

Dementia day care as a green addition to the city

AR3AD110
Dwelling Graduation Studio

R Versteegen



Delft University of Technology
Faculty of Architecture and the Built Environment
MSc Architecture, Urbanism and Building Sciences
AR3AD110 Dwelling Graduation Studio
Designing for Care in an Inclusive Environment

Design tutor
Birgit Jürgehake

Research tutor
Leo Oorschot

31-10 -2023

KEYWORDS

Early stage dementia, farm-based day care, urban green-blue grids, dementia supportive environments.

ABSTRACT

The growing number of dementia patients in the Netherlands has many consequences. Many people with early stage dementia live at home and are cared for by relatives. This creates a lot of pressure and stress for both the patient and the informal caregiver. A well-known and popular solution to this problem is farm-based day care, which is unfortunately not yet applied in the urban fabric, despite its many spatial and functional advantages. In order to integrate this successful typology in the urban fabric, the following research question was answered: *'Can the successful characteristics of farm-based day care be implemented in the green-blue landscape of Dutch cities in order to support the spatial and architectural needs of people with early-stage dementia?'.* Literature research and fieldwork shows that eight qualities make farm-based day care successful for people with early stage dementia: stimulating connection with nature, creating purpose in life, offering meaningful activities, supporting social interaction, supporting physical activity, focussing on healthy nutrition and offering a domestic atmosphere and daily structure. Using results from fieldwork and case studies, the eight themes have been made generically applicable in the form of design guidelines, to which the themes 'clear wayfinding' and 'balance in sensory stimuli' have been added. In order to make these features applicable in the urban fabric, they must fit in the Urban Green-Blue grid of the city, therefore the themes 'biodiversity', 'quality of life' and food 'production', from the theory on Urban Green-Blue Grids, must be respected or strengthened while designing a urban care building. Locational guidelines result from this. These architectural and locational design guidelines can be applied in the average Dutch city in order to create an urban version of a day care farm and answer the main question in this way.

CHAPTER 1: INTRODUCTION	8
1.1 PERSONAL FACINATION	9
1.2 BACKGROUND	10
1.3 PROBLEM STATEMENT	10
1.4 GOAL AND AIMS	11
1.5 THEORETICAL FRAMEWORK	12
1.6 RESEARCH GAP	13
1.7 DESIGN HYPOTHESIS	13
1.8 RESEARCH QUESTIONS	14
1.9 LIMITATIONS	
1.10 DEFINITIONS	
1.11 METHODS	
CHAPTER 2: EXPLORING THE NEEDS OF THE TARGET GROUP	21
WHAT ARE THE SPATIAL AND ARCHITECTURAL NEEDS OF PEOPLE WITH EARLY-STAGE DEMENTIA RESIDING IN CITIES?	
2.1 DEMENTIA AND ITS STAGES	22
2.2 THE SYMPTOMS OF EARLY STAGE DEMENTIA	24
2.3 THE INFLUENCE OF URBAN DWELLING ON DEMENTIA	25
2.4 SPATIAL AND ARCHITECTURAL NEEDS	25
CHAPTER 3: EXPLORING THE CONCEPT OF FARM-BASED DAY CARE	27
WHAT IS FARM-BASED DAY CARE AND WHAT ARE EXISTING URBAN ALTERNATIVES?	
3.1 EARLY STAGE DEMENTIA CARE	28
3.2 THE CONCEPT OF FARM-BASED DEMENTIA DAY CARE	29
3.3 EXISTING URBAN ALTERNATIVES	30

CHAPTER 4: EXTRACTING THE QUALITIES OF FARM-BASED DAY CARE (FIELDWORK)	31
WHAT ARE THE QUALITIES OF FARM-BASED DAY CARE?	
4.1 INTRODUCTION FIELDWORK LOCATIONS	32
4.3 THE QUALITIES OF FARM-BASED DAY CARE	36
CHAPTER 5: TRANSLATING THE QUALITIES OF FARM-BASED DAY CARE (CASE STUDIES)	44
HOW CAN THE QUALITIES OF FARM-BASED DAY CARE BE MADE SPATIALLY APPLICABLE IN A WIDER (NON-RURAL) ENVIRONMENT?	
5.1 A SPATIAL TRANSLATION OF THE FARM-BASED DAY CARE QUALITIES	45
5.2 ADDITIONAL SPATIAL AND ARCHITECTURAL GUIDELINES	58
CHAPTER 6: INTEGRATING THE QUALITIES OF FARM-BASED DAY CARE IN THE CITY	60
HOW CAN THE DESIGN GUIDELINES FOR FARM-BASED DAY CARE BE IMPLEMENTED IN THE GREEN-BLUE GRID OF DUTCH CITIES?	
6.1 IS THERE PLACE FOR DEMENTIA CARE IN THE URBAN-GREEN-BLUE GRID?	61
6.1 MORE BIODIVERSITY	62
6.2 FOOD PRODUCTION	63
6.3 QUALITY OF LIFE	64
CHAPTER 7: CONCLUSION, DISCUSSION AND REFLECTION	66
7.1 CONCLUSION	67
7.2 DISCUSSION	69
7.3 REFLECTION	69
7.4 GUIDELINES SCHEME	70
BIBLIOGRAPHY	75

Chapter 1

Introduction

PERSONAL FASCINATION

Ever since I started my Architecture degree, I had a fascination for human-centered architecture and influencing people's health and mental state by the use of building design. Dwellings are the places where people spend most of their time, especially when ill, because people with disabilities and illnesses are often tied to their home or care facility. That is why creating healthy, stimulating and safe living environment is an important theme within architecture in my opinion.

Therefore, the specific focus of this project will be designing for people living with dementia. As dementia is a common disease in my family, I have experienced up close how my grandfather and grandmother have deteriorated in a short period of time because of it. As their dementia progressed, living at home, while being on the waiting list for a nursing facility, became more stressful and risky. While my grandparents' anxiety grew, my parents' stress from the informal care increased. Personally, I would have wished for them that their final months of living independently, had been more enjoyable experience. This was my main motivation for wanting to create a dementia-friendly and supporting care environment during for independently living elderly with dementia my graduating studio.

BACKGROUND

Among all diseases, dementia is one of the primary drivers of dependency and cognitive incapacity among the elderly globally (World Health Organization, 2022). It is estimated that the number of people with dementia in the Netherlands will increase from circa 290,000 in 2021 to approximately 500,000 in 2040 and more than 620,000 in 2050 (Alzheimer Nederland, 2022).

Currently, 79% of Dutch people with dementia still live at home, mainly because they are in the early stages of the disease and do not want to move out yet. Even though many of them are cared for by home care workers, generally, close family and partners handle the majority of the nursing. This is what we call 'informal care' (Alzheimer Nederland, 2022). Growing memory problems and difficulty performing daily tasks, as well as lowered self-confidence and anxiety due to awareness of the symptoms in the earliest stages of the disease (Kwak et al., 2017), cause the pressure on informal caregivers to rise as the patient's condition declines. (Alzheimer Nederland, 2022).

Nursing home placement is therefore often an unavoidable choice. However, the long waiting lists of care homes, the increasing pressure on the Dutch health care system (Alzheimer Nederland, 2022) and the fact that a move can be a mentally impactful, and sometimes even traumatizing, event (Ryman et al., 2019), make this step easier said than done.

Dementia day care is therefore a popular form of care that is offered for people with early-stage dementia in that still live independently. (Tretteteig et al., 2016) Farm based care care, which will be discussed in further depth in the theoretical framework, seems to be an successful variant of this care form. (de Bruin et al., 2021). However, as the highest number of people with dementia are found in cities (Vektis, 2022), focus on finding similar dementia friendly spatial solutions for the urban environment becomes more important.

PROBLEM STATEMENT

The central problem in this study revolves around the fact that as the Dutch population ages, the number of people with dementia increases and so do the mentioned consequences for both the patient and their informal caregivers. Given the anticipated rise in the number of dementia patients and the current pressure on Dutch health care, there should be found a way for people with early stage dementia to live at home for as long as possible, however, this can be difficult for the patient and their informal care givers due to the consequences of the disease.

As people spent most of their days indoors, the building where people with dementia spent their day should be supportive of their needs. For finding a ways to solve this mentioned problem, answers can be found in the spatial environments where people reside. A proven succesfull concept is dementia day care located on farms (de Bruin et al., 2021), unfortunately, this spatial care environment is not present in the urban environment yet which forms an additional problem which will get focus in this study.

GOAL AND AIMS

This research aims to find ways to create a fitting day care facility where people with early-stage dementia can be supported in their daily life in order for them to live in their own environment for as long as possible with safety for both patient and informal caregiver. The goal of this study is therefore to find architectural solutions to create a supportive day care environment, while taking inspiration from the successful rural care environment on dementia care farms.

To achieve the mentioned goal, the research aims of the project are: getting to know the needs of the target group, exploring the existing concept farm-based day care, extracting the qualities of this concept in regard to the target group, translating these qualities into more widely applicable design guidelines and finding ways to fit these qualities in to the urban landscape of cities. The outcome of this research will lead to generic design and locational guidelines that can be used to reach the mentioned goal.

THEORETICAL FRAMEWORK

Farm based day care

From a review of the literature on supporting those with early-stage dementia, the daycare concept, especially farm-based daycare, stands out both on spatial and functional level. This concept revolves around a farmers, opening up their farm for people with dementia to work in agriculture during the day. Most people with dementia, their loved ones and informal caregivers, prefer this concept over standard day care facilities, mainly because of the connection with nature and the meaningful daytime activities. (De Bruin et al., 2020). Research by de Bruin et al (2020), and Ibsen & Eriksen (2021), Eling & Koffijberg (2011) strongly emphasise the benefits of farm-based dementia care. The qualities described in those studies will form the basis of this research and will be further explained in chapter 3.

The distance between the city and countryside in the Netherlands has increased over the years due to industrialization this had caused has this care concept is becoming less accessible for urban dwellers with dementia. (de Bruin et al., 2021) However, it could be meaningful to introduce this concept into the urban fabric because it is line with the spatial needs of people with dementia that are reflected in literature on the target group, (which can be read in chapter 2) and because it has spatial qualities to offer that the urban fabric lack.

Urban green-blue grids

While searching for ways to introduce farm-based care in an urban environment, the presence of urban green-blue grids seems to be an concept to take into account. This concept was described in literature by Hiltrud Pötz in 2016.

As urbanization rises, cities must remain comfortable, healthy, safe, and attractive. This task is made more challenging by additional issues like climate change and the depletion of fossil fuels. (Pötz, 2016) According to Pötz (2016), strengthening existing urban green-blue grids is an effective way to direct this essential change of cities. Networks connecting bodies of water and the

surrounding landscapes are crucial for resilient cities as they can withstand the effects of rising temperatures, drought, and precipitation. The integration and strengthening of these networks in urbanization make a diverse, attractive and healthy city. (Pötz, 2016) Connecting green and blue areas can make the city stronger and more resilient in seven ways:

- Climate adaptation: green and surface water serves as a buffer for excessive rainwater, which performs better than petrification.
- Less heat stress: cities with a lot of greenery or surface water are cooler on average than highly bricked or concrete urban areas. Shadowing and evaporation of vegetation contribute to this.
- More biodiversity: connecting and adding green-blue elements in the city creates an uninterrupted route for plants and animals to reproduce, which optimizes biodiversity.
- Food production: a green-blue grid offers the opportunity to grow produce in the city.
- Better air quality: greenery and urban trees can contribute to purifying the air by absorbing carbon dioxide, sulfur oxide and particulate matter.
- Sustainable energy production: green waste and surface water in cities can be used for energy production and heat generation.
- Quality of life: urban green can increase the quality of life of the user because functional greenery can support physical activity and social interaction and can reduce stress levels. (Pötz, 2016)

While adding buildings or new greenery to a city, connecting to these grids is crucial, this can be done by connecting to or adding to these different themes. The concept of urban green-blue grids will therefore be the basis of this study in order tot implement the caring concept into the urban fabric.

RESEARCH GAP

Literature reveals that farm-based day care is a successful concept for people in the early stages of dementia living independently as it seems to meet many of the needs of people with dementia and their caregivers. Some urban alternatives are therefore already being offered in urban environments. However, these are not yet location-bound, public greenery is often used and this is not yet part of day-cares itself. (de Bruin et al., 2021). Next to this, what an urban environment has to offer for a care farm also remains undiscussed. Thus, there is a research gap when it comes to integrating farm-based care elements into urban architecture and urban planning. This can be seen as a missed opportunity, as that the majority of elderly people with dementia reside in cities. (Vektis, 2022).

Existing green-blue grids (Pötz, 2016) might lend themselves for the integration of an urban care farm, however, the connection between these grids and care has not been made before in literature which creates an additional research gap.

DESIGN HYPOTHESIS

An innovative design for an urban dementia day care facility seems to be an appropriate solution to support people with dementia in living in the city independently as long as possible. The weakening connection between city and countryside in the Netherlands, in addition to the increasing number of urban dwellers with dementia, may offer opportunities for the successful farm-based day care concept to be integrated within the Dutch urban fabric. Connecting the qualities of farm-based day care to the existing blue-green grid of Dutch cities, as described by Pötz (2016) is expected to fill the research gap appropriately.

A design for an urban dementia day care facility that meets the needs of people with early-stage dementia, incorporates the qualities of the farm-based care concept as well as the advantages of city living and its urban green-blue grid, might be a good contribution to the solution to the posed problem statement.

Resulting design guidelines from this research, can serve as a support for architects and urban planners who design for people with early stage dementia or search for fitting places in the urban landscape for farm-based care. Appropriate designs that could result from this are new spatial typologies that are connected in the existing urban green-blue grids and social life of the city, but also containing the tranquility, nature and functionality of farm-based day care. This new typology must be developed in such a way that it fits the needs of people with early stage dementia.

A growing number of dementia patients in the Netherlands.

Alzheimer Nederland (2022)



As many patients in the early stages of the disease live at home, pressure on informal care is increasing
Alzheimer Nederland (2022)

Moving out can cause the patient stress and the shortage of healthcare staff is increasing in the Netherlands
Alzheimer Nederland (2022)



GOAL
Supporting elderly with early stage dementia in living independently in their own environment as long as possible with the use of a fitting day care facility that meets all their needs.

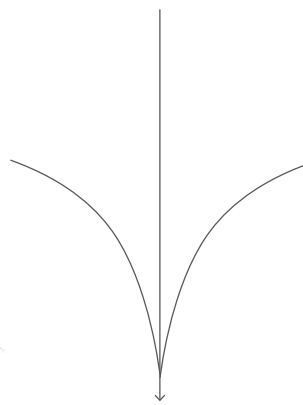
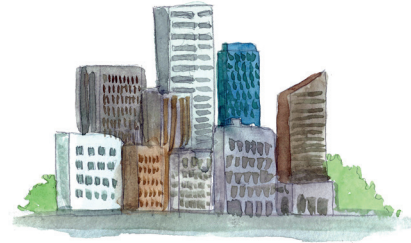
Theoretical framework
De Bruin et al. (2020), Elings & Koffijberg (2011) and Ibsen et al. (2021)

Theoretical framework
Pötz (2016), Hajer et al. (2021) and Talsma & van Weerden (2012)

Farm-based day care as a successful typology



In the context of the Dutch urban landscape



'Can the successful characteristics of farm-based day care be implemented in the green-blue landscape of Dutch cities in order to support the spatial and architectural needs of people with early-stage dementia?'



OUTCOME
Design guidelines to use while designing a urban version of farm based day care.

Figure 1.1 Research diagram (own image)

RESEARCH QUESTIONS

In order to contribute something to the mentioned problem statement and reach the research goal, the following research question and sub questions were formulated:

‘Can the successful characteristics of farm-based day care be implemented in the green-blue landscape of Dutch cities in order to support the spatial and architectural needs of people with early-stage dementia?’

Sub question 1:

What are the spatial and architectural needs of people with early-stage dementia living independently in the city?

Sub question 2:

What is farm-based day care and what are existing urban alternatives?

Sub question 3:

What are the qualities of the concept of farm-based day care?

Sub question 4:

How can the qualities of farm-based day care be made spatially applicable in a wider (non-rural) environment?

Sub question 5:

How can the features of farm-based day care be implemented in the green-blue grid of Dutch cities?

LIMITATIONS

While answering the different research questions, some topics will be included in the study and others will be excluded due to the size of this study.

During this research, the focus will be on a specific target group: people with early-stage dementia, who still live independently but experience the early symptoms of the disease and therefore rely on home care or informal care. As dementia has a very personal progression, the focus is on the most common symptoms and their common sequence. The most prevalent symptoms of the various variants are examined rather than concentrating on a single type of dementia so that the findings can be applied in a broad way. Variant-specific symptoms, however, will be excluded.

The context in which this target group and their needs are researched is the Dutch city or other non-rural places in the Netherlands, other countries are excluded in this study.

DEFINITIONS

DESIGN GUIDELINE, PRINCIPLE AND SOLUTION

Design guidelines can be seen as sets of written suggestions on how to use certain design principles to create a pleasant user experience. Design principles are the fundamental ideas and elements that can be used while designing. Design solution are the final architectural choices that are made in a specific design. (De Wit, 2021)

DEMENTIA

The term 'dementia' refers to a set of symptoms (a syndrome) that severely impair memory, thinking, and social skills. More than fifty disorders can cause dementia each of which causes the affected person's brain to slowly deteriorate. Common types of dementia are Alzheimer's disease, Lewy body dementia, frontotemporal dementia, and vascular dementia. (World Health Organization, 2022). In this research dementia will be addressed as a whole, looking at the most common symptoms and overlapping characteristics of the different diseases.

DEMENTIA DAY CARE

Dementia day care facilities provide communal care with paid or volunteer caregivers on-site. These facilities are located somewhere other than the users' homes, People with dementia travel there on their own or in a group and return home the same day (Tretteteig et al., 2016). Day care can be divided into 'daytime activities' that emphasises fun and relaxation, and 'day treatment', managed multidisciplinary team with specialised caregivers. (Alzheimer Nederland, 2022) In this study, 'day care' is seen as an umbrella term for these different types.

EARLY STAGE DEMENTIA

Dementia's progression is a very personal process. It can therefore be difficult to precisely define the term 'early stage dementia'. In this study, this term will be defined as: people with dementia who still live independently at home, but who do experience the early effects of the disease and therefore rely on home care or informal care.

FARM-BASED DEMENTIA DAY CARE

'Farm-based dementia day care' is a service that utilises resources and activities found on a farm to foster both physical and mental well-being. The opportunity for the patients to engage in outdoor farm activities, distinguishes it from traditional day care. This form of day care can take place on a farm owned by an active farmer, or on a farm building managed by a care institution (Ibsen et al., 2018)

URBAN GREEN-BLUE GRIDS

The term 'urban green-blue grids' described by Hitrud Pötz (2016) refers to the connection of green-blue areas that run through the city like lifelines consisting of greenery and water. These networks are, among others, needed in light of climate change, to connect the habitats of plants and animals but also to support biodiversity, social functions of greenery and food production. (Pötz, 2016)

METHODS

CHAPTER 2 EXPLORING THE NEEDS OF THE TARGET GROUP

This chapter answers the first sub-question: *‘What are the spatial and architectural needs of people with early-stage dementia living independently in the city?’*

The goal of this chapter is getting to know the target group and their needs. As interviewing people with dementia is not a reliable nor ethical method to extract accurate answers; to establish a sense of their symptoms and needs, the research will be based on **literature research**. The chapter will start of by obtaining a general picture of the general stages within dementia and their clinical symptoms. Next, focus is placed on how these symptoms affect the life of urban dwellers in the early stages of dementia. Finally existing literature on spatial needs of people with dementia is analysed and compared to the specific symptoms of the early stage of the disease. This literature study results in a textual chapter containing focus points for support of the target mentioned target group.

CHAPTER 3 EXPLORING THE CONCEPT OF FARM-BASED DAY CARE

This chapter answers the second sub-question: *‘What is farm-based day care and what are existing urban alternatives?’*

The main objective of this chapter is to gain insight on the concept of farm-based day care and the by exploring written literature on this topic while comparing it to normal day care facilities. To be able to reach this goal, the research will start by gaining information on farm-based care and existing urban alternatives using the method **literature research**. The output of this sub question will be a textual chapter based on existing literatur.

