research booklet

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health creation

the search
for a new place
for health

figure 1. Goonerua, 2022

health creation

the search for a new place for health

AR3AD110 Designing for Health and Care – Graduation Studio
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„We don‘t stop playing because we grow old,
we grow old because we stop playing.“ (Ely, 2022, 0:07-0:16)

George Bernard Shaw, playwright and political activist

„The human body does not wear out with use.
On the contrary, it wears down when it is not used.“ (Alexander et al., 1977, p.364)

Christopher Alexander, architect and architectural theorist

„Health is a state of complete physical, mental and
social well-being and not merely the absence of
disease or infirmity “ (WHO, 1948)

World Health Organisation (WHO)

„ (...) we’re seeing a preference among patients
and families for a calming place (...), not just a
‘machine’ to deliver care.“ (Schnall, 2023)

Brenna Costello, medical planner

abstract

Health Creation as a holistic approach towards health – This new perspective on people's health aims to overcome the purely physical view of health and emphasize the importance of mental and social health. In this respect, the elderly and the socio-economically disadvantaged have been identified as target groups that require increased accessibility and awareness in the areas of health and social inclusion.

This led to the main question of this research: *How can the principles of Health Creation be embedded into architecture that supports (elderly) people in remaining both physically and mentally active as well as socially integrated?*

To answer this question, fieldwork investigations, conversations with experts in the field of healthcare as well as people from the target group, literature studies, documentaries, and case studies were involved.

These investigations showed that the existing health environment in the form of hospitals and general practitioners is not suitable for making people aware of their health. By integrating health-creating methods into a community setting, the institutional character can be eliminated, overcoming psychological barriers and positioning itself as an antithesis to the existing health environment. Elements of human-centered architecture, intergenerational interactions, nearby care, and the Blue Zones have proven to be pioneering approaches and can be implemented to generate a health-creating environment!

keywords

Health Creation – prevention – nearby care – elderly people – Blue Zones – intergenerational – human-centered architecture

figure 2. the goal of a prolonged healthy life through *Health Creation* (Cafon, 2019)

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I. introduction

1.1 context

In times of an **aging population** worldwide, the related issue of care is an increasing topic in our society. Suppose one looks at the current forecasts of population development in the Netherlands, the proportion of people aged 65+ will increase from 3.6 million in 2022 to 4.8 million in 2040 (CBS, 2022) and consequently will represent almost one-quarter of the whole population (currently around 20%). Due to this **demographic shift**, without a rethink in the healthcare system, we are at risk of meeting an imbalance between the care needed and the available care!

People are getting older, but are they living healthier for longer as well?
In 1950, the life expectancy of the Dutch population across all genders was around 71.4 years; in 2023, this figure was already 82.6 years and is forecast to rise to 86 years by 2050 (Statista, 2023).
One value that provides insights into the population's health is "**healthy life expectancy**". This refers to the years of life that can be lived without restrictions due to illness or complaints. At the current time, the average "healthy life expectancy" is around nine years less than the general life expectancy (Garmany et al., 2021), illustrated in figure 5. The extension of lifespan alone, without measures to live longer healthy, will only aggravate the healthspan-lifespan gap. Statements like "*(…) modern medicine has increased our life expectancy but not necessarily the quality of those extra years of life*" by Susan Kurrle, a professor in health care of elderly people at the University of Sydney, support this finding (Hembree & Henry, 2022).
The question here arises, **what is the benefit of more years of life if in reality, we have no life to live in those years?** The aim should be to reduce the existing gap between lifespan and healthy lifespan to enable people to live independently for as long as possible without major health issues.

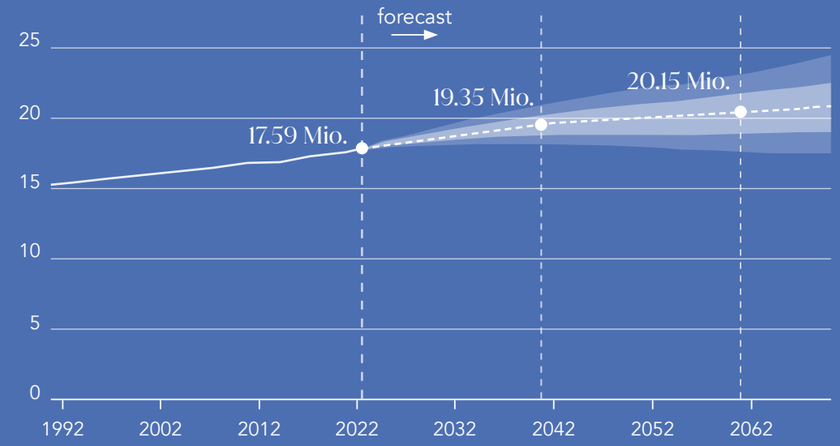


figure 3. population development of the Netherlands
(adapted from CBS, 2023)

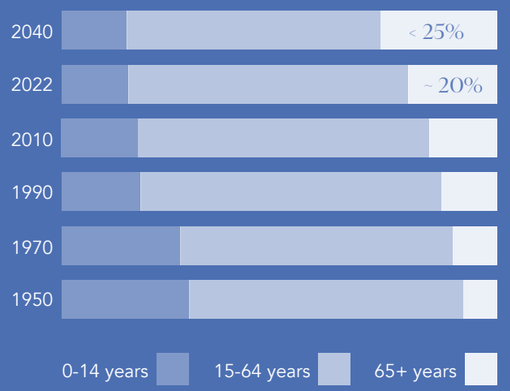


figure 4. population distribution of the Netherlands
(adapted from Statista, 2024)

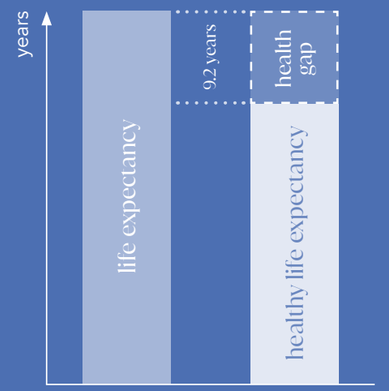


figure 5. life span vs. health span
(illustrated by author)

A large proportion of elderly people in the Netherlands live alone, which may also result in the fact that one out of three elderly sometimes feel lonely and every tenth frequently feels lonely (CBS, 2020). The feeling of loneliness is seen as a contributing factor to creating depression symptoms (Lee et al., 2021), whereby elderly people are at risk of entering a "**vicious circle of aging**" (figure 7), which results often in a lack of motivation to be physically and socially active and so the downward spiral of frailty development is progressing, threatening the established autonomy.

Besides the mental influencing factors, independence is often further impaired by unfortunate circumstances such as a fall or illness, which in many cases results in hospitalization, a relatively "hostile environment" for many people. The hospital itself is often perceived as a machine (Schnall, 2023) whose focus should be on healing people, but people often take a secondary role and efficiency takes center stage. This becomes visible as a "**psychologically hard design**" (Ulrich, 1991, p.97), which in turn can lead to a deterioration in the health of the individuals, as shown in a study, where more than one-third of discharged elderly experienced a decline in executing fundamental activities of daily life (i.e., dressing, toilet use, bathing, transfer from bed or chair, and eating without external support, etc.) (Covinsky et al., 2003). Given these factors, the hospital does not appear to be the ideal environment and the focus should be on keeping older people in particular at a distance from such facilities for as long as possible.

Suppose one considers the **costs arising from geriatric care**, a significant increase can be expected in the coming years. Between 2019 and 2022 alone, expenditures have increased from around one billion to over 1.2 billion Euros (Zorginstituut Nederland, 2022).

