especially those at risk of cognitive decline, so natural elements such as natural light, access to green space, activities in the outdoors provide sensory engagement, encouragement for physical activities and improve mental well-being. These elements are to be integrated in the layout.

Activities and spaces for neighboorhood interaction:

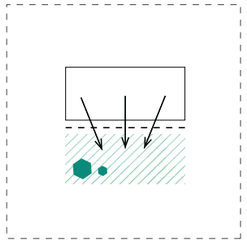
An essential aspect for reducing social isolation is to increase opportunities for activities with the surroundings. This can be mainly done with integrating services, enhancing outdoor functions or providing care services to the comunity as well.



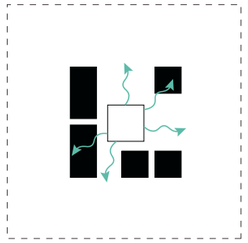
looped circulation and/or direct no-dead end paths



central and visible attractions



visual and physical access to outdoors



activities and spaces for neighboorhood interaction

Fig. 145 Concepts for typology scenarios. Source: Author

6.2 *Typology Scenario 1*

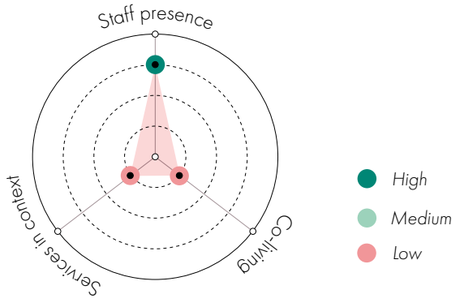


Fig. 146 Parameters for scenario 1.
Source: Author

6.2.1 *"Assisted Privacy"*

The scenario parameters include high staff presence, low co-living so more private focused apartments, and a context that is lacking nearby services and public areas in the neighboorhood. The aim is to provide assistance through staff presence in private living arrangements that is different from an assited living facility.

Following these factors, and the findings from research, a spatial distribution concept was established that can act as guidelines for applications that follow similar conditions.

The core ideas is that the residents live in private, and optionally multi-generational apartments that feel like regular housing, thus presenting a significant separation from the care space but integrated to it with the presence of on-site staff. The scenario includes a number of spaces that can be used by the surrounding community for care services and commercial areas, and act as a bridge between the residents and the neighboorhood.

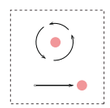
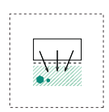
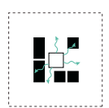
Scenario Name	Assisted Privacy
Core Idea	Independent apartments with staff support and shared spaces linking residents to the neighborhood
Scale & Layout	• Flexible scale but aimed for arrangement of medium sized complex of 30-40 apartments • A central common area bridging the block for more private apartments,and the more "assisted" section. • The ground floor is focused on care functions with staff, and there is also the integration of some commercial areas.
Apartment types	• Studio • 1-bedroom • 2-bedroom
Staff presence	Staff is integrated through dedicated spaces. The staff is on-site, and assists when needed. The care space acts as an adult day-care center.
Co-living degree	The apartments are private living oriented either with staff assistance or suitable layouts for living with relatives. Common areas are still integrated in other parts.
Surrounding services	Due to the established parameter, the scenario experiments with integrated functions that can serve to the community as well as the residents.
Resident profile	The typology is aimed to accomodate older adults (and possibly their relatives) in general who is willing to have assistance or face security issues at their home. The goal is to house older adults with cognitive decline or in various stages of dementia as long as possible.
Correspondence to the common conceptual pillars	 A looped circulation is proposed in the care zone, and some residential units; while the end of paths is proposed to have access to terrace.  A central semi-public space is envisioned on the ground floor, while for the upper floors, there is common areas for apartments connected through vertical circulation.  The access to outdoors is provided from common areas and care spaces, as well as the apartments are proposed to have balconies.  Semi public outdoor spaces are integrated as well as some commercial activities to attract both residents and neighboorhood.

Fig. 147 Scenario 1 introduction table.
Source: Author

6.2.2 Zoning Concept

A central shared atrium space that acts as shared zone in between the care space and the residential zone is envisioned, while integrating commercial activities and the use of the space for neighboorhood interactions ***(Fig.148)***. The combination and characteristics of the zones are described as follows and diagramed on the following section as spatial adjacencies ***(Fig.149)***:

Public Zone:
This zone is mainly intended for meeting the needs of the isolated context while creating spaces that provide opportunities for attracting the neighboors. The program can include shop(s), cafè, hairdresser, and outdoor areas for the use of these spaces.

Semi-public Zone:
This space is the central attraction as it connects parts of residential and healthcare. It is intended to be an atrium with more open circulation with a skylight. It connects to the staff desk and the common rooms.

Semi-private Zone:
This space is the central attraction as it connects parts of residential spaces on the typical floors. It is intended to be an atrium with more open circulation with a skylight. It connects to the staff desk and the common rooms on the upper levels.

Residential Zone:
The residential zone is intended to be separated from the others while having some type of connection to make staff connection easier for assistance. Proposed apartment types are studios, 1-bedroom apartments, and lower number of 2-bedroom apartments.

Staff Zone:
This part is clustered with offices, staff room, changing rooms, meeting rooms and storage with a separate entrance.

Care Zone:
The space can act as a day-care center that partially integrate the public as well as providing support for the residents.

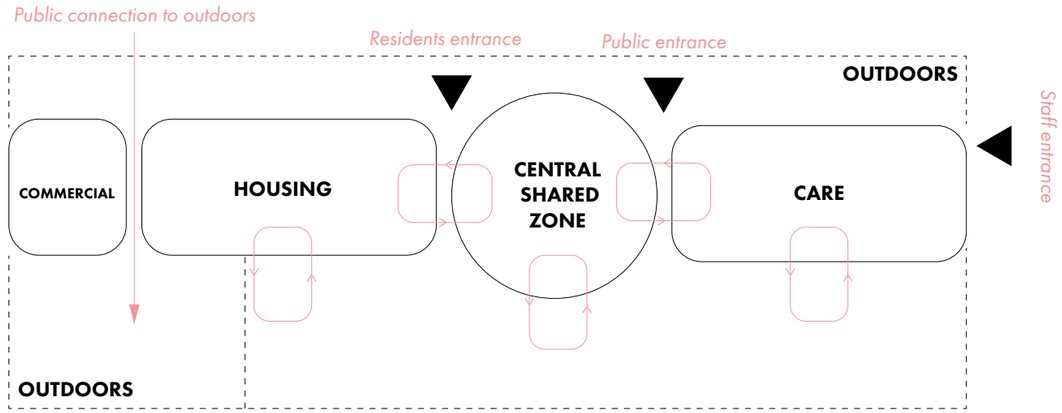
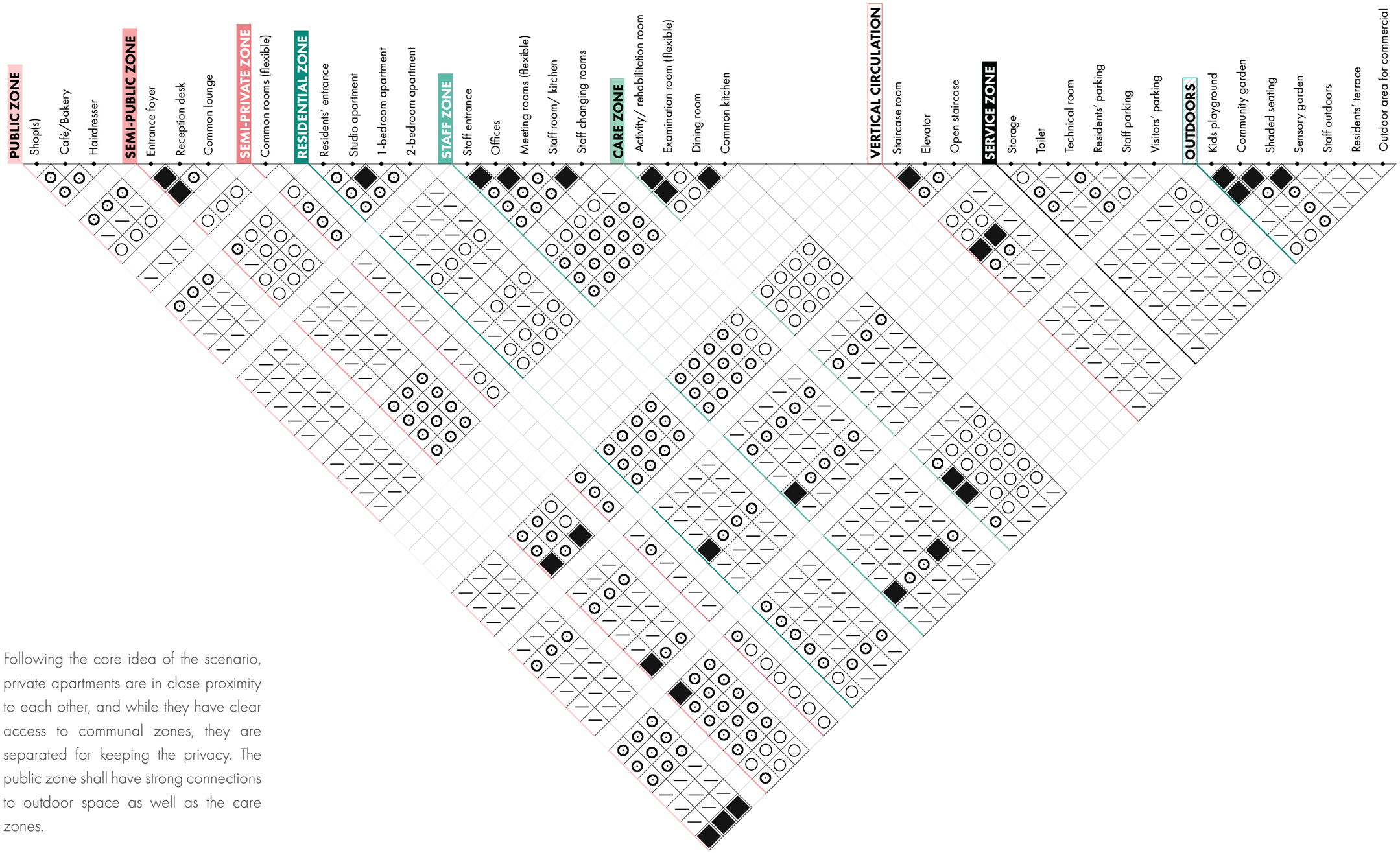


Fig. 148 Zoning concept 1.
Source: Author

6.2.3 Spatial Adjacencies



Following the core idea of the scenario, private apartments are in close proximity to each other, and while they have clear access to communal zones, they are separated for keeping the privacy. The public zone shall have strong connections to outdoor space as well as the care zones.

Fig. 149 Spatial adjacencies 1. Source: Author

6.2.4 *Spatial Organization*

Resulting from the spatial adjacencies, the abstract idea for the spatial organization is proposed. It is evident that the typology scenario presents clustered areas for care, and private residential area with assistance. This balance creates the potential for designing an environment that is both safe and home-like.

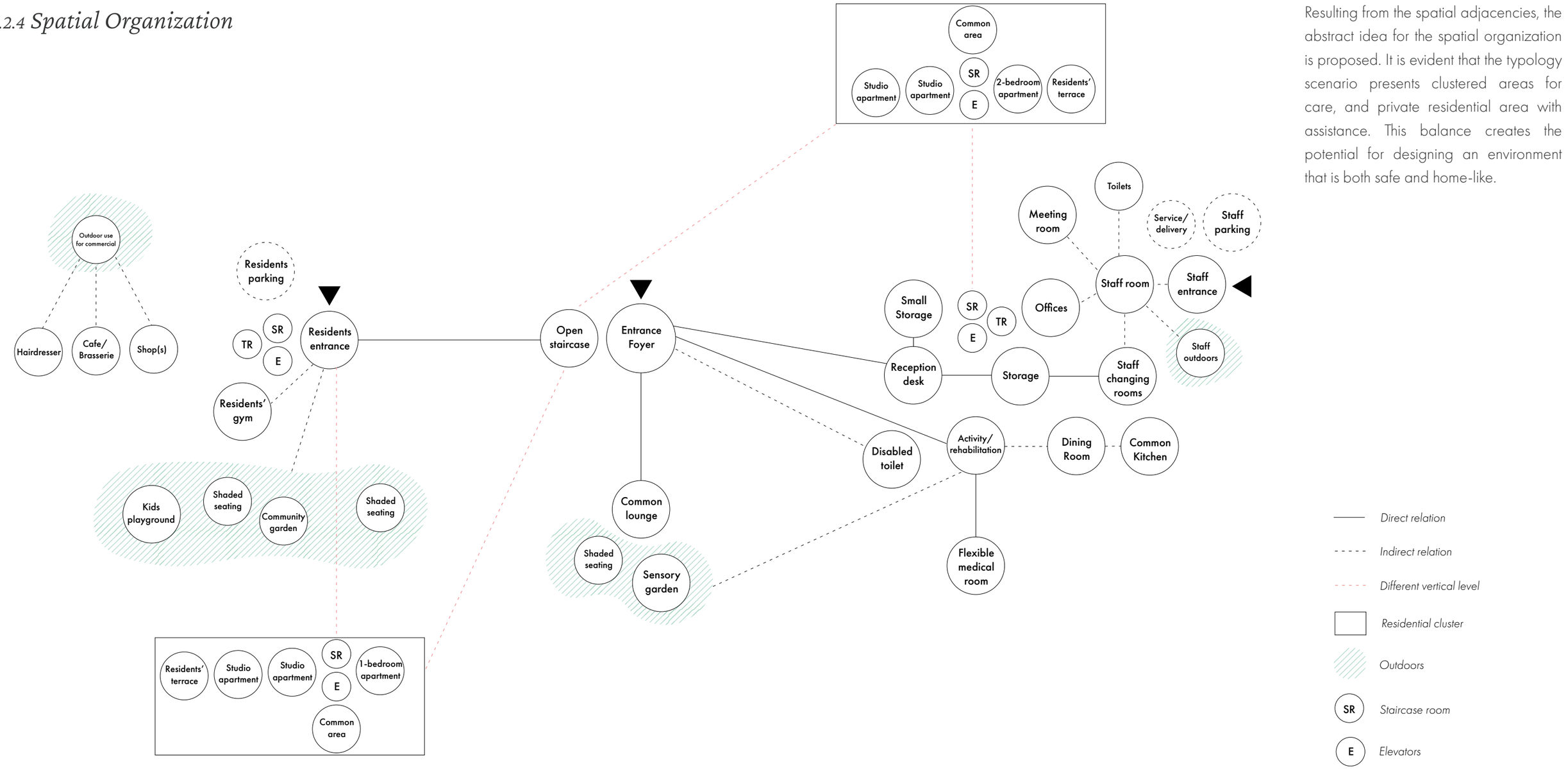


Fig. 150 Spatial organization 1. Source: Author

6.2.5 Spatial Typology Schemes

Following the spatial organization diagram, spatial typology schemes were formed which are demonstrated in ***(Fig.151)***, and diagrammed in ***(Fig. 150)***.

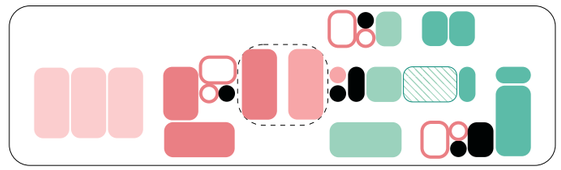
The public zone is integrated, but kept isolated from the other functions as the intention is to bring the services closer but not intrude the users' privacy. In this scenario level 0 does not present any residential function and is focused on the care spaces connected with the staff area and the separate entrance area for the residents that reach the upper levels with the residential zone. The scenario creates intention to position the outdoor areas in two orientations of the building and is recommended to face south. The public zone is framed with the outdoor common areas such as kids' playground, community garden and shaded seating zones.

The care and staff zone are clustered in one part to be separated from the private living zones, but it is integrated with vertical circulation elements so that the staff can reach the upper floors when needed. The indended courtyard space positioned in the care zone is for the use of activities that need to be isolated from the surroundings but still have connections to nature, while also creating a looped circulation in the care zone. The flexibility of the areas are emphasized. The flexible medical room means it can be used for different healthcare functions depending on the needs that can change over time.

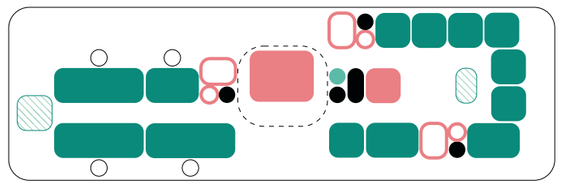
A semi-public entrance is envisioned to reach the reception area both for the visitors and the older adults who are in need of care and support. The central zone shall be a common atrium area that increases the visual perception to surroundings and creates a space for gathering the residents that is separate but connected to the private zones.

Residents' parking areas and storage is planned for underground however can be integrated to level 0 if the conditions provide enough space in the programming of the design project like the example of Bon Top that was analyzed in the best practice section, or can be planned in the surrounding area.

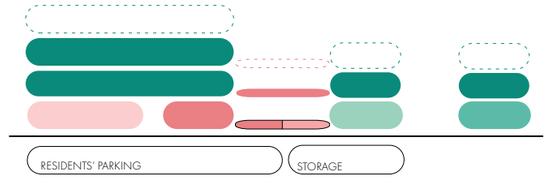
Overall, the spatial typology demonstrates a hierarchy between the organization of spaces with public and community care related spaces on the ground floor which can provide support to the residents, and private but assisted living arrangements on the upper levels. The intermediate solution is that residents live in a home-like environment with integrated care and support both from the staff, and the surrounding community.



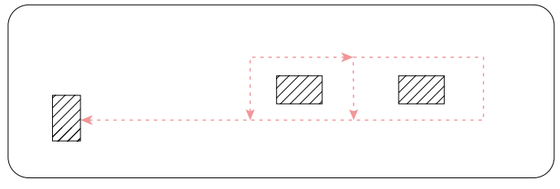
Level 0 zones



Level typical zones

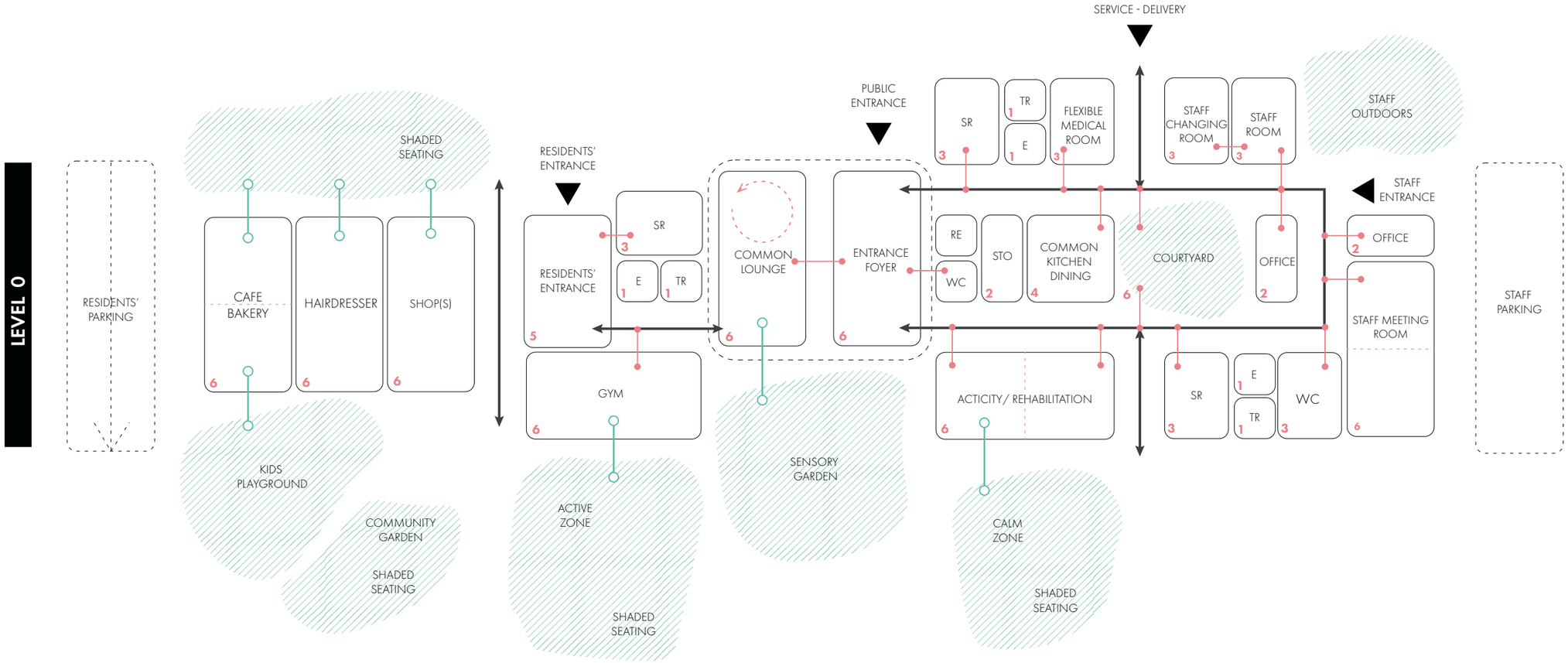


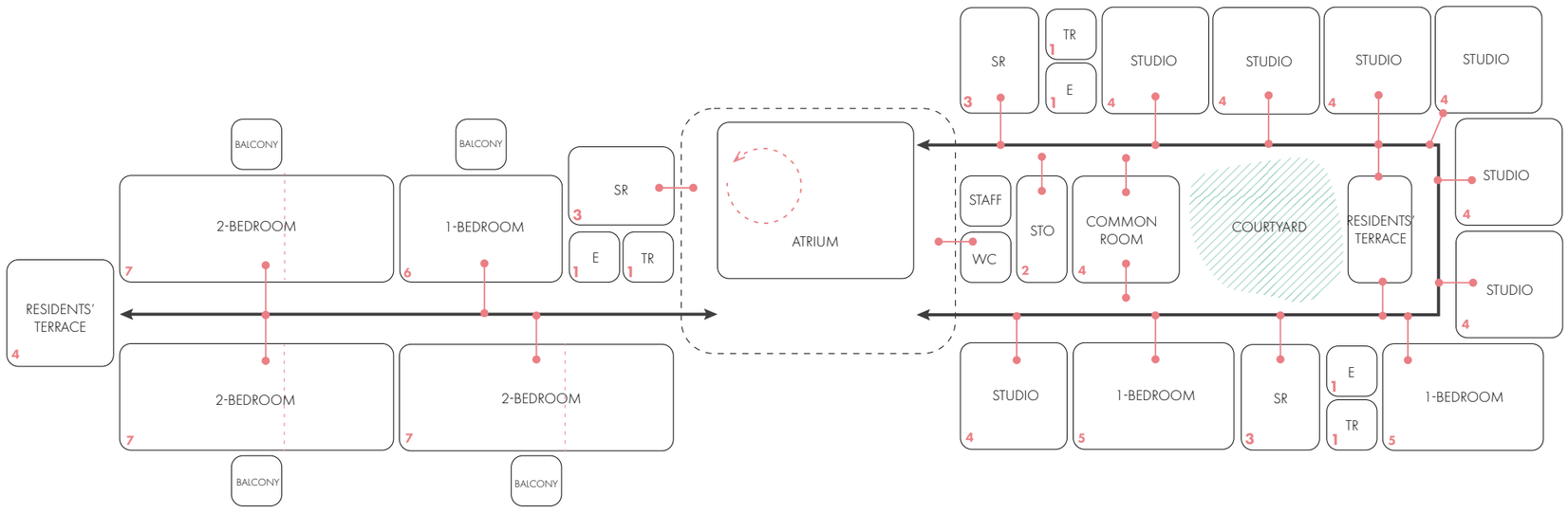
Vertical layout



Main circulation

Fig. 151 Spatial diagrams 1.
Source: Author





LEGEND

- SC — *Social corner*
- STO — *Storage*
- RE — *Reception*
- WC — *Toilets*
- SR — *Staircase room*
- E — *Elevators*
- TR — *Technical room*
- *Horizontal circulation*
- *Access points to outdoors*
- *Access points to outdoors*
- *Flexible spaces for division*
- *Open staircase*

Size of spaces (approximate)

- **1-** *4 - 6 m²*
- **2-** *6-12 m²*
- **3-** *8-16 m²*
- **4-** *12-32 m²*
- **5-** *24-48 m²*
- **6-** *32-56 m²*
- **7-** *56 - 90 m²*

Fig. 152 Spatial typology schemes 1.
Source: Author

6.2.6 *Layout Variations*

As it has been stated in the previous sections, the aim of the typology scenarios is to propose illustrative design frameworks for developing design scenarios. Thus, a further step is demonstrated showing the flexibility and adaptability of the layout arrangements with the proposed spatial typology schemes. Following the core idea, needs and requirements, some examples of layout variations for typology scenario 1 were created and illustrated in ***(Fig.153)***:

1) Linear organization with blocks:
The linear organization is the most typical one of this spatial layout proposal. It distributes the functions along a spine following both a looped and direct circulation. The commercial and residential zones are placed adjacently with allowing access to the outdoor space for the neighboors. They are followed by central common atrium and staff/ care zones. This typology can work well on long or narrow sites, such as street-facing plots or edges of plots.