CHAPTER 4 EXTRACTING THE QUALITIES OF FARM-BASED DAY CARE

This chapter answers the third sub-question: *‘What are the qualities of farm-based day care?’*

The aim of this chapter is to gain insight into the successful qualities of farm-based day care that are mentioned in literature and how they are experienced in practice. First, three case studies on different existing farm-based day care facilities and their vision will be introduced. Two ‘Onvergetelijk Leven’ day care locations, one in Utrecht and the other in Hollandse Rading, are highlighted. The third case study is Zorgboerderij Reigershoeve Heemskerk which is a farm-based residential care and day care organization. These three locations all fall under the farm-based care concept, but differ in spatial development .The three case studies are visited in order to do fieldwork, the **observations** on the environment and the organization will serve as the foundation of this chapter. During the fieldwork **semi-structure interviews** with staff members and observations on de behavior of the target group are carried out. For ethical reasons, informal conversations with dementia patients will not be used to draw conclusions from. To substantiate and illustrate the observations and conversations from fieldwork are processed a storytelling manner illustrated by watercolor drawings instead of pictures n order to respect the privacy of the people involved.

The characteristics of farm-based care that follow from this chapter form the basis for chapter 5.

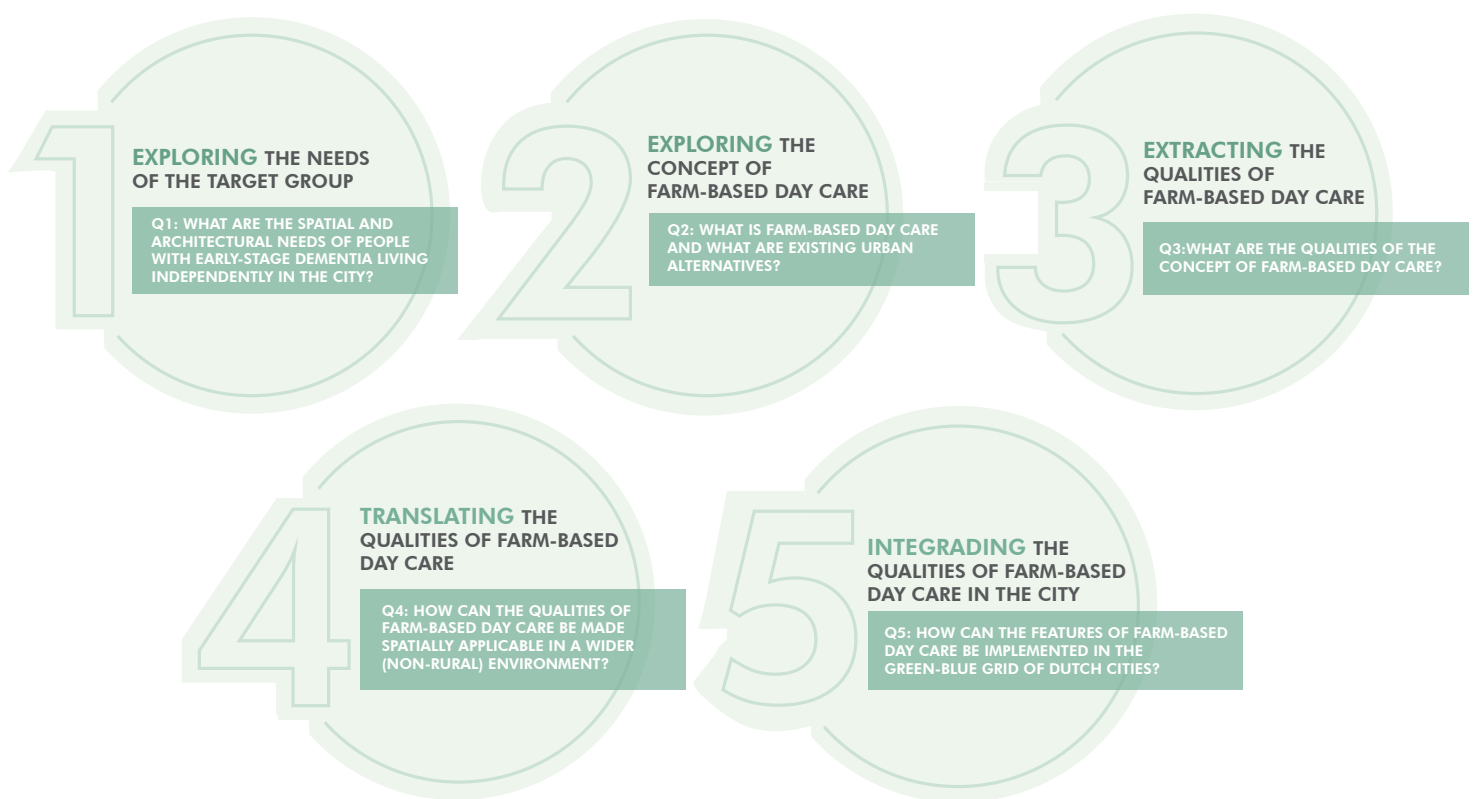


Figure 1.2 Research steps (own image)

CHAPTER 5 TRANSLATING THE QUALITIES OF FARM-BASED DAY CARE

This chapter answers the fourth sub-question: *'How can the qualities of farm-based day care be made spatially applicable in a wider (non-rural) environment?'*

The chapter aims to translate the mentioned qualities of farm-based day care into refined spatial and architectural design guidelines. Conclusions from literature review on design for dementia will be illustrated by spatial examples from the mentioned **cases studies**. The same qualities mentioned in the previous chapter remain the common thread in this chapter, and design guidelines are discussed per quality. The output of this chapter will be textual and illustrated by drawings or schemes.

CHAPTER 6 INTEGRATING THE QUALITIES OF FARM-BASED DAY CARE IN THE CITY

This chapter answers the fifth sub-question: *'How can the features of farm-based day care be implemented in the green-blue grid of Dutch cities?'*

The goal of this chapter is to discover fitting locational guidelines needed to implement the qualities of farm-based day care in Dutch cities while looking at the qualities that the urban green-blue grids have to offer.. This chapter will be based on the theory mentioned in the theoretical framework on Dutch urban green-blue grids and other green landscapes within the city. In this way, the qualitative characteristics of farm-based day care are compared to the characteristics of the blue-green grid. Using **references and literature research** on architectural projects intertwined in the blue-green grid of cities are used to illustrate this chapter. This chapter provides additional guidelines to be used while finding a fitting location for the farm-based care facility within the city.

OUTCOME

This chapter answers the main question. The final output of this research will be an overview of design principles with accompanying guidelines established in chapter 5 combined with the locational guidelines proposed in chapter 6. This final product can be seen as a design guide with do's and don'ts that can be used while designing a farm-based-like care facility within a non-rural environment.

Chapter 2

EXPLORING THE NEEDS OF THE TARGET GROUP

What are the spatial and architectural needs of people with early-stage dementia residing in cities?

In general, the experience of having dementia is a very personal journey that progresses through numerous phases. In this part of this study, the existing literature on the phases and symptoms of dementia will be discussed. Hereafter studies will be discussed that address the effects of urban dwelling on the early stages of the disease. Finally, a basis is formed of architectural and spatial needs of the specific target group.

DEMENTIA AND ITS STAGES

Dementia is an umbrella term for different disorders that cause the brain to deteriorate, among which the most common types are: Alzheimer's disease, Vascular dementia, Lewy Body dementia and Frontotemporal dementia. (World Health Organization, 2022). The ways these illnesses impact the brain vary, but existing literature mentions a few primary symptoms that are generally present in all these different diseases:

- Memory loss
- Difficulty performing everyday tasks
- Trouble understanding others or finding the proper words (aphasia)
- The inability to process sensory information (agnosia)
- Losing motor skills (apraxia)
- Confusion over time and place
- Mood swings

(Alzheimer Nederland, 2022).

Some people experience additional symptoms specifically associated with their type of dementia. Suspicion, hallucinations, repetition in speech and hoarding are examples of disorder-specific symptoms. (Alzheimer Nederland, 2022).

It is crucial to keep in mind that dementia is a very complex and individualized process, everyone experiences the symptoms of dementia in a different way. Therefore, person-centered dementia care, fitting the personal progression of the disease is becoming a more crucial method in contemporary dementia care (Alzheimer Nederland, 2022). However, literature does provide a generic picture of the progression of dementia, which is mainly used to facilitate

communication between medical professionals and caregivers. The most widely used scale to define the stages of dementia is the Reisberg Scale, also known as the "Global Deterioration Scale for Assessment of Primary Degenerative Dementia". This scale focuses on the general symptoms of dementia, but does not include disorder-specific symptoms and the symptoms mentioned may not always occur in the order listed. (Hardcastle et al., 2019) Although this scale first appeared in literature in 1982, it has remained the basis of investigations into symptoms of dementia.



Figure 2.1 Dementia umbrella (own figure)

Because this study focuses on people with early forms of dementia, the remainder of this chapter focuses on the symptoms associated with these stages.

Stage	Diagnosis	Level of cognitive decline	Signs and symptoms	Expected duration of stage
1	No dementia	Non	- Normal function - No memory loss	N/A
2	No dementia	Very mild	- Forgetting names - Misplacing familiar objects - Symptoms not evident to friends, family or doctors	Unknown
3	No dementia	Mild	- Increased forgetfulness - Slight difficulty concentrating - Decreased work performance - Difficulty with way finding through poor orientation - Difficulty with finding right words	2-7 years
4	Early-stage	Moderate	- Difficulty concentrating - Forgetting recent events - Cannot manage finances - Cannot travel alone to new places due to poor orientation - Difficulty completing tasks - Socialization problems: struggling to follow a conversation or find the right words.	2 years
5	Mid-stage	Moderately severe	- Major memory deficiencies - Needing assistance with activities of daily living (dressing, bathing etc.) - Forgets details like addresses or phone numbers - Does not know time or date - Does not know where they are	1.5 years
6	Mid-stage	Severe	- Cannot carry out activities of daily living without help - Forgets names of family members - Forgets recent events - Forgets major events in past - Difficulty counting down from 10 - Incontinence - Difficulty speaking - Personality and emotional changes - Delusions - Compulsions - Anxiety	2.5 years
7	Late-stage	Very Severe	- Cannot speak or communicate - Require help with most activities - Loss of motor skills - Cannot walk - Swallowing becomes an issue	1.5-2.5 years

Figure 2.2 "Global Deterioration Scale for Assessment of Primary Degenerative Dementia" (Reisberg, 1982)

THE SYMPTOMS OF EARLY STAGE DEMENTIA

Even in its earliest stages, the effects of dementia cause a person's life to change drastically. There are a number of symptoms that contribute to this change.

The daily life of someone with early stage dementia is strongly influenced by the **deterioration of memory**. In the early stages of dementia, it is mainly short-term memory that is affected. Long-term memories, on the other hand, are retained for a longer amount of time. Memory loss of recent events or conversations is the common sign of this. As a result, maintaining routine and performing certain tasks can become more difficult. When dementia is still in its early stages, the person affected frequently needs encouragement or reminders. (Alzheimer Nederland, 2022).

Another one of the patient's first abilities to deteriorate is **spatial orientation**, which can create stressful situations while adjusting to a new surroundings. This may eventually progress to difficulty orienting within their familiar environment. Additionally, people with early stage dementia have **difficulty with orientation in time**. This manifests itself in losing track of the date or the year or having no grip on daily structure. (Alzheimer's Association, 2022)

Although aphasia is generally not strongly present in the early stages of the disease yet, the person affected can have a **hard time following a conversation** or finding the right words. This can cause social discomfort, which often leads to avoiding taking initiative towards social interaction. (Alzheimer's Association, 2022).

In the beginning of the disease, it can become harder for the affected person to concentrate on tasks, walking routes, and conversations, as their **focus can shift easily**. The reason for this is that getting a large amount of sensory stimuli at once might be overwhelming since the brain is unable to process it as quickly as it once could. (Alzheimer's Association, 2022).

The primary changes in behavior often lead to secondary symptoms that affect the overall well-being of the affected person, which is particularly common in the early stages of the disease. Many people in the early stages of dementia experience depression, anxiety and insecurity as it can be confronting to realize that their brain is deteriorating. At this stage of the disease, maintaining identity and dignity can give the person handles to these **mental health challenges**. (Steeman et al., 2006) Due to shame for their mental decline, fear of social failure, gloom and depression, people with early-stage dementia tend to withdraw from social contact and turn to themselves. This seems to manifest itself in undertaking fewer social activities and avoiding crowded spaces due to having difficulty taking initiatives. This can be described as a "shrinking world" in which the limits of their social and physical worlds increasingly close in over time, depriving them of their autonomy and control. (Ward et al., 2021)

As described by Ward et al. (2021), physical activity can decrease as a result of the "shrinking world" as well. People with dementia tend engage in less physical activity as there are fewer activities performed outside of their home. In addition, the decline in memory, together with a reduction in appetite, can lead to eating less or forgetting to drink. So in addition to mental decline, the **physical body also deteriorates**.

In conclusion, people with early stage dementia need support with:

- Performing daily tasks
- Spatial orientation
- Orientation in time
- Undertaking social interaction
- Concentrating
- Battling mental health problems
- Maintaining a healthy and physically active lifestyle

THE EFFECTS OF URBAN DWELLING ON DEMENTIA

As the world's population ages and urbanization increases, the number of dementia patients living in urban areas is growing and will do so in the future. The question of whether living in cities increases the risk of dementia is still being researched. (Liu et al., 2022) Several studies, indicate that a highly urban setting is an unsupportive living environment for those living with dementia. (Rohra et al., 2021) (Mitchell et al., 2004)

Cities are environments filled with visual, auditory and olfactory stimuli. According to Rohra et al., (2021), highly urban environments tend to worsen the spatial orientation, as well as the concentration of people with early-stage dementia for this reason. Due to dynamically changing environmental characteristics, such as views, soundscapes, traffic, or illumination, people with dementia tend to feel more **anxious and disoriented** in urban environments. (Rohra et al., 2021) Research by Mitchell et al., (2004) supports this claim. The study demonstrates that dementia patients have incapacity to navigate urban environments as they seem to be less conscious of changes in their surroundings than those without dementia. (Mitchell et al., 2004) People with dementia become far more limited in their autonomous use of the urban environment compared to people without dementia.

This is mainly caused by the fact that they frequently have to give up driving and experience fear in taking public transportation or visiting crowded areas. (Mitchell et al., 2004). This restricts their travel options to places that are within easy walking distance of their homes which makes their social and physical world 'shrink' even more. (Ward et al., 2021)

However, research by Manthorpe & Iliffe (2020) emphasizes that the city also has its perks to offer for people with dementia. They argue that the notion that the city is a "problem" ignores some of the benefits of a dense population. For instance, the social life that is present in the city ensure that residents stay active in society for a longer period of time. Following that, the capacity to get to key destinations, such as food stores, medical facilities, recreation areas, or bus or train terminals, is a crucial requirement for feeling autonomy and independence, this is supported in cities due to the good accessibility and amount of facilities that are present. Additionally, Manthorpe & Iliffe (2020) note that people with dementia frequently favor active, vibrant environments that provide the landmarks and environmental cues necessary for navigating through spaces.

SPATIAL AND ARCHITECTURAL NEEDS

Considering the disease's early phases have an impact on how people live their everyday lives and behave in their dwellings and surroundings, architects must make thoughtful design decisions when creating dementia care facilities.

The needs of people with dementia in terms of architecture and space are therefore already widely discussed in existing literature. The handbook 'Dementia Training Australia: Environmental Design Resources', by Richard Fleming and Kirsty A Bennett (2021), reviews the existing literature on the design of senior living and healthcare facilities used by persons with dementia, as well as the context in which current care environments are functioning spatially. As a result of reviewing a large body of existing literature on this topic, a list of key design principles has been developed that reflect the symptoms of the disease. (Fleming & Bennett, 2021)

People with dementia need an environment that:

- *Reduces risks unobtrusively*: People with dementia need an safe internal and external living environment. However safety features must be unobtrusive, this could otherwise lead to frustration agitation and anger.
- *Provides a human scale*: A person should not be intimidated by the overall size of the building, the number of people residing there and the size of individual building components. Creating recognizable scales could improve one's wellbeing.
- *Allows people to see and be seen*: Confusion will be reduced by providing an atmosphere that is simple to understand. Good visual access is

therefore crucial as it opens up opportunities for engagement and stimulates confidence.

- *Reduces unhelpful stimulation:* The setting should be planned to limit the resident's exposure to stimuli that aren't particularly beneficial to them, in order to stimulate concentration and lower stress levels.
- *Optimizes helpful stimulation:* allowing the person suffering from dementia to perceive, hear, and smell items that serve as indicators for their surroundings.
- *Supports movement and engagement:* providing a well defined pathway, both indoor and outdoor, free from obstacles and complex decision points can help people with dementia to engage in physical activity.
- *Create a familiar place:* The setting should enable individuals to maintain their competence and identity through the utilization of familiar architectural designs. A familiar environment triggers long term

memory, makes people feel at home and relieves stress but also helps in performing domestic tasks.

- *Provides a variety of places to be alone or with others:* The building should be designed to blend in with the existing community and not stand out as a care-unit, in order to lower stigma and to create social connection with peers and the community.
 - *Is a response to the way of living of the user:* The way of life offered must be made clear, and the building must be made in such a way that residents and workers can both support and see it clearly.
- (Fleming & Bennett, 2021)

Combining the findings on spatial needs of people with dementia and the information gathered on the symptoms of people with early stage dementia, leads to a list of starting points for a daycare building specifically fitting the needs of people with early stage dementia. As people with early stage dementia have more independence than people in later stages, but have a greater need for help with mental health problems, the points below have been slightly modified.

<i>In order to support ...</i>	<i>The spatial environment of a day care building needs to...</i>
<i>Performing daily tasks</i>	Offer a familiar domestic environment
<i>Spatial orientation</i>	Offer a clear wayfinding and signage design.
<i>Orientation in time</i>	Reflect daily structure
<i>Undertaking social interaction</i>	Offer a variety of places for social interaction.
<i>Concentrating</i>	Offer a balance between helpful and unhelpful stimulation.
<i>Battling mental health problems</i>	Reflect one's identity
<i>Maintaining a healthy and physically active lifestyle</i>	Support people in movement and healthy habits.

Figure 2.3 Spatial needs for people with early stage dementia (own image)

Chapter 3

EXPLORING THE CONCEPT OF FARM-BASED DAY CARE

What is farm-based day care and what are existing urban alternatives?

While the number of people with dementia is increasing in the Netherlands, demand for new person-centered dementia care approaches is rising. As a result of this, an innovative care concept, known as 'farm-based care' or 'care farming' has been put in to practice in rural areas. Literature on day care in general, the concept of farm-based day care, and existing urban alternatives will be explored in this part of the study.

EARLY STAGE DEMENTIA CARE

In addition to the symptoms of the dementia patient, it is important to keep in mind that the disease is constantly affecting a system as a whole. Family, partners and friends suffer from the deterioration of their loved one from the earliest stages of the disease. Family members or partners often take on the role of caregiver while the person is still living at home. Currently, an estimated 800.000 unpaid informal caregivers provide care for dementia patients in the Netherlands. As the disease progresses, their tasks become more challenging and more time-consuming, on average informal carers indicate that they spend 39 hours a week on care. This often causes stress and burn-outs among informal caregivers, what makes that 53% of informal caregivers feel overpressured. (Alzheimer Nederland, 2022) Relieving and supporting infromal caregivers from the earliest stages of the disease is therefore essential.

A concept that is proposed as a tool to support both the patient and their informal caregivers, is dementia day care. Day care institutions can offer daytime activities that emphasise social interaction and relaxation, while day treatment can also be offered for people with an official dementia indication, which is managed by a multidisciplinary team with specialised caregivers. (Alzheimer Nederland, 2023) Research by Strandenæs et al. (2018) empathizes the quality of dementia day care. facilities fcous on 'day treatment' This concept appears to benefit dementia patients as it enhances activities and social support, minimizes isolation, and improves practical and cognitive functioning. (Strandenæs et al., 2018) Tretteteig et al. (2017) state that dementia day care centers can provide family support, relief, and therefore also have a positive impact on the relationship between the informal caregivers and the dementia patients.