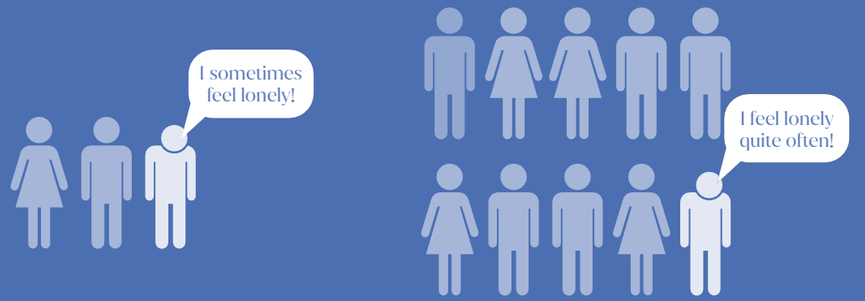


figure 6. feeling of loneliness among elderly people (adapted from CBS, 2020)

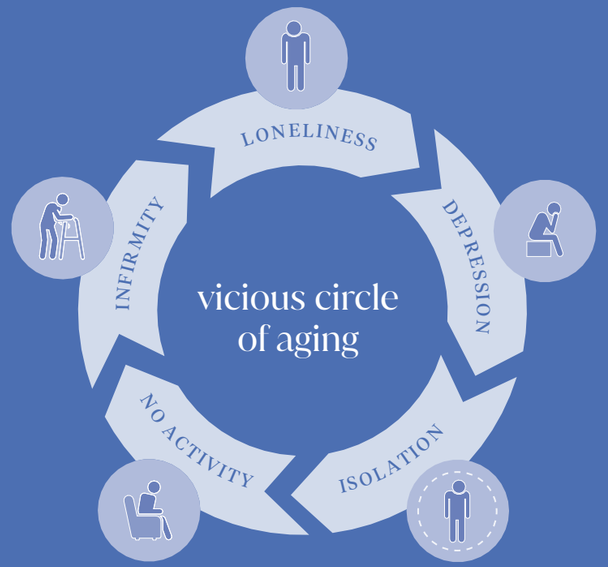


figure 7. vicious circle of aging (illustrated by author)

1.2 problem statement & aims

Considering the current demographic changes and the shortage of health personnel, the health sector is heading towards a self-created catastrophe unless we rethink current approaches! As part of the "2015 Social Support Act", "Aging in Place" was promoted through government initiatives, leading to increased popularity. **But are people getting enough education on how to stay physically and mentally fit to maintain their long-term independence?**

As such, our shared societal aim should be towards implementing health-creating methods for (elderly) people from declining physical and mental conditions, keeping them active in society, and by doing so renewing in them a purpose in life. This process of raising awareness of individual health, but also of an entire community, could be summarized in the term "**Health Creation**". Through this, not only does the care sector get relieved, but at the same time it also avoids long-term and cost-intensive treatments for individuals, as well as for the entire health system.

The goal should be to maintain the ability to engage in fundamental self-care tasks of daily life (Covinsky et al., 2003), but also to be able to participate socially in a community. These activities are essential to the independence of the individuals and the focus should be on maintaining or revitalizing these aspects.

Would it therefore not be preferable if there was an environment in which one could request support and advice apart from the institutional approach, where one could playfully learn about new opportunities and methods to preserve or improve health to realize one's full potential? **Moving beyond the "what is the matter with you?" approach and towards a "what matters to you?" philosophy!** A place of health awareness and education for aging with dignity and independence!

These considerations led to the following research question and additional sub-questions:

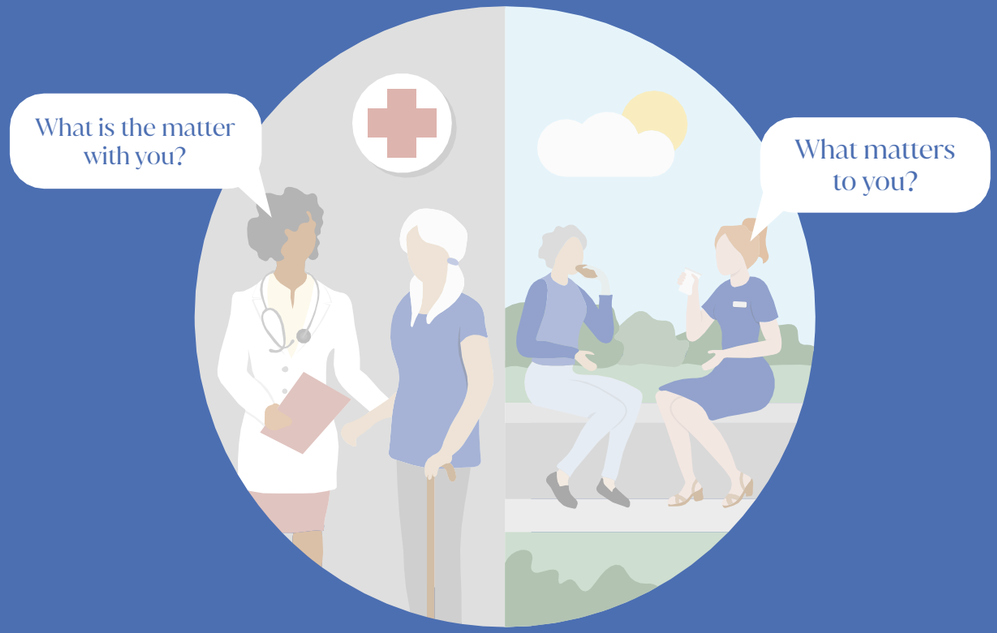


figure 8. "What is the matter with you?" vs. "What matters to you?" (illustrated by author)

1.3 research question

How can the principles of Health Creation be embedded into architecture that supports (elderly) people in remaining both physically and mentally active as well as socially integrated?

sub-questions

- What spatial and design elements are needed to create a new health environment which is inviting to the public?
- What are the potentials of *Health Creation* apart from a hospital setting and instead in a health-creating environment?
- How can architecture promote social interaction and thus increase the awareness and integration of the elderly people in our society?

1.4 design hypothesis

Through the findings of this research, the individual components, that are necessary to increase (elderly) people's awareness of their health, should be identified and combined to form a future-oriented approach in health-creating architecture.

The vision of this environment is to generate a spatial setting available for people to visit, with a focus on the growing elderly population, to learn about health-creating methods playfully without the feeling of entering an institutional setting. The purpose of these measures is to foster prolonged integration of individuals within society, thereby enhancing both their physical and mental well-being. To realize this vision, it is necessary to generate a new spatial framework and a comprehensive spatial program through user-centered and scientific research – beyond the traditional clinical approach.

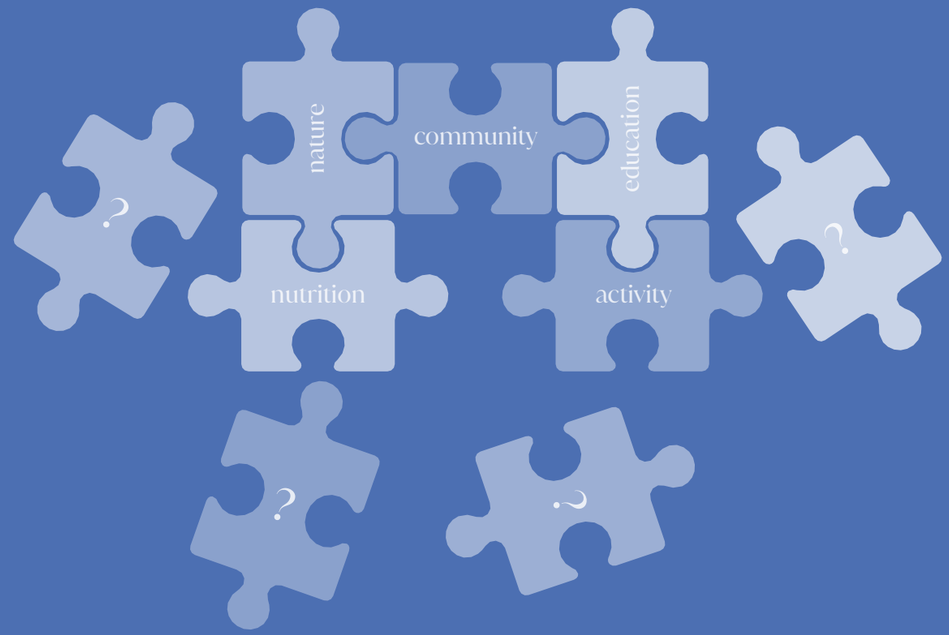


figure 9. identifying the individual components of the Health Creation (illustrated by author)