2) L-shaped semi-courtyard organization:
This layout introduces a semi-closed outdoor area and creates a more spatial intimacy. The commercial functions is still more isolated, but integrated, and the care zone establishes a stronger adjacency to outdoors and the residential zones. It can be imagined for sites that support the potential of creating a semi-closed garden that combines outdoors use of the residents and the surrounding community.

3) Courtyard organization:
The courtyard organization proposed to keep the common atrium space, but creates the potential for a fully looped circulation and stronger connection to the different zones. The central courtyard can be either a completely semi-private outdoor area for the residents, or just like in other variations be a permeable space for public interactions.

4) Semi-courtyards with block additions:
This variation proposes a more hybrid arrangement while maintaining the main spatial aspects. It can be more adaptable to complex sites, or have a volumetric character that blends into the open space.

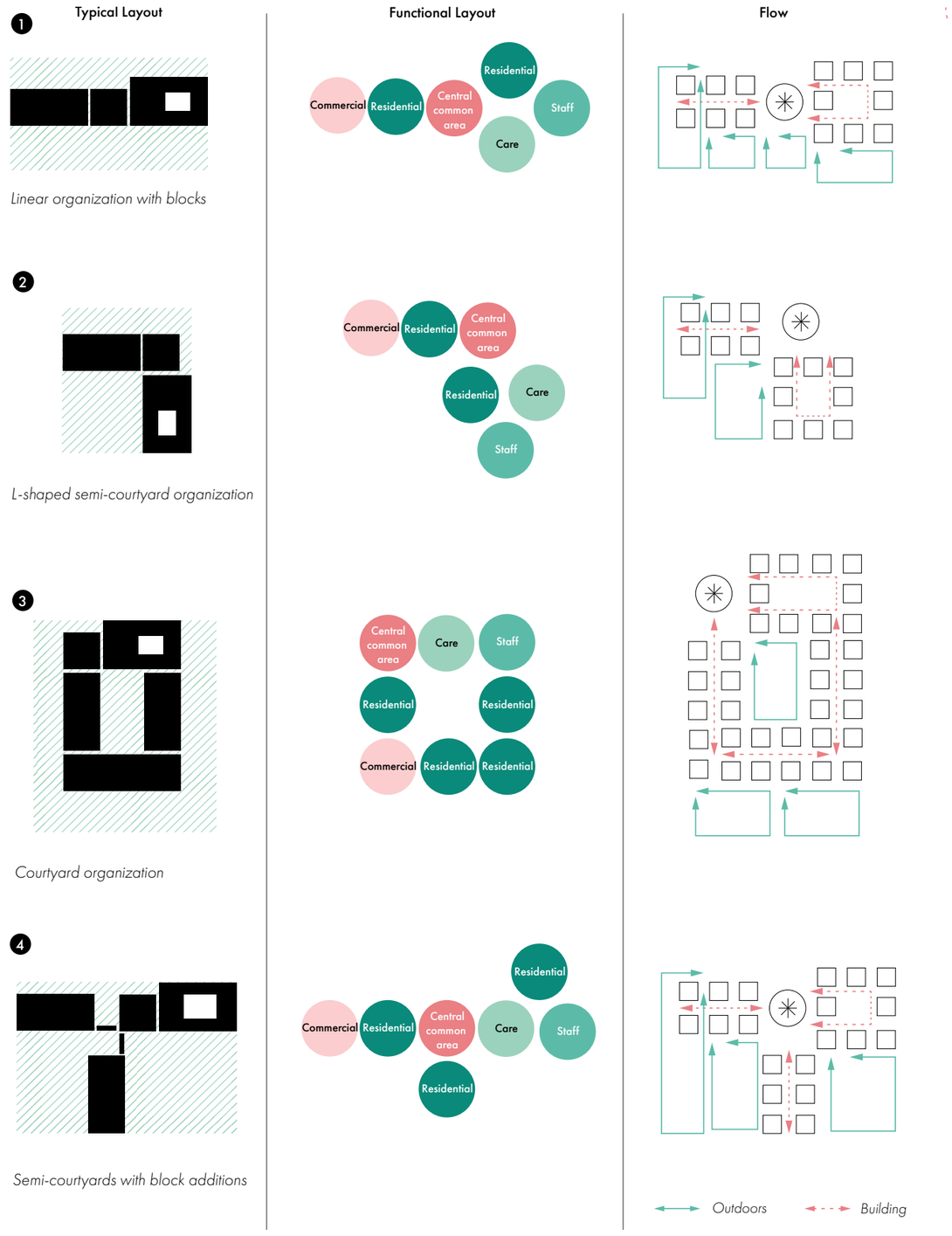
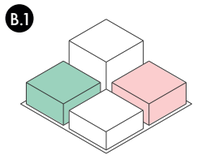


Fig. 153 Layout variations schemes 1.
Source: Author

/ Phase . F-1

Suggest tools for typology scenario 1

B.1

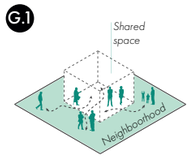


Different types of apartments according to preference of lifestlye & memories

D.1

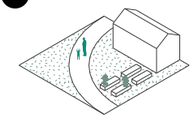
Use of the building volume to point to the central space with common areas

G.1



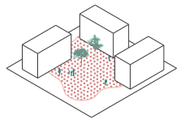
Common areas open to activities in the neighboorhood

H.1



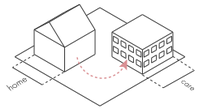
Community garden

I.1



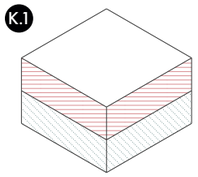
Buildings connected by public space

J.1



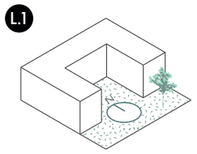
Possibility to transition to long-term care from home

K.1



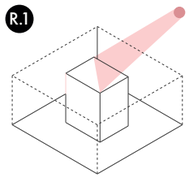
Ground floor for public healthcare function & upper floors with residences

L.1



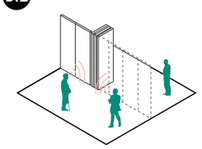
South facing gardens

R.1



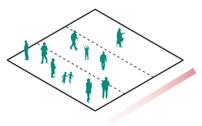
Indoor shared space with access to natural light

B.2



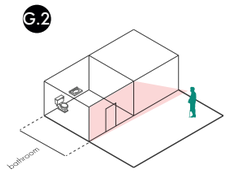
Flexible rooms to isolate when necessary

E.2



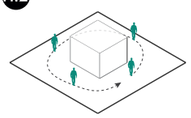
Gradient of privacy

G.2



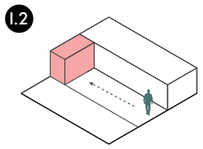
Bathroom is visible and easy to locate

H.2



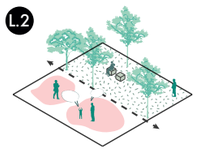
Circulation on a path that is a loop & central location of important functions

I.2



Clear destination in the end of the corridor and no dead ends

L.2



Clear distinction between active/calm space in the outdoors

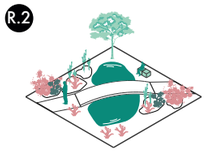
M.2

Access to neighboorhood services/ commercial areas

N.2

Kids playgrounds to be integrated in the surroundings

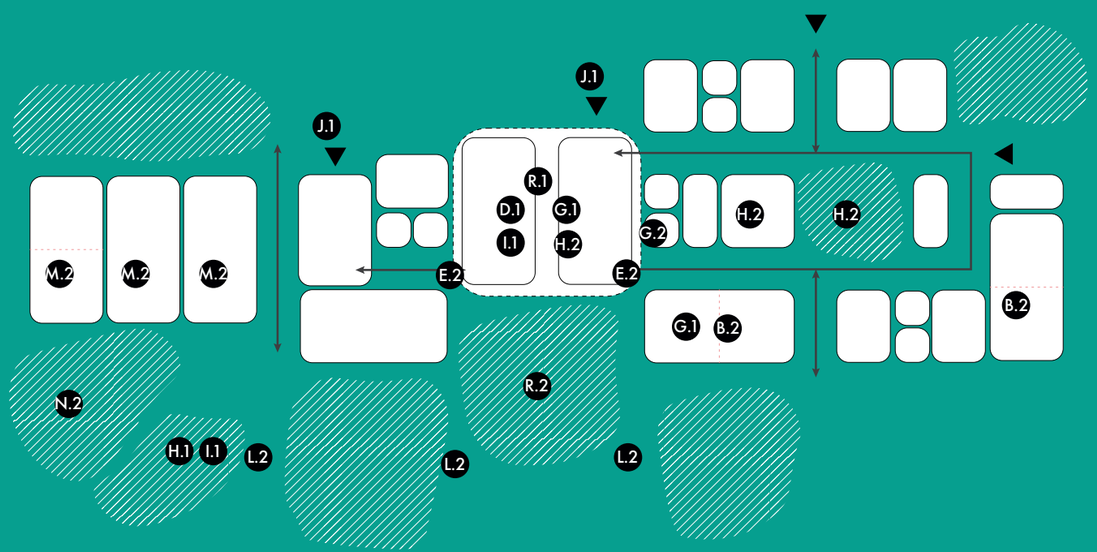
R.2



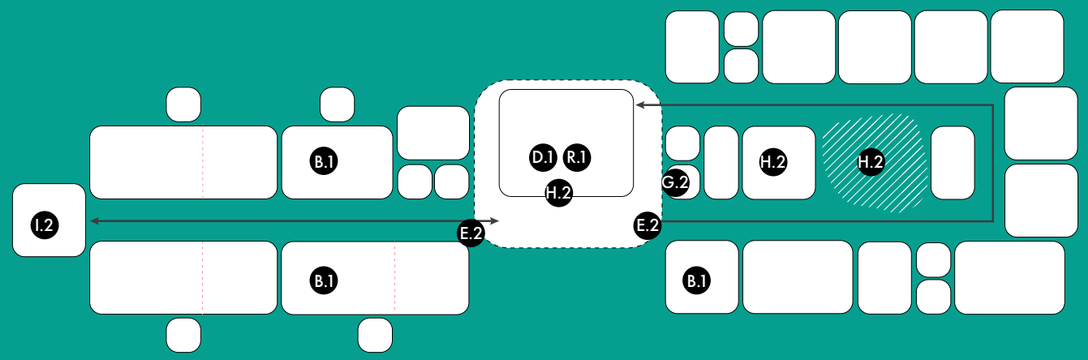
Therapuatic sensory gardens

This phase demonstrates the tools that were used and/or suggested to use in further design detailing phases for the typology scenario 1.

LEVEL 0 K.1



LEVEL TYPICAL K.1



Note:
.1 are from case studies
.2 are from research

Fig. 154 Design tools demonstration 1.
Source: Author

6.3 *Typology Scenario 2*

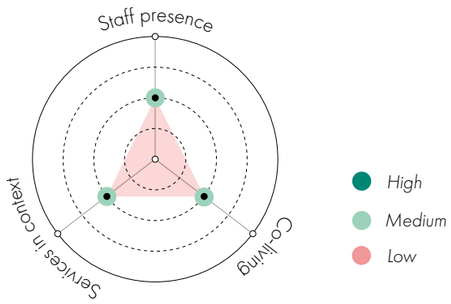


Fig. 155 Parameters for scenario 2.
Source: Author

6.3.1 *"Connected Living"*

The scenario parameters include medium staff presence, medium co-living so integration of some more dominant common areas for private apartments, and a context that has nearby services but lacks public areas in the neighboorhood so the integration of commercial functions are not prioritized in this case.

Following these factors, and the findings from research, a spatial distribution concept was established that can act as guidelines for applications that follow similar conditions.

The core ideas is that the residents live in private, and optionally multi-generational apartments that feel like regular housing, but have access to care that is less available but still existent compared to scenario 1, in a clustered living arrangement with central outdoor space and surrounding otudoor spaces for shared use with the neighboorhood, promoting social interaction and integration with the community.

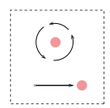
Scenario Name	Connected Living
Core Idea	Independent apartments clusters with moderate staff support, and direct access to common areas and integration of shared open areas with the neighborhood
Scale & Layout	• Flexible scale but aimed for arrangement of smaller complex of 20-30 apartments • A central outdoor space is created providing looped circulation in the arragement of spaces. • The ground floor focuses partially on care functions with staff, and also presents residential and common functions.
Apartment types	• Studio • 1-bedroom • 2-bedroom
Staff presence	Staff is present daily in the care zone but not continuously on-site. Assistance is available on request, and care is provided in specific support areas.
Co-living degree	Degree of co-living increases with more direct access to common areas, but shared spaces still encourage optional social interactions.
Surrounding services	Due to the established parameter, the scenario does not integrate commercial areas but the care zone and outdoors are available.
Resident profile	The typology is aimed to accomodate older adults (and possibly their relatives) with early to moderate cognitive decline, who value privacy and autonomy but prefer or need supportive environment.
Correspondence to the common conceptual pillars	 A looped circulation is proposed around the central outdoor space with encounters to shared spaces.  Central outdoor and shared space for the apartment clusters are envisioned.  The access to outdoors is provided both to the central garden and the outdoors in the perimeters, with direct garden access from some apartments.  Semi public outdoor spaces are integrated as well as the occasional care activities that can provide support during the day.

Fig. 156 Scenario 2 introduction table.
Source: Author

6.3.2 Zoning Concept

A central garden space that aims to connect the living areas and the other zones together in a safe perimeter for the residents is envisioned as the zoning concept ***(Fig.157)***. The combination and characteristics of the zones are described as follows and diagramed on the following page ***(Fig.x)***:

Public Zone:
As this typology presentes certain services in the vicinity, public and commercial functions were integrated in the building, and the main focus is on the feeling of a normal apartment building that is in form of clustered spaces.

Semi-public Zone:
The semi-public zone acts as a buffer between the residential zone and the care zone similar to how it was arranged in typology scenario 1.

Semi-private Zone:
Common living areas are more integrated into where the apartments are in order to encourage interactions. Other communal functions such as the gym shall be located on the ground floor.

Residential Zone:
With the increasing level of shared living, the residential zone that makes up the housing units is formed in clusters and share common spaces on each floor. The aim is to maintain indepence and privacy while promoting participation in common living areas as well as the central outdoor space.

Staff Zone:
The typology consists of medium level of staff presence integrated into a dedicated care zone. Since lower number of staff is expected, less areas are focused specifically on the staff.

Care Zone:
The care zone is included within the typology with occaisonal care services depending on the needs, and it includes a flexible medical room and activity and rehabiliation rooms designed to integrate care into daily life of the residents in a natural way.

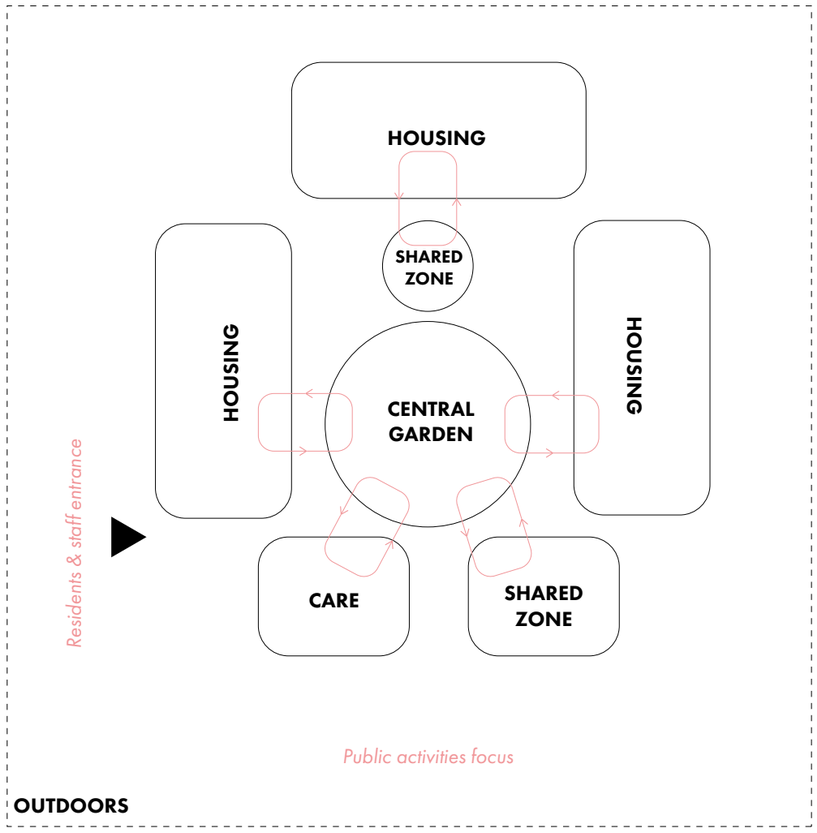
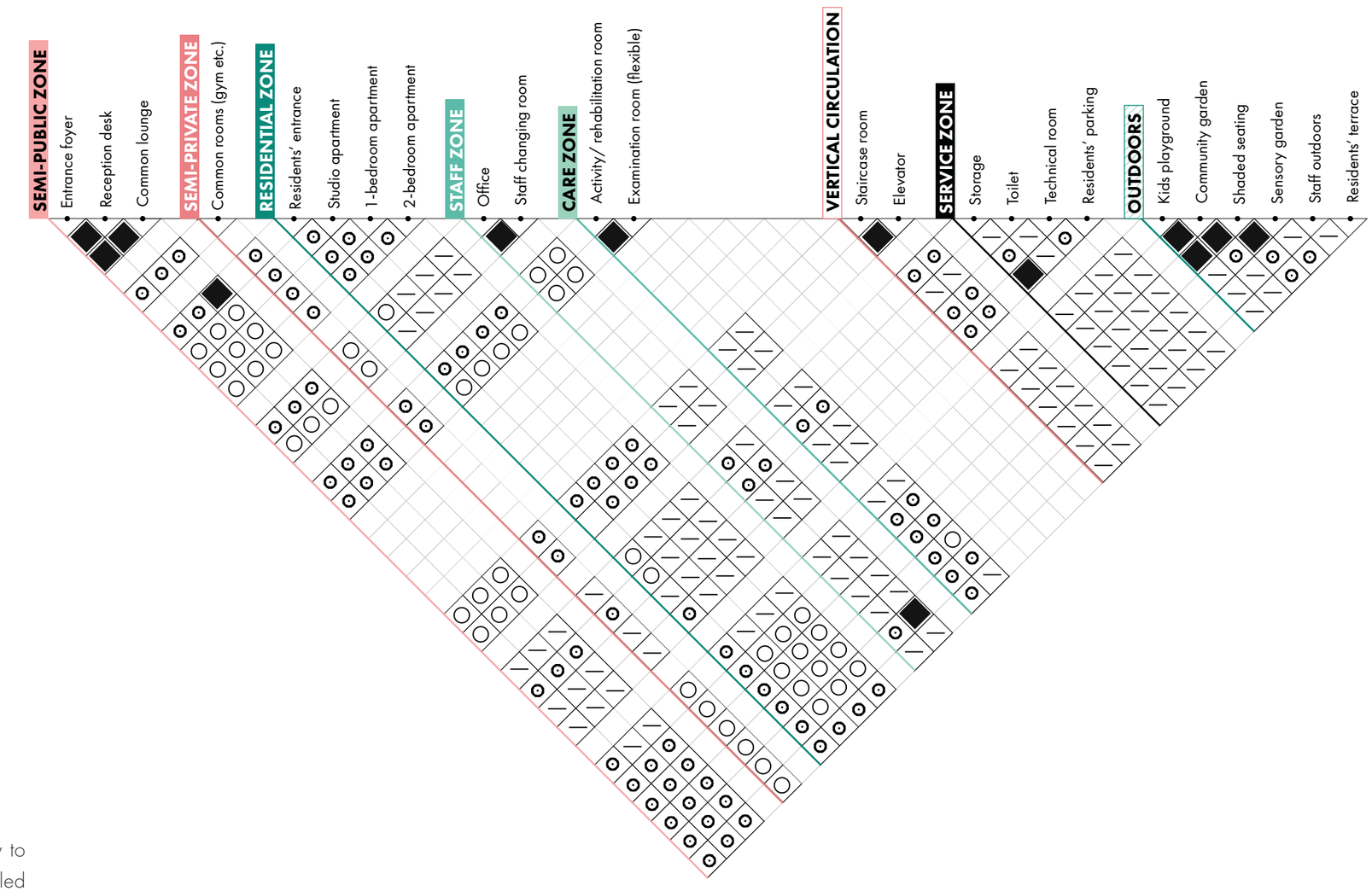


Fig. 157 Zoning concept 2.
Source: Author

6.3.3 Spatial Adjacencies



The apartments are in close proximity to each other, and they maintain controlled but direct access to shared zones.
Apart from that, the elements of most of the zones are in direct relation to each other while being in close proximity to the related functions allowing clear and comfortable transitions.

Direct/ Primary adjancency

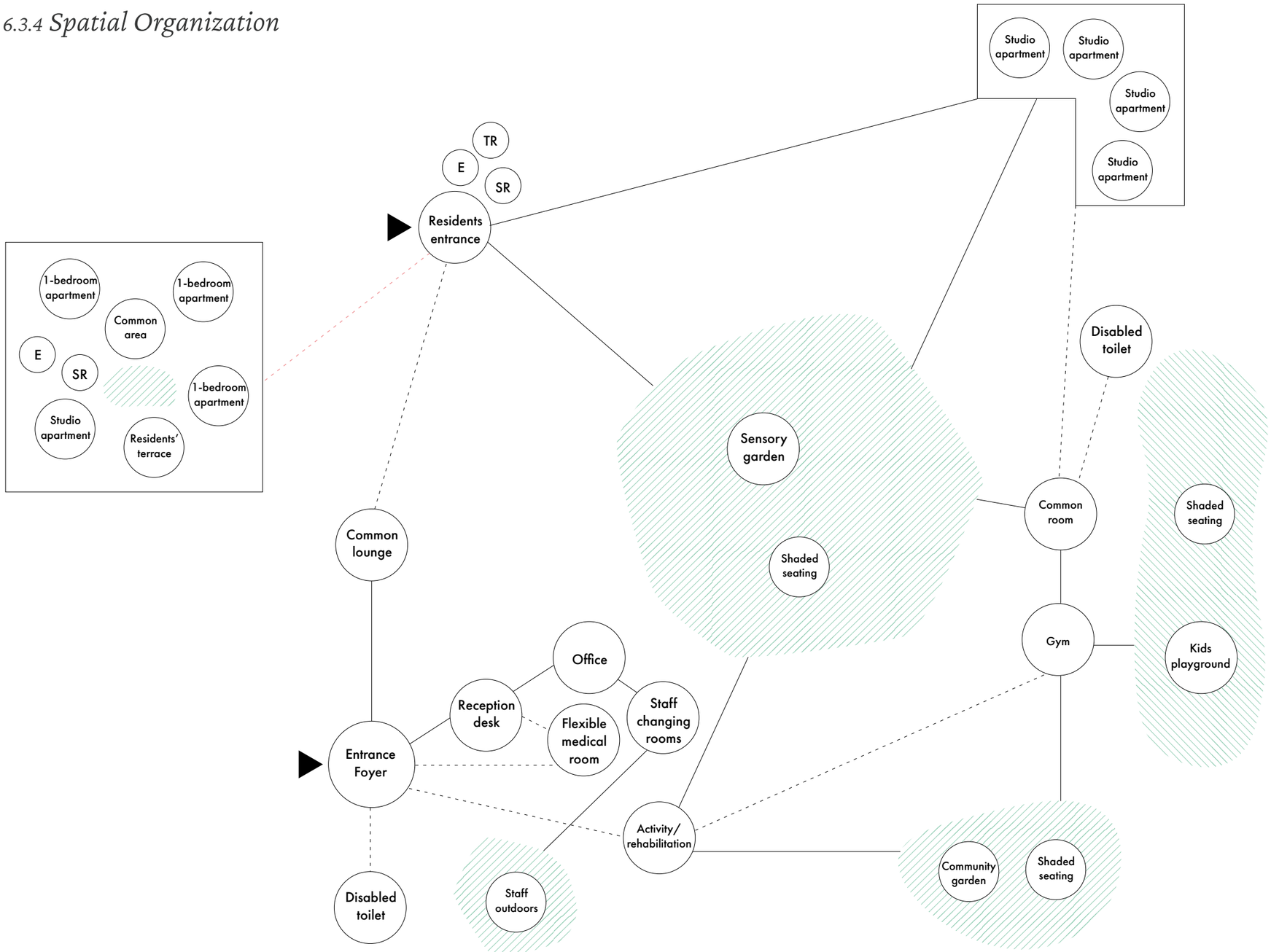
Preferred/ Close adjancency

Remote

Not required

Fig. 158 Spatial adjacencies 2.
Source: Author

6.3.4 *Spatial Organization*



Resulting from the spatial adjacencies, the abstract idea for the spatial organization is proposed. The residents' entrance is connected directly to the central garden and the other residential zones, as well as the common lounge between the entrance foyer of the care zone and the residents' entrance. Spaces such as the reception, office, medical room, and staff areas are connected in the care zone, while communal areas like the lounge, common room, gym, and activity/rehabilitation spaces connect both to indoor facilities and outdoor areas such as gardens, shaded seating, and a kids' playground as semi-public outdoor functions.