THE CONCEPT OF FARM-BASED DEMENTIA DAY CARE

A type of dementia day care that is often praised for its spatial and functional characteristics is 'farm-based care' or 'care farming', which has been put into practice both in the Netherlands and Norway over the past few decades. For people in the early stages of dementia specifically, day care programs or activities, are offered in these care farms. Research by Elings & Koffijberg (2011), de Bruin et al., (2018) and Ibsen et al. (2021) shows that, both in terms of programming and architectural design, this care typology offers outstanding features, compared to traditional day care facilities.

Since 1990, there has been a lot of development in the agricultural sector in the Netherlands, with more farmers lending their farm and land for health care services to various client groups, including (mentally) disabled, troubled youth, people with mental health problems and people with dementia. Existing dementia care farms provide residential care or day care services for people in the early stages of the disease. A small number of farm-based care facilities offer evening / weekend services or respite services to support informal caregivers. Dementia care farms are now fully incorporated into the Dutch health and social care system, proving the success of the dementia care farm idea. (de Bruin et al., 2018)

Most of the farms with care facilities are located in farms run by active farmers, in which the farmer teams up with qualified healthcare employees and volunteers. Other farm-based care facilities reside in agricultural buildings owned and run by health care facilities. While there isn't any collaboration with a farmer in this case, some care workers or volunteers have a background in agriculture or are qualified in this field. In addition to these two forms of care farms, there are also locations that mimic the concept of a farm and reflect its characteristics in their care model or in the design of their building. d Ibsen et al. (2021) To ensure that the care remains of high quality on all farms, a quality mark called 'Kwaliteitswaarborg zorgboerderijen' has been drawn up to guarantee this. (Federatie Landbouw en Zorg, 2022)

At care farms, people with dementia can participate in different types of farm-related activities such as helping the farmer on the land, gardening or taking care of animals. Additionally, care farming also places a strong emphasis on domestic duties, such as weeding the yard or preparing a meal with the newly harvested vegetables (Elings & Koffijberg, 2011). The qualities of farm-based care, which set it apart from the typical dementia care facility, are frequently emphasized in literature. From interviews by Hassink (2010) with clients, caretakers and care farmers, it appears that the qualities of care farm are mainly based on the informal non-institutional context, which is fed by the meaningful and diverse activities, the green environment, social community and the attitude and involvement of the farmer and care staff. Elings & Koffijberg,(2011) add to this that small scale, normal life on the farm as qualities specific to people with dementia. The focus on a healthy diet, varied activities, stimulating social contact and stimulating physical contact are also mentioned as positive points for participants with dementia specifically. De Bruin et al. (2018) summarized the aforementioned core values, both users of farm-based care, as well as their informal caregivers, indicate that they find the care environment and services offered more appealing than those of traditional dementia care centers.

Although all existing studies on care farming highlight positive characteristics, there are aspects where there is still room for improvement. Because the often remote location of farms, it can be difficult for people from the village to reach the farms independently, in general, most people are therefore brought by transport organization. In cities on the other hand, participant often travel independently which keeps them active for longer. This distance sometimes results in isolation from the social life in the village / city, creating a some kind of closed community at the farm. De Bruin et al. (2018) The liveliness and the mix of functions and target groups in the city can be a meaningful addition to this rural concept.

EXISTING URBAN ALTERNATIVES

Because of the overall positive experiences participants have had at farm-based day cares, Wageningen University and Research, Rijksinstituut voor Volksgezondheid en Milieu and RIVM in collaboration with Instituut voor Natuureducatie (De Bruin et al., 2021) conducted research on green dementia day care alternatives within the urban environment of Dutch cities. They describe that there are roughly five types of initiators of green dementia daytime activities within cities that :

- Social entrepreneurs who offer their own location (e.g. city farm, city garden, park) for dementia daytime activities in a green environment.
- Nursing homes that open their garden for daytime activities for dementia daytime activities.
- Welfare organizations that, in addition to regular daytime activities, also offer green activities (e.g. walks, visits to children's or city farms, green activities).
- Neighborhood residents who, together with other parties, offer daytime activities in a neighborhood garden.
- Mixed form in which a healthcare institution organizes daytime activities together with other partners (including other institutions, citizens, social entrepreneurs).

As can be concluded from this initiatives, there is a demand for this farming concept in the city and the urban environment seems to have things to offer for the farm-based care concept as well. However, as shown by the research of De Bruin et al. (2021), urban farm-based activities currently take place in existing green environments, managed by organizations other than the day care organization itself. However, there aren't many permanent locations for green dementia day care yet. It appears like an opportunity to integrate the farm-based function into the design of new urban care facilities as these can also foster supportive spatial qualities for people with dementia specifically, as often urban greenery does not have dementia friendly characteristics.

Chapter 4

EXTRACTING THE QUALITIES OF FARM-BASED DAY CARE

What are the qualities of farm-based day care?

To get a better picture of the concept of farm-based day care and to see how the qualities mentioned in the literature are expressed in practice, three locations were visited for fieldwork: Onvergetelijk Leven Utrecht, Onvergetelijk Leven Hollandse Rading and The Reigershoeve. These three locations were selected because their care program is in line with the care farming concept but expressed in very different buildings.

INTRODUCTION FIELDWORK LOCATIONS

1 & 2: ONVERGETELIJK LEVEN UTRECHT & HOLLANDSE RADING

A Dutch example of a farm-based dementia day care organization is Onvergetelijk Leven, which freely translates to 'memorable living'. Onvergetelijk Leven provides supportive and structured daily activities for people with cognitive and memory issues who still live independently at home with as vision to help people with dementia be independent for as long as possible while relieving informal caregivers. (Onvergetelijk Leven, 2022)

This day care program is offered at six different locations based in Utrecht, Kamerik, Hollandse Rading and Groenekan. Onvergetelijk Leven can be described as a care farming organization because every site is situated in a rural environment on a historic farm bought by the organization (Hollandse Rading and Groenekan) or in a farm from an active farmer (three locations in Kamerik). The location in Utrecht is the only one located in a new building, completed in September 2022. Although this is a newly built location, it has been completely designed according to the vision of Onvergetelijk Leven and according to the characteristics of a care farm. (Visscher, 2021)

Prior to participating in the daycare programs, Onvergetelijk Leven, first determines what challenges a participant faces while residing independently at

home. As a result, an individual care plan is created in collaboration with the organization's managers, the patient's family and the dementia case manager. Regular contact between these parties is crucial. This personal plan focuses on themes such as: self-reliance, movement, social contact, memory and orientation, mood, self-image and self-confidence. (Visscher, 2021)

Structure, guidance and meaningful daytime activities are provided five days a week by a team of healthcare professionals, trainees, volunteers and farmers. The participants are brought and picked up by a van or travel to the locations independently or with family. During the day, which lasts from approximately 09:00 to 16:00, the aforementioned themes are given the focus. (Onvergetelijk Leven, 2022)

Days at Onvergetelijk are always built up according to a structured program, filled with both individual activities and group activities. The rural setting is an important part of the activities at every location. All locations have a spacious garden including vegetable garden and some of the locations also shelter (farm) animals. In consultation with the location, services such as physiotherapy can also be incorporated into the day program. (Onvergetelijk Leven, 2022)



Figure 4.1 Onvergetelijk Leven Utrecht
(Onvergetelijk Leven, 2020)



Figure 4.2 Onvergetelijk Leven Hollandse Rading
(Onvergetelijk Leven, 2020)



Figure 4.3 Reigershoeve Heemskerk
(Stichting Reigershoeve, 2022)

FIELDWORK LOCATION 3: REIGERSHOEVE, HEEMSKERK

Another Dutch example of farm-based day care is the Reigershoeve, a residential care and day care facility, located in Heemskerk. Although this organization is not located in a farm building, or run by a farmer, the design of the building and care program are based on farm-based care provision.

At the Reigershoeve, 27 people with dementia, in the need of intensive care, reside. The building consists of four group homes for people with different types of dementia, one of which for people with Young Onset dementia (dementia under the age of 65). Additionally, between ten and twenty people visit the Reigershoeve several times a week for day care. In order to temporarily relieve the informal carers of dementia patients who still reside at home, a guest apartment was opened in September 2022.

The needs of the residents are the starting point at the Reigershoeve. Therefore, their emphasis is on ensuring every resident or day care participant can lead their normal life as much as possible, without noticeably suffering from their disease. As needs and wishes can change through the development of the disease, there is a regular exchange of experiences with the team and the family. The feeling of being at home is also an important part of the vision. Therefore, residents have their own apartments, with a common living room wherein caregivers always act as if they are guests. Freedom is another key element of in the care

program of the Reigershoeve. In principle, residents are allowed to do whatever they want, unless it turns out to be harmful or impossible. Residents are never told 'no' in advance, the staff is always looking for possibilities and solutions. (Smit & Willemse, 2021)

"You are what you do" is a statement that the organization believes is valuable. People with dementia often feel like they lose their identity, offering a meaningful day is therefore crucial. The farm environment makes this possible, because of the activities such as caring for animals, gardening and cleaning the animal pens. As a result, the residents feel useful and remain independent. (Stichting Reigershoeve, 2022)

Onvergetelijk Leven Utrecht and Hollandse Rading have been visited for a day and will be further analysed in this chapter. Onvergetelijk Leven Utrecht will represent the color **orange** in this report and Overgetelijk Leven Hollandse Rading will represent the color **blue**. The Reigershoeve has been visited for a week and will also be further investigated, this location will represent the color **green** in this report.

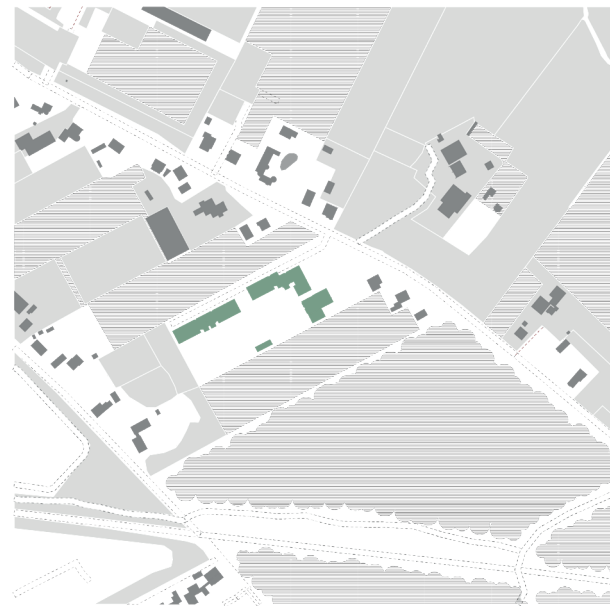
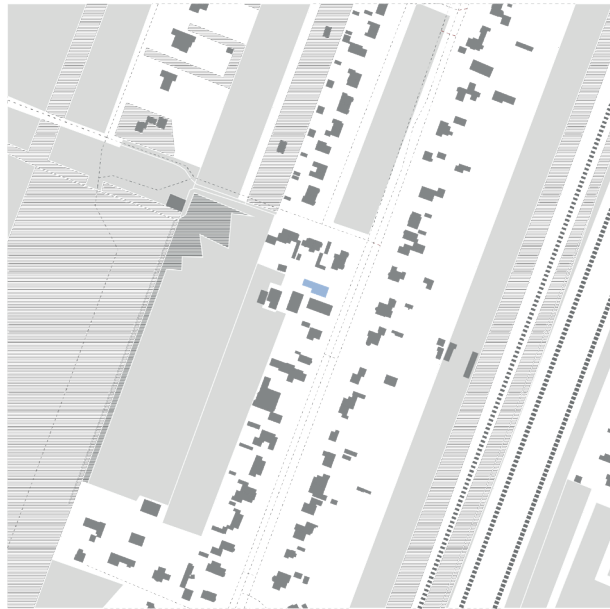
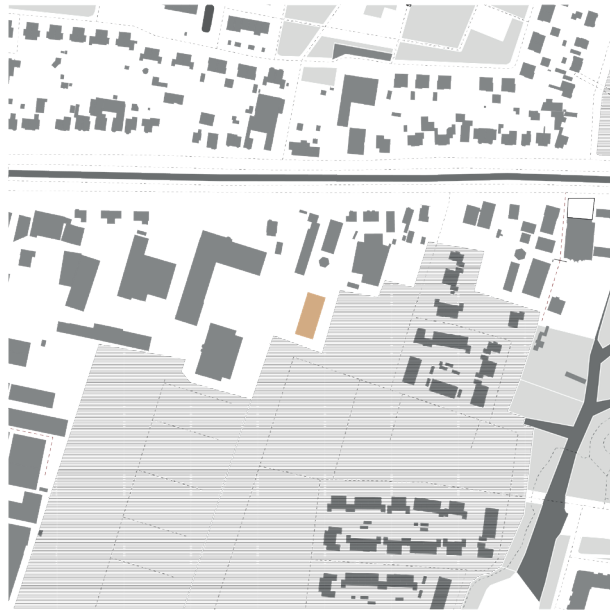
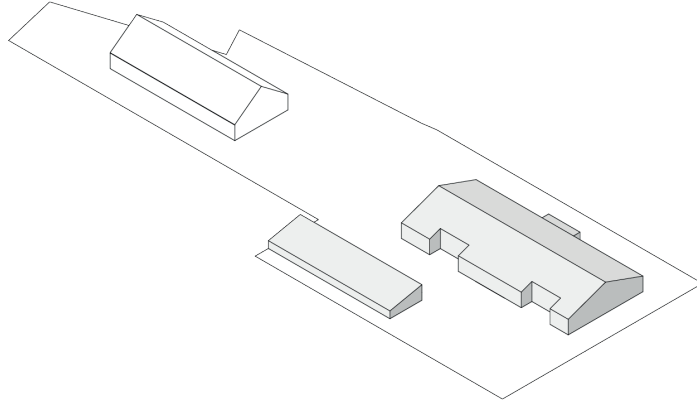


Figure 4.4, 4.5 and 4.6: Maps fieldwork locations (own figure)

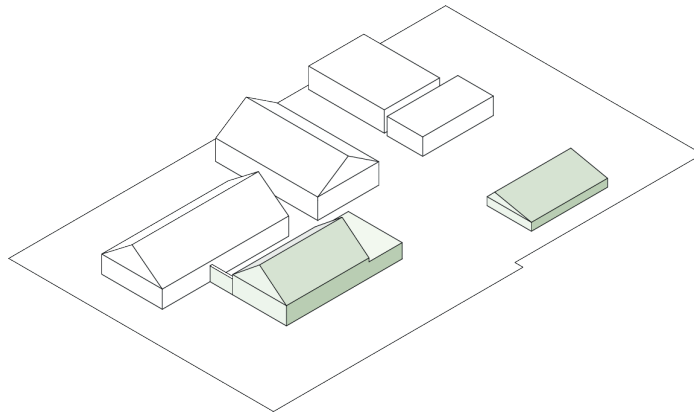


Onvergetelijk Leven

Location: Utrecht, Utrecht

Function: Dementia day care

Participants: two groups of circa 10 people a day

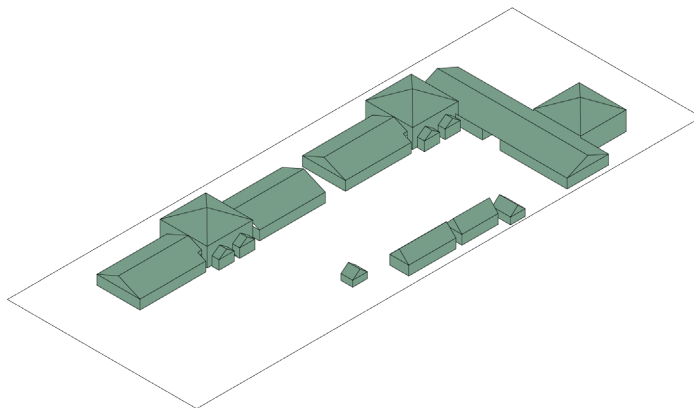


Onvergetelijk Leven

Location: Hollandse Rading, Utrecht

Function: Dementia day care

Participants: two groups of circa 15 people a day



De Reigershoeve

Location: Heemskerk, Noord-Holland

Function: Dementia day care and residential care

Participants: 27 residents, circa 15 day care participants a day

Figure 4.7, 4.8 and 4.9: Axo's fieldwork locations (own figure)

The different studies on farm-based day care mentioned in chapter 3 show that much can be learned from dementia care provision at farms due to different characteristics. Eight characteristics are chosen to represent these qualities and form the framework for the rest of this research. Care farms encourage: **ACTIVITY ENGAGEMENT**, offer a **DOMESTIC ATMOSPHERE**, provide **SOCIAL CONNECTION**, provide a **CONNECTION WITH NATURE**, ensure **HEALTHY NUTRITION** and lastly, give people with dementia a **SENSE OF PURPOSE**. In this chapter we look at how these characteristics influence people's dwelling in practice, based on experiences from fieldwork at the mentioned locations.

THE QUALITIES OF FARM-BASED DAY CARE

ACTIVITY ENGAGEMENT

People with dementia often experience happiness participating in activities that maintain their identity and autonomy. While engaging in their hobbies fosters a sense of identity which releases stress, trying new things can also be mentally stimulating. (Mak et al., 2011). Studies by both Ibsen et al. (2021) and De Bruin et al. (2018) suggest that care farms set themselves apart from traditional dementia care by offering a wide range of activities.

From visiting the different fieldwork locations it becomes clear that the rural location frequently provides the chance to engage in outdoor activities including gardening, caring for animals, going for a stroll, and weeding and caring for animals. But indoor activities like cooking, household chores, board games, woodworking and craft activities are also done at the locations. While visiting Onvergetelijk Leven Hollandse Rading for example, a number of participants had followed a workshop making Christmas flower arrangements that day while others worked in the garden and played card games. It can be concluded that care farms make enough room for people to choose an activity that fits them but also enrich their daily life.

In addition to the activities mentioned, events or trips are also organized at the fieldwork locations. At the Onvergetelijk Leven locations, excursions are planned in the region, including walks, creative workshops, dinners and sailing in Loosdrecht. At the Reigershoeve, public events are organized or the residents get the possibility to go out to a concert, museum or restaurant

in order to make sure that the participant engage in society. A recurring event is 'de Zangcirkel' (singing circle) in the communal building at the Reigershoeve 'De Vrolijke Merrie':

This afternoon an event called 'De Zangcirkel' was organized in the communal building for both the residents and the participants of the day care. One of the residents likes to go here because she used to be a student at a music school. She knows how to find her way to the 'Vrolijke Merrie', because she visits this communal building almost every day to study the piano. The seats are set up in a large circle and everyone is given a name tag. Led by one of the staff members of the day care, the group is accompanied by guitar music. A music booklet contains the lyrics of different songs and verses so that everyone can sing along, even if you don't know the lyrics. Everyone in this group appears to have an affinity with music, some sing along musically while others listen and enjoy quietly.



Making a flower arrangement at Onvergetelijk Leven

SMALL-SCALE DOMESTIC ATMOSPHERE

All studies analysed in the literature review claim that the participants of farm-based day care experience the stay as normal life as a domestic atmosphere is present both by the spatial design as the activities. Additionally, since the care farm environment is a domestic, non-institutional setting, participants and their family caregivers also encounter less stigma associated with dementia. (De Bruin et al. 2018) (Elings & Koffijberg, 2011) (Ibsen et al. (2021)). The focus on a domestic atmosphere can also be seen in the vision of the three case studies. Both the Reigershoeve and Onvergetelijk Leven make sure that the participants carry out familiar domestic activities in non-institutional surroundings that represent something familiar and safe.

From an interview with Dieneke Smit, founder of the Reigershoeve, it becomes clear that the aim of the organization is to continue the lifestyle of the residents as much as possible. For example, residents can choose until what time they sleep in, when they have lunch and which activities they participate in. According to her experiences, people with dementia are often attached to their habits so offering a familiar domestic lifestyle can provide peace and confidence.