1.5 theoretical framework

health-creating environment

In times of a changing society, our shared societal focus should be to encourage people to stay healthy and active instead of seeking medical help when this could have been avoided by early interventions. Architecture could intervene in this direction as an important actor and support key elements in health creation through new spatial programs and design elements. This may include flexible spaces that promote movement or areas that promote communication and community formation. The following examples have carried out investigations and experiments in this direction and could serve as support for my research:

Between 1926 and 1950 the **Pioneer Health Center** in South London, initiated in the course of the *Peckham Experiment* of Dr. George Scott Williamson and Dr. Innes Hope Pearse, focused on giving people the opportunity to gain a solid insight into their own health and by doing so achieving a self-awareness to maintain and promote it (Alexander et al., 1977, p. 254). Despite promising results, the center was closed due to the outbreak of the Second World War and was subsequently reopened post-war but was permanently closed in 1950 due to cost savings in the healthcare sector (Lewis & Brookes, 1983). Based on this example, you can see that attempts have already been made in the past to make people aware of the importance of human health. Through "informal health examinations" that could be carried out alongside activities, the inhibition threshold for such examinations was reduced and noticed more frequently (Alexander et al., 1977, p. 254). Concerning this research, the aim will be to alleviate the inhibition threshold of medical check-ups by integrating it into a non-institutional setting where people could spend their leisure time as well.

Roger S. Ulrich in particular attaches an important role to the significance of the built environment for people's psyche and well-being. His research has shown how space and its spatial relationships, such as views and accessibility to nature as well es interior design, influence people's moods and thus encourage them to move physically in their surroundings and positively affect the healing process (Ulrich, 1991). This research will tie in with his approaches and will investigate how the built environment can influence people as well as how nature can intervene as a passive (views into nature) and active (interacting within nature) actor in Health Creation.

Besides the influences of regular health inspections and the psychological influence of the environment, people's lifestyle has a significant impact on people's long-term health – perhaps often underestimated! The so-called **Blue Zones** are five areas around the world where an above-average longevity of the population was identified. In the course of the study of these regions, nine indicators, dubbed the Power 9, were identified that correspond to all five and are evidence of this phenomenon (Buettner & Skemp, 2016). Concerning the architectural implementation, this study will focus on four of the nine "rules": physical activity, the power of proper nutrition, the creation of purpose, and the importance of social connectedness.

Hospitals and medical facilities nowadays are often perceived as machines (Schnall, 2023), which causes the human being, who should be the main focus, to appear rather out of place due to the efficient processes and sterile environment! In a place designed to support people's healing or to encourage people in movement and social interactions, the architecture should be designed with people as users in mind. The thoughts and approaches of **Christopher Alexander** and **Herman Hertzberger**, who can be regarded as pioneers in the field of human-centered architecture, could point the way in this direction. For this research, principles of Herzberger and Alexander such as user-centered design, flexibility and adaptability and interaction-promoting design are of great interest and importance for the topic of Health Creation.

Involvement in a social network is of great importance for the well-being and quality of life of many people. **Social interaction** becomes more important in old age, as a lack of interaction increases the chances of developing depression symptoms (Lee et al., 2021) whereby the motivation to be physically active is decreasing which can lead to a higher mortality (House et al., 1988).

A probably important influencing factor, in addition to contact with people of the same age, is the interaction with people of different age groups – the so-called **intergenerational interaction**. Currently, there is a growing body of research, which points out how this kind of relationship could improve the well-being of elderly people. In 2019, a social experiment in Australia, in which elderly people interacted with preschool children over several weeks, resulted in reduced depression levels and frailty, and the participants reported improved physical strength, confidence, appetite, and overall mood (Cooper-Douglas, 2023). This research will focus primarily on the importance of intergenerational interaction with younger children (likely aged between 3 to 6 years), but possibly also, in light of Delft as a student city, on the overlap with people under the age of 26.

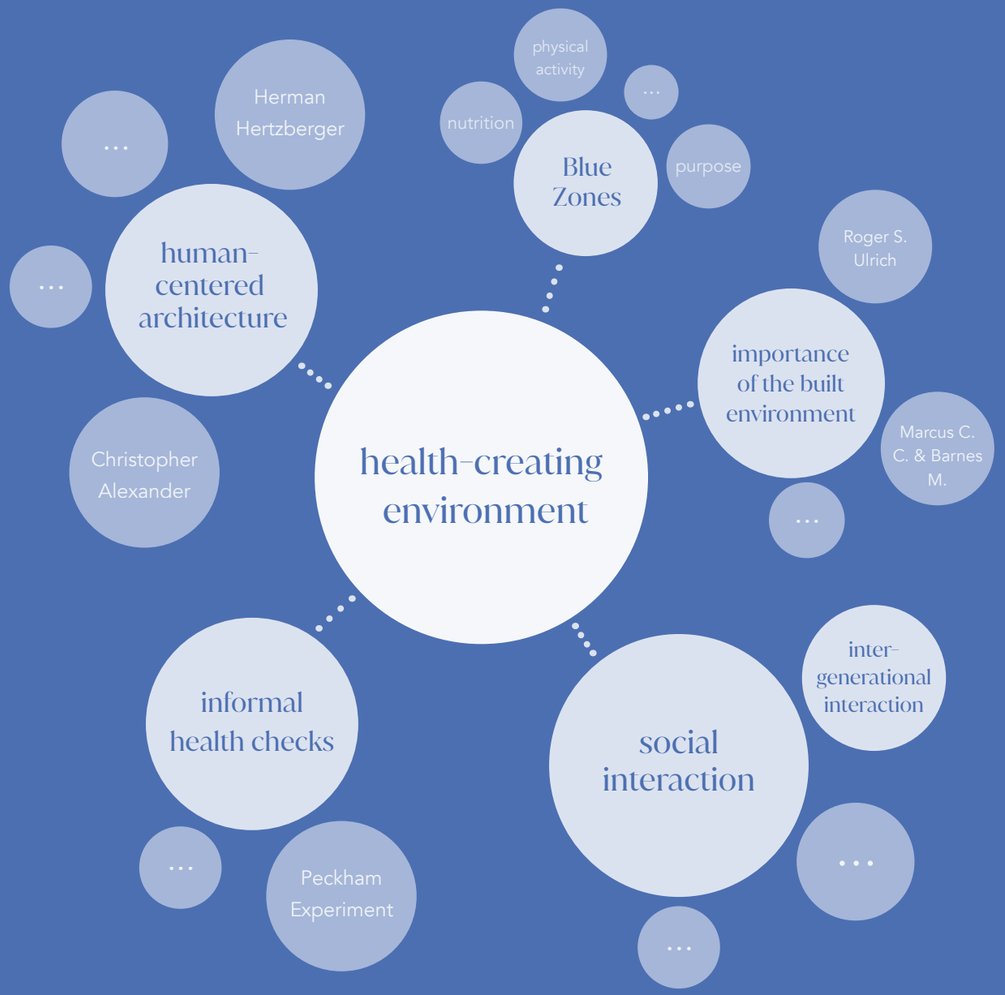


figure 10. theoretical framework diagram (illustrated by author)

1.6 methodology

1.6.1 research scope

The study will focus primarily on elderly people (aged 60+) who are still able to manage their daily lives independently to the greatest possible extent. Here, I am referring to the fundamental self-care tasks of daily life that can be done without external help.
Considering that the focus on *Health Creation* does not start at a certain age and that it is intended to be a holistic approach to health, the environment will also appeal to other age groups to ensure accessibility and use for all.