Direct relation

Indirect relation

Different vertical level

Residential cluster

Outdoors

SR *Staircase room*

E *Elevators*

TR *Technical room*

**line lengths do not indicate the adjacencies*

**bubble size do not indicate the size of space*

Fig. 159 Spatial organization 2. Source: Author

6.3.5 Spatial Typology Schemes

Following the spatial organization diagram, spatial typology schemes were formed which are demonstrated in ***(Fig.161)***, and diagrammed in ***(Fig. 160)***.

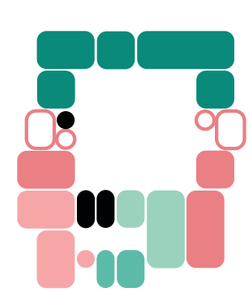
At level 0, the zoning is divided into the care dedicated space with the separaate entrance and the residential zone with apartments that has direct access to care. This arrangement ensures that the residents have some type of access to care, and since the space is visible both from the residents' entrance and the central garden, it is easy to find by the residents.

The typical upper level consists of the residential area that is surrounding the central courtyard with also the central positioning of semi-private common living areas. The floor has access to a residents' terrace. Smaller potential "indoor" balconies can be integrated to provide spaces for interaction without necessarily going into the specific space arranged for that goal. Clear signs can aid in intuitive wayfinding in the looped circulation area. The atrium areas above the residents' entrance provide more light into the circulation area.

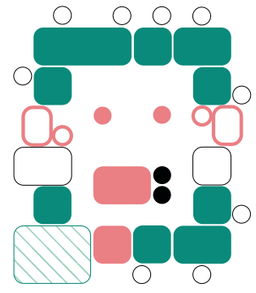
The vertical layout demonstrates that ground floors is divided into different zones while upper floors are residential focused with the potential of higher number of levels. The main circulation is completely circular and simple around the central attraction of the garden consisting of sensory elements.

Residents' parking areas and storage is planned for underground however can be integrated to level 0 if the conditions provide enough space in the programming of the design project like the example of Bon Top that was analyzed in the best practice section, or can be planned in the surrounding area.

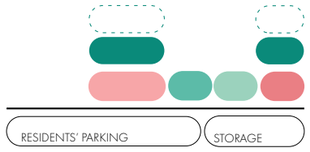
In summary, this typology demonstrates a smaller scale clustered living with integrated supports and care spaces and rely on support from neighboors and the surrounding community. The intermediate solution is that residents live in a normal apartment building with enhanced connections to outdoors, spatial cues and integrated common spaces, as well as have close access to care and staff.



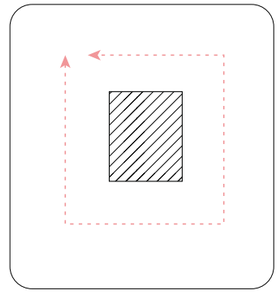
Level 0 zones



Level typical zones



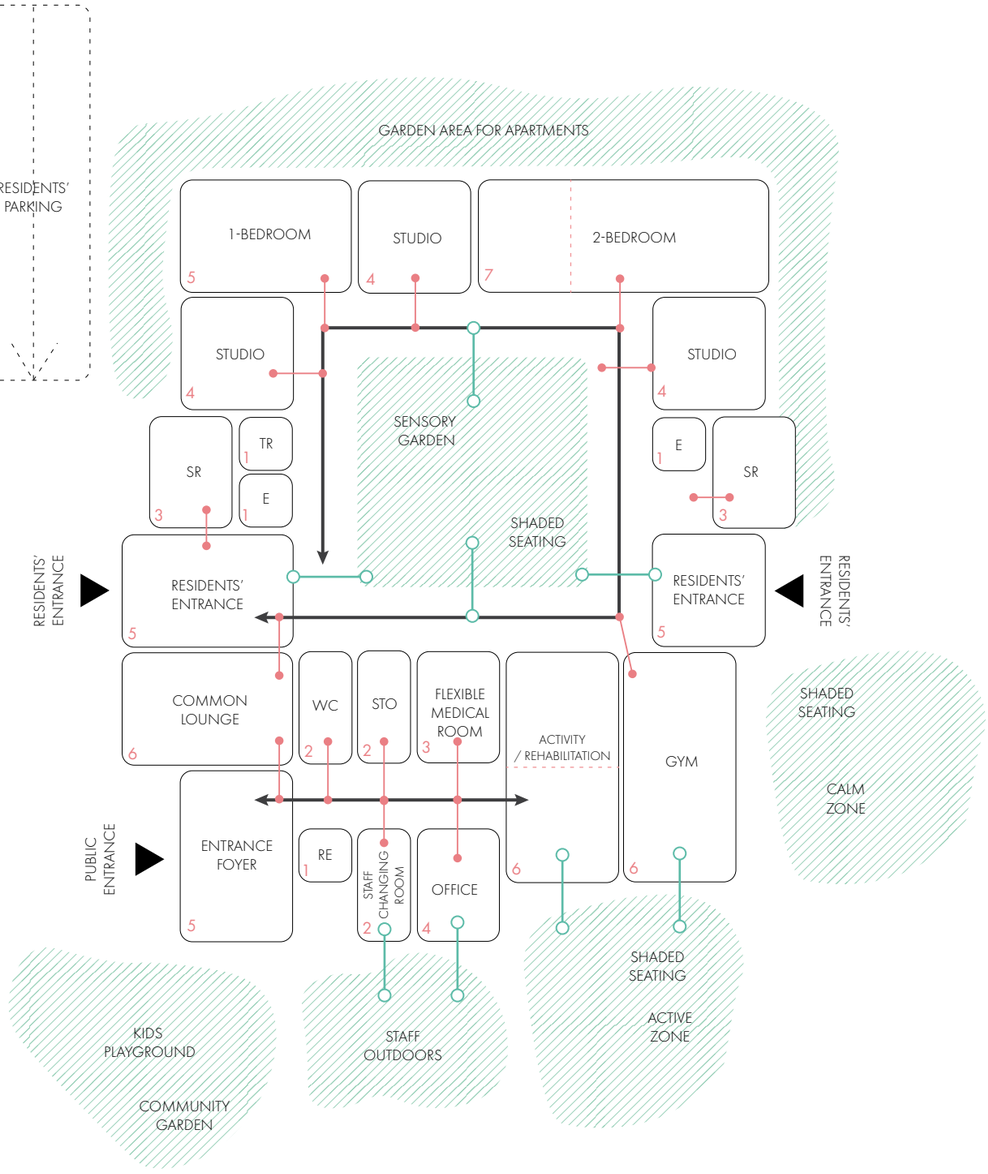
Vertical layout



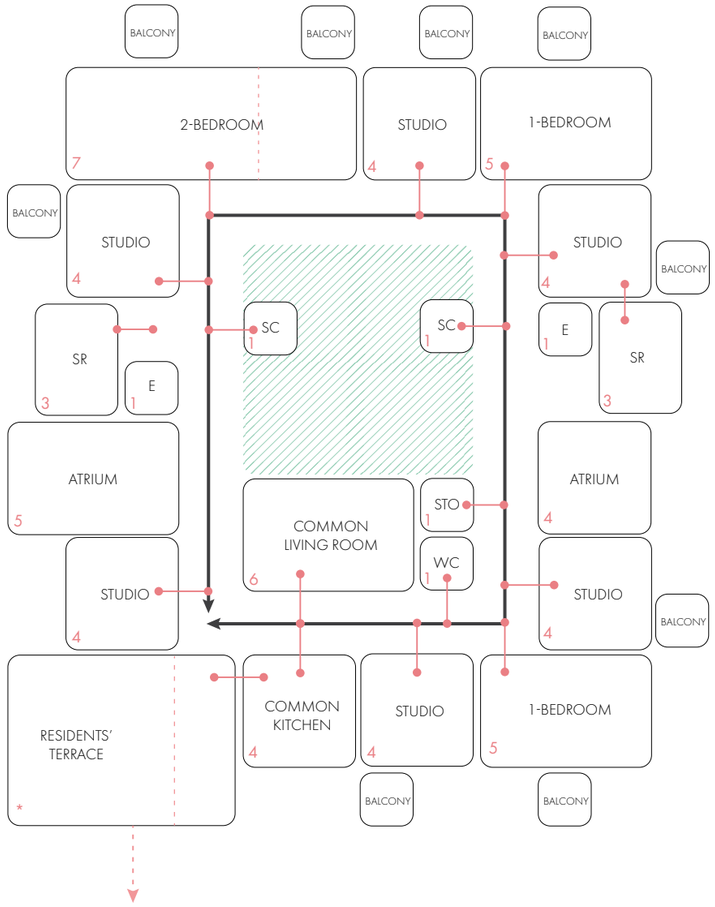
Main circulation

Fig. 160 Spatial diagrams 2.
Source: Author

LEVEL 0



LEVEL TYPICAL



LEGEND

SC	Social corner	SR	Staircase room		Access points to outdoors
STO	Storage	E	Elevators		Access points to outdoors
RE	Reception	TR	Technical room		Flexible spaces for division
WC	Toilets		Horizontal circulation		Possible connection to another block

Size of spaces (approximate)

1- 4 - 6 m²

2- 6-12 m²

3- 8-16 m²

4- 12-32 m²

5- 24-48 m²

6- 32-56 m²

7- 56-90 m²

Fig. 161 Spatial typology schemes 2.
Source: Author

6.3.6 *Layout Variations*

The illustrative design framework for typology scenario 2 is established following the previous diagrams. Thus, a further step is demonstrated showing the flexibility and adaptability of the layout arrangements with the proposed spatial typology schemes. Following the core idea, needs and requirements, some examples of layout variations for typology scenario 2 were created and illustrated in ***(Fig.162)***:

1) Courtyard organization:
The courtyard organization is the compact and centralized variation that can be proposed. A single large courtyard space in the central positions is surrounded by the blocks. Residential units are grouped around the perimeter with common areas and staff and care spaces placed strategically within. And, the main flow revolces around the central courtyard. Movement is direct, with one main access point leading into the courtyard and outward connections in the surrounding spaces of the block.

2) Combined courtyards with shared terrace:
In the combined courtyards variation, the two adjacent courtyard typology buildings are linked though a common terrace that makes up a safe space for the residents to be outside. Residential units again dominate the perimeter. Common areas and care/staff facilities are distributed between the courtyards, with a central shared terrace serving as a communal attraction point. Circulation runs across both courtyards, linking them together. Movement is more interconnected, allowing residents to cross between shared spaces. The scale becomes larger so as the site area.

3) Multiple courtyards:
Several courtyard layouts are distributes but inteconnected creating a large but connected spatial arrangement. Care and staff area becomes central, but the typology still maintains an independent living lifestyle. The strenght is that the multiple courtyards can provide various semi-private outdoor areas for interactions between the residents in a relatively larger typology.

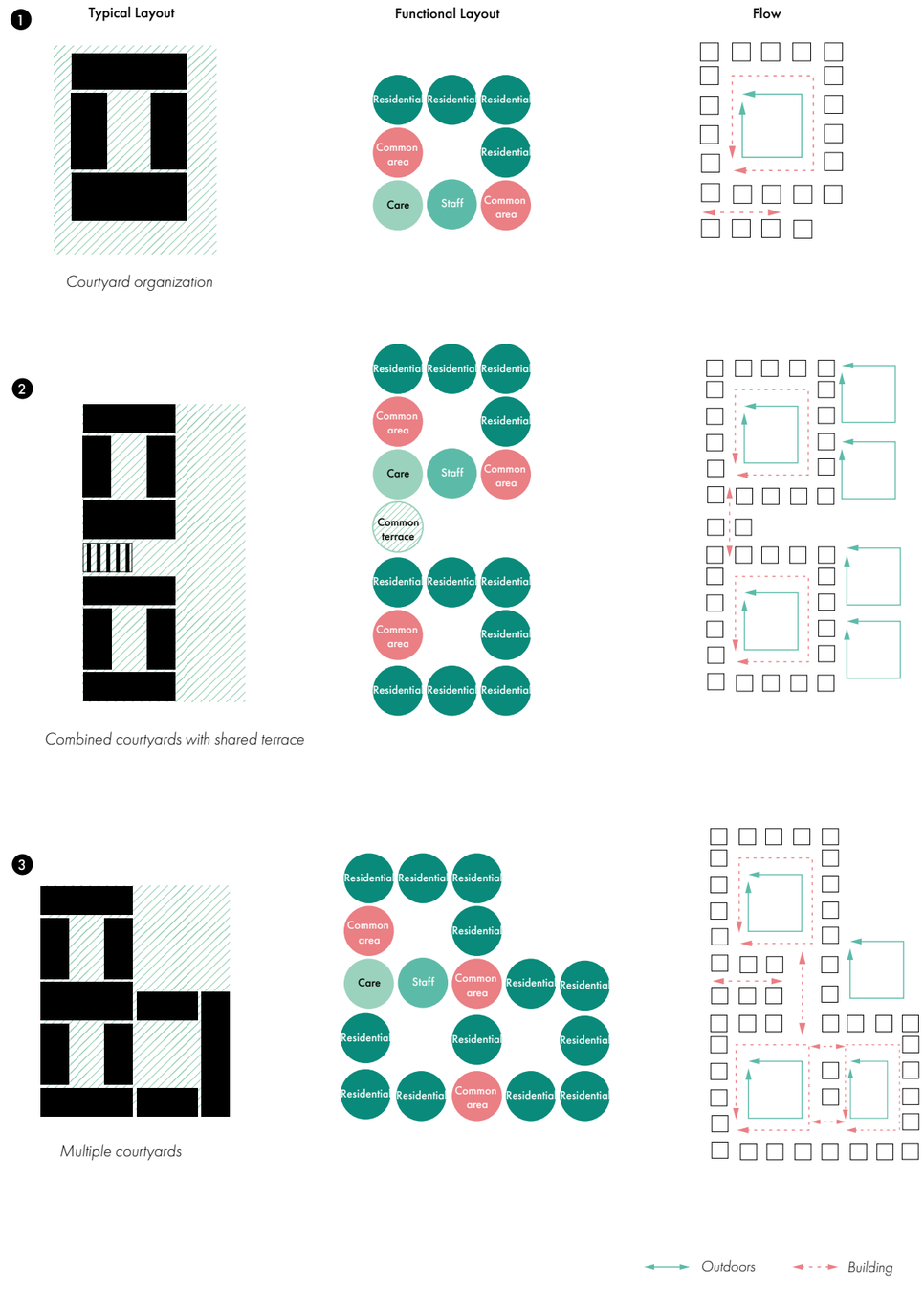
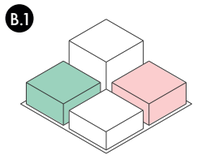


Fig. 162 Layout variations schemes 2.
Source: Author

/ Phase . F-2

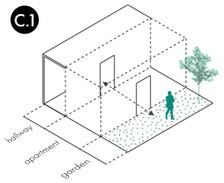
Suggest tools for typology scenario 2

B.1



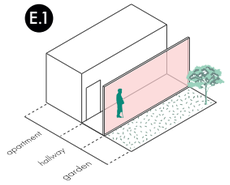
Different types of apartments according to preference of lifestlye & memories

C.1



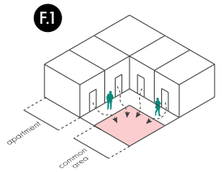
Entrance to the apartments both from the indoors & the garden

E.1



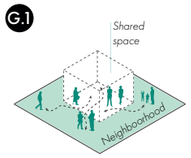
Hallways to create direct connections to outdoors

F.1



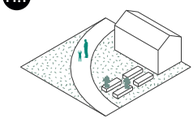
Common areas in open areas that are directly accessible from apartments

G.1



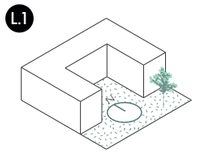
Common areas open to activities in the neighboorhood

H.1



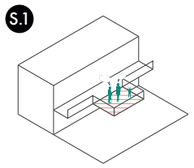
Community garden

L.1



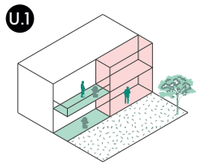
South facing gardens

S.1



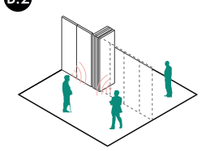
Pockets in the hallway as balconies for social interactions

U.1



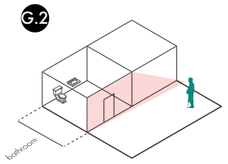
Open & covered balcony spaces

B.2



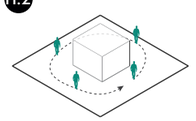
Flexible rooms to isolate when necessary

G.2



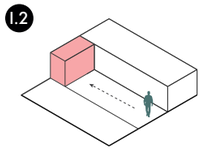
Bathroom is visible and easy to locate

H.2



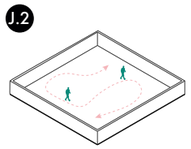
Circulation on a path that is a loop & central location of important functions

I.2



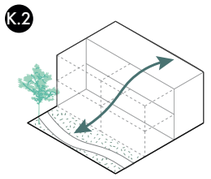
Clear destination in the end of the corridor and no dead ends

J.2



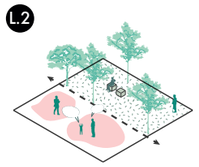
Freedom of movement in a secure perimeter

K.2



Transition spaces to outside

L.2



Clear distinction between active/calm space in the outdoors

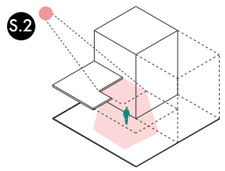
N.2

Kids playgrounds to be integrated in the surroundings

R.2

Therapuatic sensory gardens

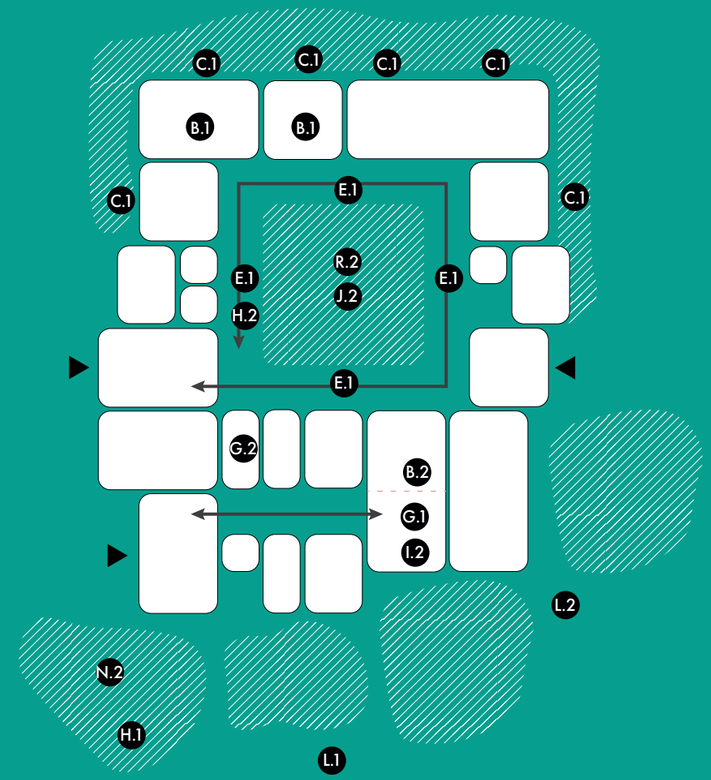
S.2



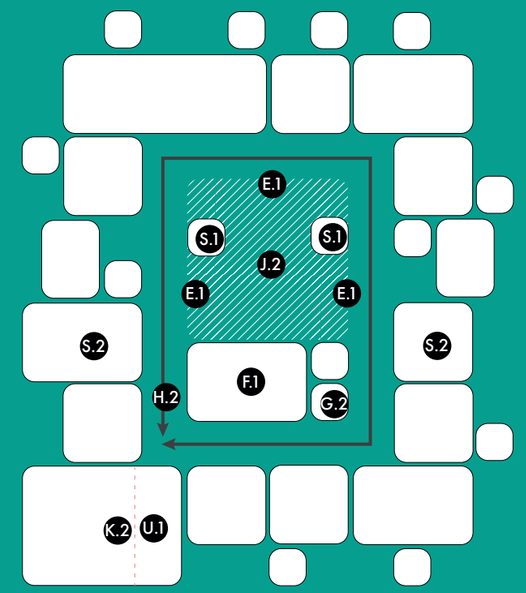
Skylights for getting more natural light

This phase demonstrates the tools that were used and/or suggested for the typology scenario 2.

LEVEL 0



LEVEL TYPICAL



Note:
.1 are from case studies
.2 are from research

Fig. 163 Design tools demonstration 2.
Source: Author

6.4 Typology Scenario 3

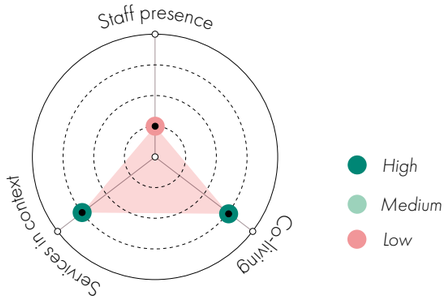


Fig. 164 Parameters for scenario 3.
Source: Author

6.4.1 "Shared care"

The scenario parameters include high staff presence, higher amount of co-living so more shared focused apartments, and a context that has high access to services and a nearby public park.

Following these factors, and the findings from research, a spatial distribution concept was established that can act as guidelines for applications that follow similar conditions.

The core ideas is that the residents live in private, and optionally multi-generational apartments that are arranged into co-living clusters of 2-3 apartments together with a shared common area that can become a living room and a common kitchen. Since no professional care support is envisioned to be integrated into the typology, the housing community is aimed to be a more socially supportive environment. The connection with the public outdoor environments are provided through the integration of zones that support the well-being of the target group.

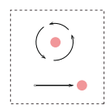
Scenario Name	Shared Care
Core Idea	Independent apartments clusters with no/low staff support, but are integrated into clusters of co-living apartments, and connection to surrounding public space.
Scale & Layout	• Flexible scale, with clusters of 2-3 private apartments forming larger shared units. • Several clusters can be combined into larger ones following a looped circulation and access to other semi-private zones. • A central common loung can be integrated to connect different blocks.
Apartment types	• Studio • 1-bedroom
Staff presence	Residents mostly rely on social supportive networks, however there is an integrated office space for any stype of staff to take place based on needs such as to arrange activities etc.
Co-living degree	Degree of co-living increases even more with each cluster having shared kitchens and living rooms.
Surrounding services	Due to the established parameter, the scenario does not integrate commercial areas, and some public outdoor functions, but instead tries to create permeability.
Resident profile	The typology is designed for older adults (and possibly their families or multigenerational households) who seek privacy within their apartments but also benefit from close-knit social support. It is particularly suitable for those who value autonomy and community but do not require continuous professional care.
Correspondence to the common conceptual pillars	 A looped circulation is proposed around the central vertical circulation core and encounters with common areas.  Central shared space for the apartment clusters are envisioned.  The typology itself is to act like a park with permeable circulation, and some apartments have direct access to outdoors.  Semi public outdoor spaces and well-being zones connect the community to the neighboorhood.