'Would you like a cup of coffee?' asks one of the residents of house F van de Reigerhoeve. "Take a seat and I'll get it for you", she adds, as she pours a cup of tea. Under the table a dog of one of the residents happily walks around. When his owner came to live here he moved with her. It becomes clear that the residents feel at home in this house and are also very hospitable. The residents feel like one big family living all together in one big apartment. While the healthcare staff acts as if they are visiting them like friends. The bustle of a large household can also be seen while visiting this house. There is a lot of chatting, playing games and watching TV while others perform household tasks.

Onvergetelijk Leven also focuses on radiating this domestic sphere. This is strongly reflected in the location of Hollandse Rading, because of the small-scale group that participates and the homely interior. The tasks and activities that the participants perform here also contribute to this, think of cooking together and light household tasks. In regular day care, where food is made in a central kitchen, there is generally less room for this type of activity. (Elings & Koffijberg, 2011)

After eating a warm lunch and chatting with the participants of the day care, a group of participants did the dishes. According to one of the volunteers, this specific group of participants always wants to cooperate washing and drying the plates, cups and silverware. 'They all have their own qualities', she added. One likes to contribute to the dishes, the other helps with drying and others prefer to help prepare the meal or clean the living room. While a number of participants clears the tables, some start their evening with a cup of coffee in the sitting area. It feels like one big family, because of the domestic activities that take place here and the home-like atmosphere of the space in which the day care is located.

SOCIAL INTERACTION

As discussed in the literature review, people with early stage dementia often lose the capacity to socially connect with others. De Bruin et al. (2018) state that farm-based day care facilities can operate as a stepping stone to social interaction on three different levels: with other participants, farm visitors, and the staff.

Focus on social contact is strongly present in the different fieldwork locations as they foster an environment to meet people with the same disease. This can be enlightening as there is mutual understanding of the symptoms. (De Bruin et al., 2018) This contact is stimulated at the Reigershoeve by coffee moments, joint activities or doing household chores together. An interview with a partner of a participants of the day care at the Reigershoeve shows that this contact can be beneficial for the informal caregivers as well:

“Places where you can meet people who are going through the same experience (living with dementia) are the most important thing for people with dementia as well as for myself as a partner. The people you meet, have experienced it firsthand, you can learn a lot from their experiences and knowledge, even more than you can ever learn from a book or a website. Certainly in the early stages of my wife’s illness, both my wife and I benefited a lot from these interactions at the Reigershoeve.”

Interactions with the staff members and volunteers are also often experienced as pleasant on the farm. Because farms have a non-institutional and small scale atmosphere, participants tend to enter into a more

personal and trustful relationship with the staff. (De Bruin et al., 2018)

Onvergetelijk Leven highly values social connection between participants as well and therefore includes social moments in the daily planning, such as a coffee moment or a communal lunch:

While entering the building of Onvergetelijk Leven in Utrecht, the living room is filled with chatter. Participants are divided into two different groups located on both sides of the building. The participants of both groups divided up again among various dining tables, the layout feels comparable with a restaurant set up. At one table people talk about the news and the developments of the new building of this Onvergetelijk Leven location. The table is covered with self-made photo albums that detail the new building’s construction and past activities at the location. At the same time, at one of the other tables, people are playing cards in silence while others watch quietly. It is clear to see that everyone is given the opportunity to do what they want, but also encouraged to participate in social interaction. One of the participants indicates that this is his favorite part of the day, because it allows him to catch up with his friends.

Some farm-based dementia care facilities feature a café, restaurant, or community vegetable garden where residents can socialize with locals in order to keep them engaged in the community. (De Bruin et al., 2018) At the fieldwork locations that were visited, this is not part of their program yet.

CONNECTION WITH NATURE

Literature on farm-based care, mentioned in the literature review shows that having contact with nature very much appreciated by people with dementia. Other studies have shown that it supports mental and physical health as well.

Research by Førsund et al. (2018) shows that the social and physical space people with dementia use, decreases as the disease progresses. Taking part in outdoor activities can lead to positive effects on different levels. Physically it can be good because of fresh air and sunlight. It is crucial for the brain to get enough oxygen as it is the greatest user of this element. In addition, sunlight affects the rhythm, alertness and appetite, which often deteriorates in people with dementia. Mentally, nature can give a boost, because hormones are released that provide happiness, but can also reduce anxiety and depression. (Elings & Koffijberg, 2011)

As mentioned earlier, many activities take place on and around the site of the three different fieldwork locations. At the Reigershoeve, for example, a lot of encouragement is placed on caring for the animals and taking care of the vegetable garden and herb gardens. Next to this, participants can visit the communal garden whenever they want, as all the spaces they use are on the ground floor, which is also the case at the other locations.

During a walk over the site of the Reigershoeve in the morning, a lot of residents and day care participants were enjoying some outdoor activities. For example, some residents were feeding the animals while the participants of the day care were taking care of the animal shelters and the garden. Scooping manure of the cows, weeding weeds and collecting herbs and vegetables from the garden are examples of farm activities that were going on at that moment. While walking past the greenhouse, one of the participants of the day care offered to give a tour of the herb garden. This is something she likes to do when she is at the daycare, which she visits three times a week. She described the names and use of all the herbs in the garden while she collected a bunch of herbs in her bag. 'These will be used in the salad that will be made in the kitchen later' she said. She herself prefers to help in the garden, but others prefer to walk through the garden or to pet the animals, 'there is something to do for everyone' she adds.



PHYSICAL ACTIVITY

The activities mentioned earlier, especially those that take place in nature, are often associated with physical activity as they get people moving over the site or in the building.

All three locations offer opportunities for outdoor physical activity, mainly due to their large site and outdoor areas to make use of. Additionally, most care farms are located in a rural environment where you get the opportunity to go on a walk or a bike ride. An afternoon at the day care at the Reigershoeve illustrates this:

After attending lunch at the day care Reigershoeve, a small group of participants left for a walk through the adjacent forest with one of the employees and one of the volunteers. Another part of the group goes to work in the garden and to clean the cowshed, others stay on location. One of the ladies indicates that she would like to go on a bike ride, she has difficulty walking due to an injury to her hip so she can't join the walking group. Cycling on the side-by-side tandem is something that works just fine. Together we make a trip through Heemskerk. She mentions that she is very aware of her mental decline but tries to make the most of her life. She likes physical activities such as cycling or swimming, 'because you don't have to rely on your memory during these activities'. After having seen a lot of the area, and having cycled a bit, we head towards the site again. Finally, after this 'workout', the participants enjoy a homemade cake and a cup of tea.

HEALTHY NUTRITION

An important point of attention for demented elderly people mentioned in the literature review is the amount of food and drink they consume as they tend to forget or lose track of their eating schedule. The Bruin et al. (2018) indicate that participants of a day care farm consume more energy, carbohydrates and fluids than participants of regular day cares.

This can be explained by the fact that harvesting fresh crops is an important part of farming life, which can be seen at the Reigershoeve. Additionally, the shared lunches at all the field work locations, do not only lead to social interactions but stimulate healthy eating too.

At Onvergetelijk Leven, good nutrition is a crucial element of the day. Eating lunch together is one of the starting points of the organization and the participants are always involved in preparing this healthy meal. In this way, the performance of daily and domestic activities is stimulated, but participants are also guaranteed to consume healthy food.

While visiting the Onvergetelijk Leven location in Hollandse Rading, the atmosphere of homeliness and hospitality was strongly present. A big group of day care participants sat at the living room tables chatting while a small group helped prepare the tables for three-course afternoon meal. The meal was prepared in another room by one of the volunteers who cooked for both day care groups that day. At that moment, more participants came in, they just came back from making a flower arrangement workshop, together with participants from the location in Groenekan. They proudly showed off their flower arrangement and sat down for lunch. After a little while, the lunch was ready and the residents could take a seat. A Greek salad was served as a starter, after which the residents ate a hot dish with potatoes, meat and vegetables, the lunch ended with a bowl of custard and ice cream. At the table, one of the participants commented on how he liked to be able to eat here in a big group, and that he was very thankful for the nutritious food that was prepared for him while socializing with other people.

The vegetable garden at the Reigershoeve



SENSE OF PURPOSE

Given that those who have dementia frequently feel useless and unproductive as a result of their decline, it is crucial to give them purpose in life since it can improve their mental health, maintains their identity, and delays cognitive loss (Mak et al., 2011).

Performing activities and social interactions offered in farm-based day care can give participants that sense of continuity an identity in life. Aspecially when these activities are with people in the wider community, as this can lower stigma on the disease and make them feel part of society. (Mak et al., 2021).

People with dementia may feel more recognized as individuals if they get the ability to perform helpful chores, participate in meaningful activities, and assist others. Farming tasks are perceived as 'real work' what gives the participants the feeling that they contribute to society or help the farmer (Ibsen et al., 2021). Next to this, preparing lunches or doing household tasks also nurtures the need to help others which gives them the feeling they are important to other participants. (Mak et al., 2021).

A meaningful day is the starting point of the three organizations that where visited. For instance, at the Reigershoeve, staff members are trained in offering meaningful activities to people with dementia. Activities like cooking a meal, maintaining the garden and taking care of the animals, simulate the sense of responsibility:

At the Reigershoeve, the residents of all four houses are responsible for a number of animals. House F is responsible for the pigs and rabbits. After the coffee hour at ten o'clock in the morning, the tasks associated with the care of these animals are performed. This is a standard part of the daytime routine. One of the volunteers accompanied two of the residents during this activity. In the shed, all necessities are arranged with photos of the animals and trays that can hold the correct amount of animal feed. In this way, the residents are supported in the activity, but independence is still stimulated. In addition to feeding the animals, a fun activity was made of it by taking a walk through the garden. Statements such as 'What would those animals do without us?' and 'We enjoy doing this every day' might indicate that it gives users a sense of responsibility which supports their feeling of purpose in life.



Feeding the goats at the Reigershoeve

STRUCTURE

A fixed daily routine can have a positive effect on the daily life of someone with dementia. Having a clear structure in the day makes sure the person knows exactly how the day will go, which eases stress and confusion. The routine that is provided at farm-based day cares can assist the residents' daily lives. For instance, participants are picked up or expected to arrive at the daytime activities at specific times from their homes. Additionally, there is a predetermined daily program with activities, meals and breaks.(de Bruin et al. 2018)

Structure is one of the most important principles of the organization of Onvergetelijk Leven. While visiting the location in Utrecht, this becomes evident:

Upon entering the Onvergetelijk Leven location in Utrecht, the residents were having a coffee while chatting with each other and eating some freshly baked cake. At that time it was a little over ten o'clock in the morning, the time that the day care opens as standard. 'Every day is started this way', says one of the staff members, this is done to match the habits of the participants, but also to create a clear routine in their daily life. After the coffee moment, the focus shifts to preparing the lunch, some of the participants of the day care participate in this. At the table, some people watch what is happening in the kitchen, this is clearly visible from here, because of the windows and the central location of the kitchen. After lunch, which is the focus of the day, other creative of physical activities are carried out. This structure is always present at Onvergetelijk Leven.

In short, according to the literature review and by substantiating this by fieldwork study, the eight selected characteristics of farm-based day care are experienced as supportive for people with early-stage dementia. Furthermore, they can lead to reduced feelings of guilt and stress among family caregivers, as they generally feel relieved that their loved one spends the day in a pleasant and stimulating place. (De Bruin et al., 2018). In the next chapter, the mentioned success factors of farm-based day care are discussed on a spatial level and illustrated by practical examples from the case studies, these design choices will be made generic so that these principles can also be applied in an urban environment.

Chapter 5

TRANSLATING THE QUALITIES OF FARM-BASED DAY CARE

How can the qualities of farm-based day care be made spatially applicable in a wider (non-rural) environment?

As concluded from literature review eight characteristics of farm-based day care are experienced as successful in dementia day care, this was illustrated and substantiated by different examples from fieldwork. In this chapter, design strategies will be described on how to make the eight care farm characteristics spatially applicable in a wider (non-rural) environment in order to meet the spatial needs of people with dementia living in the city.

A SPATIAL TRANSLATION OF THE FARM-BASED DAY CARE QUALITIES

From literature based on the symptoms of the early stages of dementia and existing literature on dementia supportive environments. A list of spatial needs for a day care center for dementia has been made, this schedule is shown in Figure 5.1. What can be concluded from the results of the fieldwork is that there are a large number of similarities between the characteristics of care farms and the needs of people with early stage dementia.

The need for a dementia day care building to offer a ‘familiar domestic environment’ can be reached directly by the ‘small-scale domestic’ characteristics of a care farm. The need for a building to ‘reflect daily structure’ also matches the characteristic of ‘offering structure’ of day care farms. A day care building also needs to offer ‘a variety of places for social interaction’, this also ties seamlessly with the ‘social engagement’ that is created on farm care farms. ‘Reflecting one’s identity’ is also something that is needed in a successful dementia day care facility. Day care farms can meet this need by their characteristics of offering ‘activity engagement’ ‘purpose in life’ and ‘social engagement’. The need for a dementia day care building to ‘support people

in movement and healthy habits’ can also be met by the characteristics of ‘physical activity engagement’, ‘connecting with nature’ and ‘offering healthy nutrition’ in day care farms.

The building needs: ‘offering a clear wayfinding and signage design’ and ‘creating a balance between helpful and unhelpful stimulation’ are not directly visible in the characteristics of farm based care yet. Because these needs of the spatial environment are crucial for spatial orientation and the concentration of people with dementia, they must be included in the guidelines for an urban version of a care farm in addition to the eight care farm characteristics. These two characteristics will therefore be part of the guideline categories from now on.

Using spatial and architectural examples from the fieldwork and elements from The handbook ‘Dementia Training Australia: Environmental Design Resources’, by Richard Fleming and Kirsty A Bennett (2021), different design guidelines for the building are created.

<i>In order to support ...</i>	<i>The spatial environment of a day care building needs to...</i>
<i>Performing daily tasks</i>	Offer a familiar domestic environment
<i>Spatial orientation</i>	Offer a clear wayfinding and signage design.
<i>Orientation in time</i>	Reflect daily structure
<i>Undertaking social interaction</i>	Offer a variety of places for social interaction.
<i>Concentrating</i>	Offer a balance between helpful and unhelpful stimulation.
<i>Battling mental health problems</i>	Reflect one’s identity
<i>Maintaining a healthy and physically active lifestyle</i>	Support people in movement and healthy habits.

Figure 5.1: Spatial needs for people with early stage dementia (own image)

ACTIVITY ENGAGEMENT

Farm environments offers space and opportunities for indoor and outdoor activities scattered around the farm plot. To get an overview of relations between activity rooms or areas accessible to day care participants in the case study locations, relationship diagrams have been created, these are shown in figure 5.1, 5.2 and 5.3.

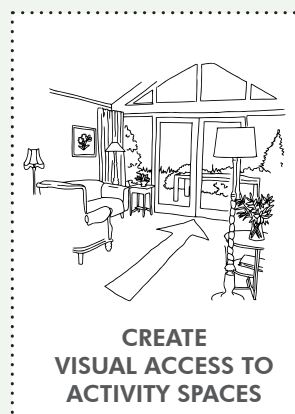
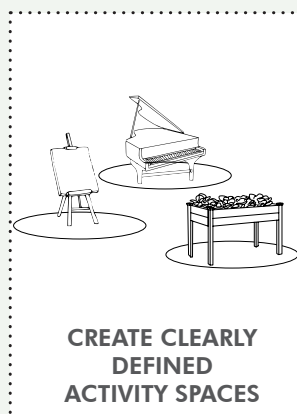
In order for people to engage in activities within an urban day care location, it can be beneficial to **designate a variety of specific recognizable activity places** as well. Equipping the spaces with all the tools and characteristics to do these activities, makes them recognizable. For example, the Reigershoeve has activity spaces both on the inside as on the outside of the building. An arts and crafts room, woodworking room, bar area with instruments and small shopping room are all clustered around the day care. The garden also contains a number of recognizable activity zones, think of places to pet the animals, places to do gardening, a small football pitch and a jeux de boules court. In both the Onvergetelijk Leven Locations, activities take place in the living room areas or on other locations in the neighborhood. The location in Utrecht has included a separate reading corner in the building, has a woodworking shed on the site and plans on adding a vegetable garden. However, the location in Hollandse Rading has less defined activity spaces, because this design is fitted into a small existing farm building, a newly built design offers more opportunities for activity spaces.

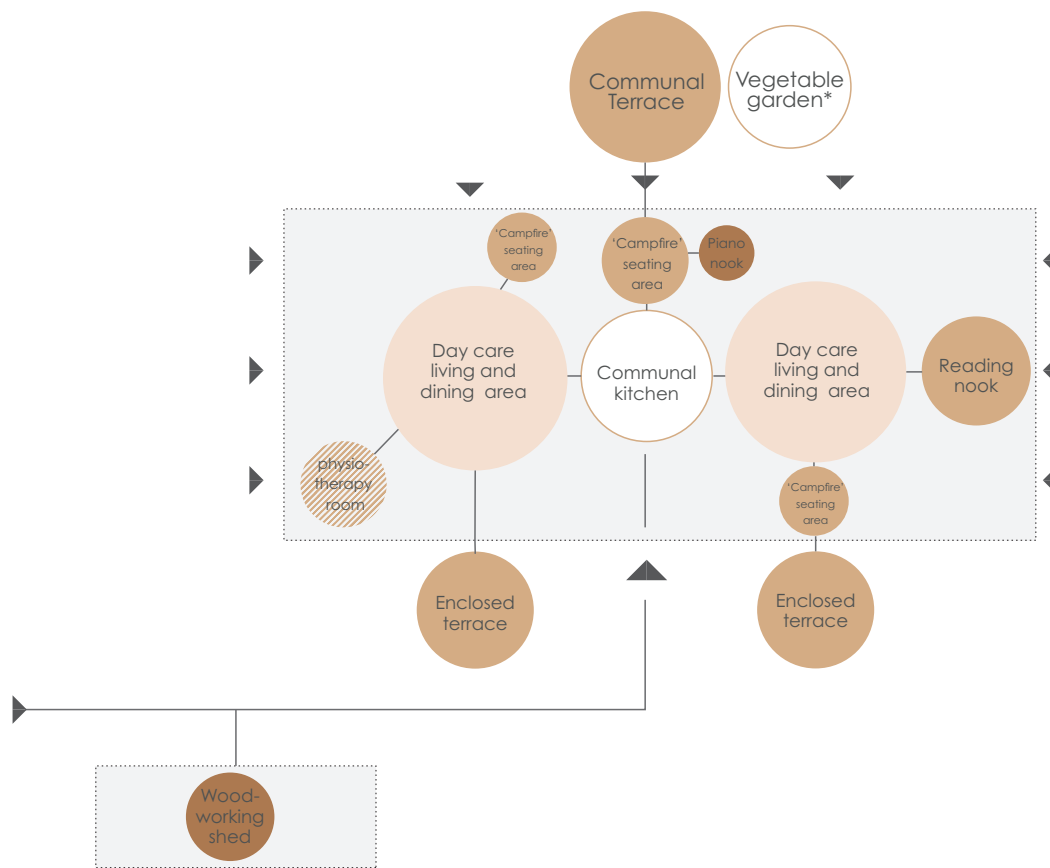
It appears a reasonable approach to make one multifunctional room for different types of activity as there may be too limited space in urban environment. However, these big spaces can feel overwhelming, ,sometimes it can be be confusing if a space changes its

function, and many stimuli can arise if different activities take place at the same time. This could be seen during fieldwork; the singing activity at the Reigershoeve would take place a different place than normal, which caused stress for some of the residents.

People with dementia are mostly motivated to engage in activities by seeing other people doing them. (Fleming & Bennet, 2021). It is crucial that other participants are able to **see the locations of the activities**, the people carrying out activities, or both, while they walk past it. As the activities in the Onvergetelijk Leven locations mainly take place in the living room, activities are clearly visible for other participants. This can also be beneficial to create a clear route along the different activities, so that participants see the locations as the walk through the building or over the site. This can be seen at the Reigershoeve. Because the activity areas are situated along the primary walking path and have spacious fronts that are open to the outside, De Reigershoeve encourages activity engagement. In order for users to locate the activity spaces, they are clustered together in one area. An outdoor pathway that passes through the garden links all of the outside activities.