1.6.2 research methodology

To obtain the necessary knowledge to formulate design guidelines, a variety of research methods are used, including interviews, ethnographic observations, literature studies, documentaries, and the analysis of relevant case studies. To make the research feasible, it is necessary to set a scope that determines which components are included and which are excluded.

conversations

To understand the needs of the target group, it is essential to obtain this information first-hand. During the field research week in a Dutch nursing home, it will be possible to come into contact with elderly people and to engage in dialogue with them. The residents will be asked about their daily life routines and their activities to keep them fit. In this regard, residents are asked, how often they leave their housing unit or the building and what drives them to do so. Furthermore, the residents will be asked which spaces are missing or which spaces they value the most in this facility. The conversations aim to reveal what motivates people to move around in their living environment and what prevents them from doing so. Furthermore, I hope to gain insights into appreciated or required facilities and activities that people like to do or would like to do.

In addition to conversations with retirement home residents, people in Delft are also interviewed to figure out what people undertake to keep fit and what they miss in the neighborhood. This will probably be done through street dialogs, visits to local community centers and conversations with people living around the project site.

ethnographic observation

Since the language barrier often presents itself as an obstacle to communication, further **visual observations** of people are carried out to analyze and understand the movements of the target group within their existing living environment and generally in their daily lives. In the course of the field week, the retirement home residents are observed on which routes they use inside, but also outside the building, where they spend most of their time, or where frequently used gathering places among the residents are located. This could provide conclusions about preferred areas in their living environment and why these are likely to be used more than others. The findings of this observation are documented in the form of sketches, movement diagrams, people counting, and notes.

literature studies

The literature investigation will primarily focus on the three **categories of psychology/medicine, lifestyle habits, and human-centered architecture**. Prevailing theories and examples from the theoretical framework, such as…

- "*Effects of Interior Design on Wellness: Theory and Recent Scientific Research*" by R. Ulrich
- "*Blue Zones - Lessons for Living Longer from the People Who've Lived the Longest*" by D. Buettner
- "*A Pattern Language*" by C. Alexander et al.
- "*Lessons for Students in Architecture*" by H. Hertzberger
- …

… as well as **literature relevant to the topic**, such as research reports or articles, will be studied and analyzed, and in which way the often theoretical and practical approaches can be translated into an architectural language.

documentaries

In addition to literary works, some documentaries and films could serve as support for the research. Examples of this are the documentary series "**Old People's Home for 4 Year Olds**" which tried to point out the influence and chances of intergenerational connections between a group of older retirement home residents and pre-school children and "**Live to 100: Secrets of the Blue Zones**" which tried to list the essential living habits of five areas on earth where people live to an above-average age.

case studies

Concerning new spatial programs and new functional connections, it is of great importance to analyze the typologies of existing programs. For this reason, examples that are based on the theoretical framework such as community (health) centers like the former "**Pioneer Health Center**" in London, new approaches in cross-generational care such as intergenerational daycare, or spatial settings like the generation-café "**Vollpension**" in Vienna, that deal with the topic of health promotion and social integration, and try to lead in a new direction, will be investigated.

1.6.3 desired research answers

Based on the applied research methods and the obtained qualitative and quantitative data, it is hoped to gain a deeper understanding of (elderly) people's needs to create a more human-centered environment that supports them in maintaining and/or improving their health condition.

From these findings, visual design guidelines will be formulated which ensure a solid base for the translation into an architecture that is health-creating and supportive for (elderly) people!

WHY?

issue

Due to a demographic shift, without a rethink in the healthcare system, we are at risk of meeting an imbalance between the care needed and the available care! The focus of our society should be to encourage people to stay healthy and active instead of seeking medical help when this could have been avoided by early interventions – the approach should be towards *Health Creation*!

hypothesis

The goal of this research project is the definition of design guidelines for a health-creating setting, available for people to visit, with a focus on the growing elderly population, to learn about health-creating methods playfully without the feeling of entering an institutional setting. These measures aim to promote long-term social integration, improving both physical and mental well-being.

WHAT?

How can the principles of Health Creation be embedded into architecture that supports (elderly) people in remaining both physically and mentally active as well as socially integrated?

What spatial and design elements are needed to create a new health environment which is inviting to the public?	What are the potentials of *Health Creation* apart from a hospital setting and instead in a health-creating environment?	How can architecture promote social interaction and thus increase the awareness and integration of the elderly people in our society?

HOW?

interviews	literature review	literature review
literature review	case studies	interviews
case studies	interviews	documentaries
		case studies

THIS!

design guidelines for a health-creating environment
leading to an architectural implementation in the context of Delft

1.7 definitions

aging in place

The ability to live in your own home and community safely, independently, and comfortably, regardless of income, age, or ability level (RHIHub, n.d.).

blue zones

The so-called Blue Zones are five regions around the world (Italy, Japan, Greece, Costa Rica, and the USA) where the extraordinary longevity and vitality of the population were examined. All of these regions were compared and resulted in nine lifestyle habits that they share with each other – the so-called Power 9 (Buettner, 2008, p. 168).

fundamental self-care tasks

According to Covinsky et al. (2003), fundamental self-care tasks of daily life include dressing, toilet use, bathing, transferring from bed or chair, and eating without external support. By being able to execute these tasks, the person is considered largely "independent".

geriatrics

Geriatrics is a field of expertise that is based on improving health care for older people. It advocates health improvement in the elderly by preventing and treating illnesses and disabilities that arise as people age (Portea, n.d.).

health creation

At the present time, there is no universal definition for "Health Creation", but it is frequently used in association with the process of improving and maintaining the overall health and well-being of individuals, but also an entire community.
According to *The Health Creation Alliance* (2023), which operates in the UK, health creation is the process of gaining a sense of purpose, hope, and control over life and by doing so enhancing overall health and well-being.

health promotion

Health promotion is the process that enables people to increase control and improve their health. The focus goes beyond the individual behavior toward a wide spectrum of environmental and social interventions (WHO, 1998).

human-centered architecture

Human-centered architecture puts people at the center of the design process, striving to create spaces that serve their needs, improve their well-being, and encourage a sense of connection to their environment (Fidanci, 2023).

informal health care

Informal care refers to disabled people or elderly people who receive care and support that is carried out by relatives, friends, acquaintances, or neighbors, often without a contract agreement or formal payment (European Centre for Social Welfare Policy and Research, n.d.).

intergenerational

According to the Cambridge Dictionary (2023), intergenerational stands for "involving different generations". In the context of a community, this can be applied to social exchanges between people of different age groups.

II. fieldwork & expert opinions

2.1 fieldwork

2.1.1 general information

The building, a former nursing home, was transformed in 2014 into a "**residence for the elderly**", where older adults with little care demand and elderly who require 24/7 care, but also younger people live "together". The complex comprises 77 housing units designed for one person, which results in 77 older adults living in this facility at full capacity. Connected to this is another building complex ("**Aanleunwoning**") with larger rental apartments, where the older people have the option to rent care if required.

The building itself has two stories with a "closed facility" for people with dementia and elderly who need comprehensive care on the ground floor. The heart of the building consists of an open entrance hall where one can find the **public library**, whose aim is to connect the building and the people from the surrounding area with the residents. In addition to the library, there is also a **multi-purpose room** that can be rented by residents or external parties, and several **communal kitchens/living rooms** that are available to residents. Besides these facilities and the apartments, one can also find care staff offices and break rooms, a **physiotherapist**, and an advertised "spa room", which actually is just a shared bathroom with an accessible bathtub.