Fig. 165 Scenario 3 introduction table.
Source: Author

6.4.2 Zoning Concept

A central circulation and common area aims to connect the living areas and the other zones together in a safe perimeter for the residents is envisioned as the zoning concept ***(Fig.166)*** having a resemblence to typology scenario 1 central atrium zone. The combination and characteristics of the zones are described as follows and diagramed on the following section through spatial ajjacencies ***(Fig.167)***:

Public Zone:
No additional public function is integrated since the parameters state the area has high access to services, however the site accessibility should be supportive of reaching those areas.

Semi-public Zone:
Semi-public zone is the central ground floor circulation area in between the typology arrangements in order to create stronger flows to the outdoor space.

Semi-private Zone:
Common living areas areas are directly integrated into apartment clusters to encourage a social style of living and support. Other communal functions such as the gym shall be located on the ground floor with connections to outdoor spaces.

Residential Zone:
With the increasing level of shared living, the residential zone that makes up the housing units is formed in clusters and share common spaces on each specific cluster arrangement. The aim is to support a community care network.

Staff Zone:
The typology consists of very low to no level of staff presence, so the only space proposed is an office area that can be used for staff support if needed.

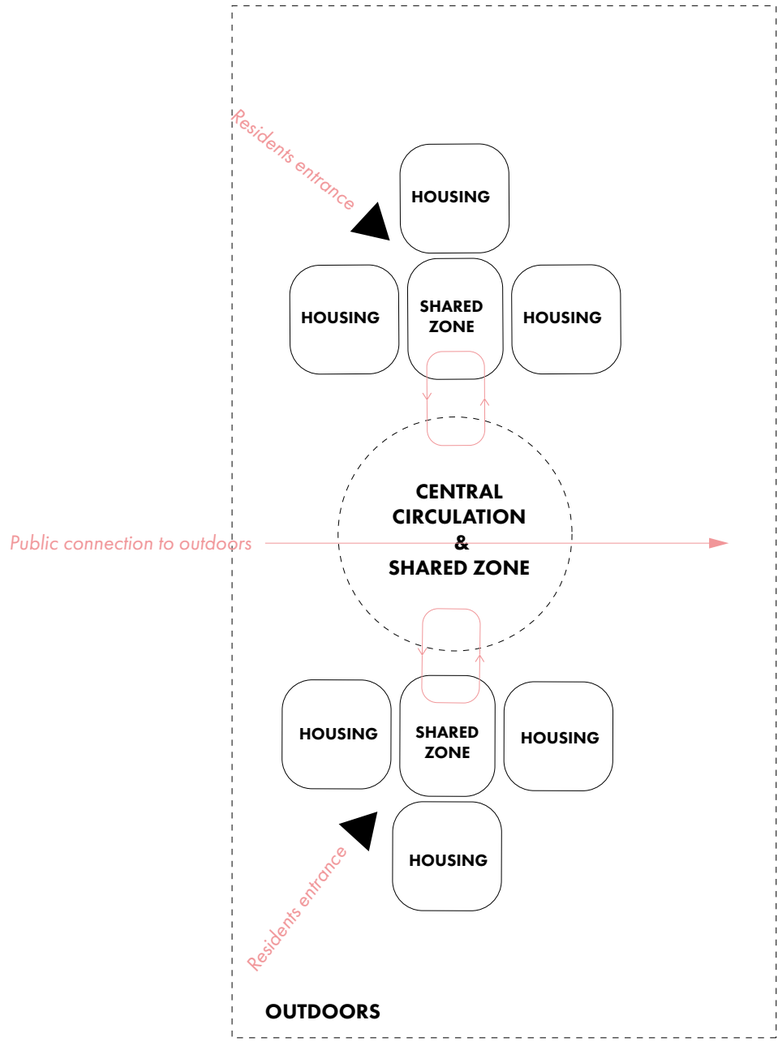


Fig. 166 Zoning concept 3.
Source: Author

6.4.3 Spatial Adjacencies

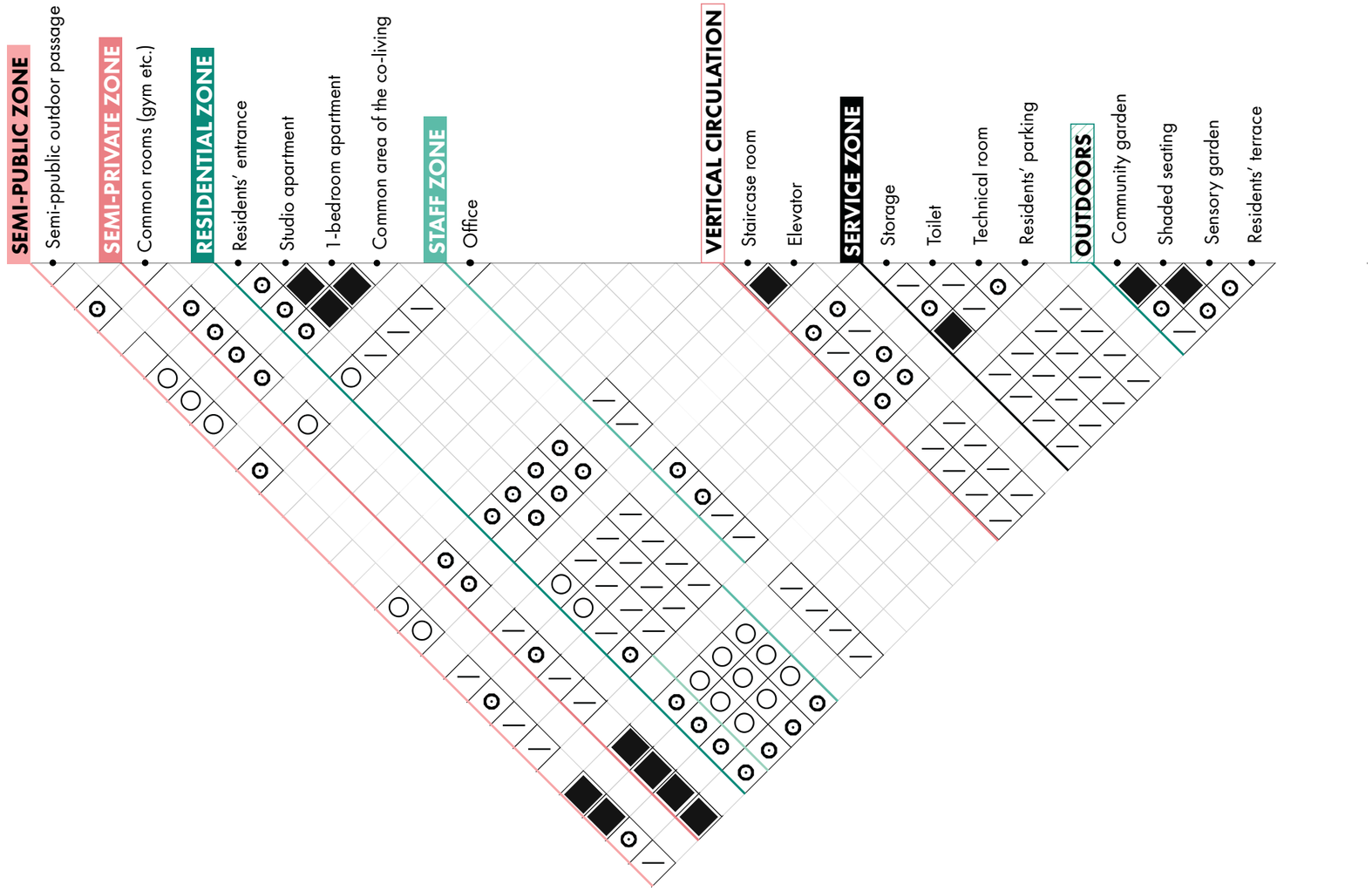


Fig. 167 Spatial adjacencies 3. Source: Author

The spatial adjacencies diagram strongly emphasizes the direct relationship between the residential units and their dedicated shared areas. Semi-public zone stay one step further to ensure a gradual transition of privacy starting from the most private being the private apartments to their shared zones and the semi-private zones within the building, and transitioning to outdoors semi-public passage. The staff zone is present buts shows a lower adjacency piority compared to the previous scenarios.

The vertical circulation elements are central and well-connected in this scenario, also with the potential of an integrated skylight that could bring more natural light to the circulation spaces. Although, there are less number of functions to be placed in this scenario, the diagram emphasizes the need for a layered interaction model.

6.4.4 *Spatial Organization*

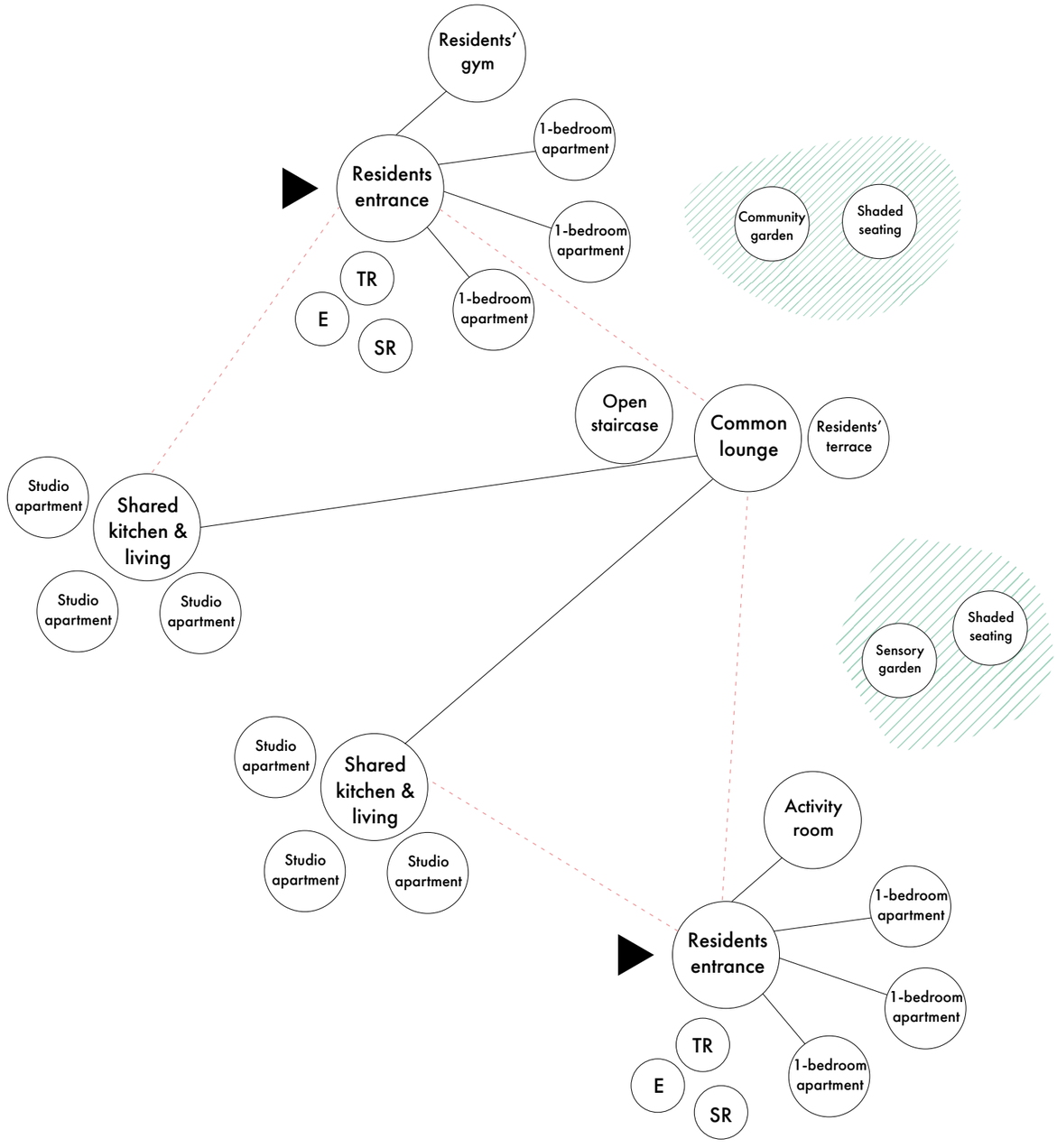


Fig. 168 Spatial organization 3. Source: Author

Resulting from the spatial adjacencies, the abstract idea for the spatial organization is proposed. The sptial organization diagram demonstrates the hierarchy between the private apartments, co-living clusters and their shared areas, as well as the other common areas envisioned within the typology. The common lounge area is positioned centrally and is visivle from different clusters of co-living arrangements with direct access to a residents' terrace. The vertical circulation is central and ensures good visibility. Overall, the spatial organization emphasizes the autonomous living arrangements within a community, offering adaptability in living arragements without direct presence of constant formal care.

6.4.5 Spatial Typology Schemes

As a result of the spatial organizations that were discussed, spatial typology scehemes were created and are demonstrated in ***(Fig. 170)***, and explained with diagrams in ***(Fig.169)***.

At level 0, the configuration integrates residential clusters with the possibility of direct access to dedicated gardens and easy access to shared outdoor spaces such as community gardens, sensory gardens, and shaded seating areas. The central vertical circulation provides direct access to upper floors.

At the typical level, the residential zone is dominant with the co-living clusters that are connected through a central lounge. This central lounge can be flexible in nature and divided into different roms on different floors in desin project scenarios to meet different preferences of the residents in terms of social interactions. Clear signs can aid in wayfinding in the looped circulation area. The co-living arrangements can be imagined for multi-generational living, imagining a scenario that the senior residents lives in their studio apartment within the same cluster while their relatives can be accomodated in the other apartments within the shared area so protecting the autonomy and privacy, but still being in a supportive social care network.

The vertical layout demonstrates clearly the semi- public passage envisioned to be integrated between the different clusters of living in order to increase the permeability of the area, and become a more community integrated place within close proximity to the surroinding areas.

Just like in the other scenarios, residents' parking areas and storage is planned for underground however can be integrated to level 0 if the conditions provide enough space in the programming of the design project like the example of Bon Top that was analyzed in the best practice section, or can be planned in the surrounding area.

Thus, the typology scenario 3 emphasizes layers of shared living with integrated neighboor support and support through the surrounding community. The intermediate dementia-friednly solutions is that the residents that live in co-living arrangements experience opportunities for high level of social interactions and have connections to outdoor spaces that they can interact with the surrounding community.

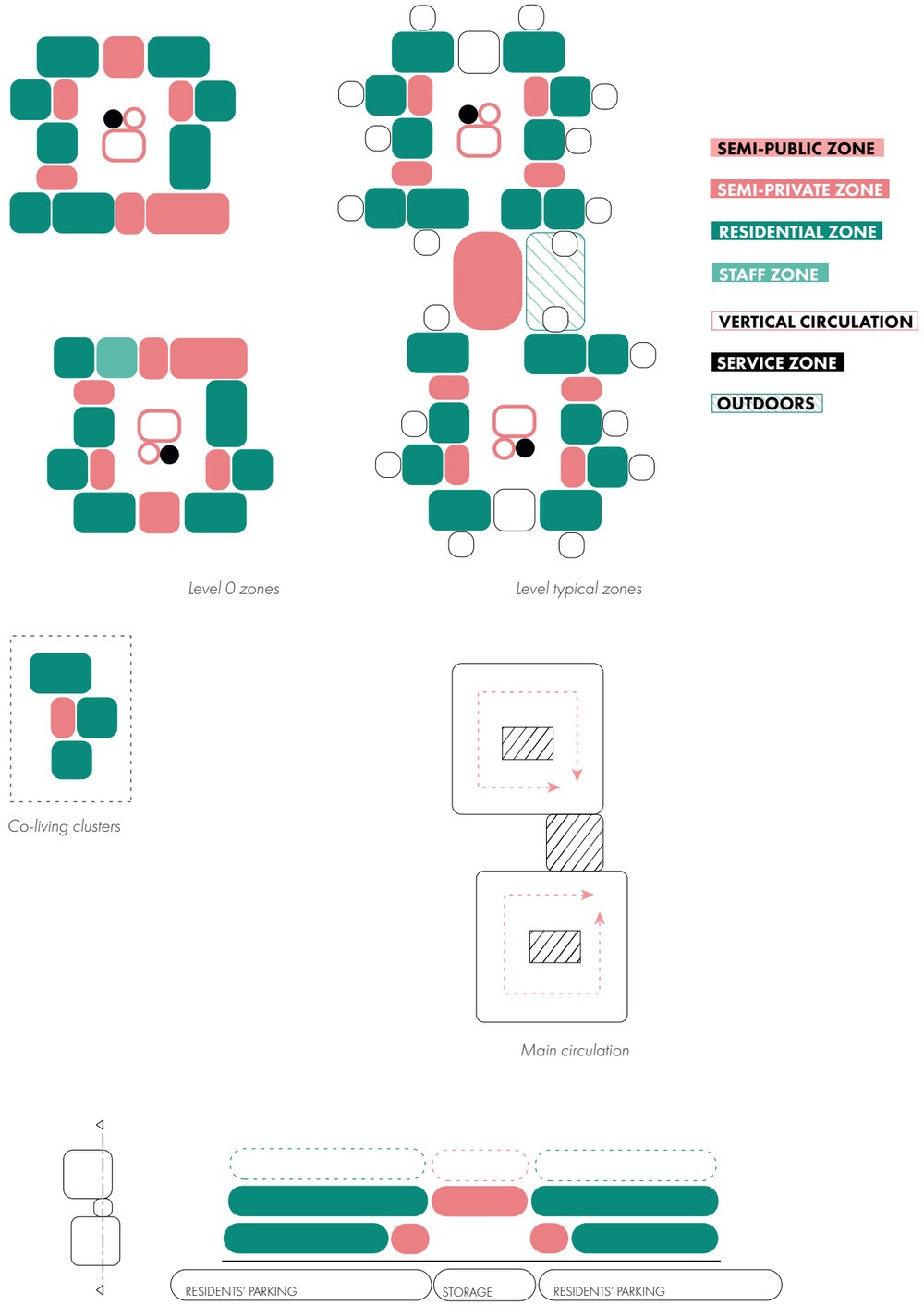
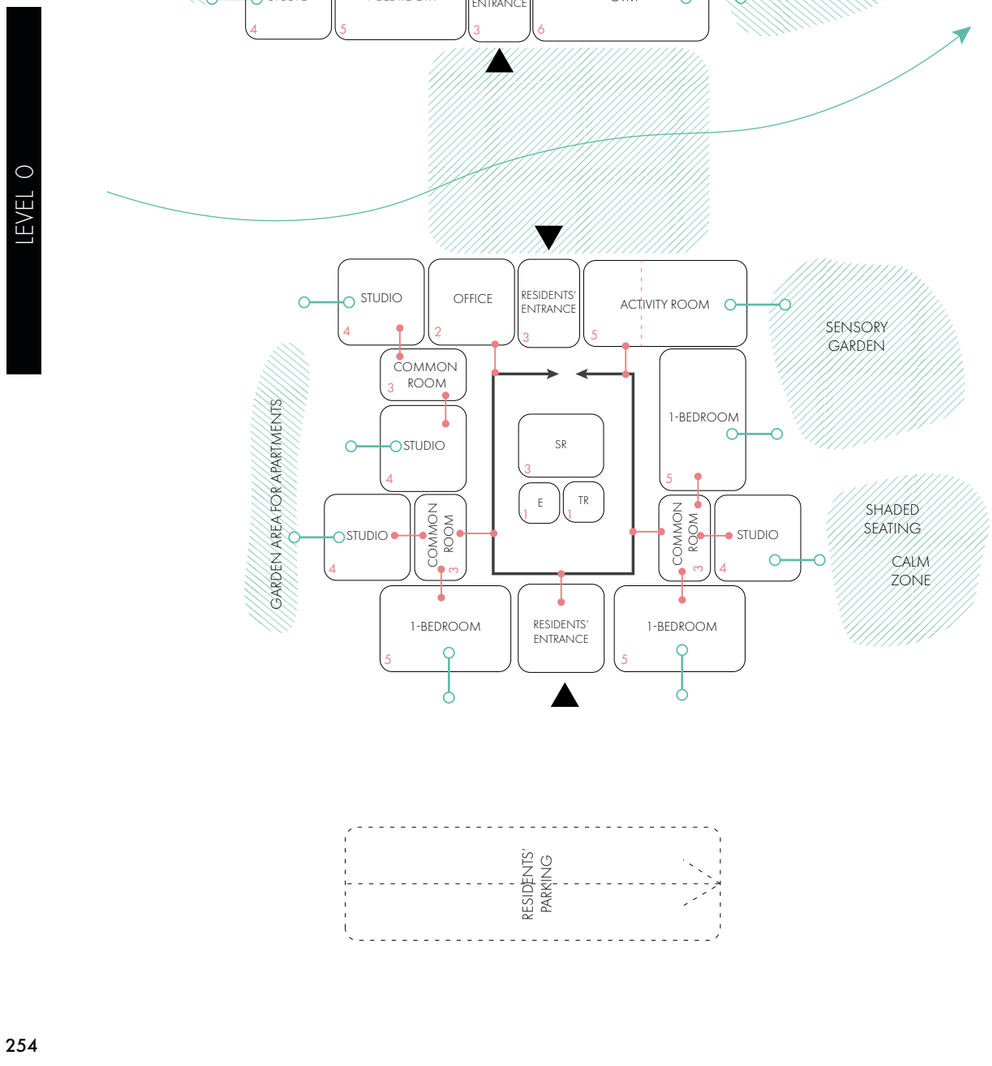
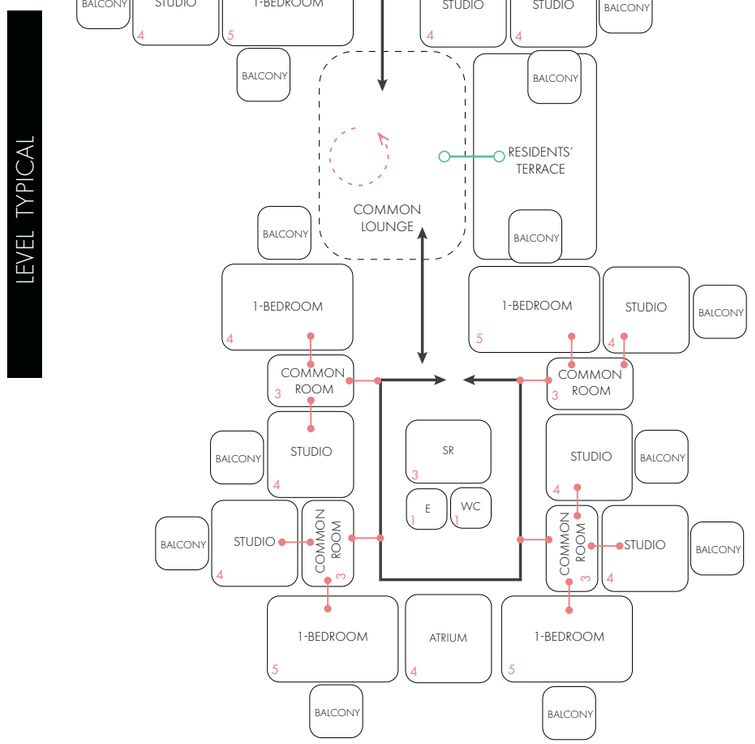


Fig. 169 Spatial diagrams 3.
Source: Author





LEGEND

- RE — *Reception*
- WC — *Toilets*
- SR — *Staircase room*
- E — *Elevators*
- TR — *Technical room*
- *Horizontal circulation*
- *Access points to outdoors*
- *Access points to outdoors*
- *Flexible spaces for division*
- *Open staircase*

Size of spaces (approximate)

1- 4 - 6 m²

2- 6-12 m²

3- 10-20 m²

4- 12-32 m²

5- 24-48 m²

6- 32-56 m²

Fig. 170 Spatial typology schemes 3.
Source: Author

6.4.6 Layout Variations

The illustrative design framework for typology scenario 3 is established following the previous diagrams. Thus, a further step is demonstrated showing the flexibility and adaptability of the layout arrangements with the proposed spatial typology schemes. Following the core idea, needs and requirements, some examples of layout variations for typology scenario 3 were created and illustrated in ***(Fig.171)*** with also the flexibility of integrating care spaces:

1) Linear cluster:
Planned blocks can be positioned into a more linear axis connected through the central common area that is linked to the residents' terrace. The circulation is straightforward and simple, and ensures clarity of orientation by also becoming more clearly accessible and distinguishable from the surroindings. The layout variation can work well in compact but linear plots with access to public outdoor spaces.

2) Distributed cluster:
The blocks are distributed along the central common core similar to the previous proposal but more expandable to accomodate higher number of residents in relatively larger plots. The arrangement also creates mutliple points of access to the outdoor spaces and creates higher permeability to the environment.

3) Integrated care cluster:
Although the parameters for typology 3 indicated low number of staff presence and professional care, it is demonstrated how the typology can be flexible to still integrate care depending on different conditions or program requirements. The core idea is similar to typology scenario 1, but with the integration of higher level of communal living. It is oriented for care-integrated co-living models enhancing the connection between daily life and access to care infrastructure.