What distinguishes activities on these case studies from a regular urban day care is the way in which activity functions are decentralized and spread across different smaller buildings on the farm plot, this stimulates movement while walking from one location to another. While designing an urban care farm, spreading smaller functional areas over an indoor square for example can create this same small-scale effect.

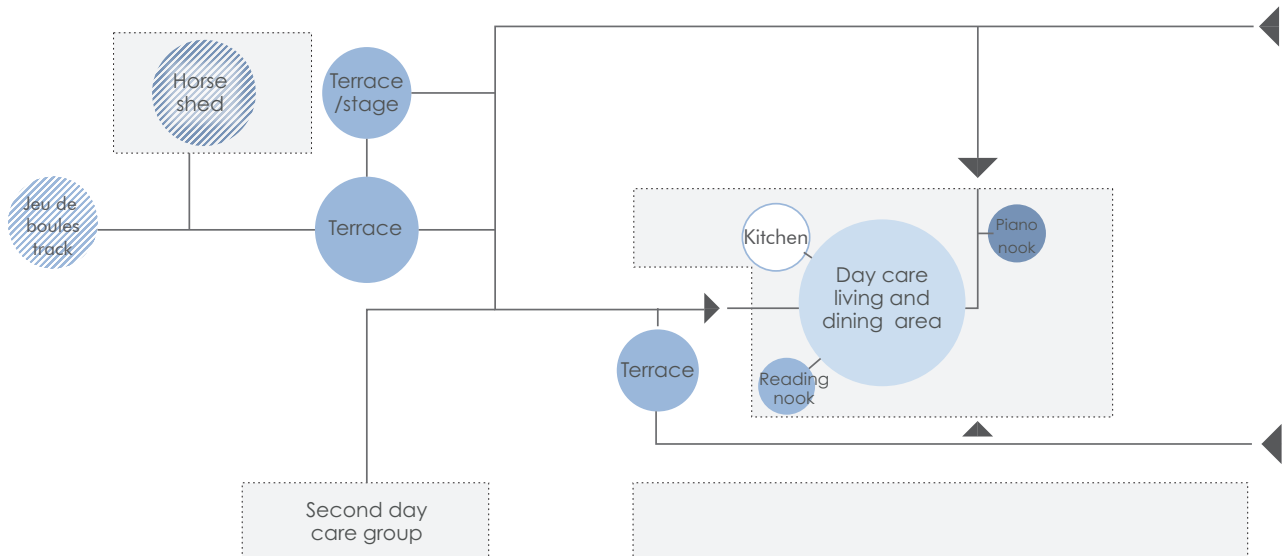




-  Multifunctional activity spaces
-  Spaces for relaxing activities
-  Spaces for physical activities
-  Spaces for culinary activities
-  Spaces for creative activities
-  Indoor area
-  Walking route
- *not built yet

Figure 5.1: **Activities spaces accessible to day care participants.**

Onvergetelijk Leven
Utrecht, Utrecht











-  Multifunctional activity
-  Spaces for relaxing activities
-  Spaces for physical activities
-  Spaces for culinary activities
-  Spaces for creative activities
-  Spaces for animals
-  Indoor area
-  Walking route

Figure 5.4: **Activities spaces accessible to day care participants.**

Onvergetelijk Leven
 Hollandse Rading, Utrecht

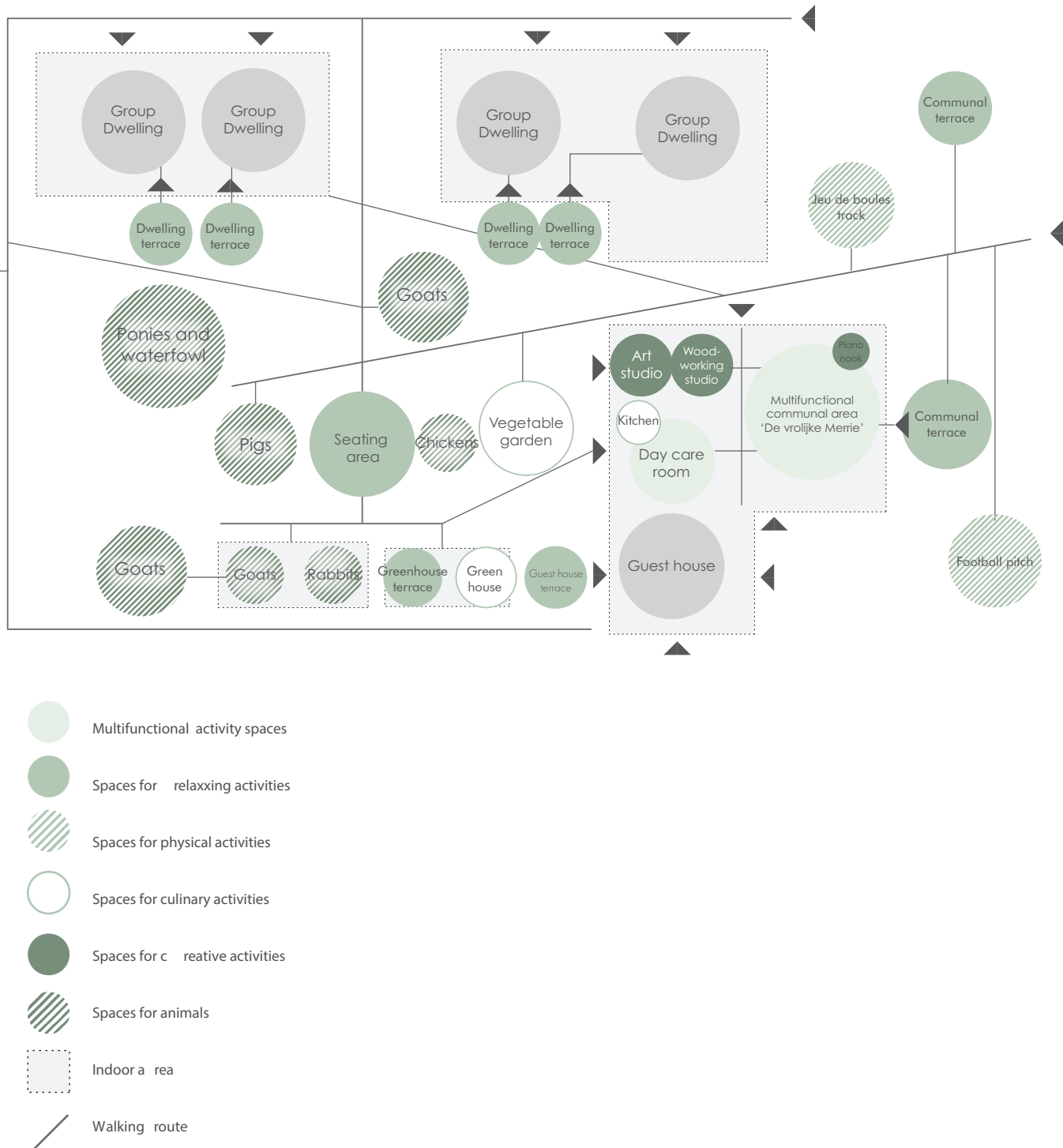


Figure 5.3: **Activities spaces accessible to residents and day care participants.**

De Reigershoeve
Heemskerk, Noord-Holland

SMALL-SCALE DOMESTIC ATMOSPHERE

Fleming & Bennett (2021) state that designing a familiar place, reduces pacing, agitation, and exit seeking. This principle corresponds with the farm-based care characteristic 'domestic atmosphere'.

Farms frequently have a familiar layout without institutional corridors and with intimate dining and living spaces. The floorplan of the small-scale old farm building in Hollandse Rading, is a clear reflection of this **domestic layout**. According to Niek Visscher, founder of Onvergetelijk Leven, a care environment inspired by a typical dwelling is crucial for people to feel at home. For example, the living rooms in the homes and in the day care of the Reigershoeve, are inspired by a typical Dutch home. For instance, the homes have a small entryway with a toilet before you enter the living room with an open kitchen on the street side and a living area on the garden side. While designing in an urban environment, it can therefore be good to take on the layout of a typical home or city apartment.

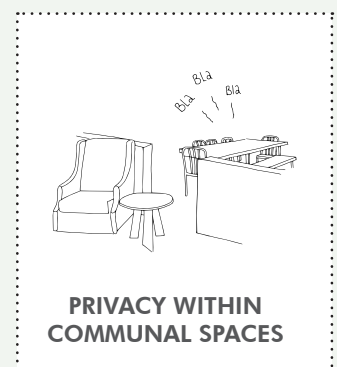
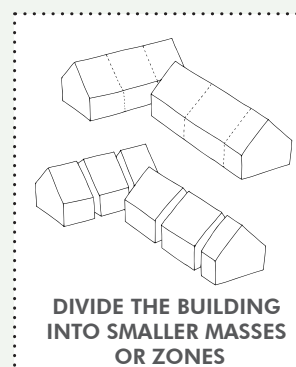
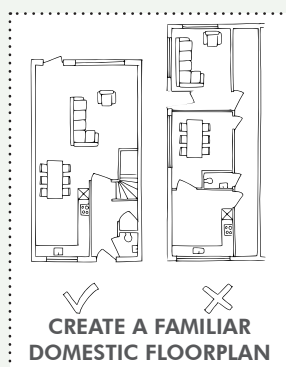
Personal furniture and recognizable architectural elements can give a space a domestic atmosphere too. (Fleming & Bennet, 2021). As this research focusses on day care and not permanent housing, participants don't take their personal furniture with them. Therefore, extra focus on making the building homely with **recognizable fixed furniture, finishes, decoration and architectural elements** on the inside, as well as the outside of the building. This will create an inviting atmosphere and will encourage residents to use the spaces and enjoy them. (Fleming & Bennet, 2021) additionally, furniture and furniture components used by participants must have an identifiable appearance in order for them to be used properly. Consider a refrigerator's appearance; it should not resemble a cabinet. And a door handle must unmistakably resemble a door handle not a knob. The classic architectural elements like cast-iron arched windows or and old fireplace,

present in the old farm building in Hollandse Rading resemble classical domestic elements. In the other two newly constructed cases, architectural features with a classical influence are used. Instead of using sleek modern window frames, thick wooden window frames are implemented. The use of gabled roofs with visible wooden support structures and the brick/wood facade in each of the case studies convey this rural homeliness to the outside as well.

In an urban environment, it can be difficult to convey the small scale of a care farm. **Dividing the building into smaller masses or spaces** with different functions or for different groups of participants, can be a solution for this. This has been done in Onvergetelijk Leven Utrecht. Compared to the other case studies this is a large day care building, but for overview and small scale, the building is clearly divided into two parts, separated by a communal kitchen.

The feeling of homeliness can also be stimulated by offering safe places with privacy to withdraw from the hustle and bustle. Fleming and Bennett (2021) describe this in their principle 'provide a variety of places to be alone or with others'. Clustering of living room areas with half walls for example can **provide privacy in a communal area**. This has been taken into account in all the case studies as well. This can be seen in figures 5.4, 5.5 and 5.6, Smaller seating nooks have been created in the sunroom of the residences in the Reigershoeve's living rooms, for example. Onvergetelijk Leven Utrecht, these private seating areas are located in between the bigger communal areas, with the possibility to close the doors. And however, Onvergetelijk Leven Hollandse Rading is a smaller location, there are still individual lounging areas created in the corners of the livingroom. Both Onvergetelijk Leven sites provide private, lockable rooms that can be used for resting or having private chats with relatives.

Guidelines



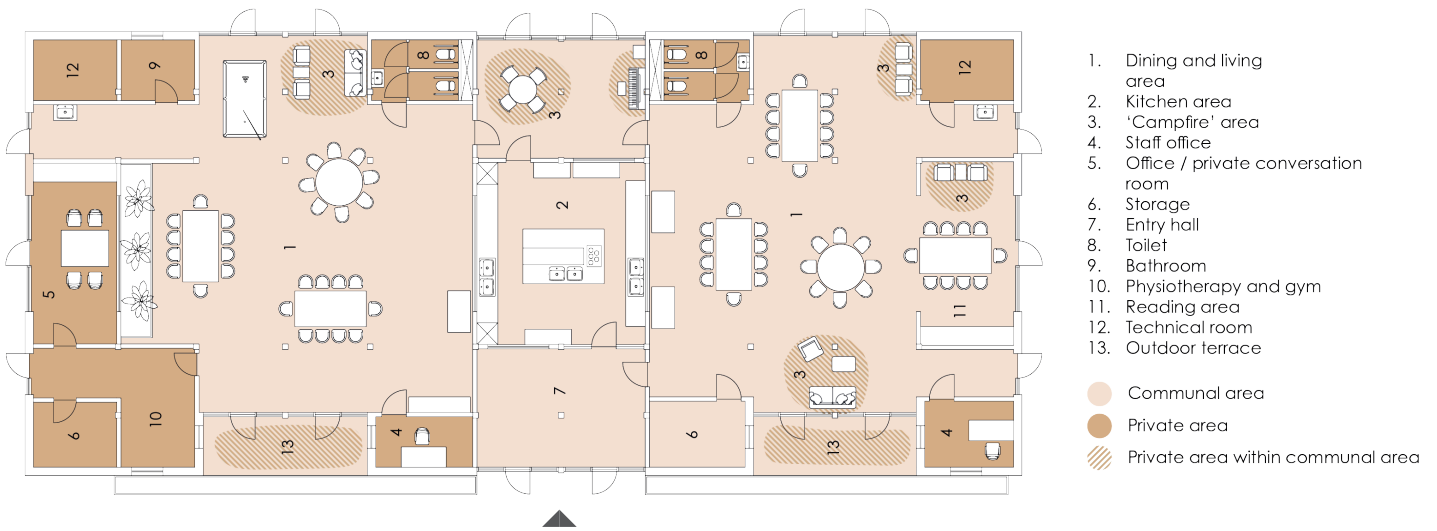


Figure 5.4: **Privacy within public spaces**
 Onvergetelijk Leven
 Utrecht, Utrecht

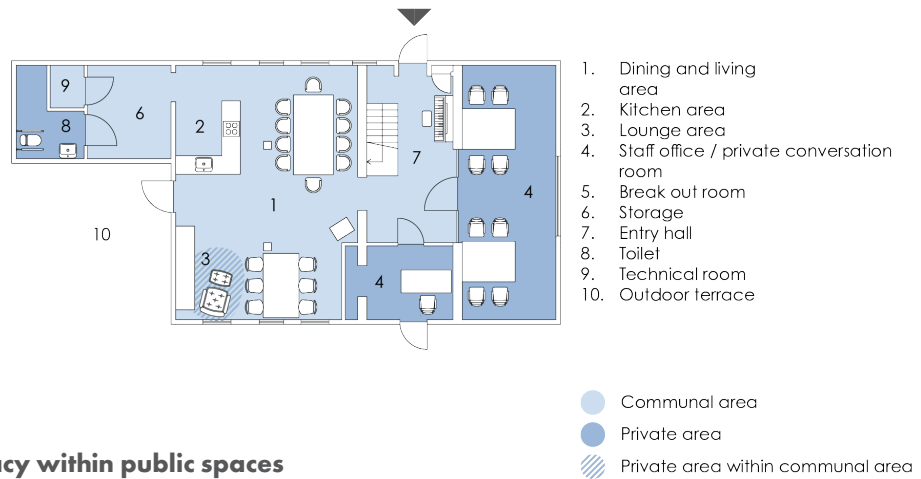


Figure 5.5: **Privacy within public spaces**
 Onvergetelijk Leven
 Hollandse Rading, Utrecht

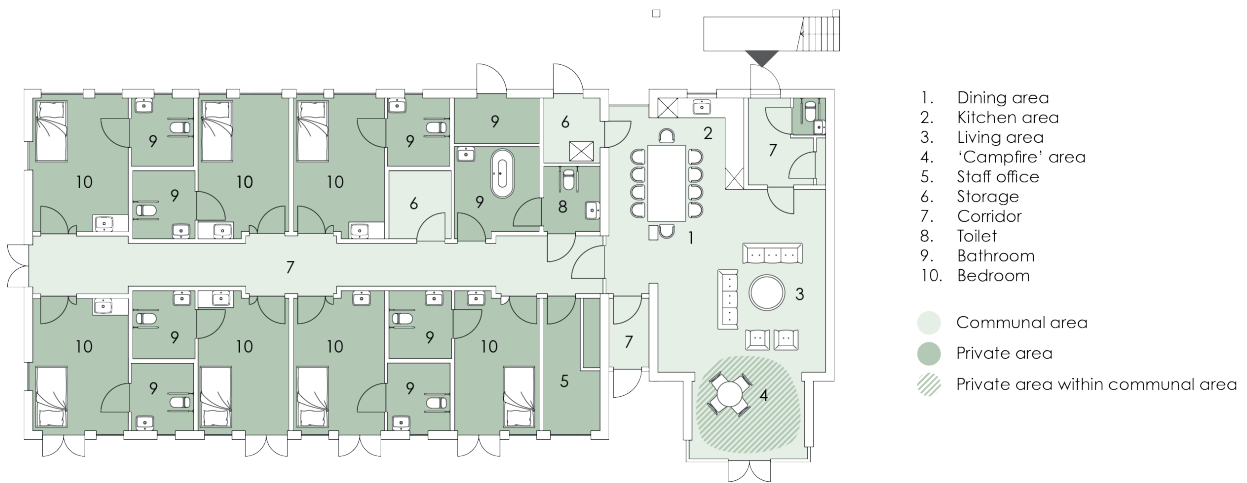
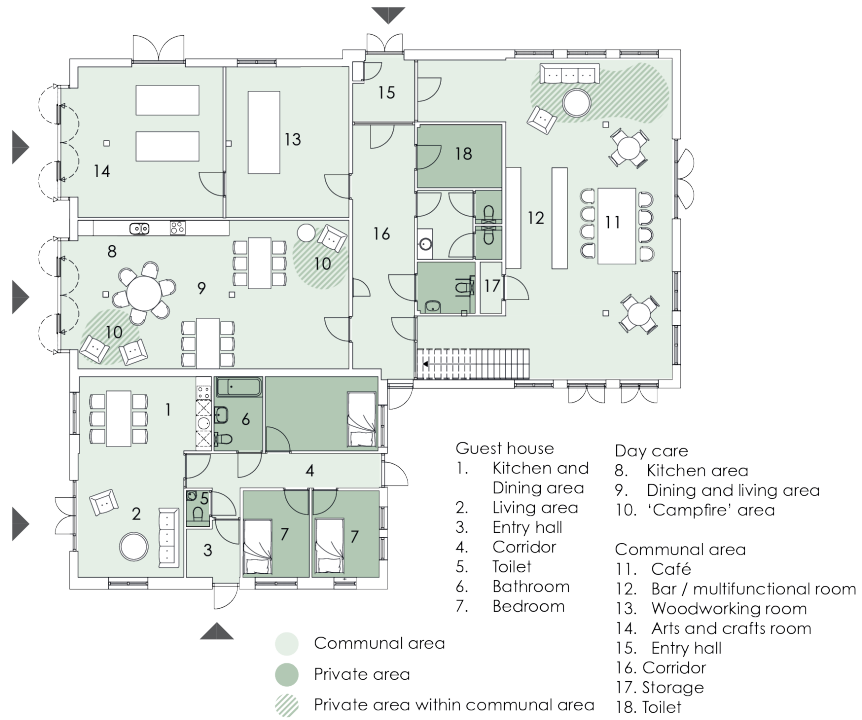


Figure 5.6: **Privacy within public spaces**
 De Reigershoeve
 Heemsker, Noord-Holland

SOCIAL INTERACTION

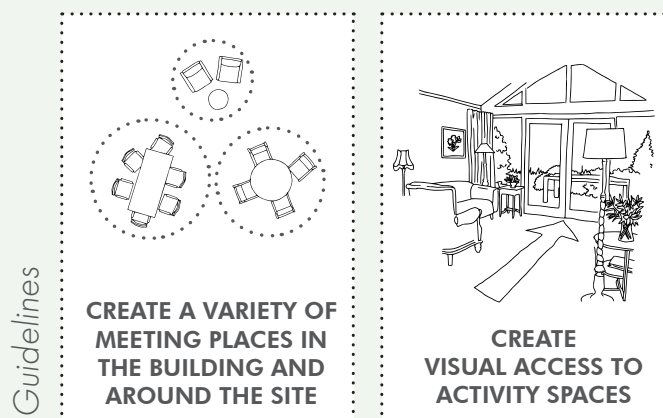
The previously mentioned architectural principles that stimulate activity, can stimulate social engagement as well, as many of these activities are carried out in a social context. Having clear visual access to these activities can therefore support social connection. However, there are more design principles that can be used to stimulate social interaction.