The surrounding area of the complex consists mainly of residential buildings with a supermarket, pharmacies, restaurants, cafés, diverse stores, and a primary school within a radius of 200m. It was noticeable in the immediate surroundings that, apart from the seating on the premises of the facility, there were very few benches. This was also emphasized in later conversations with residents who would like to have a place to rest, especially on the route from the facility to the nearby grocery store.

The investigation was based on **visual observation and interaction with the residents** in their daily activities. As expected in advance, the language barrier proved to be the biggest hurdle in interacting with the residents. For this reason, it was not possible to have in-depth conversations, as I had to rely on translations from my colleague Kim Houweling. Nevertheless, it was possible to gather valuable information and there were also opportunities to visit some of the residents' housing units which enabled us to get to know the residents better.
In addition to the residents, we also spoke with the responsible care staff and thus also obtained the views of the caregiving position.

figure 11. ground floor plan of the "residence for the elderly" (illustrated by author)

1 5 10 20

main functions on the ground floor

1. public library
2. community kitchen
3. "Aanleunwoning"
4. multi-purpose room
5. community spaces
6. "spa room"
7. church service room
8. community garden

2.1.2 built environment

The building has a rather unusual shape, resulting in extensive internal corridors. All these corridors lead to the entrance hall with an adjoining public library, which is also accessible from the opposite side of the building, which turns the building into a transit zone.

In discussions with the residents, but also with the responsible care staff, **the expansive layout of the building stood out negatively**: the long corridors, which were attempted to be personalized after the renovation with color-coded entrance niches and printed front door motifs, sometimes caused confusion due to the generally similar appearance of all corridors and require long distances for the residents, but also for the care staff, who would prefer a more compact layout. They also pointed out the former design with **color-coded corridors** (red, green, blue), which made it much easier to find one's way around.

The intention of integrating the library into the "residence for the elderly" and thus connecting the neighborhood with the residents may seem well-intentioned at first glance, but the reality is different: In the past, there has often been **noise complaints** or even vandalism by young people in the library itself, but also in the corridors and communal areas accessible from it. To combat this, the library's opening hours were shortened, limiting accessibility in the evenings, but residents still associate these negative impressions with the facility.

The residents gather daily for morning coffee in one of the community kitchens with a capacity of around 15 people. The larger multi-purpose room, which can accommodate more people, is perceived as unsuitable by the residents as it does not look inviting due to its high ceiling and general cool appearance. The building has a central lift by the reception hall and an internal lift connecting the closed section on the ground floor to the floor above. The elevator doors were deliberately chosen in a white color scheme so that they "disappear" into the wall and thus **promote the stairs as a means of access**.

Although the room program was basically planned to be **wheelchair-accessible**, there are some obstacles: The transition from different floor coverings often results in undesirable thresholds, which also, from discussions with residents and care staff, make it difficult to move around with wheelchairs or walking aids. Furthermore, care staff in particular pointed out that the **bathrooms were too small** for wheelchair-bound residents, which is probably due to the former room layout.

In a discussion with care staff, the partially **poor air quality and overheating in summer** were mentioned. They would prefer the option of cross-ventilation of the rooms or the installation of mechanical ventilation.

According to residents and caregivers, the outdoor facilities including a children's playground are only used sporadically. Only the residents of the closed facility on the ground floor have direct access to a garden with a common seating area. In individual casual conversations with four residents, it emerged that the **distance to outdoor spaces is usually too far** for them from the upper floor, so they rarely spend their free time outdoors, even in summer.

It emerged from conversations that the residents and care personnel are quite satisfied with the facility. Only the problem of the public library and a possible **lack of a café** that is accessible to residents during the day was repeatedly mentioned. In general, the majority of respondents felt that there was a **need for a central meeting place**, not only for residents but also for people from the neighborhood.

2.1.3 housing units

The individual residential units are **designed for one person** and have an average size of around 35m^2 with a spacious open-plan living space that includes a kitchenette, a barrier-free bathroom and, in some cases, a separate room that can be used as a wardrobe or storage room. Around half of the flats have an adjoining balcony. The **large windows** fill the living space with light and low window sills allow residents in wheelchairs an unobstructed view.

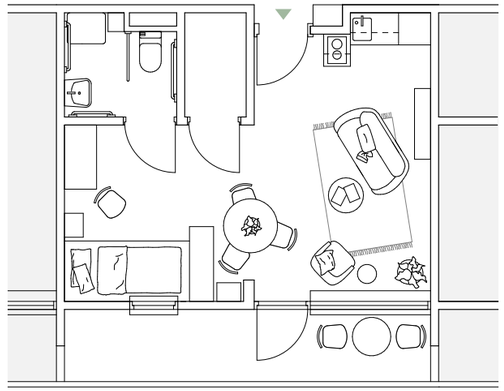


figure 12. exemplary housing unit (illustrated by author)

2.1.4 care staff

The care staff is composed of **trained caregivers and a large number of volunteers**. Around 65 volunteers are present on a rotating basis and provide company for the residents during the morning coffee meeting and afternoon activities.

There are two staff areas for overall administration with an adjoining meeting room and the activities coordination office with an adjoining staff room. However, it was generally found that the staff also spent their breaks in the communal areas, as these are not predominantly used apart from the planned residents' gatherings.

In a conversation with two care staff members, they complained about the shortage in the care sector: They only have **5 minutes per person in the morning and evening**, with minimal human contact and no room for proper interaction. In a talk with a former employee, it became clear that there's now less interaction between caregivers and residents, with activities like playing games or enjoying music together in the evening no longer happening.

On a positive note, caregivers mostly wore regular clothes with **just a name tag indicating their position**, reducing the institutional feel of the care facility significantly, in my opinion.

2.1.5 daily routine

Most residents begin their mornings independently unless they require assistance with activities like getting out of bed, dressing, or personal hygiene, in which case the care staff supports the individuals. Residents have the option to either prepare their own breakfast or choose the "breakfast service," delivered in the form of a food trolley daily.

At 10:00 a.m., residents gather for morning coffee in the communal kitchen, where care staff or local volunteers serve coffee and cookies. This coffee meeting typically occurs in the same place but can also be held as lectures in the multi-purpose room. Information regarding this can be found on multiple pinboards, where the **weekly activity agenda** and other information can be found.
After coffee, residents generally return to their housing units, engaging in personal activities such as walks or errands until lunchtime.

Lunchtime is around noon and the residents, who have chosen the meal service, come together in the common spaces or have their meals delivered in hot boxes to their apartment units. Twice a week (Wednesday and Thursday) there is also an **organized lunch by volunteers**, where they cook for a group of six elderly and eat together in one of the separate kitchens. Those who didn't sign up for one of the services prepare their own lunch in their apartment kitchens. After lunch, the residents return to their apartments to continue their own activities. Some prefer to take an afternoon nap or enjoy a short walk in the surrounding area.

The **afternoon activity** usually starts at 2:30 p.m. and includes activities that require physical engagement or that stimulate brain activity. These mainly include **ball games, skill exercises, and Rummikub**. This is combined with drinking coffee together and socializing among the residents, as well as with family members of the residents and volunteers. The afternoon activities conclude at 4:30 p.m., after which participants focus on individual activities within their accommodation units.

In the evening, residents either prepare their own dinner or receive a delivered snack. Between 7:00 p.m. and 8:30 p.m., caregivers assist residents in need of help with transfers to bed or personal hygiene, marking the end of the day for the care personnel. If there is an emergency during the night, a night nurse is available.