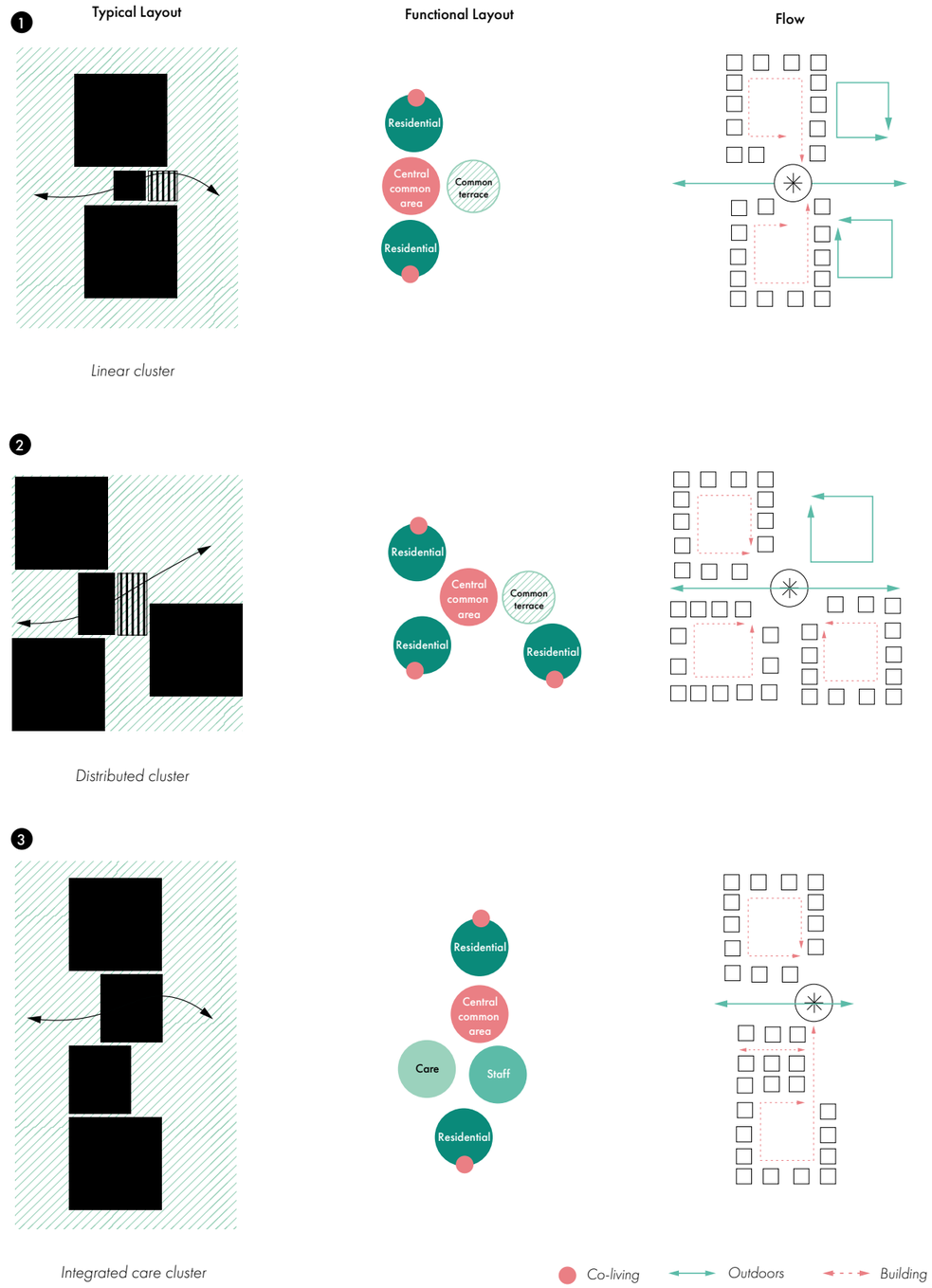
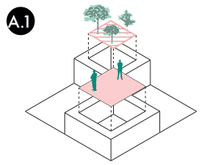


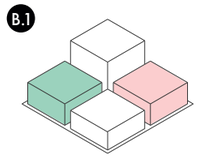
Fig. 171 Layout variations schemes 3.
Source: Author

/ Phase . F-3

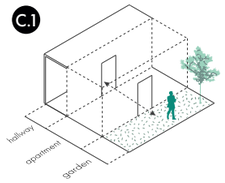
Suggest tools for typology scenario 3



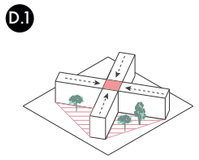
Different typologies of courtyards creating outdoor spaces



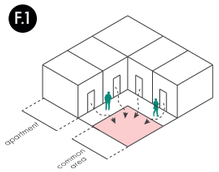
Different types of apartments according to preference of lifestlye & memories



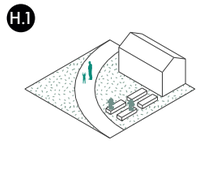
Entrance to the apartments both from the indoors & the garden



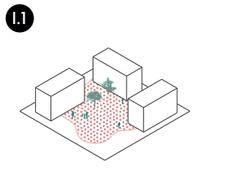
Use of the building volume to point to the central space with common areas



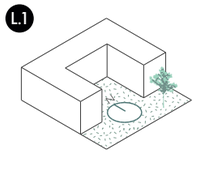
Common areas in open areas that are directly accessible from apartments



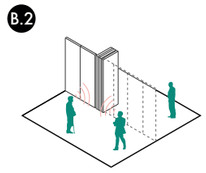
Community garden



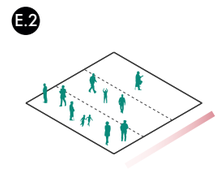
Buildings connected by public space



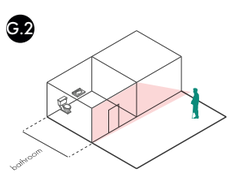
South facing gardens



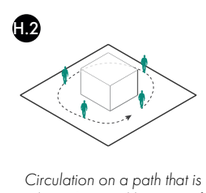
Flexible rooms to isolate when necessary



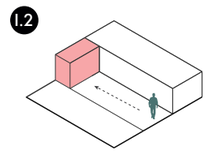
Gradient of privacy



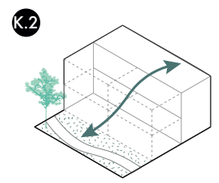
Bathroom is visible and easy to locate



Circulation on a path that is a loop & central location of important functions

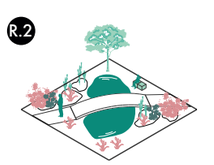


Clear destination in the end of the corridor and no dead ends

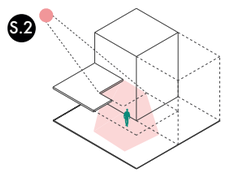


Transition spaces to outside

Clear distinction between active/calm space in the outdoors

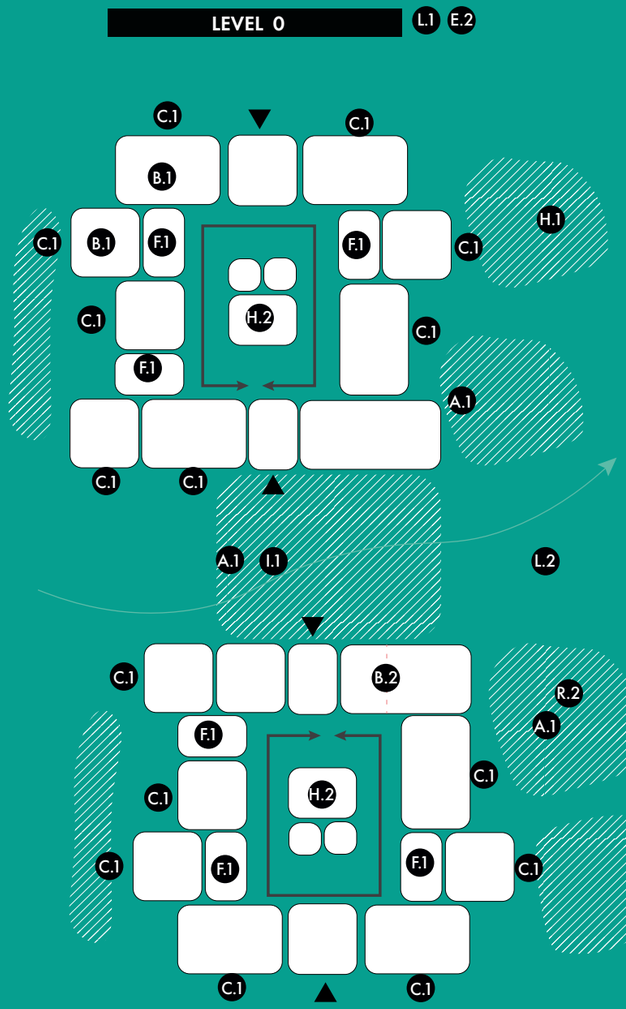


Therapuatic sensory gardens



Skylights for getting more natural light

This phase demonstrates the tools that were used and/or suggested for the typology scenario 3.



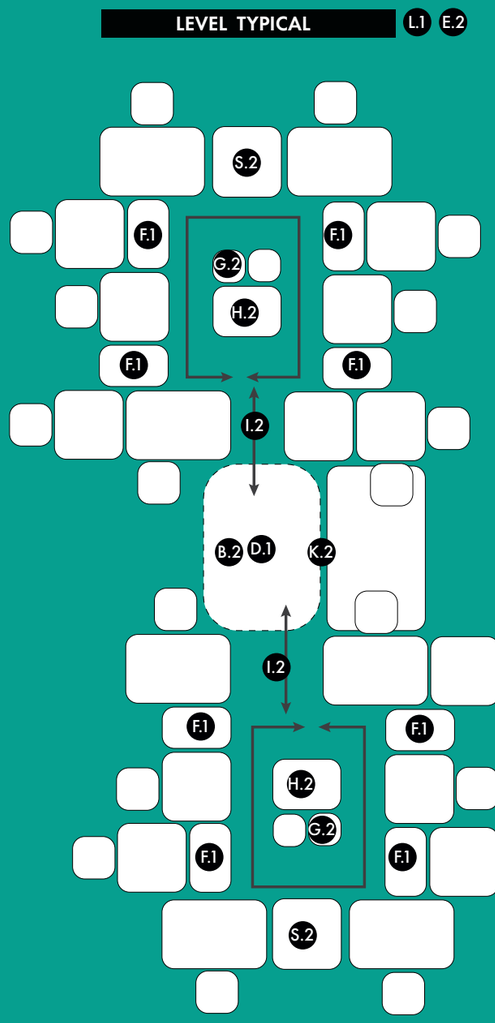


Fig. 172 Design tools demonstration 3.
Source: Author

6.5 *Apartment Scenarios*

6.5.1 *Dementia-Friendly Layouts*

The apartment is the main living space that the older adults spend most of their time in. However, with the progression of cognitive decline, it becomes struggling to carry out activities of daily living. Finding the bathroom is a challenge, or remembering that it is time to eat becomes almost impossible. Within these considerations, apartment layouts shall also support more dementia-focused orientations. Some common conceptual pillars are defined also for apartment scenarios:

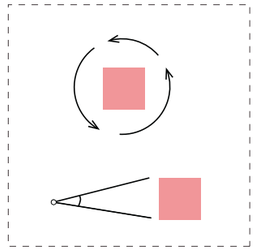
Looped circulation and/or clearly visible rooms:
A continuous circulation path or clear sightlines reduces confusion and helps residents orient themselves more easilyin the apartment.

Easily reachable bathroom and kitchen:
Locating important functions nearby minimizes disorientation and supports independence in daily activities.

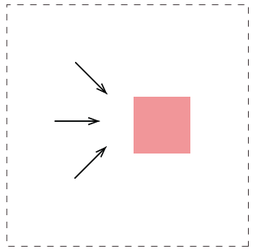
Entrance to apartment has a personazible space:
The area can provide space for placing familiar items or furniture to make it easier to recognize the residents' own apartment, and also act as a social space.

Connections to outside through balconies/ porches:
Direct access to outdoor areas provides fresh air, natural light, and opportunities for safe engagement with nature within the borders of one's own living unit.

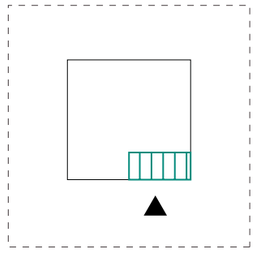
Two scenarios are presented in this section to demonstrate apartment examples. The focus is on the layout. Dementia-friendly apartments should also adapt to some furniture adjustments, but this aspect is outside the scope of this thesis, so it is summarized only to add safety features to the kitchen and the bathroom.



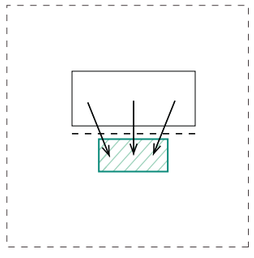
looped circulation and/or clearly visible rooms



easily reachable bathroom and kitchen



entrance to apartment is personalizable



connections to outside through balconies/ porches

Fig. 173 Concepts for apartment scenarios. Source: Author

Layout Type A:

This proposal focuses on studio, 1-bedroom and 2-bedroom apartments that suggest flexible layouts to be implemented into possible building typologies. The entrance area follows the common concept identified for apartments and presents a dedicated area that can be considered as an "indoor" balcony that provides chance to personalize the entrance space with signs, colors or furniture while also creating an extra space for social interactions.

In the studio proposal, the entrance directly views the bathroom and the living room that will also accomodate the sleeping area. That's why a flexible element can be implemented in order to divide the space when needed, especially considering a home-care situation when the privacy should be maintained. The living room is positioned to views the bathroom area and the kitchen directly, and the kitchen can be proposed with a space that acts as a covered balcony. In larger degree of co-living situations, the kitchens can be designed as small kitchenettes that meet essential needs, as a common kitchen would be integrated to be shared with the other apartments nearby.

The option for one-bedroom apartment follows a similar base layout with the studio, but the distinct feature it presents is the looped circulation within the apartment. The centrally located bathroom is visible from every point in the apartment, if also it is highlighted with a distinct color or material that makes it easier to differentiate from other places.

The two-bedroom layout follows the same features as the types before, but adds up an additional bedroom next to the living room, which is easilly accessible from the living room. An additional private bathroom to the bedroom can be integrated, especially considering the cases of multi-generational living in the apartment. The special case of this type is that an extra entrance can be added, to divide the apartments in home care situation or possible co-living situation with other residents.

In addition to the spatial aspects proposed, the bathrooms and the kitchen should be adapted for safer and easier use by the older adults and those with cognitive decline.

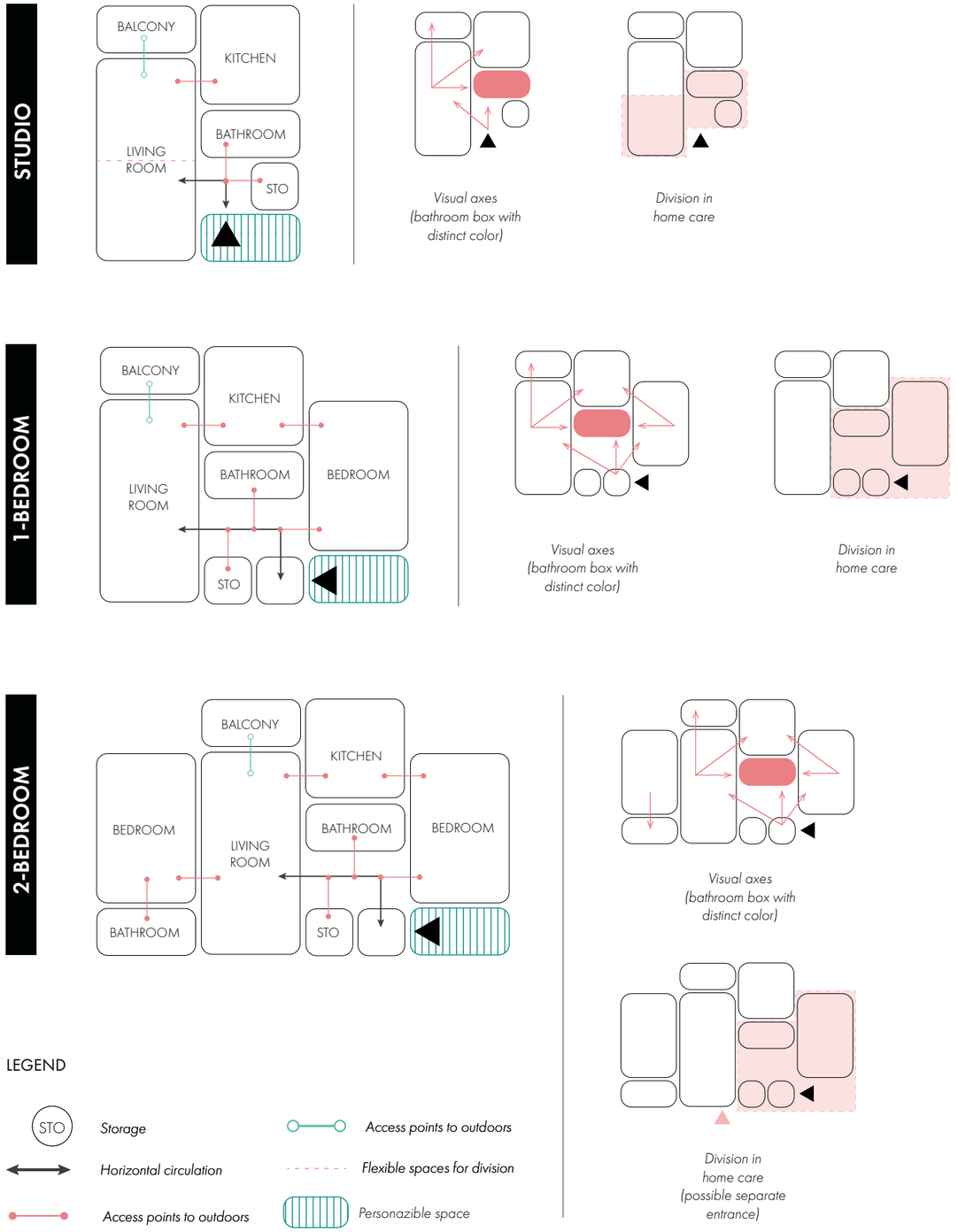


Fig. 174 Spatial typology apartments A. Source: Author

Layout Type B:

The second option presented as an example typology of an apartment layout is characterized by a single hall entrance that has direct views to the main rooms of the apartment, and also a separation for storage that can perform as a guide for circular movement within the space. The main difference of this type with the previous one is that it is more suitable for buildings that can accomodate narrower widths as the one-bedroom and two-bedroom types do not add up so much extra lenght.

As it was also proposed in layout type A, the entrance area follows the common concept identified for apartments and presents a dedicated area that can be considered as an "indoor" balcony that can be personalized.

The proposal for the studio typology presents a similar kitchen to layout type B with connection to the balcony. The living room is proposed to be flexible in order to divide the space when needed, especially considering a home-care situation when the privacy should be maintained. The visual axes provide clear views to the bathroom, balcony, and the living space.

One-bedroom apartment provides flexibility in the connection of the kitchen and living room space while following the same typology logic with the circulation and the position of service space.

Lastly, the two-bedroom option integrates and extra bedroom with an extra bathroom that makes it easier to divide the entrance with the bedroom and the bathroom when needed with the possibility to enclose the other parts of the apartment.

All additional considerations discussed for layout type A applies to this type, too.

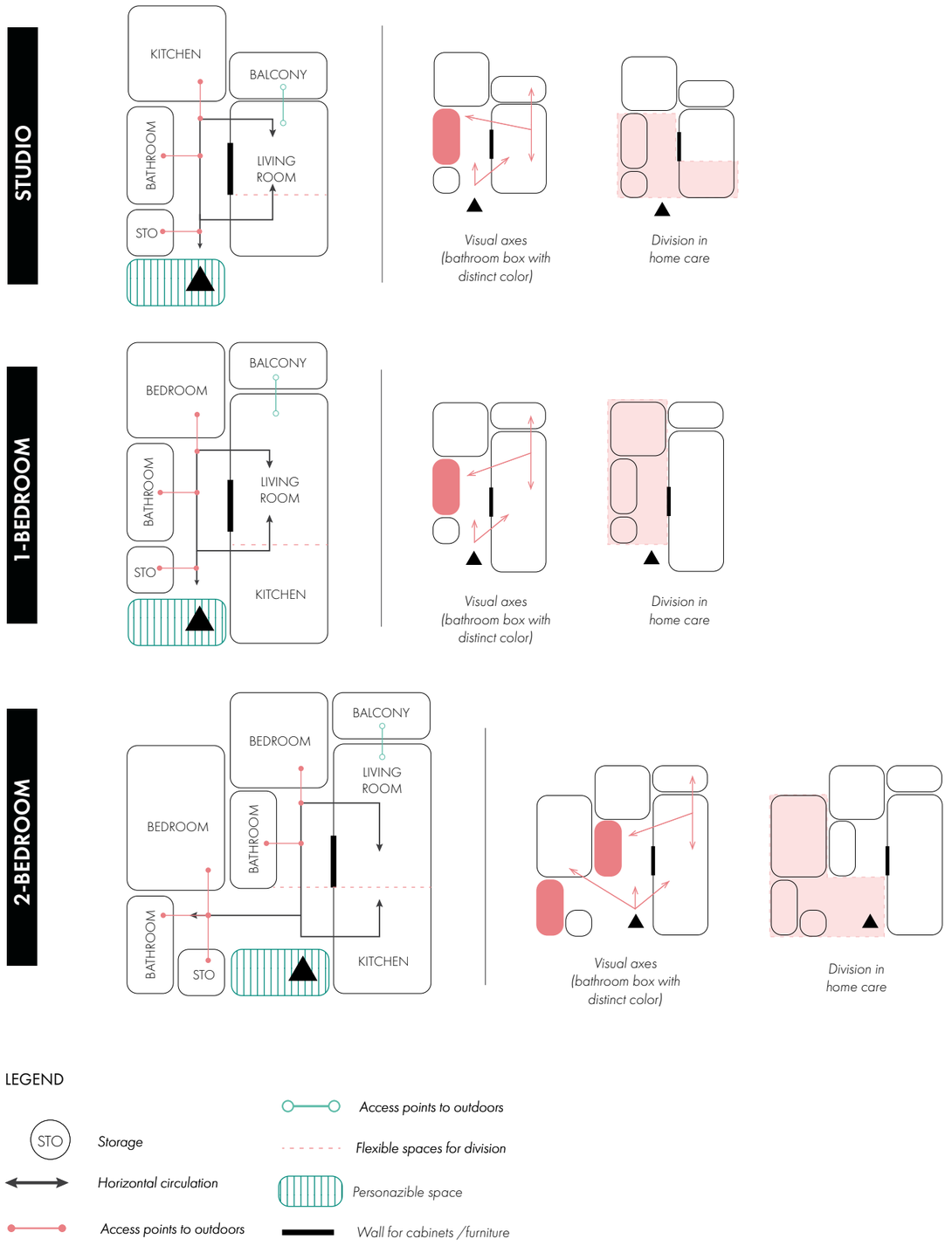
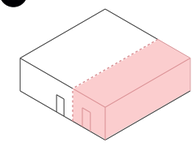


Fig. 175 Spatial typology apartments B. Source: Author

/ Phase . F-4

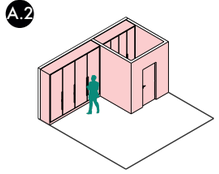
Suggest tools for apartment scenarios

T.1



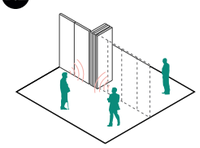
Possibility to separate a part of the apartment in a home-care situation

A.2



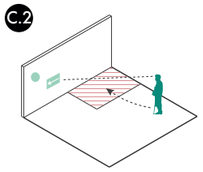
Integrating storage areas

B.2



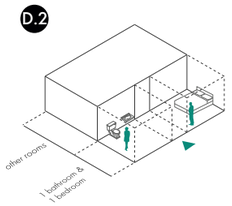
Flexible rooms to isolate when necessary

C.2



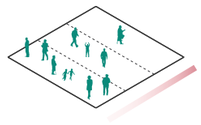
Personalizable space and signs for navigation

D.2



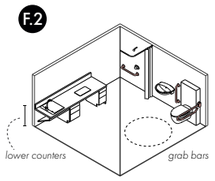
1 bedroom & 1 bathroom close to the entrance

E.2



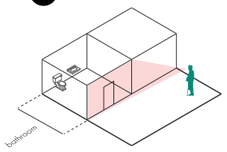
Gradient of privacy

F.2



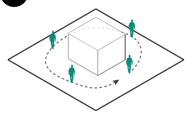
Barrier free kitchen & bathroom

G.2



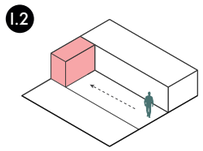
Bathroom is visible and easy to locate

H.2



Circulation on a path that is a loop & central location of important functions

I.2



Clear destination in the end of the corridor and no dead ends

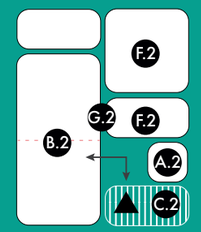
This phase demonstrates the tools that were used and/or suggested for the apartment scenarios.