According to Fleming and Bennett's (2021) principle 'provide a variety of places to be alone or with others', the easier it is for visitors to drop in and enjoy being in social settings, the more this sense of social identity is reinforced. To encourage participants to stop by and spend time, such locations must be appealing and pleasant. When giving participants pleasant environment to socialize, it is important to give them option of choosing to spend time based on their own preference for social interaction, in big groups, small groups or alone. This is visible in every case study.

The day care room and the living rooms in the houses of the Reigershoeve designed in a flexible way with different types of furniture, so that it is possible to

create **different seating areas within the day care**. Both large tables for bigger groups and small seating nooks for one or two people are present. On both sides of the Onvergetelijk Leven Utrecht building, various seating areas have been created for groups of four or more, but also for smaller groups to sit and socialize in duos. The shared kitchen makes sure the two different groups can interact with each other as well. Onvergetelijk Leven Hollandse Rading also creates these social places on the site of the building, think of a place to barbecue and outdoor covered terrace.

As was mentioned in chapter 4, social interaction with different target groups as beneficial, however, often, farms are located at a distance from the lively center of a village. One of the advantages of designing in the city, on the other hand, is the social vibrancy. When creating different seating areas, meeting points routes with encounters, it is also wise to extend this outside the site. Think of seating areas along the public functions of the building or in the public part of the garden and widening walking paths at point where streams of people cross each other.



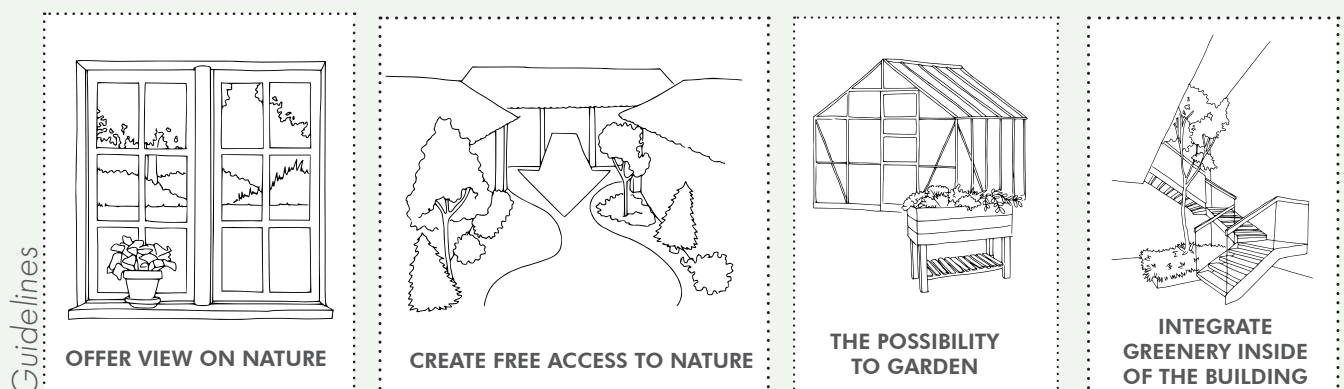
CONNECTION WITH NATURE

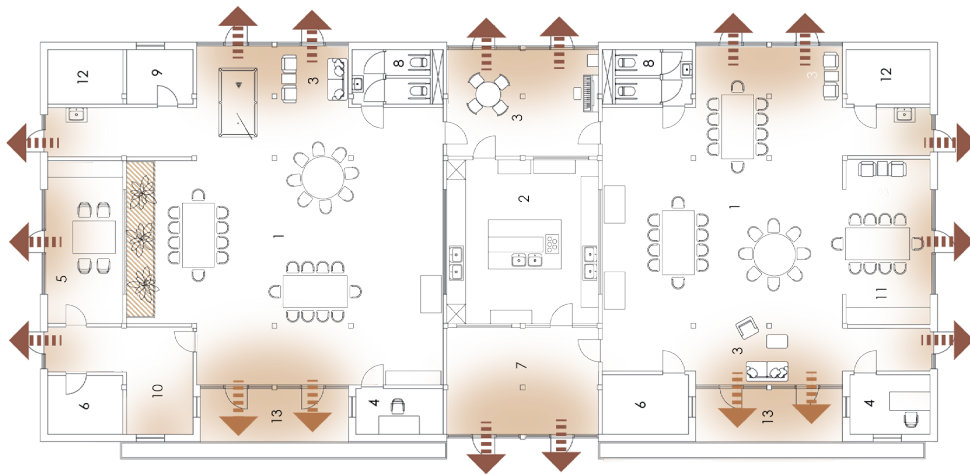
Figure 5.7, 5.8 and 5.9 show how the different case studies create connection with nature. On all three locations, connection with the outdoors is stimulated by a **view on nature**. The building of the Reigershoeve connects visually to the garden side. Within the homes, a sunroom has been added with a view to the garden, the day care area also has a large glass front on the garden side. The building of Onvergetelijk Leven Utrecht also has a view on nature in every spot of the building through the use of large fronts and windows in between the different rooms. Onvergetelijk Leven Hollandse Rading, has smaller windows due to the old farm structure, but with every view of natural elements. In case of an urban location, it is important to make sure that windows look out on a view with elements of nature, for example a park, terrace or garden.

According to de Bruin et al. (2018) many participants of farm-based daycare appreciate not only the appearance of nature, but also the tranquility, liveliness and learning that can be found while experiencing nature. **Free access to a calm and safe outdoor area** is therefore important. It is crucial to make the door visible so it stimulates the participants and to create step free access. Next to this, creating a visible

connection with the nature the door leads to, can help the participants to take initiative to go outside. Fleming and Bennett, 2021 Access to nature is important in all of the case studies. In the dwellings and the day care of the Reigershoeve, users have the opportunity to go outside independently. The residents with a bedroom on the garden side even have their own door to the garden. In Onvergetelijk Leven Utrecht, a number of small enclosed terraces have been created that are freely accessible. These are naturally separated by bushes for safety. These buildings are located in a rural environment, but access to the outdoors can be stimulated in an urban environment by adding safe outdoor areas. In case of little space on the ground floor, a freely accessible roof terrace, greenhouse, courtyard garden or large balcony can be added.

Something that has only been included in the design of Onvergetelijk Leven Utrecht **is the integration of greenery on the inside of the building**. An inner garden with living plants embellishes the living rooms and allows the outside to flow into the inside. Integrating green elements into the interior can be an alternative for a building in an urban environment where there is little space for a garden.



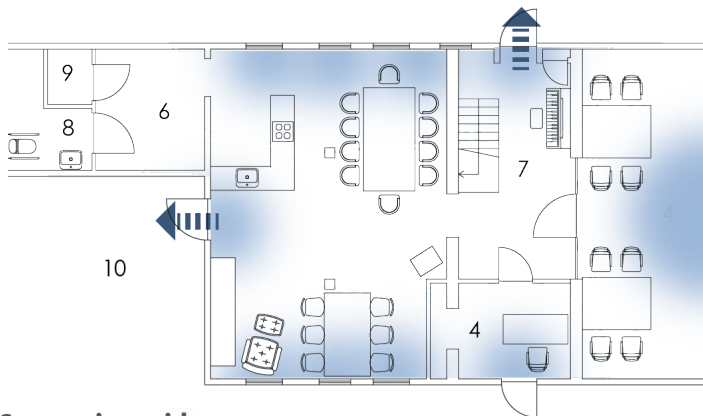


1. Dining and living area
2. Kitchen area
3. "Campfire" area
4. Staff office
5. Office / private conversation room
6. Storage
7. Entry hall
8. Toilet
9. Bathroom
10. Physiotherapy and gym
11. Reading area
12. Technical room
13. Outdoor terrace

- Free access to the outside
- Free access to enclosed terrace
- View to the outside and daylight entry
- Indoor greenery

Figure 5.7: **Connection with nature**

Onvergetelijk Leven
Utrecht, Utrecht

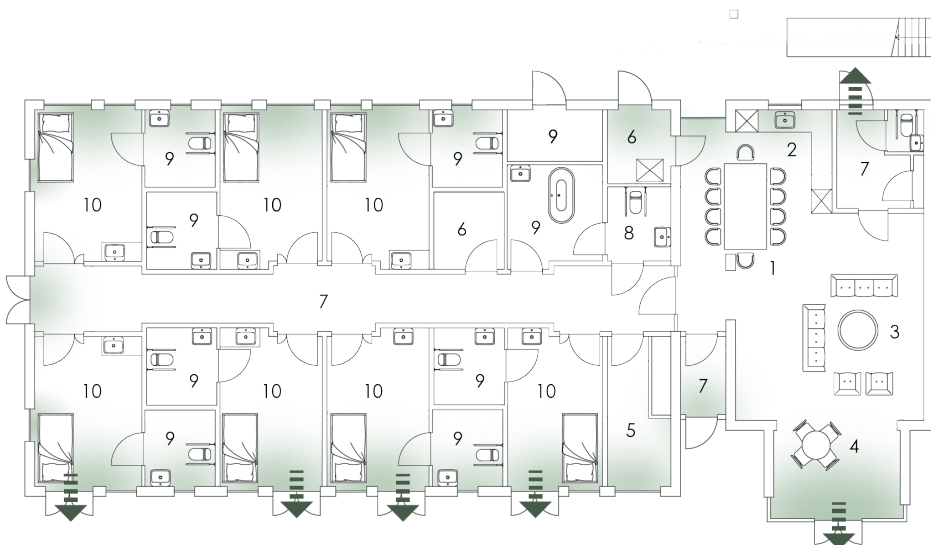


1. Dining and living area
2. Kitchen area
3. Lounge area
4. Staff office / private convers room
5. Break out room
6. Storage
7. Entry hall
8. Toilet
9. Technical room
10. Outdoor terrace

- Free access to the outside
- View to the outside and daylight

Figure 5.8: **Connection with nature**

Onvergetelijk Leven
Hollandse Rading, Utrecht



1. Dining area
2. Kitchen area
3. Living area
4. "Campfire" area
5. Staff office
6. Storage
7. Corridor
8. Toilet
9. Bathroom
10. Bedroom

- Free access to the outside
- View to the outside and daylight entry

Figure 5.9: **Connection with nature**

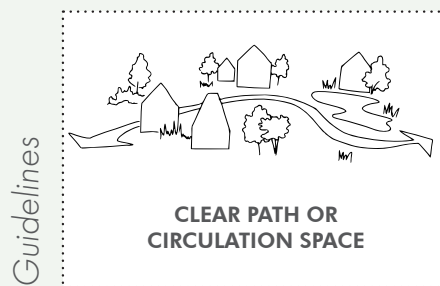
De Reigershoeve
Heemskerk, Noord-Holland

STIMULATING PHYSICAL ACTIVITY

Physical activity can mainly be supported by doing active activities, how this can be supported is described in the previous paragraph.

Fleming and Bennett (2021) also emphasize the importance of a well-defined pathway encouraging as it encourages movement. This corresponds to the goal of stimulation of physical activity in care farms. People can be persuaded to walk the route by creating a **clear path or circulation space** that is devoid of hazards and difficult decision-making points. Additionally, this path may lead travelers past places of interest and chances for recreation or social interaction, which can be well responded to in an urban environment. The path should be well marked both

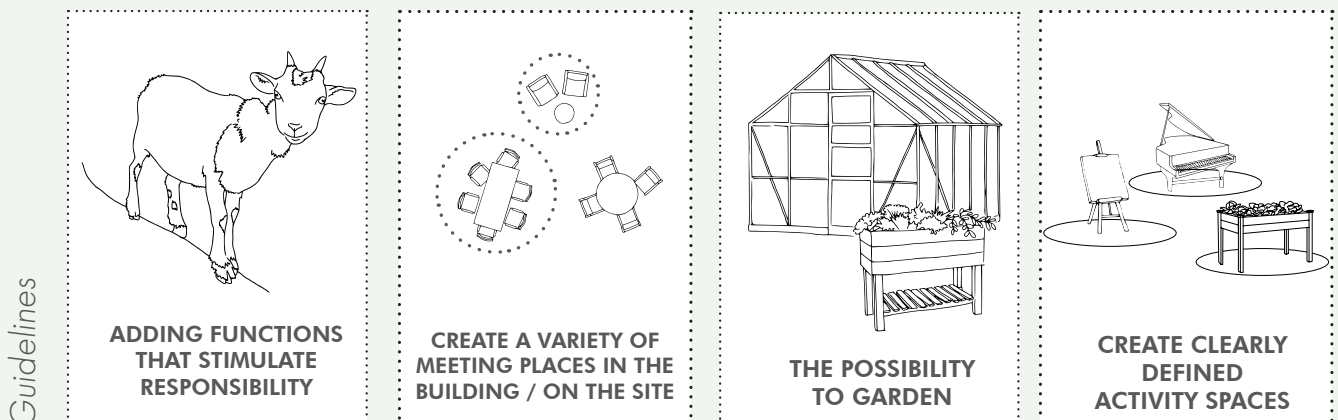
indoors and externally to give people a chance and a reason to leave when the weather allows this. A high-quality path needs continuity in routing, a continuous material without ramps, enough width, clearly marked edges and no obstacles or dead ends. If there is little space on the urban site, the route can also run along or in the building with stairs or ramps, making the stairs more attractive than the elevator for people who still have good mobility. To keep the physical activity safe, places to rest or drink water next to the route, are also needed. (Fleming and Bennett, 2021) The outdoor diagonal route in the garden of the Reigershoeve is an important part of the site, this can be seen in figure 5.3. A clearly defined path, with sub routes connects the different functions of the garden.



SENSE OF PURPOSE

Farm-based day care programs are frequently favored because they foster a feeling of purpose in life. As mentioned earlier, this is mainly due to participating in meaningful activities like gardening, having social contacts and contributing to the community. The design principles that support activities and social contacts will also stimulate the provision of purpose in life.

Providing activity **spaces that encourage independence and responsibility** can add to fostering this sense of purpose. Consider a small store, café, or location where visitors can care for animals or a garden. The design of the site in the Reigershoeve reflects this. Numerous animal shelters and a barn with essential animal care supplies, all of which are independently accessible and visible from the homes, stimulate people's responsibility and interest in animals.

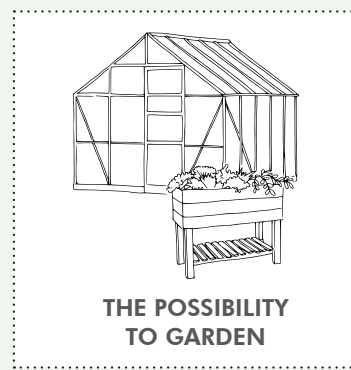


GOOD NUTRITION

Healthy nutrition is something that can mainly be supported within the program of the day-care, but the building can also support this in different ways. One of the most important parts of the garden of the Reigershoeve is the **possibility to grow produce**. The vegetable garden, herb garden and greenhouse are therefore an crucial component of the garden design. These functions are connected to the main walking route. Through the raised garden beds, gardening is made accessible for everyone. Onvergetelijk Leven Utrecht does not yet have a vegetable garden but this will be constructed soon, at the east side of the building in the sight of the living rooms.

Preparing a healthy meal together is a part of a typical day at all the mentioned case studies. In a regular day care, where food is often made in an inaccessible central kitchen, there is generally less room for this

type of activity. (Elings & Koffijberg, 2011). **Creating a visible and easily accessible kitchen.** All the locations have a kitchen visible for the participants, which makes sure they get to chance to see the culinary activities and help with cooking. At Onvergetelijk Leven Utrecht, the kitchen is the center of the building, it is surrounded by glass so that there is visibility from all sides. Additionally, there are multiple entrances to the kitchen, which invites participants to assist in dinner preparation. The houses and day care of the Reigershoeve, as well as the Onvergetelijk Leven location in Hollandse Rading, have an open plan kitchen. In order to provide the staff with a good overview, the kitchen countertop in the Hollandse Rading location is turned toward the dining area. Some employees of Reigershoeve indicate they would favor an open kitchen or cooking island with a view of the dining room as well for overview and monitoring safety during cooking.

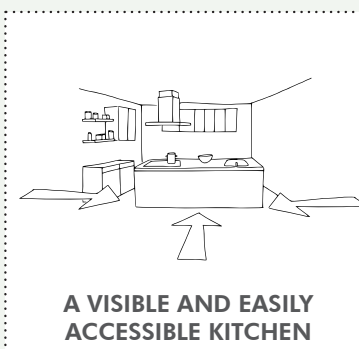
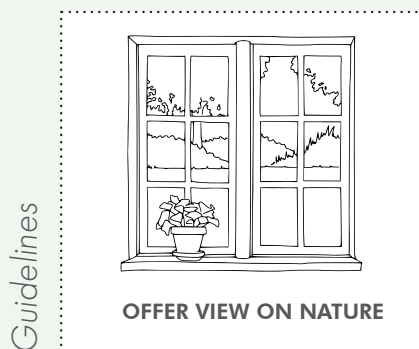


STRUCTURE

At farm-based day cares, structure is mainly offered through a fixed day program, something that cannot be directly translated into architecture. However, there are a number of previously mentioned architectural elements that can support the daily structure of participants.

A view on nature, makes sure that participants are aware of the time of day by making it obvious

that evening is approaching, for example. Additionally, it raises awareness of the seasons. But the aforementioned design guideline **creating a visible and easily accessible kitchen** can also support the participants' daily rhythm. For example, seeing or smelling food being prepared may indicate that a lunchtime meal is being prepared, meaning it is around noon. (Fleming and Bennett, 2021)



Guidelines

ADDITIONAL SPATIAL GUIDELINES

BALANCE OF SENSORY STIMULI

Fleming and Bennet (2021) mention the importance of managing sensory stimulations, design strategies that support this are described in their design principles 'reduce unhelpful stimulation' and 'optimize helpful stimulation'. However, this is not a specific farm-based care characteristic, this can be very helpful in design for dementia as it helps people with wayfinding, concentrating and it decreases stress. (Fleming and Bennet, 2021) Adding guidelines that offer a balance in sensory stimulations can make a care farm in a city more dementia-friendly, primarily because the city offers a variety of canceling sensory stimuli.

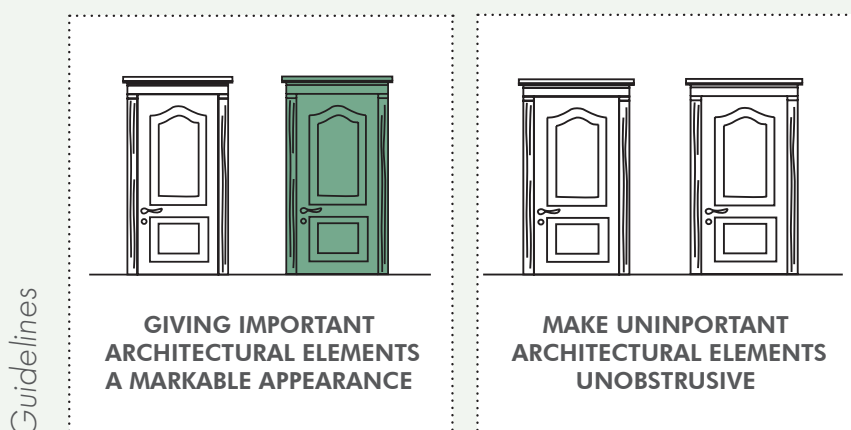
The location should be planned to **limit exposure to stimuli that are not particularly beneficial to the resident**, such as unwanted or conflicting noises and the sight of signs, posters, places, and clutter that is unhelpful to the participant. For instance, thresholds with a contrasting color to the floor can be confused with a hole in the floor. It's important to take into account all of the senses. When mapping the functions, it is therefore also important not to place functions that produce a lot of disturbing noise, smell or visualisations close to functions that require quietness and rest. (Fleming and Bennet, 2021)

Reducing exposure to stimuli that aren't immediately advantageous to the individual is crucial. But it might be quite helpful to **optimise the stimuli that are favorable**. A user may be drawn to and use doors

that are strikingly different in color, for instance. Another example is adding landmarks within the building, or making use of landmarks in the city, in order to support wayfinding by making use of visual stimuli. In short, making architectural elements or rooms that are meant to be used markable, and the ones that not meant to be used, unobtrusive, is important while designing for people with early stage dementia. (Fleming and Bennet, 2021)

The design of the Reigershoeve strongly focuses on managing stimuli. For example places where people aren't allowed to go in the garden, less interesting (without planting, furniture or pathways) and conveniently designed, while routes that are supposed to be walked on, are decorated with flowers, greenery and a good walking path.