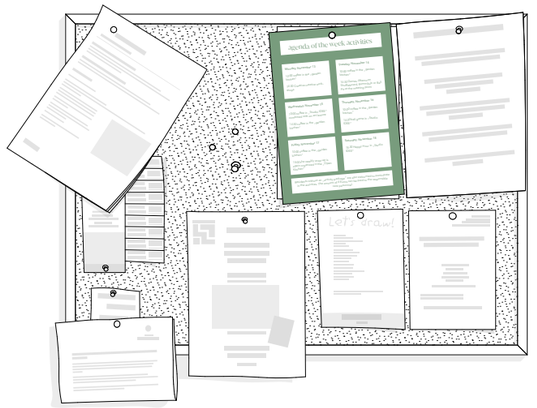


figure 13. pinboard with news and activity program (illustrated by author)

2.1.6 conversations with residents

#1

Mr. R., aged 62, has been a resident of the facility for the past two and a half years. Interestingly, his mother also lives in the same building, but on the ground floor, as she requires 24/7 care. His sister visits him and his mother regularly. Mr. R. can be described as a thoroughly positive character, as he was particularly noticeable in the group due to his numerous jokes.

He is consistently satisfied with life at the facility. He regularly attends the morning coffee meeting and often takes part in the afternoon activities. He is also responsible for the weekly distribution of the following week's schedule of activities. Although meal service is offered, Mr. R. prefers to prepare his own meals. He mainly uses the microwave and an air-fryer for this, which suggests that his diet is not overly balanced.

Due to Multiple Sclerosis (MS), diagnosed at the age of 26, his muscle strength is increasingly deteriorating, which is why he is dependent on a walking aid and a scooter. In this regard, he mentioned one criticism of the facility: as there is no charging point in the corridor, he has to carefully maneuver his scooter into his accommodation unit to charge it. When the scooter is not in use, he parks it in the corridor, which in turn reduces his freedom of movement in the corridor itself. A parking facility for the scooter would be desirable. Due to progressive muscle atrophy, Mr. R. visits physiotherapy once a week, which is located inside the building on the first floor.

When asked if he uses the library often, he said that he doesn't like reading and therefore doesn't go there often. However, over the week, we saw him in the library quite often, even though he didn't use the library's primary service. In response to this observation, he mentioned that he often spends time in the foyer/library because it puts him in contact with other people.

#2

Ms. H., aged 74, still carries out everyday activities such as tidying up and personal hygiene independently, and she explicitly insists that she wants to keep this up. She enjoys the size of the apartment, as she would otherwise accumulate even more stuff, and so she is encouraged to keep it organized. She has decorated the flat itself with pictures and self-painted paintings from family members.

She usually skips the coffee meeting in the morning and enjoys the peace in her flat before taking advantage of the meal service at lunchtime and eating together with other residents. She then takes an afternoon nap in her flat, enjoys the view from the balcony, or occupies herself with other activities. Afterward, she was always present and actively participated in the afternoon activities.
Like others, Ms. H. does not like the accessibility of the building to strangers through the library. However, she appreciates the interaction with the younger residents, as this leads to an exchange between the generations.

#3

Ms. J. has been living in the ground floor closed ward for three years and is in the middle stage of dementia. As a former flight attendant, she traveled to many North American countries, which is why she was one of the few participants who could speak English.

She enjoys spending time in the "shared living room", but finds that there are few activities apart from drinking coffee. Apart from that, she finds the views of the surrounding area and the greenery a positive change, which she enjoys especially in the warmer months by spending time together in the communal garden of the closed department.
She often spoke of her grandchildren, who regularly visit her. However, she would like this to happen even more often. In general, she said that the presence of children energizes her.
She does not visit the library regularly, as she considers the library's range of literature to be primarily aimed at children. We analyzed the library's stock and concluded that the range was relatively balanced between children's and adult literature.

#4

During one of the afternoon activities, I had a conversation with a resident's daughter who was present. She mentioned that her mother was no longer able to lead a fully independent life after a stroke, which is why she moved to this facility.

The time after the stroke was particularly difficult: After just four days of hospitalization, she would have been transferred to the rehabilitation ward, even though she only needed a walking aid. She would then have been moved to a temporary accommodation unit and only then to permanent placement. These transfers would have been scattered throughout the Netherlands, which in her opinion would have been "the killing" of her mother. She would have preferred a longer stay in one location and, if possible, in the familiar living environment. According to her, they were lucky to get a place in the current facility, although she criticizes the lack of activities for the elderly.

#5

Ms. N. is 92 years old and has lived in the facility for one and a half years. She is consistently satisfied with life in the residence and spoke positively about her light-flooded apartment and the view of the green surroundings. However, she rarely uses the attached balcony, possibly due to the threshold between inside and outside. She still manages the majority of her daily activities independently and only needs help from time to time. She is reassured by the fact that her son lives not far from her and that her family visits her regularly.

She usually takes part in the morning coffee meeting, but not in all afternoon activities, as she often finds large crowds too loud and is not comfortable with this. Instead, she goes for a short walk in the neighborhood every day to get some fresh air. Since moving here, she has made new friends who she believes help her to cope with loneliness. On Fridays, she always attends the church service in the communal room on the ground floor, as it is too far to walk to the local church.

#6

Ms. A., aged 79, moved here around three years ago. Due to the fact that she has minor dementia, she always wears her house key as a necklace so that she does not misplace it. In addition, she suffers from epilepsy, which causes her to fall quite often. As a result, a walking aid is her daily companion, which gives her confidence in her movements. In general, she can no longer walk long distances, which is why the journey to the local supermarket is a challenge as there are no places to sit down for a short rest. She also avoids the stairs, as she perceives that the individual steps are too high and are therefore a tripping risk.

Ms. A. has furnished her housing unit with furniture from her former farmhouse, which makes her feel at home. The only criticism is that her bed is in the same room as the kitchen and the living/dining room, which she tries to conceal with a room divider.
The flat is decorated with countless plants, which play an important role in her life. She avoids the balcony after her latest fall, but enjoys the view to the tree in front of her flat.

She has found a good friend in Ms. N., with whom she regularly visits the in-house library or goes for short walks. In general, she finds that the mentality of some of the residents is too negative and this tends to spoil the atmosphere.

2.1.7 findings from the fieldwork

During the field week, it was possible to gain an insight into the structure and processes of a care and residential facility for older individuals. Through discussions with the residents, but also with the care staff and family members, different perspectives were obtained from various stakeholders.

It was noted that both residents and caregivers often mentioned the unconventional shape of the building and the resulting long internal corridors in a negative light. These cause long routes for the residents, some of whom have limited mobility, but also long distances for the caregivers and a reduced overview of the facility as a result. A **more compact building layout** would make it much easier for residents and caregivers to gain an **overview and easier wayfinding**.

The residents' feedback on the residential units was largely positive. They very much appreciated the fact that they can **live a highly independent life**, but can still receive assistance with various daily activities if required – whereby one could also refer to **nearby care**. This varies from person to person and ranges from breakfast service and assistance with personal hygiene to apartment cleaning.

According to all the residents interviewed, the flat itself is large enough (approx. 35m^2) and allows them to bring their furniture, giving them the freedom to organize it themselves. However, one interviewee mentioned that the direct view of the bed, due to the **open-plan layout**, was a disruptive factor for them, which was mitigated by a room divider.

The general built environment is also perceived as positive. However, it was mentioned that there may be a **lack of additional seating** in the immediate vicinity of the facility. This would prevent older people from moving around more freely, as seating is urgently needed for rest. It was also mentioned that the step heights might be too high, as this would increase the fear of falling.

Although the integration of a public facility in the form of the library is appreciated as a stand-alone function, the realization of its integration into the building without the possibility of separation is perceived negatively. Past vandalism in the library, but also the communal areas accessible via the library, is deeply engraved in the memories of the residents. If there was a way of **separating the library from the residential wings**, residents said they would feel safer and less "exposed".