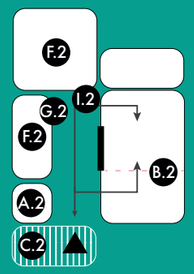
Layout Type A:

Layout Type B:

STUDIO

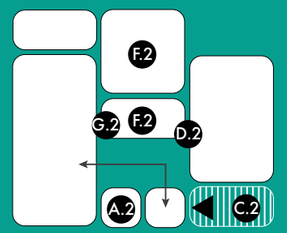
E.2
T.1

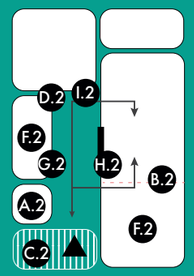




1-BEDROOM

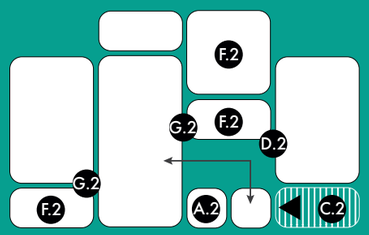
E.2
T.1

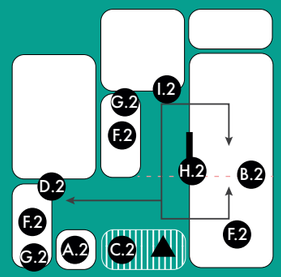




2-BEDROOM

E.2
T.1





Note:
.1 are from case studies
.2 are from research

Fig. 176 Design tools demonstration for apartment scenarios.
Source: Author

6.6 Discussions

The discussions of the proposed experimental typology scenarios aim to reflect on the outcomes of the scenarios in relation to the theoretical and the application of the toolkit parts of this thesis. A secondary aim also includes the discussion of the design tools that were not explicitly pointed out in the phases of each scenario, but can add additional dimensions to the design applications especially with a focus on the material aspects and the arragement of outdoor spaces.

These suggestions are demonstrated and discussed in ***(Fig. 177)*** while the comparative discussions of the three typology scenarios are presented in the following parts of the section. ***(Fig. 178)*** explains the strenghts and challenges of each scenario, and ***(Fig. 180)*** demonstrates a comparative analysis of the types of tools that were collected from the design matrices.

And, finally, some user scenarios for each typology scenario is presented ***(Fig. 181)*** in order to reflect on examples of types of users that can be suitable for each typology, and to understand how they can interact with the spatial arrangement.

(Fig. 177) demonstrates the additionally essential, recommended and optional tools from the design matrices that are guided for use in further design developments of each scenario.

It is essential that the circulation spaces shall be barrier-free and safe for use as well as providing accessibility. The materials in general should support sensory experiences and act as spatial cues such as creating constrasts on flooring for visual distinctions and having non-slippery materials for safer use. The thermal comfort is also essential with providing appropriate design of openings and sharing elements also against glare.

It is recommended that dementia-friendly colors are used for distinguishing spaces if possible without changing the natural feeling. Buffer zones in all levels protecting from unwanted noises is also useful.

Finally, it is optional but enhances the orientation by adding cues to integrate different colors on different floors. Some rooftop spaces can also be converted to outdoor environments within a perimeter, if necessary safety measures are taken as in the example of Dronning Ingrids Hage.

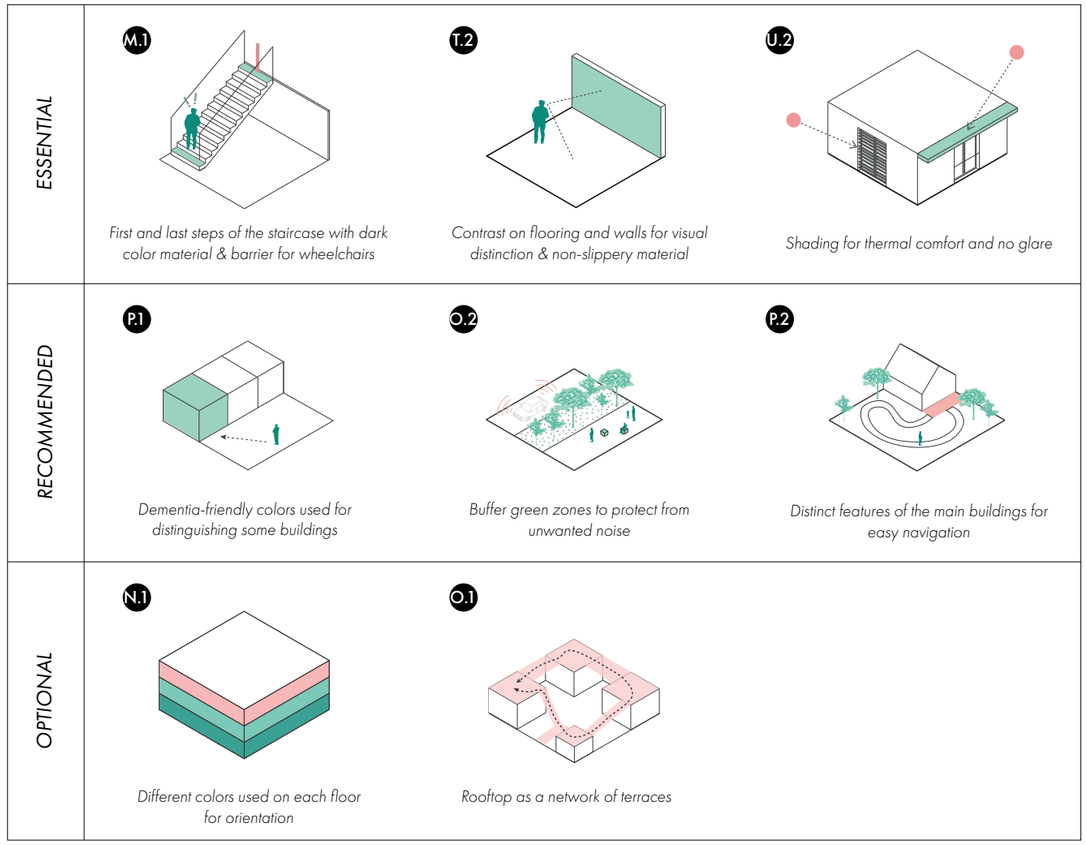


Fig. 177 Additional design tools. Source: Author

	Strenghts	*Challenges*
Typology Scenario 1 "Assisted Privacy"	• High level of staff presence ensures safety and care needs that can be more suitable for residents that need it. • Integration of commercial and semi-public outdoor areas encourage interactions with the neighboorhood. • Range of apartment types provide solutions for singles, couples or larger families. • Clear zoning between the mixed-use ground floor and the residential zones creating a more normal living atmosphere.	• Since the level of staff is high the construction and operating costs may be high. • The design should consider integrating aspects that reduces the risk of feeling too medicalized space because of the care integration. • Integration of commercial and public functions requires attentive management of resident privacy.
Typology Scenario 2 "Connected Living"	• Medium level of staff presence ensures that care support is available when needed. • Central outdoor space provides a looped circulation and safe perimeter for the residents providing comfortable living and connections to outdoors. • The residents can have support from communal living reducing social isolation while still staying independent.	• The care zone requires operational planning and should be well-coordinated. • Shared spaces require strong programming so that the residents are engaged. • Neighboorhood interactions mostly rely on the use of the outdoor space and the encounters in the care zone, which can be limiting.
Typology Scenario 3 "Shared Care"	• The typology has the potential to create strong community bonds and a supportive care network between the residents. • Lower operational costs due to lower level of staff presence. • The gradual arrangement of the zones from more private to more shared protects user privacy and comfort while providing more direct opportunities for interactions.	• Relies mostly on the initiative of the residents, and can sometime create problems. • May need additional systems (visiting staff and support/ volunteer programs etc.) to keep active engagement and help with care needs. • Shared spaces should be adaptable to preferences to avoid unequal participation of the residents.

Fig. 178 Typologies' strenghts and challenges.
Source: Author

(Fig. 178) demonstrates a comparative approach to a number of strenghts and challenges foreseen for each scenario. Typology scenario 1 ensures higher safety with staff presence, and mixed-use spaces, but this can raise costs and privacy concerns. Typology scenario 2 provides less staff support but increased level of common spaces and a central outdoor area to reduce isolation and provide more connection to nature, however it needs strong programming to stay effective. And, lastly typology scenario 3 encourages close community connection and support and lower operational costs due to minimal staff, however may need extra support systems for management. Although each scenario presents some strenghts and challenges, they suggest senior housing solutions that can help individuals with cognitive decline to remain in the community as long as possible.

To analyze the design tools that were used for each scenario and compare the key considerations that were considered in each scenario, ***(Fig.180)*** is developed including also the apartment scenarios. As demonstrated in ***(Fig.179)***, the diagram provides information about the amount of the tools that were found through the Part II of this thesis, and which of them have been considered in each scenario for each key consideration category. The extra black hatch is for the additional design tools that were presented in the "essential" category of ***(Fig.177)***. The diagram points out how the different experimental typology scenarios and apartments layouts can vary in their performance to support the key considerations that were established, but in common demonstrate that the design decisions that the framework can influence support safety, sensory experiences, privacy and comfort, wayfinding, social interactions, connections to nature and physical activitiy. The apartment scenarios focus more dominantly on the privacy aspects, followed by safety and accessibility, and wayfinding.

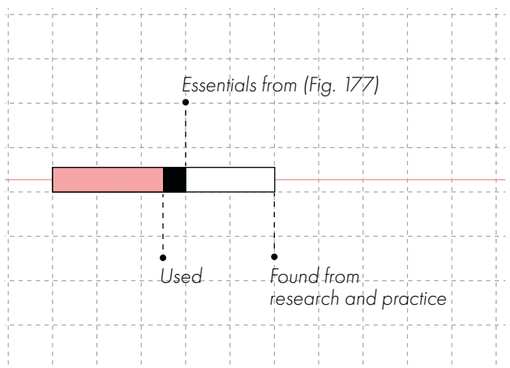


Fig. 179 Legend of (Fig. 180).
Source: Author

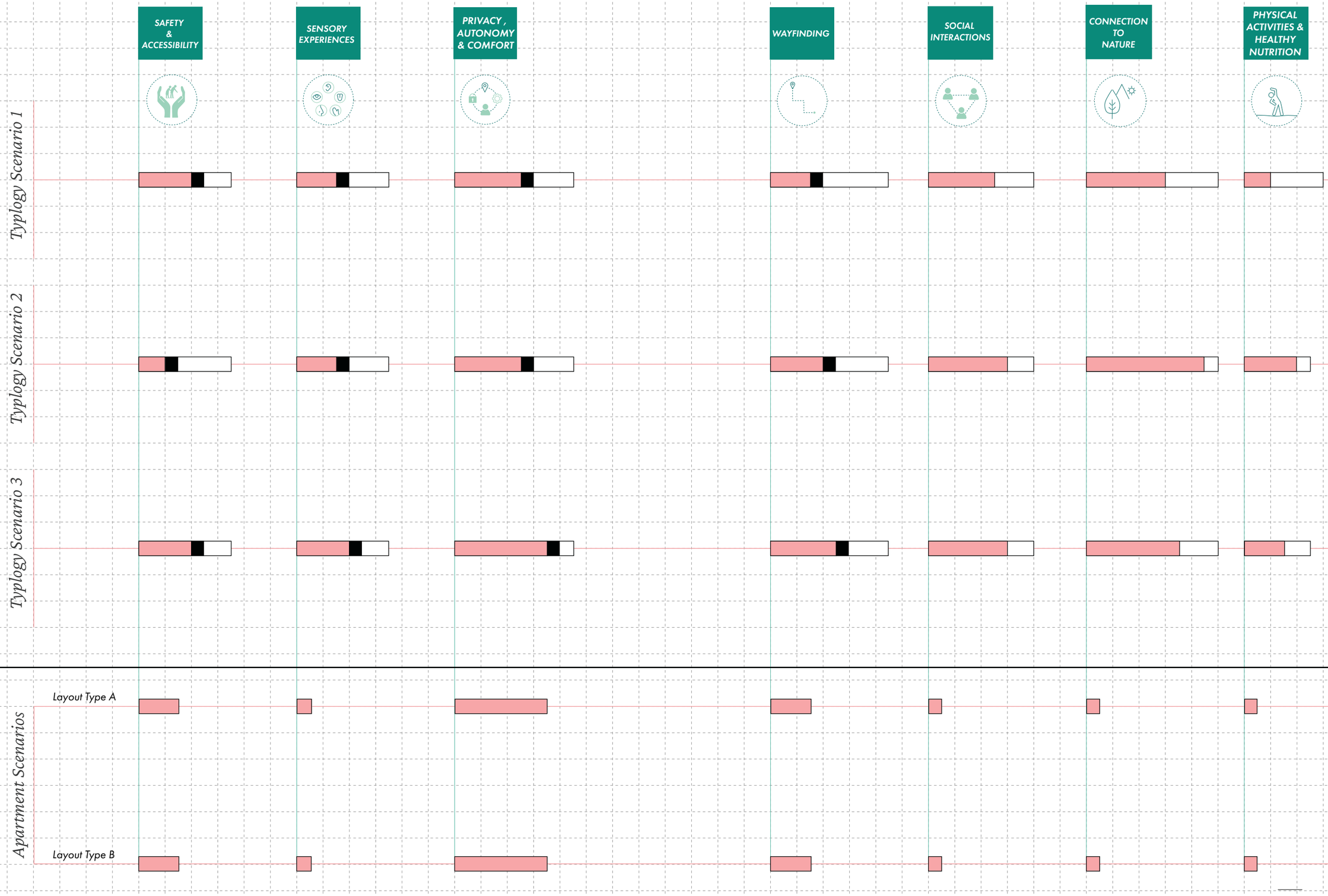


Fig. 180 Typology comparisons.
Source: Author

Assisted Privacy

Resident A

Age: *68*

No dementia diagnosis

Life Before

- *The person lives alone in their own home*
- *They are still mostly self sufficient*
- *Relatives live in another city, and the person does not have support if needed*

Trigger

Frequent falls experienced at home raises safety concerns and the relatives search for solutions that can provide more supportive living.

Transition

The person moves into a 1-bedroom apartment in the "Assisted Privacy" typology as it was how the previous home was. It provides room when relatives visit.

Progression

At the very late stages of life, the person starts experiencing cognitive decline, however has immidiate access to required care and support. The apartment separates for home-care when relatives come to visit.

Connected Living

Resident B

Age: *80*

With moderate dementia diagnosis

Age: *45*

Daughter

- *The person lives at their own home with their daugther who is working full-time and sometimes goes to travel for work.*
- *The person can still handle daily work, but sometimes has confusion.*

As the condition advances it becomes difficult to stay autonomous especially when the daugther is not at home.

They move into the "Connected Living" typology together in a 2-bedroom apartment so that the person has access to more support.

When they need support, the person attends rehabilitation activities in the care zone, spends time in the courtyard, and enjoys meals in common areas with the neighboors. The daughter can also engage in social activities.

Shared Care

Resident C

Age: *75*

No dementia diagnosis

Age: *82*

Early dementia diagnosis

- *The couple lives together in their sub-urban residence that does not have so much access to services.*
- *Since one of them is diagnosed with dementia the partner is responsible with care.*

The couple starts to feel very isolated and is concerned with safety in long-term.

They move into a 1-bedroom apartment together in the "Shared Care" typology, and start to co-live with other three olders adults sharing daily activities together.

The person's dementia condition advances to moderate stage, but the couple continue living together, and have support with home-care within their adaptable apartment.

Fig. 181 User scenarios for typologies. Source: Author

Conclusion

07

The rise of dementia within ageing populations demands that housing models position design as a form of care. The years preceding the latest stages of the condition represent a critical period in the dementia journey, when the living environment can make a decisive difference. The present and the future call for solutions that adapt to the needs of the ageing population that adress social, health and architectural challenges. Not every older adult is going to experience cognitive decline, but those who do require options of supportive environments that sustain and potentially enhance their quality of life.

This thesis aimed to respond to the aforementioned challenges by proposing a framework for dementia-friendly senior housing models that are providing an intermediate ground between long-term care and ageing-in-place. Through the different phases of the constructive methodology applied for answering the research questions, the thesis analyzed experimental typology scenarios for how senior housing can be reimagined to support independent living while promoting cognitive, physical, psychological and social well-being for older adults at various stages of dementia.

The best practice analyses have been useful to understand which typological considerations on both the quantitative and qualitative levels are prevalent in real-life contexts of designing for older adults and/or for dementia. The findings later influenced various decisions for the experimental typology scenarios highlighting spatial solutions, and programmatic arrangements that support the well-being of the target user group.

The development of experimental typology scenarios transforms theoretical findings and design tools into spatial strategies. These highlight how the various design tools can be integrated into diverse scenarios for dementia-friendly living. By discussing the strengths, challenges, and design tools used across scenarios, the study identifies patterns that consistently support safety, autonomy, social engagement, and other key considerations for cognitive health, providing a potential guidance for future senior housing developments.

Building on the overall findings of this study, several approaches emerge that can guide the design, management, and policy of dementia-friendly senior housing models. These principles focus on how spatial design, community integration, and supportive services can all together enhance the well-being and inclusion of older adults, including those living with dementia. These approaches are summarized through the following statements:

Support healthy ageing through design

The study highlights the importance of considering the challenges faced by older adults through ageing while also recognizing that the ageing population does not simply imply the growing number of older adults, but at the same time points out that humans actually live longer. Thus, supporting healthy ageing becomes more crucial. Through the design matrices that were constructed in the Part II of this thesis, how the design can respond to promoting well-being through ageing has been identified. In Part III, the typology scenarios demonstrate that variations in staff presence and shared spaces can be programmed to balance autonomy with necessary support, ensuring residents remain active and independent for longer. These considerations in the design of senior housing help maintain independence, and promote engagement in a supportive environment through the ageing process.

Enable environments that care for cognitive health

The findings related to design strategies in relation to the prevalent conditions identified for people who have cognitive decline resulted that designing dementia-friendly housing that is safe, accessible and integrated with the necessary environmental cues reduce disorientation to space, encourage autonomy and engagement, and promote overall well-being. The design matrices in Part II also illsutrate how the design tool findings respond to the various needs related to cognitive health. Following that, in Part III, the typology scenarios experiment with the integration of design tools that enhance the arrangement of spatial zones to be more dementia-friendly. These attempts also show how tools such as sensory cues, material contrasts, buffer zones, and outdoor access can support cognitive engagement across different stages of dementia.

Design senior housing through spaces that support

The overall spatial layout, living space configurations, and communal spaces shape residents' autonomy, safety, and daily routines and participation in their surroundings. Spatial design tools such as clear circulation patterns, visual directions, and flexible common areas act as important strategies to enhance cognitive health. The typology scenarios and the design matrices developed in

this research provide guidance to propose housing models that translate care principles directly into spatial solutions. The discussions of the various typology scenarios revealed that some models emphasize safety and staff presence, while others primarily focus on privacy or community interaction, illustrating multiple ways that housing can embrace care through different parameters.

Acknowledge the potentials in social engagements

Housing should support individual well-being of the older adults and the other residents who may be living together with them while acknowledging the role of community. Dementia-friendly environments that provide opportunities for social interaction and accessible common spaces strengthen social connections, reduce isolation, and promote cognitive health. Recognizing and integrating the value of community ensures that residents remain connected to both their close housing environment and the broader neighbourhood, reinforcing the principles of social sustainability. The typology scenarios demonstrated the potential of using the design of the outdoors spaces and some service integrations as tools for engagement with the broader community, while also providing programmed common spaces that encourage engagement within the housing community itself, creating different layers of privacy.

By synthesizing the findings of the thesis into the various approaches summarized above, the result establishes a foundation for practical application, policy development, and further studies in this field. The research findings establish implications for a range of stakeholders, including architects, urban designers, housing providers, policymakers, and care organisations. The design tools and typology scenarios can be useful for architects and planners to design environments that support dementia-friendly living. In order to be able to apply these into design project contexts, governmental support on the policymaking level should be adapted with regulatory frameworks to promote innovative dementia-friendly housing models with strategies that are feasible in different dimensions. The housing developers, social innovation foundations, and co-housing cooperatives can adopt the results as part of community-based solutions. Care organizations could benefit from the framework as they search for more flexible and humane care environments that enhance social inclusion, cognitive engagement and overall quality of life for older adults.

The study also presented some limitations. The typological scenarios offer a conceptual guidance remaining on the experimental level. They demonstrate potential design directions grounded in the typological findings from the best practice analyses, and offer foundation for further exploration in real-life contexts. Another limitation is on the medical complexity of dementia. Although certain dementia-related conditions were identified, the actual experience of cognitive decline differs in every individual and may not follow a common and/or linear process. Thus, it is limiting to propose universally applicable solutions, so the framework is intended as a flexible tool that can be adjusted to different needs, contexts, and levels of support. As discussed in some expert interviews conducted for this thesis, a person-centered approach in care is becoming prevalent, however on the design level, adapting environments to individual conditions, and daily routines may be challenging, and requires collaboration with the different stakeholders potentially involving the users.

This thesis has outlined a framework for dementia-friendly senior housing, but several approaches for future research remain open. Further research could focus on evaluating how such housing affects residents' daily lives, wellbeing, and independence with a user-centered design application. It would also be useful to explore how technology, such as assistive devices or smart home systems, can support the aim of prolonging the independence in these spatial typologies. Additionally, the research could explore how the model can be adapted to different cultural, economic and regulatory contexts, and how collaboration with healthcare and social fields can improve its effectiveness. Finally, further work is needed on questions of affordability, building on the foundations outlined in this thesis to make dementia-friendly senior housing a realistic option for wider communities, ensuring that older adults are, above all, enfolded in care.

Figures

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Fig. 47 Case study analysis table (Zierik 7). Source: Author

Fig.s 48, 49, 50 Typology analysis (Zierik 7). Source: Author

Fig. 51 Location of The Gardens Care Home (Scale - 1:5000). Source: Google Earth - re-elaboration of the author

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Fig.62 Location of New Ground Co-Housing (Scale - 1:5000). Source: Google Earth - re-elaboration of the author

Fig.63 New Ground Co-Housing view. Source: New Ground Cohousing (2024)
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Fig. 67 Case study analysis table (New Ground Cohousing). Source: Author

Fig.s 68, 69, 70 Typology analysis (New Ground Cohousing). Source: Author

Fig.71 Location of Eltheto Housing & Healthcare (Scale - 1:5000). Source: Google Earth - re-elaboration of the author

Fig.72 Eltheto Housing and Healthcare Complex view. Source: Archdaily (2015)
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Fig. 81 Location of Borgo Assistito Figino (Scale - 1:5000). Source: Google Earth - re-elaboration of the author

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Fig.86 Borgo Assistito Figino first floor plan (Scale - 1:500). Source: Giacomo Penco | Proginvest (2019)
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Fig.s 89, 90, 91 Typology analysis (Borgo Assistito Figino). Source: Author

Fig. 92 Location of Villa Videbeck (Scale - 1:5000). Source: Google Earth - re-elaboration of the author

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Fig.95 Villa Videbeck study visit photos. Source: Author

Fig.96 Villa Videbeck ground floor plan (Scale - 1:1000). Source: Drawing provided directly by the facility

Fig.97 Villa Videbeck apartment plan. (Scale - 1:100). Source: Drawing provided directly by the facility - re-elaboration of the author

Fig. 98 Case study analysis table (Villa Videbeck). Source: Author

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Fig. 102 Location of Dronning Ingrids Hage (Scale - 1:5000). Source: Google Earth - re-elaboration of the author

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Fig.107 Case study analysis table (Dronning Ingrids Hage). Source: Author

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Fig. 111 Location of Bon Top (Scale - 1:5000). Source: Google Earth - re-elaboration of the author

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Fig.115 BonTop first floor plan (Scale: 1:500). Source: Drawing provided by the company - re-elaboration of the author

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Fig.126 Trygghetsboende Bifrost apartment plan (Scale - 1:200). Source: Drawing provided by the company

Fig.127 Case study analysis table (Trygghetsboende Bifrost). Source: Author

Fig.s 128, 129, 130 Typology analysis (Trygghetsboende Bifrost). Source: Author

Fig.131 Case study quantitative comparison. Source: Author

Fig.132 Case study qualitative comparison. Source: Author

Fig.133 Case study scale comparison. Source: Author

Fig. 134 How to read design matrices. Source: Author

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Appendix

Interview with Andrea Möhn

March 30th, 2025

Y.E: While designing spaces for people with special conditions such as cognitive or mental challenges, mobility limitations etc. , the design approach can be quite complex. It requires more attention to some design aspects. What do you think are the main challenges in designing for users with these specific needs?