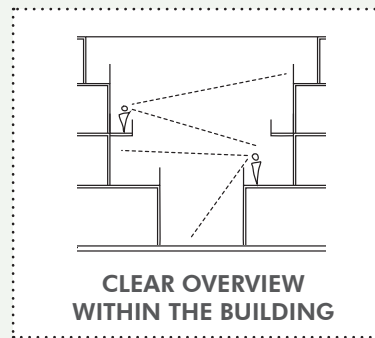
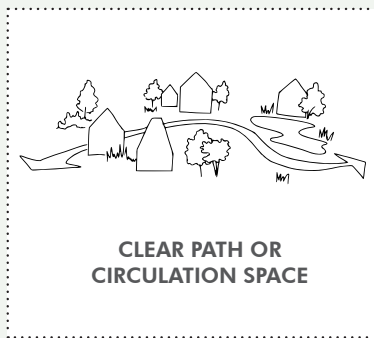
Fleming and Bennett (2021) also mention that smells and a multitude of visual stimuli can have an influence on how people with dementia negotiate journeys around their neighborhoods, the processing of stimuli can therefore also be important for spatial orientation. Think of using signs, words and their cues to help the person in question. Allowing the person with dementia to see, hear, and smell objects that provide cues about where they are might be beneficial in reducing confusion and uncertainty which also lowers stress levels. (Fleming and Bennet, 2021)



CLEAR WAYFINDING DESIGN

Wayfinding is not an element that is specifically reflected in farm-based day care characteristics, but it is very important in people with early stage dementia. The previously mentioned **clearly defined paths** that stimulate physical movement, **familiar objects** or **optimizing helpful stimulation**, also proved helpful for finding the way in a building. (Fleming and Bennet, 2021).

An additional design element that is important for wayfinding is that participants are able to move freely with **clear overview** so a pleasant walk doesn't become frustrating. Clear and open circulation space (for example open galleries of balconies) and avoiding long corridor that don't show the destination that they lead to, can also help with this. (Fleming and Bennett, 2021) In the floorplan of Onvergetelijk Leven Utrecht this is highly valued. The building has an open plan with enough room to walk around the furniture while constantly having the opportunity to see the environment through the use of glass within the building.



Guidelines

Chapter 6

INTEGRATING THE QUALITIES OF FARM-BASED DAY CARE IN THE CITY

How can the design guidelines for farm-based day care be implemented in the green-blue grid of Dutch cities?

While injecting the formed design guidelines for dementia care farms in the city, the direct environment has to be taken into account as research shows that cities are often experienced as unsupportive for people with dementia. This chapter examines which parts of the city offer space for the implementation of an urban care farm taking into account the theory of urban green-blue grids by Hiltrud Pötz (2016) mentioned in the theoretical framework. Additional guidelines are formed from this information, which focus on the location of an urban-care farm for dementia.

IS THERE PLACE FOR FARM-BASED CARE IN THE CITY?

Because of the mentioned benefits of strong urban green-blue grids in the theoretical framework, Pötz (2016) argues for transformations of current cities with a fine-grained approach to connect new greenery and new buildings to the existing green-blue grid. When new functions are connected to existing green-blue networks, a mutually beneficial relationship can be created in which the qualities of the urban environment can strengthen the newly integrated building and vice versa. That is why, when integrating an urban care farm into the network of the city, it has to be part of the urban green-blue grid as well.

There seems to be a lot of overlap between the aforementioned characteristics of farm-based day care and the objectives of the urban green-blue grid which can make the integration promising.

Three principles discussed by Pötz (2016) that can be directly strengthened by integrating the characteristics of the farm-based care are:

- More biodiversity
- Food production
- Quality of life
(Pötz, 2016)

These principles will be related to the urban farming concept and additional locational guidelines are formed in order to make sure that, while adding a urban day care farm to the city, the structure adds to the city's urban green-blue grid in order to make the city, as well as the care concept, more resilient.



Figure 6.1 : Groene Mient, The Hague (Pötz, 2016)

MORE BIODIVERSITY

Biodiversity is a term for the degree of diversity of life forms in an ecosystem. More biodiversity can lead to a better habitat for local species, ensure better water buffering, air quality and creates a more attractive cityscape. In order to support this biodiversity, it is important that species are given the space to reproduce. An uninterrupted ecological network, that is a green-blue grid, can support this. (Pötz, 2016)

Adding more greenery and thus more biodiversity to the urban green-blue grid appears to be a difficult task, as the increasing density in cities means there is less room for green areas. There is a need for new possibilities to make more efficient use of space for greenery. (Hajer et al., 2020) For example, green roofs and facades can also form part of the green grid in the city. But the greenery interwoven in urban functions such as parks, vegetable gardens, allotments, sports areas, urban farms and slow traffic routes can also contribute to this. (Pötz, 2016)

Since green areas like this by themselves cannot form a continuous grid for local species, emphasis must be on decentralizing greenery. In other words, moving away from the idea as greenery as an island within the city, but entangling it in the urban fabric. Therefore, while adding a care farm in the city, the structure **should not act as a separate island in the city**. The building can join the city's green-blue grid or provide additional green as this fits the typical farm-based day

care idea of "connection with nature." While adding greenery to the plan, it has to be a path for wildlife to reproduce both on and around the building. This is best supported by **using native species when adding greenery** and respecting native species by providing a shelter for birds and insects.

In this way the city can be strengthened, through the care facility, but the urban green-blue grid can also have its positive influences on the day care farm. Insight into and access to the high-quality greenery of the continuous grid can also improve the wellbeing and physical health of people with dementia for example. (de Bruin et al., 2018)

An example of a way to integrate more biodiversity in different ways in the green-blue grid of the city is 'Groene Mient', a residential project in the Vruchtenbuurt in The Hague. In the design of the building and the inner garden, attention has been paid to: climate adaptation, biodiversity, energy neutrality and collectivity. The wadis in the communal courtyard serve as a green storage area for the rainwater that collects on the dwellings' roofs. To boost biodiversity, the wadis and the environmentally friendly banks of the nearby ditch are wildly overgrown with a variety of primarily native species. Green roofs on the storage facilities also increase biodiversity and act as a water buffer. In order to promote social cohesiveness among the inhabitants, the inner garden is also created and maintained by the residents themselves. (Pötz, 2016)

FOOD PRODUCTION

According to Pötz (2016), cities will eventually resemble living organisms with green structures serving as a kind of plasma that will process and eliminate waste while also supplying food and raw materials. On a small scale, these regions can supply food for the environment. Direct sales of high quality products from attractively integrated farms can generate profits, particularly since that food costs are on the rise. In addition to growing and selling food, urban farming also provides a place for personal expression, relaxation, collective sovereignty, and a measure of independence from the consumer society. Next to their communal purpose, vegetable gardens also serve to increase biodiversity, lessen heat stress, buffer rainwater, and promote social interaction which strengthens the city's green-blue grid. (Pötz, 2016)

Urban farming can be implemented in the green-blue structure of the city in different ways. Depending on the amount of space available in the city, different variations may include modest square-meter gardens, balcony garden, and rooftop gardens, as well as fruit trees, greenhouses, urban farms, and communal gardens. (Pötz, 2016) A study on urban farming architecture by Nowysz & Trocka-Leszczynska (2021) divides all these forms of urban farming into four typologies: the allotment garden (an area with garden parcels rented by their individual users), the community garden (an area with land used for farming collectively by a group of people), the horizontal farm (an individual plot, or greenhouse used for farming on roofs or lots) and the vertical farm (vertical fragments, walls, serving vertical

cultivation of plants). These types differ in terms of social cooperation and location and can be compared against each other in a design project on this basis.

The value 'Food production' matches exactly with one of the guidelines fitting the principles of farm-based day care 'healthy nutrition'. As mentioned in chapter 4 and 5, while designing a urban version of a care farm facility, integrating an vegetable garden in the design can stimulate healthy nutrition. As urban farming also is an important part within the urban green-blue grid, this offers the opportunity to make a strong connection within the public urban greenery and the element of the farm facility. Linking the day care to an existing urban farming location is an option, but **making the vegetable garden of the care farm publicly accessible and** can ensure better ecological continuity in the urban green grid, but also for encounters within the community.

The Roof Fields on the Schieblok, also known as "De Dakakker," is an intriguing example of urban farming in a crowded urban setting. This is the Netherlands' first substantial harvestable roof, and has been constructed as a test facility for several roof farming techniques. This roof area, which is located 20 meters high, is used to cultivate fruit, vegetables, and herbs. Honeybees are also kept here. Every Friday is "roof work day," when neighborhood people can assist with gardening tasks and special events are frequently held on the roof. As a result, it serves a social purpose in addition to increasing biodiversity and producing food. (Pötz, 2016)



Figure 6.2 : The Roof Fields Rotterdam (Pötz, 2016)



Figure 6.3 : Emma's Hof The Hague (Pötz, 2016)

QUALITY OF LIFE

Giving (social) function to greenery and bodies of water is an key element in strengthening the urban green-blue grid as it increases the quality of life of the people that make use of it. In a city with a system that prioritises economic gains, green spaces with their limited expected profits must be able to persist. Therefore, it is vital that urban green-blue grids have a societal purpose so that it creates societal support which ensures that the greenery can contain its quality for a longer period of time. Public urban green spaces are one of the few places in the city where people can meet each other without obligation and free of charge, especially if activities can take place there. (Pötz, 2016)

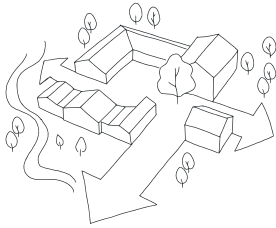
So, connecting, or being part of, a green area with a social or active function can have a positive impact on the green-blue grid but also on a care facility. Making sure an urban farm-based day care facility becomes a location with social importance, or connecting the facility to a green-blue area that serves as a social hub, also affects the users of the care facility. This is in line with the 'social engagement' principle of farm-based day care. Making the facility part of, or linking it to, the urban green-blue grid with the use of communal events and activities, stimulates social contact with the community.

This again affects the starting point of 'creating a sense of purpose in life'. By allowing both the general public

and the daycare participants to visit the green functions, a "bridge" between the facility and the community is created. The stigma associated with dementia can be reduced when the building is also made to blend in with the public space of the neighborhood and not stick out as a special care facility. This can ensure that dementia patients continue to feel part of society, which can give them the feeling of purpose. (Fleming & Bennet, 2021) Connecting the care facility to the community is difficult to achieve in rural locations, as the social heart of the village is often further away. The green-blue grid of a dense urban environment, on the other hand, does offer the opportunity for connection with the neighborhood, different target groups and facilities.

A location that illustrates how the quality of life of the users can be improved is Emma's Hof in The Hague. The plan for this public city garden, located at the former location of Het Patronaatsgebouw, was initiated by local residents and built in 2011. Various activities are organized in the garden, such as workshops, exhibitions and neighborhood barbecues. Additionally, the garden is maintained by local volunteers. These characteristics ensure that the city garden is an important element for social bonding in the neighborhood. (Pötz, 2016)

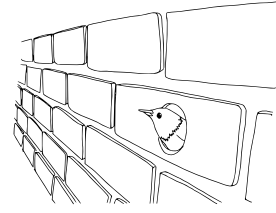
Locational guidelines



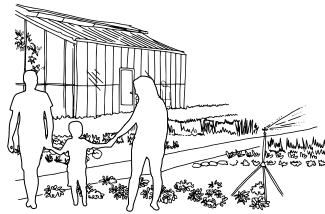
CONNECTING THE SITE TO EXISTING GREENERY



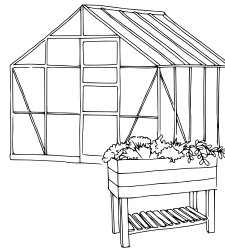
USE NATIVE SPECIES



PROVIDE SHELTER FOR BIRDS AND INSECTS



GIVING (PART OF) THE SITE A PUBLIC FUNCTION



ADDING A PUBLIC URBAN GARDENING FUNCTION

Chapter 7

Conclusion, discussion
and reflection

CONCLUSION

The main question of this research reads as follows:

‘Can the successful characteristics of farm-based day care be implemented in the green-blue landscape of Dutch cities in order to support the spatial and architectural needs of people with early-stage dementia?’

In order to answer this question, there will be reflected on the results from the subquestions answered in chapter 2 to 5, based on the different subquestions.

In chapter 2, the question ‘What are the spatial and architectural needs of people with early-stage dementia living independently in the city?’ was answered on the basis of literature research into the symptoms of early stage dementia and how this affects urban dwelling. Existing literature shows that the progression of dementia is a very individualized process. However, in the early stages of the disease, there are a number of general symptoms that often seem occur in all types of dementia. These include problems with short-term memory, difficulty with daily tasks, spatial orientation and orientation in time, decreased concentration and difficulty with social contact. But the psychological consequences caused by these symptoms and the patient’s growing awareness of their decline, are specifically common in the clinical picture of people in the early stages of dementia. Think of experiencing a ‘shrinking world’ due to stress, fear, gloom. This physical and social inactivity also have its effect on people’s wellbeing. In order to support people in living with these kinds of symptoms and feelings with the use of design, some spatial needs are established partly based on the theory of Fleming & Bennet (2021) : The spatial environment of a day care building needs to:

- offer a familiar domestic environment
- offer a clear wayfinding and signage design
- reflect daily structure
- offer places for social interaction
- offer a balance between helpful and unhelpful stimulation
- reflect one’s identity
- support people in movement and healthy habits

All while unobtusively reducing risks but keeping the user independent.

In the chapter 3, an existing concept of dementia care was explored, focusing on the question: ‘What is farm-based day care and what are existing urban alternatives?’ This literature research provides an overview of the typology of farm-based day care. Combining dementia care with farming is becoming more and more popular because of its person-centered approach. Farms are often used, bought or designed to carry out farm activities, as well as dementia day care.

The fourth chapter explores what makes this care concept so successful among (informal) caregivers and participants. The question ‘What are the qualities of the concept of farm-based day care?’ was answered on the basis of existing studies on the qualities of day care in Netherlands and substantiated by fieldwork experiences at the case study locations. The case studies that are introduced in this chapter are Onvergetelijk Leven Utrecht, Onvergetelijk Leven Hollandse Rading and the Reigershoeve in Heemskerk. All three of these organizations fall under the farm-based day care concept and their visions focus on rural/nature activities, social interaction and offering a meaningful day. From literature and fieldwork, eight qualities that make farm-based day care successful, come to light: activity engagement, social interaction, connection with nature, physical activity, good nutrition, creating a sense of purpose in life, domestic small-scale atmosphere and offering daily structure. These themes are also reflected in each of the three case studies. For example, the Reigershoeve mainly focuses on activity in and connection with nature through green activities in the garden and the tasks that the participants perform give them a sense of purpose. Both locations of onvergetelijk leven put a strong emphasis on daily structure and good nutrition through a preconceived program and daily three-course lunch. In addition, the homely atmosphere and domestic activities are an important part of the vision.

Farm-based day care appears to be successful but is not very present in the urban fabric yet. The fifth chapter discusses how the positive qualities elements are made spatial and generically applicable so that they can also be applied in the city. The question ‘How can the qualities of farm-based day care be made spatially applicable in a wider (non-rural) environment?’ was therefore central in this chapter, which was answered on the basis of a literature study and spatial examples

from the plan analysis of the case studies. First, it is checked whether the qualities of farm-based day care do meet the needs of people with early stage dementia mentioned in chapter 2. There is resemblance on almost all levels, so in theory, mimicing the different characteristics of farm-based care in the city should be helpful in creating a succesfull dementia day care. Therefore, the categories of farm-based day care are used to categorize design principles. However, the needs *'offering a clear wayfinding and signage design'* and *'offering a balance between helpful and unhelpful stimulation'* are not specifically covered by the features of farm-based day care. These needs are even higher in urban enviroments as literature mentioned in chapter 2 showed that the large amount of disruptive and changing stimuli can make people with dementia feel overwhelmed and have a hard time finding their way. Therefore these themes were added as additional categories to this research.

The table in figure 7.2 on pages 70-74 provides an overview of the guidelines that resulted from literature research, fieldwork and case studies belonging to the different categories and have been established in chapter 5. This outlines what must be ensured during design and, in some cases, what must be avoided. Based on how many and needs the guidelines satisfy and how effectively they do so, stars show how significant these guidelines are in the design process.

The sixth chapter focused on finding a suitable place for implementing these guidelines in the green-blue urban fabric. The central question in this chapter

was *'How can the design guidelines for farm-based day care be implemented in the green-blue grid of Dutch cities?'* Based on the book *'Green-blue grid. Manual for resilient cities'* by Hiltrud Pötz (2016), the characteristics of the green-blue grid were given the focus. Pötz empathises that that if greenery or bodies of water are added, they must blend in uninterruptedly with the existing grid of greenery and water. So the implementation of a new building, in this case an urban care farm, must have a connection to one or more of the characteristics of urban green-blue grids, so that it is part of the whole system and not a closed island within the city. Farm-based day care seems to meet the goals and characteristics on different levels. The aspects of green-blue grid: urban farming, social interaction and biodiversity, are therefore discussed in more detail. In order to be able to implement the care farm properly and to ensure that the shared qualities are matched a number of location-oriented principles and guidelines have been added to the table.

Using the guidelines while designing a day care facility in the urban fabric can ensure that the building can benefit from the effective rural characteristics of farm-based care, as well as the vibrancy, and unique biodiversity that the city and its green-blue grid has to offer. This will ease the burden on informal caregivers and the Dutch healthcare system while allowing dementia patients to remain independently in their own environment for longer. In this way the successfull characteristics of farm-based day care can contribute to the creation of a dementia-friendly urban fabric.

DISCUSSION

This study discusses the qualities of farm-based dementia day care in depth. The case studies have been analyzed on the basis of floor plans, images and photos, but because they were visited for fieldwork as well, I believe that the conclusions that follow from this can be considered strongly substantiated and reliable.

In following studies on this topic, more case studies should be analyzed in the same way in order to specify the guidelines even more or offer more design examples. However, due to the size of the study, urban case studies have received less attention in this research. In follow-up research, urban day-care locations could possibly be discussed, instead of only discussing theory on this topic. Additionally, the study would have gained even more depth if more research had been done on informal caregivers and their experiences as they form a large part of the life of someone with early stage dementia.

However, I believe that the answers received from literature, fieldwork experiences and conversations with health care staff can be considered sufficient indications for the intended objective of my research.

Given the magnitude of the study and the fact that each person with each type of dementia has unique needs, it was necessary to define these needs in a more general way. Because of this, while using the findings and associated design guidelines from this study for designing a dementia day care, it is crucial to always consider the personal stage, way of life and needs, of building's users.

Nevertheless the conclusions from this study can be seen as reliable because it has been substantiated on the basis of several methods and thus meets the aims and objectives of the study and offers new and critical perspective on existing literature based on subjective observations.

REFLECTION

When starting this studio I had a strong preference for doing research into designing for people with dementia as this is a personal interest due to the fact that it is a common disease in my family. I Therefore wanted to have a meaningful impact on the life of those who are mentally deteriorating and becoming disconnected from society and their way of life. Contributing to a dementia-friendly society and creating a familiar, stimulating and pleasant dwelling environment for this target group has therefore been a very special and dear research topic to me.

The anthropological layer of this research made it very interesting to carry out, the fieldwork was a special experience as it gave a new look at the literature I have read but also touched me personally through the experiences I have had with dementia in my family. Despite their educational value, this has occasionally also made the fieldwork experiences on the care farms emotionally impactful and heavy.