In addition to the public library, the wish for another facility came up in discussions with residents: a **public café**. Respondents often pointed out that they would like to be able to meet up with family members, friends, and residents from the surrounding neighborhood outside of the communal areas. The spacious "Studio IDEE" meeting room would be ideal for such a function, but the current interior design and the resulting cold room climate make it moderately suitable for this purpose.

There was consistently positive feedback from residents regarding the afternoon activities. In discussions with volunteers, however, it was suggested that people from the neighborhood who do not live in the facility might also benefit from such activities, as they would otherwise become increasingly isolated and lonely. **Opening up the activities to external people** was therefore left as a suggestion.

A relatively new program highlight is a **communal lunch** prepared by volunteers. A small group of residents come together and are served a home-cooked meal. The demand for this lunch meeting was so great that it is now offered twice a week. In this respect, I could also imagine not only serving the older residents but also actively involving them and thus maintaining their motor skills and stimulating other senses.

In conversations with various residents, the positive emotional memories with younger children often stood out. One respondent pointed out that she "*felt more energized by the presence of the younger generation*". Statements like this support this study's hypothesis and current research regarding the **positive influence of younger people on the older generation**. In the area surrounding the "residence for the elderly", there is also a primary school, which would make cooperation between the two facilities a good idea. In a conversation with the activity coordinator, she mentioned that school groups visit occasionally, but not regularly. Before the current organization took over the management of the facility, there was also a so-called "mother's club", which was disbanded over time despite positive feedback.

It was also positively noticeable that the integration of a **physiotherapist within the facility** meant that this was increasingly used by the residents. Nevertheless, it was noticeable that the existence of this facility may not be advertised well enough, as some residents were unaware of it.

2.2 conversation with geriatric care experts

During a visit to an elderly care facility in Austria, I had the opportunity to speak with the management of the institution and the head of the care and nursing department. This resulted in interesting findings that support and reinforce the aims of this research.

Built as a retirement home at the turn of the millennium, the facility has undergone significant changes in the last two decades. With an average resident age of approximately 85, the care level is now classified as "high," making it more fitting to refer to it as a nursing home. Initially, a majority of seniors could independently carry out daily activities, but this has shifted due to increased care requirements for admission, categorized into seven "care levels" in Austria

Both respondents identify a crucial issue in the care sector: **staff shortage and financial cost-cutting in healthcare**. The facility's head emphasizes the severity, stating, *"The healthcare sector has been cut to the bone"*. These measures worsen the health crisis, increasing workload for nursing staff and lowering overall care quality.
In this respect, the care manager pointed out the negative effects on the staff, but also the residents: *"The stress that the staff feel due to the additional workload is passed on directly to the residents, which can affect their state of health."* To counteract the stress experienced by care staff, **relaxation rooms** have been set up, especially for employees in recent years.
Despite cost-cutting, the facility prioritizes (re)mobilization to reduce staff care requirements, as **more active residents require less care** .
Communal rooms serve as the backdrop for residents engaging in various activities, from meals and coffee gatherings to games and weekly church services. Additionally, there's a playgroup for young children, fostering a lively community with spontaneous encounters and seasonal events like St. Martin's Day parades, even without explicit intergenerational interaction.

In relation to the research topic, discussions with the care management strongly supported the study's hypothesis. She pointed out the importance of the older generation: *"We should not put the elderly on the sidelines. They should continue to be a part of our society and have a right to a pleasant evening of life."*
The conversation underscored the significance of increasing activity levels for seniors and listening to their needs. *"It's often the little things that can have a big impact"*. The facility already prioritises non-medical approaches such as aromatherapy to reduce the need for medication and avoid unnecessary hospital admissions. "We shouldn't pump people full of medication unnecessarily just to calm them down," was one statement along these lines.
Encouraging resident **participation in activities, including assisting others, aims to boost physical activity and social cohesion**.

When asked what would be changed if the facility were to be redesigned, the care manager pointed out that the **public should be more closely involved**. *"We in the healthcare sector have a certain amount of public relations work to do!"* She referred to the current **negatively associated status of care for the elderly** as a "closed-off world". The aim should be to increase the awareness and involvement of the older generation and thus lead to less segregation in the community. This year (2023), a joint Christmas market was held in the foyer of the facility as a first step in this direction. In addition to hot punch, homemade products were also sold and were well received by residents, volunteers, and residents of the municipality.

The redesign of the forecourt, which is currently mainly made up of parking spaces, is being discussed. According to the care and home management, a "**garden of encounters**" is being considered, in which residents can spend time outdoors, and possibly also garden activities can be offered to improve motor and sensory skills. As is often the case in the care sector, funding and legal standards could present obstacles in this respect.

In response to the question of how we can improve the quality of care in the future, the care manager pointed out that preventative measures need to be promoted. *"People need to be busy to have a purpose in life, otherwise they'll get bogged down! The elderly in particular run the risk of falling into a comfortable lifestyle as they get older due to reduced social contact."* In this respect, the care manager insisted on **focusing on a more active lifestyle – especially in old age**!

2.3 conversation with a physiotherapist

In a conversation with a physiotherapist who **specializes in orthopedics**, which concerns the optimization of the human musculoskeletal system, it was possible to gain insights into physical health care and what recommendations can be made for a more active and healthier lifestyle.

The age group of patients ranges from 15 to 80 years and therefore covers a broad age spectrum. Over many years of practical experience, two main groups of patients have crystallized alongside a wide range of complaints: Patients experiencing spinal damage or limitations, as well as those who have suffered trauma, such as individuals requiring medical intervention after an accident. According to the physiotherapist, the complaints of the first group of patients are mainly due to the ever-increasing proportion of sedentary work, specifically conventional "office work", and the associated reduction in physical activity throughout the day. Here a connection is also made with the constantly increasing share of younger patients with such complaints.

Her treatment methodology goes **beyond purely physical treatment and attempts to address psychological aspects** such as stress in addition to physical improvements. According to her, stress, especially chronic stress, affects the body's fasciae and can lead to muscle tension, restricted movement, and changes in connective tissue.

In her treatment, her motto is "**quality not quantity**": she tries to give her patients specific exercises along the way instead of "overloading" them with a multitude of exercises. This is because experience has shown that fewer exercises usually lead to greater success, as otherwise they become overstrained and consequently avoid doing them altogether.

To prevent or minimize restrictions in the musculoskeletal system, she generally recommends a more active lifestyle, whereby "**low-impact activities**" such as walking more or climbing stairs can already be seen as beneficial – "*Often it's the little things that have a big impact*".

In terms of physical activity, she recommends **full-body sports** such as therapeutic climbing / bouldering, which means as much as climbing at low heights without safety gear, Pilates, Yoga, bodyweight exercises, and general exercises to strengthen balance. In this respect, she points out that older people in particular should be given more opportunities and advice on "fall prevention"!

figure 14. therapeutic climbing/bouldering (Bergzeit, 2022)

In general, however, she has seen an improvement in people's attitudes to their own health in recent years. More and more people are exercising and are aware of a healthy and balanced diet. She is critical of the excessive intake of so-called "dietary supplements". According to her, these additional nutrients can be obtained through a balanced diet.
In general, she urges **early awareness of topics such as health, sport, and nutrition**. She sees potential for improvement in the younger generations in particular, as it is possible to generate a positive attitude towards these topics at a young age and thus "*positively influence future lifestyles*".

In conclusion, she emphasized that we should not only pay attention to physical complaints but also **prioritize the psychological and mental aspects of health**. This approach should be taken over a longer period – like adopting a healthier and more active lifestyle – and not just when you experience symptoms. The motto should be "**Continuity is better than short-term measures**".