A.M: *I think the most important thing is to understand how they feel. So, we always focus very much directly on functional things. For instance, if somebody is on a wheelchair, like you mentioned mobility, how can they manage to get from somewhere to another? But, if they also have some more mental issues, then I think it is much more important to understand really what thrives people and how they are, who they are as a person, their identity... And, the more vulnerable they are, the more important it is. Otherwise, there could be a more flexible solution.*

Y.E: Which type of methods do you use to be able to understand these in the design process?

A.M: *What I always do is personal observations. That's the most important thing. Never never start a thinking or designing without knowing somebody! I do this with all my clients, and especially with the ones who we are speaking about, right. So, I go to such an institution and I do a consultation. I usually speak a few minutes or half an hour with the caretaker, with the psychiatrist or other people or family who are around this person who know this person a lot and that they just explain to me some things they know. Then, still, I go within an open mind into the room or the space of such a person, and I just feel what I would I feel, what this person is telling me. I try to forget almost everything and really open my senses. I observe the person: how he or she is moving through the space, which ticks they have or how they react to their caretaker.*

Mostly, I know a little about their favorite things or what they really love to do or really don't like so that I can have a special look on that, but it's very intuitive. I always just open myself very much and I think that's the best thing so you should always start with your observation and what you feel directly, and not directly with your thoughts. And, of course, you can reflect what you see. For example, currently I'm doing a special room. Ther is a lady and it is about finding the secret of a person. So, everybody around her quickly comes up with solutions, ideas, and they fill in, you know, because when someone is vulnerable, we always try to help them as fast as possible. It's like, 'Oh, this could be an idea! Oh, let's do that.' But it's so... last time I met her, I usually feel completely empty when I leave such an institution because it takes a lot of energy. When you're around them, you open yourself so much. And when I returned, I tried to put the puzzle together in my mind—everything I've seen and felt. And then it's kind of like a puzzle. You realize, 'Ah, she loves being in water, and she loves warmth.'

It's very important to consider the age of the person—their mental age. So, I realize that I can also do biographical work and what I do what I realized is that when you um there are parallels in the personal life of a person um related to the mental age and the real age. So imagine some is now 54, but mental age is two then you should go back to the age of two ask family members. what happened in this? Where did this person live? What did the person love? What are things they intensely love and mostly something parallel to this mental age in real life happened, or something was very positive. They really want to have this moment back just to heal their life or feel good. It's very simple actually, but it's difficult to find that because they can't tell you. Most people can't tell you what they really want and what they really need, and I think that's the real difficulty. It's okay, this is for the most vulnerable ones, but still I would say there's a secret and you have to find a secret for a person. If you find it and design something that fits really the personal needs of a person and then you are there. Everything starts with that.

Y.E: Could I ask you as a follow-up then? You are practicing in real life this profession. However, I am working on a a more hypothetical project, so I think I don't have the opportunity to actually meet someone who is going to really use that space that I design. So, even though in my research I find that a person-centered approach is very important, I also had a conversation with a staff member at a dementia care housing, and she told me that every patient is different. Even though there are some common symptoms or conditions faced by these patients, the approach should still be person-centered. However, I need to consider some differences. The challenge is that I don't really have the opportunity to do lots of observations of individuals. So, I need to adopt a more general approach to this matter. What would be your suggestions?

A.M: *After all these cases, I found that this general approach works, so I can tell you a couple of things, but I also realized I have to be careful not to give away too much of what I need to write out myself to publish. I'll just share the ingredients with you, but, to be honest, it's better if you discover them yourself. It's like a recipe for a good cake, right? What I've found is that these steps are universal. Although the patients or clients are different, these principles really are universal.*

It starts with finding the identity because, although they're all different, you have to find the identity of a person. Then, you need to create an environment that gives the person a feeling of safety. An overview is important, so they're not surprised by someone approaching from here or there. When they feel safe and have this overview like you know when you're in a restaurant and you choose carefully where to sit, right? You either want to sit with your back to the wall, or you want to sit freely in space. It's very personal.
It's important to create this feeling of safety, because when they feel safe and can relax, they can be themselves. When they have their identity and feel safe, that's the foundation of everything. Then, you see a kind of empowerment in people. When they feel safe and like they can be themselves, it's a big step like, "Wow, I don't have to play a role anymore; I can just be myself."
Then, of course, they need things like good materials, pure materials. Try to avoid using fake materials because they often want to give you plastic stuff, but sensitive people, or actually everyone, reacts better to pure materials, like real wood. We resonate with things that are natural, true, and grounded. Warm, soft colors are important. Pastel colors are great, and green is always good. A soft green or a warmer, darker green works well, but it should come from nature, not something heavy and artificial. People often tell you that you need contrast, and of course you do, but you can manage it in a different way. It doesn't have to be red and black, or yellow and black. Do you like black and yellow everywhere? I don't think so.

Also, I've noticed that very extreme patients or clients sometimes have mattresses covered with materials meant to prevent urine leakage. But it feels like being in a gym, and they can sense it. They've told me, "I'm sleeping on a mattress like in the gym." They want something different, something more comfortable and natural. The dilemma, of course, is that they might wet the bed. So, how do you handle these different needs? It's very difficult to balance all these interests.

Y.E: One of the difficulties is creating a feeling that is more like a home rather than an institutional setting. Do you have any strategies for designing spaces that feel more homelike?

A.M: *This is a very important point you're bringing up. I have an example where we designed a home for 65 clients with mental disabilities, who lived together in groups of six. When we asked them how they would like the house to look, they said, "We want to live in a house like normal people, not in a bungalow or something institutional." Their association with what's "normal" is crucial because everyone, regardless of their condition, wants to feel normal. This is tied to their dignity. Even if a person has a very low IQ, they are very aware of their identity and take pride in themselves. Always take this seriously!*
The conclusion we reached was that we needed to design a real house, something that felt like a home. The challenge was that the building was 110 meters long, but we used a zig-zag design that made it feel smaller, helping the residents feel like they were living in a real house.
You can do interviews with people, and this is very important. Ask them how they would like to live and what they would like to have. Take them seriously and involve them in the process. When you design according to their needs and preferences, you empower them. They feel more relaxed and better. It's incredible how much this can make a difference.

Y.E: How about the balance between private and shared spaces? Isolation can be a significant concern for vulnerable groups. How can architecture encourage social interactions while also maintaining privacy?

A.M: *Again, you must know the clients. Some people, for example, may be on the autism spectrum, and they prefer solitude. They love it to be on their own, even when they are in the living room. Acoustics are very important, there should be no unexpected or disruptive sounds. Other people, however, might love to sit together at a dining table. It's essential to design spaces for different preferences. For those who prefer to be alone, provide a space where they can sit by themselves without being forced into group settings. A solution could be to design different areas with varying qualities.*
For example, when they have their own bedroom, which is private, but it is also good not to only have a bedroom, but another private space where they could hide. It is difficult to realize that because the program is usually defined, and you have to be very smart in that. It's important that these spaces don't feel like "extra" rooms.
Imagine when somebody has the age of a two or three or four-year-old child, what would you do? I don't know if you are a mother, but when you're not yet, but you are aware maybe of how little kids feel because I learned a lot from my daughters, and I would never put a little child upstairs or far away from you. It's important that they have this connection with you, and it can be a visual connection so that if you have that, you see somebody or you hear somebody or you really have a physical connection.
The awareness of "I'm not alone, somebody else is there, and I have the choice to go to them if I want" gives you this feeling of safety. It's again like orientation and overview. It's also a kind of overview. For example, with a very vulnerable client, we realized even that he could look through in a smart way until the living room from his bed. From that moment, it was like, "Ah, everything is okay. They are there. They are far enough away that they do not disturb me, but I can see them if I want, so I feel safe". Does this help you?

Y.E: Yes, it's very useful. Thank you. One of the last questions is that I'm focusing also on different scales. So, what I mean by that is, as you were saying, about the private living area, how the space is organized in the building, and the outdoors and the connection with the neighborhood. In your experience, what is important to consider while thinking about these different scales and their combination or their specific design qualities while designing for vulnerable groups again?

A.M: *Well, I think you have to be aware of distances and which distance feels safe or not safe. So, when the distance to your caretakers is too big, then the scale is too huge. At the same time, you should also form the building where the connection to the neighborhood is important, in terms of distances and proportions of things. Also, again, the view and sunlight. I think, you know, everything if you really feel inside, what you like yourself, and what you love yourself.*

Y.E: Do you mean as a designer?

A.M: *Yes, I always check it for myself, how would I feel? And sometimes I try the system and then I try even to think like this person would have from their point of view and their vulnerability, and this helps me a lot. YeS, I think it's just too much around a corner that's too far away, where you know there are so many research studies about people in offices. If you put the coffee corner more than 40 meters away from where people can reach it, they do not connect, they do not come together. So, there's even a lot of research about that.*

I think, and awareness of human scale in all different topics. Like, what is the human scale when you sit at a table? How can you sit very well at the table? But also, how big is the space around you? It's like, it all depends on your physical, on your body, and what fits related to your size, but also your mental capability. So it's both actually. And, then we're back again with this where we started. Of course, you have to do it functionally, but it has to also be sensory and emotionally safe, and feel good. And feeling good is related to space proportion, distance, materials, acoustics...

Y.E: And finally, would you have some recommendations regarding my research? You already mentioned many things, but I don't know if you want to add something.

A.M: *What I would love to suggest to you, I think, the most you can learn is from the people themselves. If you can manage to get into an institution and just walk around and see and be aware, just running a day with them helps you understand so many things. You will reflect on that automatically when you see things, because you already know a lot and will ask questions. Some things you thought would work might turn out that they can't, and you'll realize, "Oh, this doesn't work at all." It's very important to learn that. I'm always grateful that I always run a day with them when we got a new project. I learned a lot. Actually, I learn the most, and you know people always say, "Ah, but it costs me so much time," and I say, "No, no, you gain a huge amount of experience back and can design for real in a better way.*

Y.E: Yes, I am planning some visits and as long as they allow me to interact with the residents and like being there, I can do it, but in my last visit, I had the opportunity to have a tour and make some observations, even though it was a short time. And what I found out from the staff who is giving care to the residents was also very important because I realized some things that I know, or I found out in my research can be different in real life experiences of these spaces.

Interview with Linda Björn

March 31st, 2025

Y.E: Thank you for the opportunity and your time. I'm in my final year and I'm an exchange student at Chalmers. I'm studying in Italy in Turin. and this semester I am working on part of my thesis here at Chalmers and I will go back to continue in summer. It's a great opportunity for me to have contact with you and to discuss some of my questions.

L.B: *Sure, I will try to answer.*

Y.E: So, my thesis is about housing for older adults, but with a focus on dementia. I am considering some different levels and even having no cognitive decline is included in this. And a key part of my research is developing a design tool kit to guide my design project, so it's a project thesis. For me, it's important to understand the process and the methods for design. And since you are working on some projects related to this user group, older adults, I would like to ask you some questions about your experience, if it's okay.

L.B: *It's okay. As an office and me, we've been drawing a lot of housing for older adults, which is when you can't choose to go there, but you have to go to the municipality. So, you're quite sick when you come to these houses. There's always staff working there as well. Yes, but I think the design for this user group can be general.*

Y.E: First, I would like to ask about when designing spaces for people with special conditions, like, in this case, the older adults, the design approach can be quite complex and need specific attention to certain aspects. How do you approach the design process methodologically when addressing these specific needs and requirements of the users? Do you have any research or what type of research do you need to do before designing process?

L.B: *I think in most cases, our client, often a municipality, has something they call like a room program or building program. And, sometimes we help them to define this program like "This is the size of the apartment, and this is the size of the common areas." And, in that program, you have a lot of other things. It can be like a list of sometimes very sharp things like requirements. "We need to have this in this building" and sometimes it's like add-ons if you can, if the site is suitable. Maybe one common wish is that everybody should be able to move freely from inside to outside and without going up and down the stairs. But if you are going to have a home for like 50 people, maybe you can't have a site that big that everyone can be on the ground floor; then you must think that we need to use elevators. Then, you have to think when you walk out from your apartment to the elevator and other places, to imagine all the movement. The method is to answer the questions of our client and then of course we add our experience, and the one thing we often talk about is like the senses because if you're older adults, you might lose your vision or your hearing. It's good to just always think how I can make sure the senses are always being stimulated in a positive way in a house. It's very common that older adults people get kind of stuck in their apartments because they need help to go out. So how can we make the environment as wide in experiences as possible? When we are making these buildings that a lot of older adults people are living together, a space outside the unit they live in have another design, like just another tactility on the walls or something that you can feel like "Okay, I went somewhere today." They went outside in this hallway where there may be a piano, some art or something, so you can have a feeling you went away, even though you didn't have the energy, or you couldn't be going to the city or to somewhere else. So, trying to make a range of different experiences close to your home... And, the senses and the idea of being indifferent... Add on as much as you can.*

Y.E: As you also mentioned, with not being able to go somewhere, one of the important problems is about loneliness of older adults. So how do you think architecture can encourage social interaction and help reduce isolation within the building, outside the building or in relation to the surroundings? Do you have any examples of specific considerations for that?

L.B: *Yes. We did a building in Askersund, and when we do a project, we always start with analyzing the context. In that case, there was like a health care center and a dentist on one side and there were a lot of villas, but also there was a daycare center for children. When we were supposed to add on this quite big building, and we realized, here is the children and there's the forest and they move there, can we make sure they continue to move? So, we don't have people to walk around this new building? So, we placed the building there and made a nice path between the building and the health care center and, and then you could have an access one floor above, so it was free in the ground outside. And, we also had a piece of art, which was stones where you could play with, so it was a way to make children walk along this building for older adults and also to have a nice place for them to stay and take a rest and play. That's one example of how to add some social means. In that case, they had people with like light disabilities like down syndrome and things like that. So they had a a working unit for so we had that in the in the bottom of the buildings that they could do the post and get laundry. We had a small café. We can look around what other businesses is there and we can we bring them to the building.*

There was another example. We made a huge house in Orebro called ? and then the normal thing is to have one entrance for people, one entrance for goods, one entrance for staff. We said that this building was just out in nowhere. They said that this is going to be the developing area, but actually nothing happened and that was what we were a bit concerned. We didn't believe that they were going to build other stuff around so we made all the entrances together so that you can go to one spot and you can see the stuff coming, you can wait for your relatives and you have the postman... You can have a relation with the people coming in everyday instead of having all these functions spread out, we tried to put them in one spot. Of course it can be a conflict of interest when you do that, but the problem is things don't happen in these spaces normally. We needed to make a livelier spot.

Y.E: I would like to now ask about spatial organization or more specifically about how people move in between the spaces such as the design of the circulation spaces and the corridors. How can they be, in your experience, easier to navigate or not feel like an institution?

L.B: *We have been talking a lot to add in the buildings is that it is good for everybody to move. If the environment is light, and there's something attractive on the way, you're more likely to move around so we always try to minimize corridors. Of course, you can't take them away at all, but if you have apartments on one side, you can have like one single side with windows. You can have light coming in those areas, and there has been studies that people are actually walking around more if they have a contact with daylight and if it is green outside the windows .We worked closely with the landscape architects like Land Arkitektur and they made nice gardens. Also, we have quite often worked with a kind of a diagram that if you have an apartment door and you open it, you either you can have a light and a green space outside the corridor. If you live in this kind of dwelling, where a lot of people live together, then you have a social space just outside your door. So maybe you have the kitchen or the or the dining room there. And that's also because in Sweden, when you live in this kind of institution—that's what it is—some people live there for six months or a year. It's really, really, far from what you'd call home, and then maybe you're in bed for a couple of months. But if you can open your door and still hear sounds, or smell some baking, then you have a connection—you feel a bit more included, and maybe not so lonely.*

Y.E: We talked about the common areas and the circulation of the users. How about the private space of the residents? Are there some specific considerations that are important in the bedrooms or in apartments?

L.B: *The apartments are really, really small and the size of the apartments is strongly connected to how much you can pay. You need to make these houses affordable for most people, and then that's why you make them so small in Sweden. They are around 30-35 m2. When you design the rooms, you want to be able to put to bed in like three different places. You can choose to have your bed and look out the door. You can choose to have the bed somewhere that they can't see if someone opens the door.*

One thing that I learned during designing these buildings is that when you're not ill, you think of a lot of privacy. However, the older you get and the more sick, the less you care about your privacy. You need more connection with other people. Of course it's not like that for exactly everybody, but in general. People tend not to care so much about privacy as they did a couple years ago.

Y.E: You mentioned that the residents of the facilities are in a very ill state. It is important to consider also as much as the autonomy, also the safety of the residents. Are there any design elements that support that?

L.B: *I think there's a lot of design elements that help. It's a bit about contrasts like seeing things that you're supposed to see so that doors to your apartment or to the space where you are supposed to go... It does not need to be a super strong contrast.*

On the other hand, in the floors, you don't want to have contrast because sometimes if you get older, you can have the feeling that it's a hole or deep, so that's the something. Sometimes you want the material to be in contrast and sometimes you want them to be as a close to each other as possible.

I don't know if it is about safety, but in some way, light... to make sure people get a lot of daylight. It is good for sleeping patterns, and of course you feel better if you sleep good. We have very often quite big windows in the apartments that we've been drawing and we have had to discuss with the energy consultant. They wanted to make them smaller. They said it was enough with a certain square meters. I can understand that, but if you're in your bed, you you need a bigger window and you want to have it lower so you can see outside.
There are also a lot of technical things related to safety. You often get a bracelet with an individual program. So when you're approaching a door—if you're allowed, it will open, and if you're not, you won't be able to go into your neighbor's space. Or, if you're a person who is very anxious and tends to wander off, maybe you can walk through the door, then it will alert the staff.
Also, in the kitchen, like small things make it maybe you can't open the fridge or there is a key to the knives or the chemical or cleaning stuff and things like that. So, it's a lot of these small things. You don't see them so much, but they're there.

Also, if it's a pandemic situation, you can just close off one unit, maybe it's six or eight people sharing—and that way the disease won't spread as easily. So that's also a good thing to think about.

Y.E: One of my last questions would be: have you received any feedback from the users—such as the residents or the staff—about their experience? If so, which feedback would you consider important to highlight, especially in terms of user experience?

L.B: *They were given cards—with images like the sun, a flower, or a cup of coffee, and we used those to spark reactions and conversations about what they saw, and whether they recognized anything from their environment. That turned out to be an emotional experience.*

Suddenly, these people—who moments before couldn't even say their own names or remember mine—started to respond. There was this one older man who had a really hard time speaking. He saw the card with the sun, and he just started crying. He kissed the card, held it up to his face, and said, "I love the sun. I love the sun." People still have strong feelings about their environment.
I would say that one group we often get very positive feedback from is relatives. When the environment is well designed with nice rooms and pleasant outdoor spaces—it makes a big difference.

It's much more likely that relatives won't feel as depressed when they visit. If the building is welcoming and comfortable, it feels nice to come by, to visit an old friend or a family member, and maybe take them outside for a while.

I used to hear that people's children didn't want to come along when visiting, but now the children do want to come—because it's a nice place to be in.
And of course, that's very important for the staff as well. When more relatives come and spend time there, they often help out in small ways, which makes the staff's work a bit easier, simply because there are more people around to help.
And then among the staff, I think a lot of staff is brilliant, and they do a lot of great work and let the older people be a part of daily work. But then, in some places, it can be new for them because we want the kitchen, for example, to be available for people so they can continue to help with the dishes and make some food. But some staff want the kitchen to be their own, they want it to be a space for a break and not a space for interacting with the people living there.
That can be a conflict, but I think our clients don't want the kitchen to be a space for the staff. They want the kitchen to be a space where they can interact with the older adults people living there. That's something you need to make sure—that all the staff is okay with. If you work here, you have your free time when you have that 15 minutes, but you don't have free time when you are working in the common areas. You are there for the people, that can be a conflict.

It is also very important that they have governance, like the people—they need to feel like the bosses. They need to want to have a house that works like this. If they don't want it, then it's going to be a conflict. Because we say, "Okay, but if you live in this small apartment, then the kitchen is part of your apartment too, even if it's shared with other people." But if you don't agree with that, of course, it's going to be a sharper conflict.

Y.E: Thank you so much. That was all from me. Thank you for sharing your experience.

Interview with Femke Feenstra

April 16th, 2025

Y.E: Just to talk a bit about myself, maybe, I'm actually studying in Italy at Politecnico di Torino, in Turin. This semester, I am in Sweden at Chalmers University of Technology, writing a part of my thesis. As I mentioned also in my email, it is related to designing a dementia friendly senior housing. So it's not a residential care facility, but it's about how we can make a senior housing community more dementia friendly to prolong the time that the people with this condition will have to move into a care facility. But of course, it's still interesting for me to understand how to design taking into consideration this special condition, that's why my supervisors Cristiana Caira and Jens Axelsson recommended that I have a conversation with you. And I'm glad to have this opportunity. I would like to start with my questions, if that's okay.

F.F: *Do you want me to say something about myself first?*

Y.E: Yes, thank you.

F.F: *I'm an architect and interior architect and one of the partners of the office "Gortemaker Algra Feenstra", which is in the Netherlands, which is a big office, not as big as White Arkitekter, where Jens and Cristiana are working, but it is big especially for the Netherlands. We work mainly in healthcare, but we also do other assignments, of course, because we always say that our assignment should have a bit of complexity and that's what we like. So, I do a lot in "living with care" and I say it in this way because I think it's important to have a broad perspective on that because I think there's a lot changing. Living with care in society will change in the future. So, I work a lot on that and I also do a lot of research in our office. We call it research by design. It always has to do with a design thinking in how we can address a problem and how we can help with spatial thinking to maybe solve that problem or at least help with solving the problem. So, that's what I do a lot, too.*

I did, for instance, reactivating a hospital as a big research project, but also for living with care, I did a big research. So, that's what I also like a lot. I like to combine knowledge with designing. It's the thing that drives me.

Y.E: That's actually similar to my first question. The first question was about the design process and the methods because when designing for this type of space for people with more special conditions to consider, the design approach, I can imagine, can be quite complex and needs specific attention to some certain aspects. And I was going to ask how to approach the design process methodologically. So, when addressing these specific needs and requirements in healthcare architecture, what are the steps in the design process?

F.F: *Well, we have our own method and we developed it by having a lot of experience in lots of years of designing. When I started as an architect, a director, I wanted to do much more of a methodology of how you design together because we always say "Don't design separate from your client, but you design it with your client". So, we call it the "design lab" method, which is a method that from the beginning you do several workshops together with clients, and it starts actually from what is the identity of the client, what is the effect that you want that you building should have on your end users. So, if it's about a hospital, then what is the effect that you want to have on patients? But if you talk about living with care, it's more about what kind of effect do you want the building to have on inhabitants? That's most of the time the first, so we have all the same view on and t what should the effect of the building be and what is the identity of the organization. And, after that we do several more workshops.*

We go for two days and we walk with our clients. Sometimes we even stay for the night. We want to see how their process goes and how their process works, which is really interesting because it gives you so much information about how and what are the things that are working really well, what are the things that are working not so well, how does the team work etc. So, we go to all the departments or all the different people that work there and then just walk with them for two days. Then we start off with a workshop about identity and the effect of the building and then coming from that we do several more workshops about some certain topics. We have these workshop boxes in our office, and they have these different types of topics. So, you have one for educational buildings. We have hospitals. We have one for "living with care". So we have these different topics of workshop boxes, and we use these workshop boxes through the whole process to get really to the point.

So, we always get a problem of demands, of course, when we start with most of the time, not always, but most of the time, and

we put it away and then we first start at what is the real reason that we are here and what is the solution for what you want to achieve with the building. Then in the end of course, we will have the program of demands and just fit it all in. Sometimes it changes the program of demand and sometimes it stays the same and of course that is our job to to get it all in in the end. We first always start off with "Who are you? How do you function? What is your wish with a new building? What's the effect that the building should have? What is the identity that you want?" Then go slowly towards what is the interior, what you want, what are the colors... And it Is step by step, we take them with it. And, I think it is different in healthcare and educational buildings (I call them the social buildings) than in a normal office. It's completely different.