I gained a better understanding of dementia design approaches by experiencing farm-based care building first hand and this unique perspective also ensured that I enjoyed writing my report. Even so, not everything went flawlessly, the biggest challenge was to find a logical structure and narrative order of the contents of the report, this was something that should have received more focus at the beginning of the process. Because this study addresses and connects a wide number of topics (early stage dementia, care farming, urban green blue grids) by using a variety of was difficult to determine which topic was discussed in which order.

Next to that, it was difficult to keep the research concise due to my interest, the extensive amount of fieldwork experiences, and the large amount of results from the literature. Keeping it brief and finding focus should have acquired more attention during the writing process.

Despite that, the writing process has been instructive and I am satisfied with the end result, the results and guidelines have provided good support for the subsequent design process.

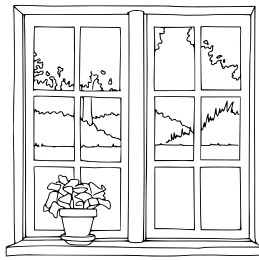
STRUCTURE

CONNECTION WITH NATURE

PHYSICAL ACTIVITY

GOOD NUTRITION

VIEW ON NATURE



Ensure

Implementing windows looking out on natural elements in the living area, dining area and kitchen.

Avoid

Using windows that run from the top to the bottom of the facade, as it can be confused with an opening.

CLEAR PATH OR CIRCULATION SPACE



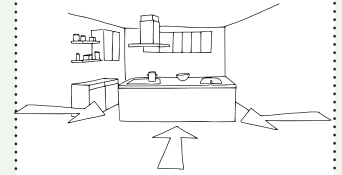
Ensure

A clearly visible, uninterrupted walking route in or around the building, preferably connecting several spots for recreation or social interaction. Make sure to integrate resting and drinking places along long routes.

Avoid

Avoid tripping hazards, obstacles, drastic changes of ground material, and difficult decision-making points on and around the route.

A VISIBLE AND EASILY ACCESSIBLE KITCHEN



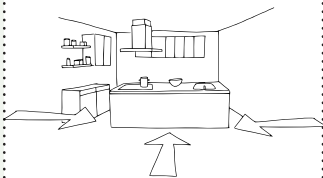
Ensure

Visually connecting the kitchen to the living space and optionally adding a kitchen island for a view of the entire space while cooking. Make sure that the kitchen can be used by different people at the same time

Avoid

Refrigerators, ovens, etc. that have the appearance of a kitchen cabinet.

A VISIBLE AND EASILY ACCESSIBLE KITCHEN



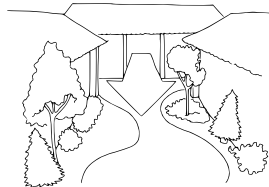
Ensure

Visually connecting the kitchen to the living space and optionally adding a kitchen island for a view of the entire space while cooking. Make sure that the kitchen can be used by different people at the same time

Avoid

Refrigerators, ovens, etc. that have the appearance of a kitchen cabinet.

FREE ACCESS TO NATURE



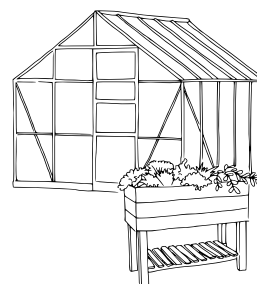
Ensure

Implementing doors in the living area that are visible and provide a view where they lead to. Preferably connecting living areas directly to a safe outdoor environment. This can be: a courtyard, roof terrace, balcony etc.

Avoid

High doorsteps and doors that run from the top to the bottom of the facade as it can be confused with an opening.

THE POSSIBILITY TO GARDEN



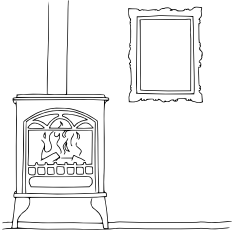
Ensure

Integrating a herb or vegetable garden or greenhouse in to the design. In case of too little outdoor space, an indoor herb garden or a greenhouse can be part of the design of the interior. Make sure to use raised planters so gardening is accessible for everyone

Figure 7.2: Guideline table

DOMESTIC ATMOSPHERE

FAMILIAR DOMESTIC ELEMENTS



Ensure

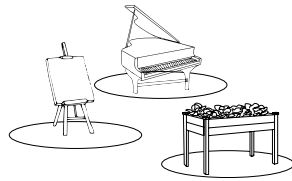
Using recognizable fixed furniture, finishes, decoration and architectural elements on the inside, as well as the outside of the building.

Avoid

Using building elements or interior elements where the function is not recognizable.

ACTIVITY ENGAGEMENT

CLEARLY DEFINED ACTIVITY SPACES



Ensure

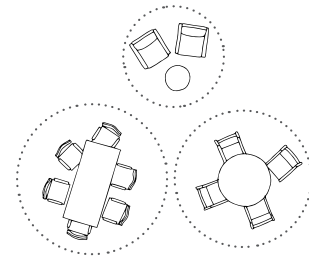
Creating rooms with specific functions for activity. Make sure they are visually recognizable with recognizable entrance or facade.

Avoid

Only creating multifunctional activity spaces.

SOCIAL ENGAGEMENT

SPACES THAT SUPPORT SOCIAL CONTACT

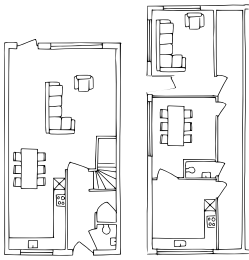


Ensure

Create areas that encourage interactions between the participants, by including various types of seating areas in small and large groups. To support social contact between people from the neighborhood and participants, these seating areas can be located around public areas / functions in the building. The widening of pedestrian areas at intersections of people flows can also be an option.

CREATING A SENSE OF PURPOSE

A FAMILIAR DOMESTIC FLOORPLAN



Ensure



Taking inspiration from recognizable typical residential floor plans, focussing on the localization of functions and scale.

Avoid

Using an institutional corridor structure, making rooms relatively large and separating the functions visually

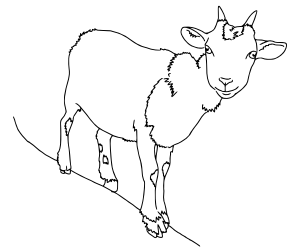
VISUAL ACCES TO ACTIVITY SPACES



Ensure

Making a visual connection with activity spaces indoor as well as outdoor. Decentralizing activity spaces along a walking route can be an example of a way to trigger participants to participate in activity while walking through or around the building.

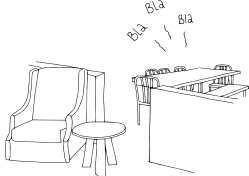
ADDING SPACES THAT OFFER FUNCTIONS THAT STIMULATE RESPONSIBILITY



Ensure

Integrating animal pens for small pets or an aviary indoor or outdoor. Or adding public functions that can be used by de participants as well as people from the neighbourhood. Or adding functions that offer a place to work, for example a small shop or library.

PRIVACY WITHIN COMMUNAL SPACES



Ensure

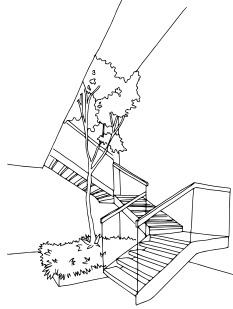
create corners with a sitting or sleeping place that can be closed off with a sliding wall, half wall, or that distance themselves from communal area

THE POSSIBILITY TO GARDEN

STRUCTURE

CONNECTION WITH NATURE

INTEGRATION OF GREENERY ON THE INSIDE OF THE BUILDING



Ensure

Adding an inner garden, green wall, indoor herb garden in case no outdoor space can be created.

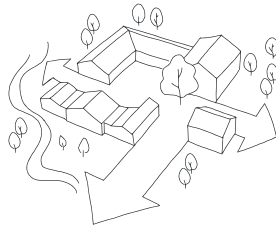
PHYSICAL ACTIVITY

GOOD NUTRITION

Locational guidelines

According to the urban green-blue grid
by Pötz (2016)

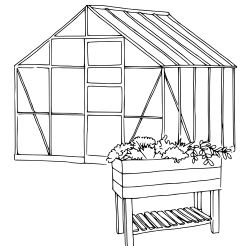
CONNECTING THE SITE TO EXISTING GREENERY



Ensure

Connecting the greenery on the site or the building to existing greenery or an existing body of water to create a continuous green chain through the city.

ADDING A PUBLIC URBAN GARDENING FUNCTION



Ensure

Publicizing (part of) the urban gardening function to improve social contact and to increase healthy nutrition for everyone in the surrounding areas of the building.

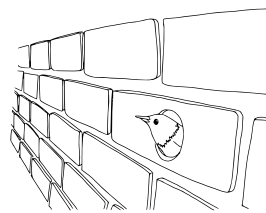
USE NATIVE SPECIES



Ensure

While adding new greenery, make sure to use plant species present in the city.

PROVIDE SHELTER FOR BIRDS AND INSECTS



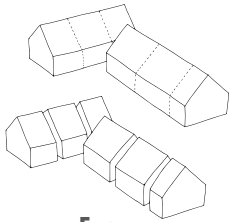
Ensure

Ensure that living areas are integrated into the building or garden for birds and insects that live in and around the location.

Figure 7.2: Guideline table

DOMESTIC ATMOSPHERE

DIVIDE THE BUILDING INTO SMALLER MASSES



Ensure

Dividing the building into different masses or separable zones for functions and day care groups. Make sure the zones of masses are distinguishable.

Avoid

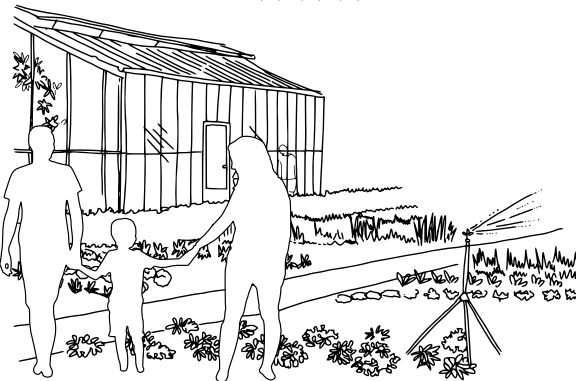
Creating a random division of these masses, the order must be logical and clear.

ACTIVITY ENGAGEMENT

SOCIAL ENGAGEMENT

CREATING A SENSE OF PURPOSE

GIVING (PART OF) THE SITE A PUBLIC FUNCTION



Ensure

Making use of, and adding to, the social vibrancy of the different target groups living in the city. Giving a part of the outdoor space a public function or connecting to public greenery to strengthen the green-blue grid of a city on a social level. Think of a public vegetable garden or a petting zoo.

Avoid

Giving all the outdoor area a public function, as the day care participants need a private outdoor area too.

BALANCE OF SENSORY STIMULI

CLEAR WAYFINDING DESIGN

GIVING IMPORTANT ARCHITECTURAL ELEMENTS A MARKABLE APPEARANCE



Ensure

Making building elements that should be supported to be used by participants markable in its environment by use of colour, form or texture. Add markable landmarks or make use of existing urban landmarks, in and around the building to enhance wayfinding and create usefull stimuli.

MAKE UNIMPORTANT ARCHITECTURAL ELEMENTS UNOBTUSIVE



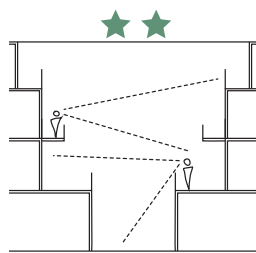
Ensure

Making building elements, that should not be used independently by participants (for example: certain doors) non-contrasting color , form or texture with the surroundings.

Avoid

To reduce nuisance from disturbing sounds, smells and images, avoid high sensory stimuli next to resting areas when mapping functions

CLEAR OVERVIEW WITHIN THE BUILDING



Ensure

If possible on the scale of the building in question, ensure that participants of the day care always have an undisturbed view of the walking routes and functions in the building. Make sure that the destination of routes is visible.

CLEAR PATH OR CIRCULATION SPACE

Figure 7.2: Guideline table

Bibliography

LIVING WITH EARLY STAGE DEMENTIA IN THE CITY

- Vektis. (2022, 1 september). Grote toename van ouderen met dementie verwacht. Retrieved October 16, 2022, from <https://www.vektis.nl/intelligence/publicaties/grote-toename-van-ouderen-met-dementie-verwacht#:~:text=Daar%20stijgt%20het%20aantal%20van,stijgt%20van%201.660%20naar%205.500>.
- Alzheimer Nederland. Factsheet cijfers en feiten over dementie. (2022.). Alzheimer Nederland. <https://www.alzheimer-nederland.nl/factsheet-cijfers-en-feiten-over-dementie>
- Alzheimer's Association. Alzheimer's Disease Facts and Figures. (2022) Alzheimer's Disease and Dementia. Retrieved September 19, 2022, from <https://www.alz.org/alzheimers-dementia/facts-figures>
- Fleming, R., & Bennet, K. A. (2021). Environmental design resources: Dementia training Australia. University of Wollongong.
- Gauthier S, Rosa-Neto P, Morais JA, & Webster C. 2021. World Alzheimer Report 2021: Journey through the diagnosis of dementia. London, England: Alzheimer's Disease International.
- Hardcastle, C., Taylor, B. W., & Price, C. C. (2019). Global Deterioration Scale. Springer Nature Switzerland AG 2019. https://doi.org/10.1007/978-3-319-69892-2_697-1
- Kwak, Y. T., Yang, Y., & Koo, M.-S. (2017). Anxiety in Dementia. *Dementia and Neurocognitive Disorders*, 16(2), 33. doi:10.12779/dnd.2017.16.2.33
- Liu, C. C., Liu, C. H., Sun, Y., Lee, H. J., Tang, L. Y., & Chiu, M. J. (2022). Rural-urban Disparities in the Prevalence of Mild Cognitive Impairment and Dementia in Taiwan: A Door-to-door Nationwide Study. *Journal of epidemiology*, 32(11), 502–509. <https://doi.org/10.2188/jea.JE20200602>
- Manthorpe J, Iliffe S. Muddling along in the city: Framing the cityscape of dementia. *Dementia*. 2020;19(7):2184-2198. doi:10.1177/1471301218817451
- Mitchell, L. M., Burton, E. M., & Raman, S. (2004). Dementia-friendly cities: designing intelligible neighbourhoods for life. *Journal of Urban Design*, 9(1), 89–101. <https://doi.org/10.1080/1357480042000187721>
- Reisberg, B., Ferris, S. H., de Leon, M. J., & Crook, T. (1982). The Global Deterioration Scale for assessment of primary degenerative dementia. *The American Journal of Psychiatry*, 139(9), 1136–1139. <https://doi.org/10.1176/ajp.139.9.1136d>.
- Rohra, H., Mann, J., Rommerskirch-Manietta, M., & Kuliga, S. (2021). Wayfinding and Urban Design From the Perspective of People Living With Dementia – A Call for Participatory. *Journal of Urban Design and Mental Health: Aging City Edition*, 7, ISSN 2398-4082. https://www.researchgate.net/publication/353982566_Wayfinding_and_Urban_Design_From_the_Perspective_of_People_Living_With_Dementia_-_A_Call_for_Participatory_Research
- Ryman, F. V. M., Erisman, J. C., Darvey, L. M., Osborne, J., Swartsenburg, E. & Syurina, E. V. (2018, 28 april). Health Effects of the Relocation of Patients With Dementia: A Scoping Review to Inform Medical and Policy Decision-Making. *The Gerontologist*, 59(6), e674 e682. <https://doi.org/10.1093/geront/gny031>
- Steeman, E., de Casterle, B. D., Godderis, J., & Grypdonck, M. (2006). Living with early-stage dementia: a review of qualitative studies. *Journal of Advanced Nursing*, 54(6), 722–738. <https://doi.org/10.1111/j.1365-2648.2006.03874.x>

Ward, R., Rummery, K., Odzakovic, E., Manji, K., Kullberg, A., Keady, J., Campbell, S. (2022). Beyond the shrinking world: Dementia, localisation and neighbourhood. *Ageing & Society*, 42(12), 2892-2913. doi:10.1017/S0144686X21000350

World Health Organization: WHO & World Health Organization: WHO. (2022). Dementia. www.who.int. <https://www.who.int/news-room/fact-sheets/detail/dementia>

(FARM-BASED) DEMENTIA DAY CARE

de Bruin, S., Buist, Y., Hassink, J. & Vaandrager, L. (2020, 1 juni). Groene dagbesteding in de stad: een levendige plek voor mensen met dementie. *Mens & Maatschappij*, 95(2), 151 – 154. <https://doi.org/10.5117/mem2020.2.005.debr>

de Bruin, S., Hop, P., Molema, C., Stoop, A., & Baan, C. (2018, December 13). Dagbesteding op zorgboerderijen: de onderscheidende waarden voor mensen met dementie en hun mantelzorgers. Rijksinstituut Voor Volksgezondheid En Milieu. Retrieved October 7, 2022, from <https://www.loketgezondleven.nl/documenten/factsheet-zorgboerderijen>

Elings, M. & Koffijberg, M. (2011). Effecten van zorglandbouw : wetenschappelijk onderzoek naar de meerwaarde van zorgboerderijen voor cliënten.

Federatie Landbouw en Zorg. (2022). De Kracht van zorglandbouw. [zorgboeren.nl](http://www.zorgboeren.nl). <https://www.zorgboeren.nl/>

Ibsen TL, Eriksen S. The experience of attending a farm-based day care service from the perspective of people with dementia: A qualitative study. *Dementia*. 2021;20(4):1356-1374. doi:10.1177/1471301220940107

Mak, M. Self-reported Goal Pursuit and Purpose in Life Among People With Dementia, *The Journals of Gerontology: Series B*, Volume 66B, Issue 2, March 2011, Pages 177–184, <https://doi.org/10.1093/geronb/gbq092>

Måvall, L., & Malmberg, B. (2007). Day care for persons with dementia. *Dementia*, 6(1), 27–43. doi:10.1177/1471301207075627

Onvergetelijk Leven - Persoonlijke en zinvolle dagbesteding. (2022, September 21). Onvergetelijk Leven. <https://www.onvergetelijkleven.nl/>

Smit, D., & Willemse, B. (2021). Bij ons in de straat. Zorgboerderij stichting de Reigershoeve.

Strandenæs, M. G., Lund, A., & Rokstad, A. M. M. (2018). Experiences of attending day care services designed for people with dementia - a qualitative study with individual interviews. *Aging & mental health*, 22(6), 764–772. <https://doi.org/10.1080/13607863.2017.1304892>

Tretteteig, S., Vatne, S. & Mork, A.M. Rokstad (2016) The influence of day care centres for people with dementia on family caregivers: an integrative review of the literature, *Aging & Mental Health*, 20:5, 450-462, DOI: 10.1080/13607863.2015.1023765

Visscher, N. (2021, January). Informatiegids Onvergetelijk Leven: Dagbesteding met meer dan alleen zorg. Onvergetelijk Leven.

Zorgboerderij Stichting Reigershoeve. (z.d.). Geraadpleegd op 2 oktober 2022, van <https://reigershoeve.nl/>

GREEN-BLUE URBAN LANDSCAPES

Hajer, M., Buitelaar, E., Dam, C. T., Pelzer, P., & Hurk, V. M. D. (2021, February 2). Neighbourhoods for the Future: A Plea for a Social and Ecological Urbanism. Valiz.

Nowysz, A. & Trocka-Leszczynska, E. (2021). Typology of Urban Agriculture Architecture. Acta Scientiarum Polonorum Architectura, 20(3) 63-71. <https://doi.org/10.22630/aspa.2021.20.3.27>

Pötz, H. (2016). Green-blue grids. Atelier GROENBLAUW.

Talsma, M., & van Weeren, B. J. (2012). Groenblauwe netwerken maken de stad klaar voor de toekomst. H2O, 14(15), 4.

OTHER

De Wit, D. (2021, December 10). Design guidelines: how I get design done - UX Collective. Medium. <https://uxdesign.cc/design-guidelines-how-i-got-design-done-9dbb5fbac820>