Y.E: What are the main values or goals that you want to translate into design, especially considering some examples from your projects related to dementia or other healthcare projects?

F.F: *We had an assignment for a living with a health building for people with dementia, and people with a somatic care need in the south of the Netherlands (Zierikzee) They asked me " Can you make a home?" There were more competitors, but they asked me "Is it possible to make not one home for 93 inhabitants but can you make 93 homes?" That was their question. And, I thought it was a really nice question because I thought it triggered me immediately about where does your home start. When does it start to be your home instead of a room in an older adults care house? So, what we did was we designed 93 front doors. We made a building with 93 front doors, and gave people access to a public park where they actually live. So, the building is in a public park and it is a bit sheltered, but it's actually an open park so everybody can go there. We made it like a more star-shaped building where people just live on their own and they can go outside and they can come back to their own home.*

But, also the family doesn't go through one front door, but they also go to their parents' or to their mother's house. For instance, they put their bike next to the front door and then go inside their mother's home. So it's a completely different way of thinking because I don't know how it is in Italy, but in the Netherlands, it's usually that the older adults home has one big front door, and you have these different apartments where you can go. It is turned inside out, where people have their front door.

This is one of the things that we always try to think differently from how can you make 93 homes and I always think that you have to think about what does where does a home start or what does it mean to have how you feel at home. It has a lot to do with identity, with autonomy, and being self-sufficient. And of course, all these things are really hard. We have to mention because then the first thing that people are talking about is mainly safety and keeping people safe. And of course, they all have a tag, so they have a tag, and with that, they can go in and out of their house, of their studios, as we call them. They can track them where they are with that, of course, we also built in some safety because otherwise it would not be possible.

Giving the people their own front door... It is amazing how that works in people's minds, because then they immediately said " No, no, this is my home. This is not something I have to live".

A thing that I heard a lot when I was walking there for a couple of days before we started off with the assignment was that you know, this is not my home. I just stay here for a couple of years because I can't go to my own home. And now if you go there, then people say "No, this is my home, I live here, this is my place."

That is I think so important for people in the last phase of their lives, to have the feeling of belonging.

Another project, for instance, that was over...They already had a bit of restriction on how they wanted to add. There was a a program of demands and they did want to build that. We said "But you need, for instance, daylight and you need , if it's a small scaled living, and you need people not to have just one big living room and just your own room, but also other spaces in between where you can maybe have one to one conversation or where you can maybe read a paper together with.

So we really involved there also the outside, daylight, things like that, because they are so important for people that have dementia but older adults, too. For us all! Especially for people that are not tending to go outside because they have to go to work or something and because we have to go outside because we have to go to work etc. To really have a lot of daylight in there... You see, for instance, if you look at the normal living, a care home, you see if you look at daylight inside, they have like 300 to 500 lux of daylight. If you go outside, it's like 10 times or 20 times double and it makes you fall asleep at night and you just need it because otherwise you have a completely different biorhythm. So, we underestimate how much we need to make that daylight for people to function in a normal way. So I am just if I look at homes that have these tiny windows and these dark corridors. It always upsets me because I think that we have to really address this.

Y.E: What are some strategies to achieve this? For example, when you mention the importance of daylight, is it just about having big windows, or is it also about how you design the space to maximize daylight as much as possible?

F.F: *No, you first have to convince your client. That's always the first step, and one of the hardest, because it costs money. So, you have to really convince your client and what I do a lot is that my research helps me with that a lot. So I have done a lot of research. Design, research by design... Also science helps with that. So also what we can learn from science, all the research that has been done about sound, about daylight, about what people with dementia need, how people seek their way... You can find, if you look for it, you can find a lot of research on that. And to collect that and to use that to convince the client... and my own research helps also with that doing a research on how you reactivate people or a research that we did on how people with dementia move or how they orientate, we did a study on that. That helps to convince our clients that it's really necessary. And, I think that's the first step that we should as designers not underestimate. Otherwise, your whole idea just drops somewhere along the way. I think that's really hard.*

And, I always look a lot at the senses.What do you hear? What do you smell? We always take movement also as a sense. I know that's not really a sense, but I always I always introduce it as one of the senses. Because, architecture is so much more than what we see. That is always where we focus on most. And of course, that's also our main sense, but it's also about other senses: Is it really comforting to hear somebody walking in the corridor? Is it really annoying? You have to really think about that. Is it for people with cancer? Is it too much to smell food or is it for somebody with dementia? It's really good to smell food because then your hunger senses are stimulated. So, you really have to think of all these things together, how do they work? So, should I make a kitchen, an open kitchen in the middle of the living room and people can see how food is made and can smell that? And for people with dementia that really worked. But for people with cancer, it might be too much, so you have to think.

The clients notice a lot as well, so I think that's why I always try to put effort into that (into the process of working together with the client) because they have a lot of knowledge on that. Together with what we know from science, and what we know from our own projects and research, I think it's really important to work with that. I don't know if it's an answer to your question though?

Y.E: Thank you. It's useful because I'm doing my research mostly by reading or analyzing case studies, but it's also helpful to hear about what's going on in practice because you have the clients and you're working on a real project. So what you're talking about is interesting to hear as well. You mentioned orientation, like the wayfinding aspects. What's important to consider in design to make it comfortable for the users? For example, you said that in your project, you built 93 homes with doors that open to the garden. But what about the other side, where the doors open to the corridor? What is going on there?

F.F: *In Zierik 7, there are 11 living rooms—or neighborhood rooms, as they call them. It's a big building, and residents can wander around everywhere; there are no closed doors. They can actually go wherever they want. That was also one of the main things we wanted to address—that there wouldn't be any closed doors where they'd just stand in front of, because for people with dementia, that can be really confronting.*

As for orientation—well, if we look at people with dementia (because it's completely different for children, for instance, and I could talk about other groups like people with psychiatric conditions—it's different for them too)—but if we focus on people with dementia, it's really important that you don't rely on only one thing. Numbers can work for some people, but not for everyone. Colors can work for some people, but not for everyone. So what we did inside their own studios, their own homes, is create little cabinets with their personal belongings. They can personalize them, I don't know the exact English word, but they can place their own little items there, like collections or photos. Some people have a collection of little statues, others have toy cars, and some just put up a photo or a family picture. This helps them recognize their own studio. Of course, it's not truly their own studio, but this really helps with orientation.We also have a big number next to the door, because some people still recognize numbers, and we include their names too, since some still recognize their names. And we also work with color. So, we have these different types of things that we have done next to their door so they would and if possible, they would recognize their own door.

The other thing that we did in the hall is make certain points, so we have these 11 living rooms or neighborhood rooms that have different themes. So, one is more about seeing, one is more about gardening, one is more about music... We have a sportroom. We have a cooking room so they have their own. We have a coffee room and on the outside of those rooms, every time there's a space that connects to the room inside. So if you have the coffee room, there's a coffee corner outside in the corridor and if you have the garden rooms there, you have big seat or surrounded by with plants. If you look at the music room, you have these music boxes on the other side in the corridor. And it really helps people, and I'm not saying that they completely realize, like, "oh, now I know exactly where to go" but they do realize where they are. That's the interesting part. They recognize the place and think, "oh, I'm here, I know this

point." So they recognize a point.

And the funny thing is, because it's a star-shaped building, I don't know if you've seen it, but it's designed like a star, with a lot of space where they can wander around. And I was a bit afraid at first. When it opened, I had these scary nights and even nightmares. I'd wake up in the middle of the night thinking, "oh my God, what if they call me on Monday and tell me that all our people got lost?" I was really nervous. So I called right away and asked, "how did the weekend go?" And they said it went really well. I still go there around, and actually they say it is really amazing because in the old home people were lost all the time, but now everybody can somehow find their way back again. And. this place is actually much more open and bigger.

Y.E: You mentioned that in their old home they got lost, but here they didn't,so these are the things that you consider and that are important to do in a care home like this. Also, there are some stages of the disease where it's still possible to stay in your own home. So, like, this place... do you move in during the very late stage, or was it designed considering other stages too? Do you think, in your research or according to your opinion, what could make their lives easier in terms of the built environment, in more general terms, outside this type of facility? So, when they were back home, what made it difficult to live for these people, if you have an idea about it or if you came across any information about that?

F.F: *Well, I think it has to do a lot with, well, maybe that's more social because it has to do a lot with their surroundings. I think most of the time in home, it's a safe environment and I mean, they come mostly to a certain stage where it's really very, it's really hard to stay in a home because of safety, but also because of, hey, if you have to cook for yourself, they can't do that anymore and things like that.*

I think if we could locate somehow in a city housing for people with dementia more into a neighborhood where we know that people, where there's a society which knows, okay, there are five houses, for instance, that people with dementia live in, they are completely adapted for people so that they can live there, but it's part of the community and we take care of those five people.

That's still my dream assignment, and if we somehow can put a label as bigger, it has 93 homes, but we can take it apart and parts of that put in different kinds of neighborhoods and put it into a society, into a community where the community actually takes care of those persons.

And of course, maybe there's still professional help coming in during the daytime or at night if something happens, but having more of this integrated into our society, because I think it's possible. If our neighbor gets dementia, I think I would take care of him too. But if we could take the whole care home apart in little pieces and put them into communities, I think that could work. And I think then people could stay a lot longer in their own community.

Y.E: Yes, it's also important to spread awareness about this.

F.F: *Absolutely.*

Y.E: My final question is about the feedback you got from the users, the staff, or the relatives about the complex you designed. So it's about the user experience, what is important to highlight?

F.F: *It's funny, I will send you that. I don't know if you got it, but I made a presentation for the European Healthcare Design Awards, which we won with it. There are also quotes in there from the users, family members, psychiatrists, and caretakers. There were a few things that I thought were really interesting. I think that especially the relatives said, "I finally can go to my mother and feel at home." While it's not, of course, their home, and they weren't raised there, the studio gives space to the cabinets, the chairs, the couch of their relatives, it really feels much more like home than just a room with one bed. I think that's one thing. Also, because they can come through the front door and don't have to go through the whole organization to visit their mother. They visit their mother, not a care home. I think that helped a lot.*

I know from psychiatrists that they saw less wandering behavior. People didn't wander around as much, and they were a lot calmer. They could find their way and knew how, as I told you before. And I know from the staff, for instance, yes, I'm looking now. Somebody said, "I feel like I got the nicest spot in the house. I call it a royal suite." So, yes, it's funny that people are so happy.

Yes, which also was nice because we were talking about my dream to cut it into little pieces and put it in communities. But actually, on another level, this is still a big home, 93 people live there. It is a community because it's in a public park, so the neighborhood walks their dog there, and children from the school next door have their little playground. For them, it's also their playground, and they have started the school garden inside the garden of the older adults. So I think that enriches the children's lives but also the lives of the people living there.

I know that the staff's reaction was also really interesting. They found it really hard in the beginning because people were allowed to eat in their own homes and not in the living rooms. People were staying in bed until 10, and they weren't waking up at 7 because of the staff needing to wash everyone. So, someone could also say, "No, I'll tell them," and then... you know. So what they said was, "We have to change our way of working into more home care," which I thought was really interesting to hear. Because, you know, I don't know if you have that in Italy too, but you have home care, where if you stay in your own home, someone from a care organization comes to give you care when you need it. And they were changing their organization to more of a home care system. They said, "Yes, we have to see it as a village. There are 93 homes, and we are the caregivers who go to their home instead of taking people out of their room and putting them all in a living room for the whole day." No, we give home care. So that was really interesting to hear how a building can change the whole way of thinking about giving care.

Y.E: That's interesting to hear because actually my project site for the thesis has a community healthcare center in the town because it's in a small town. It is still a project. It's not there. That will have nurses going to home care and coming back. And, it's right next to the site. I am also doing research into how these two buildings can be related to each other. And, it's interesting to hear that in your project, the staff experience that the care situation is similar to this home care type. Thank you so much. These were my questions.

F.F: *Thank you. If you have more questions, you can always send me an email.*

Interview with Helle Wijk

April 23rd, 2025

H.W: *That's an interesting concept "dementia friendly".*
It's worldwide now. It's not only in Sweden, it's an international effort to work with dementia friendly cities and dementia friendly households and environment.

Y.E: Yes, so my research is first focusing on the aspect of ageing: The ageing experience and then going deeper into understanding dementia and how to design considering these two conditions. That is why I have some questions for you starting with ageing and then going into a more dementia focus. In your lecture, you mentioned that ageing is not only about the number, not only the chronological age. It is also biological, psychological and social. What are the key physical, psychological, and social conditions that people commonly experience as they age, and which of these do you think are the most important to consider when designing the built environment?

H.W: *That's a big question. Internationally, still 65 years of age is the cut off range when you talk about older people, but if we look at the evidence today about ageing, 65 years of age is not very old. I myself am 67 and I don't consider myself old, so I think that is also part of what I mentioned in the lecture. Our lifestyle has changed a lot in the last 50 years, so we have much better working conditions. We know more about healthy food, we are more physically active and socially active. All that together makes the older population more vital today than before. Also in more undeveloped countries, we can see that before, the middle range age was maybe 40 years. Now it's in most countries in the world, it is 65 and above. So, that is the worldwide change. But, if we look at the biological age, I think the key factors that you should consider when it comes to environmental aspects is vision. And the problem is that it's not that you get dementia or a bad sight, it's both at the same time.*

So if a person has not developed dementia, the diminishing vision is the most crucial when it comes to distinguishing between color nuances that are very close, especially green and blue. If you put green and blue colors close together, it can be more difficult when you are older to see the difference between them. So, if you want to use colors in a more conscious way as a code or a cue, you need to think of that. And then there is what we call it that the lens is yellowing, the lens in the eye. When you look around in your environment, it looks different and also that light is when light comes into the eye, you can be disturbed. Like when we go out in bright sunlight, we need to have sunglasses. Otherwise we cannot see.
That is happening also inside buildings, when you have this yellowing of the lens. So, that's really something that is difficult when you get old, and very common. I think everybody is getting a yellowing lens and there is not anything you can do about it. So, what you have to do is to make the environment more supportive.

And then, of course, it's mobility. That is also a change during ageing. For example, it's difficult to sit on the furniture that is very low because it's difficult for you to raise up again. You also need more light, so illumination is very important.

As I mentioned, I think in the lecture, what we do when we want to have it cozy, we want to diminish the light. It's hopeless when you're old, because you can't see and you can't find your things and you can fall. It's quite common that older people fall.

And then, of course, if you also get a cognitive decline, everybody will get a cognitive decline when they are getting older in terms of you need more cues to remember and so and so but that's not a disease, that's normal ageing. But when you have a cognitive pathological decline, like dementia, then it gets really troublesome quite fast. It can be difficult for you to orientate in the environment, so you need very supportive cues and it's all is also important that , for example, if you take the bathroom, that is very obvious, where the bathroom is to find it, and also when you come into the room, the bathroom that you immediately see, yes, this is the bathroom. Because it's familiar. You recognize what's usually in the bathroom. And that's the problem with a more modern design. For example, an older person with a cognitive decline remembers how to put on water with the coLD and the warm knots, and now especially at the official places, you even cannot put on the water, you have to put on your hands, you know, for this electronic sensor, and all these things are so difficult if you have a cognitive decline, because you don't remember this, and that's not familiar for you.

But, at the same time, of course, you cannot design bathrooms in a very old fashioned way because you and I, we are also getting older, but we are used to this. That's a tricky match to make. And also, when you have a cognitive decline, it's important that, for example, if you are in the kitchen, to see all the things that you need for everyday business, that they are not tied away or so. It should be easy.
Then, when we come to the psychological part, it's important that you have a choice to choose what you want to do. And so, there should be possibilities for you to be active or to withdraw and just be lonely, not lonely, to be for yourself. You don't have to feel that it's bad. The possibility of choosing is important because when we are getting older, maybe we are not as adaptive as when we are younger. Then we can adapt easily to things. We can be in big groups or small groups, but that's more difficult, could be, when you are getting older. So you should have the possibility to choose where you want to be, if you want to socialize or if you want to just sit by yourself in the garden. And then also socially, I think it's very important when you are planning for nursing homes that you think of where they are situated. If you are grown up and used to live in a big city, I don't think maybe it's perfect for you to be at the nursing home out in the countryside where you don't know anyone or where you don't feel familiar. It's important that the sounds of the city are familiar and when you go down the street, there's a shop that you used to. All those ordinary everyday things are important.

Y.E: How about social interactions with the community? You mentioned the importance of having the choice to be active or stay more isolated, but I guess older adults people often become more isolated after they stop working or stop going to certain places. Do you think this kind of isolation should be reduced? And do you think social interaction could be a way to improve their overall health?

H.W: *Absolutely. I think too many older people — I know younger people do too, especially in Sweden — but older people are what we call unwillingly lonely. They haven't chosen it themselves. They feel lonely, and maybe their children have moved to another city or another country, and their grandchildren also live somewhere else. Many older people feel very lonely. So I think we should be much better at this, and we could learn, I think, from many other countries. In Sweden, Swedes like to travel, and we love to sit at a café in a square in Italy or wherever. But if you go here, it's not that easy. And I think many older people feel they don't fit in. It's not so easy. And if you have to move from your ordinary apartment or house into a nursing home, it's such a big step — even if maybe your relatives and close ones say, "Oh, you should move to this nursing home, there are so many activities there." But you don't know anyone there. It's not just about moving into a place with a hundred people and starting to socialize.*

Y.E: Actually, a few weeks ago I visited a housing complex for still self-sufficient older adults people. I think it's a concept here in Sweden, where there are these housing options for seniors. There is a minimum age limit to move in, but it's your choice to move; it's not like a nursing home where you have to go. I'm also investigating this possibility to see how they can age in a more healthy way and possibly prolong the need to move to a nursing home. So, how do you think architects should approach the healthy ageing aspect? You also mentioned the study with the FINGER model, which I think was interesting. What is your opinion on that?

H.W: *I think we call those kinds of housing "service housing" and "secure housing". I think we need much more of them. Today, to come into a nursing home, it's very difficult. You have to be very, very, very dependent, and you almost need to be demented. But, in between moving from your ordinary house to a nursing home, there's so little to choose between. I think in Gothenburg we had just a few of them where you are not forced to buy an apartment and if you are maybe 90-95 years old, maybe you don't feel that you want to buy something for several millions of kronos . So, we need senior apartments that you can rent just like any other rental, but with some kind of support, not nurses and doctors, but some form of service support. There should also be rooms for social interaction with other people. I can take my own parents as an example, they are 95 years old, but they are quite fit. They don't need a nursing home, but they are now worried that one of them will pass away before the other, and then there will be a problem, because they need each other. So, they would like to move into a service environment, but there are very few of them. And they are still too fresh to move into a nursing home. They don't really need that much support, but they would like to move to a service-oriented community where they could make new friends. That way, when one of them feels lonely, they won't be lonely because they'll be part of a community. So, we really need more of them.*

Y.E: When we consider this type of housing, you also mentioned that everyone is going to experience cognitive decline, but the pathological one is dementia. So, I would like to ask about the different stages of dementia. How can they be defined, and what could be the importance of considering these stages? Not everyone with dementia will move into a long-term care facility; many may continue to live at home. Considering this aspect, what are the different stages, from early to late, and how do they affect the daily life and lifestyle of these individuals?

H.W: *The FINGER model from Karolinska, they have really been focusing on lifestyles and how to really use those lifestyle interventions to prevent or to delay the progression of dementia. If you get dementia, it doesn't help if you are active and eat the right things and all*

those things. You will get dementia anyhow, but you can slow the process and you can also put forward the starting date of the dementia process. That is already shown. We have evidence of that. So that means that it's not good for you to live alone if you feel bad about being alone. That could be a trigger for dementia, the dementia process to start.So that also calls for the need for this kind of supported housing. Well, it's possible to be active, but still, you are living in a secure environment. Another aspect of it is also that the persons with dementia who still live in ordinary homes, it's often because they live together with a partner who doesn't have dementia, but also the life of that person is very important. It's very, very challenging to live together with a person with dementia 24/7. You need also to have some rest, to go out, and then it's also good to be in supportive living because then the person who has light dementia can have some support there and be together in a group. Your partner, who has dementia, can go out shopping or do whatever he or she wants to do. But it's important to know that dementia is often a process that lasts maybe 10, 15 years. So, when we think of a person with dementia, we often think of someone in the very late stages, when the disease has affected your ability to eat and take care of your hygiene and all those things. But by then, you may have been sick for ten years. So, all those years before are very important, and they should be of good quality. You can have a lot of fun and happiness being together with other people, dancing or singing or whatever, but it should be in a secure environment, and you should be surrounded by people who know that you have dementia, so that the challenge is not too big.
And that the space, the physical environment, should be easy to understand. There is evidence about that. For example, if you have very much visual stimuli with a tapestry on the walls that has a lot of patterns or flowers, it can be too much information. You can't sort it out; all information is coming to you, and you can't process it. That is very difficult when you have dementia. Everything just disturbs you.

Y.E: You mentioned that people around need to be aware that there is a person with dementia. So, how do you think we can support people living with dementia to continue participating in their communities and support them in their daily lives?

H.W: *I think that's where the aspect of choice comes in, because we are all different. All human beings are different, and even as we get older, we don't become more alike just because we are older. So, if I like to be out in the garden, it's important that there is a garden, even when I'm old and have dementia. That's also something to consider when you have dementia, you live in the moment. You can't remember much from beforehand; you mainly remember things from your very distant past, but you can't remember what you did five minutes ago or yesterday. So, you live very much in the present, and it's also difficult for you to plan in advance for what to do tomorrow. It's important that there's a stimulating, fascinating environment now. Nature is very good, of course, but if you like city life, maybe that's what you should have the opportunity to enjoy. It's very difficult to say what is typical for all older people because they are also different. So, they need to have choices.*

Y.E: So I think then I would say what is important is to present some choices as much as possible because everyone is different. A disease is not just one thing, and everyone can experience it in a different way. Apart from preferences, do you have examples of how people with dementia symptoms can experience things differently? What are some of the most common experiences, and what can vary from person to person?

H.W: *For example, a very concrete example is if you are old and have dementia, and then you come into a kitchen at a nursing home where there are a lot of sounds from machines, like a microwave. These are sounds that you don't associate with a kitchen. The physical environment doesn't fit, and all these disturbances can be overwhelming for an older person with dementia. A kitchen should be a place where it smells of good food and coffee; that's what feels right. Everything that attracts your senses is important when you have dementia because you are living in the moment. If it smells like food or coffee, you get hungry. But if you walk into a kitchen and it doesn't smell like food, but there are a lot of strange noises, you don't get the signal that it's time to eat. So, you should really enhance the things that attract our senses: smell and sight, of course. It should look like what you expect a kitchen to look like. We also know that touch is very important; that we touch each other. This is something that nurses and aides learn. But also, when designing a living room, the matter of choice is important. If I am a very social person, and there's a group of furniture where I can sit with others, I would go there because I'm interested in other people. But if I've always been a little more withdrawn, there should also be a cozy place for me to sit where I can observe without standing out. It should be natural and easy for me to be myself.*

Y.E: As a final question, if you had to give one or two sentences as a recommendation for designers when designing spaces for this target group, what would your advice be?

H.W: *I think a good approach would be for you to talk to some older people. Right now, I'm sitting here telling you what I know from research and literature, and from working with other people, but talking to older individuals, perhaps someone whose partner is beginning to have dementia, could be very insightful. It's not just about black and white answers; you can learn a lot by talking to someone with dementia about what is difficult and what isn't. Also, talking to the partner who is observing these changes could be helpful, as they might have tips or tricks they've developed to make things easier for their husband or wife. I think that would be a really good thing to do.*

Y.E: Yes, I'm not sure if I will have the opportunity to do that, but at least I have visited some facilities where people with dementia live, and I was able to observe some of their movements or talk to the staff members. Hopefully, I will find an opportunity to talk to some other people, as you suggested. I actually had three other interviews with architects—architects who designed dementia care homes or housing for the older adults. So it was useful for me to understand more design-focused experiences.

H.W: *Yes, but I think dementia-friendly and age-friendly cities and housing are really big now worldwide. For example, here in Sweden, the Swedish Dementia Center, which is a national knowledge center for dementia, has an award for shopkeepers who have made their shops dementia-friendly. That means, for example, you shouldn't rearrange all the groceries just to make it look nicer or more new. Maybe you and I can appreciate that, but for a person with the beginning stages of dementia, it can be catastrophic when the milk is no longer where it used to be. You can't find things, so it should stay the same, and it should be what is expected. It's very difficult to change. I think this might also apply to ageing in general.*

Y.E: Thank you so much. That's all. I collected interesting and useful information.