2.4 architectural and programmatic guidelines

In this section, architectural and programmatic guidelines for the new health environment are summarized, which were formed from the **fieldwork** insights and the previously mentioned conversations with **geriatric experts** and a **physiotherapist**.

age-friendly stairs

overview and wayfinding

sufficient seating and rest options

shared activities

possibility of health checks

individual living with nearby care

public library in reachable distance

café as a meeting point

intergenerational interactions

therapeutic climbing / bouldering

awareness of mental health

increase of physical activity

community kitchen

importance of caregivers' health

education about healthy life habits

community garden / garden of encounter

III. health (creation)

3.1 the challenges with health today

Health is unquestionably one of the most crucial components of individual well-being and the functioning of a society. Nevertheless, there are still various challenges and misunderstandings regarding this crucial topic.

One of the fundamental problems is that **health often is considered a merely physical state of condition** and is often referred to as the absence of illness without looking at the wider concept. With the statement "*Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*", the WHO (1948) pointed out that health should be viewed as a holistic approach. This can thus be interpreted in the direction that an individual may be in good physical condition, but due to potential mental issues or social isolation, their health state may be constrained, and thus, they may not be considered "healthy".

Another misconception concerns the idea that **health can be achieved primarily through medical intervention**. While it is undeniable that recent and ongoing advancements in new technologies and modern medicine can treat numerous diseases, it is important to recognize that preventive health, healthy lifestyle habits, and health education play an important role. Through preventive approaches, many health problems, including chronic diseases such as cardiovascular problems and type 2 diabetes, could be prevented in the first place (Seychell, 2016).

Socio-economic factors also play a significant role in people's health. Access to adequate healthcare, education, and financial resources directly influence people's health status. Inequalities in these areas can lead to discrepancies in health outcomes within a society. A Dutch study from 2018 found that there is a direct correlation between the economic situation of individuals and their life expectancy (Knoef, 2022). In short: **the wealthier people are, the older they get!** Studies like this should draw particular attention to such inequalities and highlight the need for action.

It is important to emphasize that **health is a dynamic process** that is subject to constant change throughout one's life. The needs and challenges at different stages of life must therefore be taken into account. The new approach should be to move away from simply treating illness towards a holistic approach to health that supports people to consider their health from a new perspective.

3.2 the potentials of health creation

In light of the challenges outlined previously, this is where the concept of "**Health Creation**" emerges. This relatively new term can be used to summarize the holistic state of health approach, which aims to create and maintain a comprehensive state of health that goes beyond the mentality of "health is the absence of illness". Recently, "prevention" is frequently used as a pioneering method for maintaining physical and mental health, but in my opinion, the word "prevention" is not the right choice for making people aware of their health, as this is still associated with a negative event ("prevent to get sick"). "Health Creation", however, is intended to substitute this negative perspective on health with a positive state centered on well-being and quality of life. Prevention should be seen as a component of "Health Creation", but not as the only valid approach to raise health awareness.

Due to the relatively new concept of "Health Creation", there is currently no unified definition that can be used as an all-encompassing explanation. The "**Health Creation Alliance**" (2023), which operates in the UK, defines this as *the process of individuals and whole communities gaining a sense of purpose, hope, and control over life and by doing so enhancing overall health and well-being.* This definition suggests that fostering a community that promotes health, along with its environment, is essential for the enduring well-being of a society.

The British architecture firm **Heatherwick Studio** has addressed the topic of "Health Creation" and aimed to redefine the places for health by introducing their idea of a "*Health Street*". In their eponymous report, "*Health Street – Health creation as a new mission for our high streets*" (2023), they attempt to establish this new approach in a community-based environment to reduce the pressure that pushes local hospitals to their limits and release it in another location where more capacity is available. In their opinion, design is particularly essential in places where people turn for healing, comfort, or health support, as the power of architecture significantly influences how we feel:

"How we feel about these places is important. If we associate them only with illness, then we need a different kind of place for health – a place that is not just for treating illness, but which aims to address wider issues and help people live well for longer."

– Healtherwick Studio, 2023, p.13

In their idea of a "*Health Street*", they make use of the hollowing High Streets, which means as much as the commercial streets, to bring healthcare closer to people and communities. They take advantage of the **"while I'm in town" mentality** so that people can stop by while they are doing other activities in the city center (Heatherwick Studio, 2023, p.24).

The concept of "**social prescription**" can be seen as an integrative part of Health Creation. This refers to the approach whereby healthcare providers not only prescribe drug treatments but also prescribe non-medical methods that are intended to contribute to improved well-being. This usually refers to social engagement, cultural involvement, or physical activities. This can be seen as an independent discipline, or as a complement to the traditional medical approach, which aims to emphasize the importance of social inclusion and the promotion of vitality.
Social prescription can be considered a cross-age approach for the whole population, with a particular focus on chronic diseases, mild mental health issues, social isolation, and loneliness (NHS, 2022). The goal is to create a personalized support and care plan, especially for people with such conditions, to help them take control of their health and well-being. In this respect, the **change from a "what is the matter with you?" attitude to a human-centered "what matters to you?" approach** should be encouraged.

figure 15."What is the matter with you?" vs. "What matters to you?" (illustrated by author)

To achieve such a new approach, however, it is necessary to create a new spatial framework and program that goes beyond those of traditional institutional facilities and instead promotes health and orientates towards the needs of its users. A place that provides a holistic and far-reaching perspective on overall health which is intended to create an antithesis to the conventional health climate – **a new kind of place for health.**

3.3 the current healthcare setting

To create this new place for health, which could be seen as complementary to the current initial points of contact for health such as hospitals and general practitioners, it is essential to analyze the current situation of these common places. In this regard, the spatial conditions and procedures are investigated in more detail, focusing on their core statements and their problems and how to improve those in such a new environment.

3.3.1 hospitals

The hospital has a long evolutionary history that goes back to the beginnings of civilization. Early medical treatments were often associated with a religious service and a spiritual ceremony in which the **place of treatment**, in ancient Greece for example the temple, was **seen as a meeting place for people** (Wolper & Peña, 2011).
In the course of the Roman era, the first centers, so-called "*lazarettos*", were developed for the care of injured soldiers, in which future doctors and nursing staff were also trained (Wilmanns, 2003).
With the decline of the ancient world, a significant amount of knowledge concerning health and care was lost due to the loss of the ability to read Greek writings. Monasteries played an important role in this period, as they were still able to read literary texts and were thus able to build on former knowledge and continue experimenting (De Fenffe, 2021). During this time, the focus shifted to healing through the influence of the natural resources of herbs and the importance of faith (Marcus & Barnes, 1999, p.1).

These nature-based views were gradually lost as history progressed and were largely superseded by technical and medical advancements in areas such as surgery and medicine (Marcus & Barnes, 1999, p.1). This technical focus can be seen as a reason for creating today's clinical environments, which are predominantly designed to be efficient and controlled. These spaces have a sterile and highly institutional character, resulting in a "**hard design**" (Ulrich, 1991, p.97), and are now perceived as stressful, which makes them unsuitable for the emotional and psychological needs of patients, visitors, and staff (Marcus & Barnes, 1999, p.27).
People seem almost out of place in such an environment – even though it should be designed for them! Statements such as "*(...) we're seeing a preference among patients and families for a calming place (...), not just a 'machine' to deliver care*" by

Brenna Costello, a medical planner, only illustrates the urgency to rethink the contemporary environment of health (Schnall, 2023).

Given an increasingly aging population and the associated increase in frailty and morbidity, making hospitalization more frequent in old age, it is important to note that older people perceive certain spatial settings differently from younger people. Aspects such as lighting, noise, color perception, loss of control, and social isolation increasingly affect hospitalized elders and can thus significantly influence their state of health. In a study of over 2.000 subjects, it was found that more than a third of older people were no longer able to fully manage fundamental activities of daily life after hospitalization, thereby limiting their independence and putting them at risk of developing new functional deficits (Covinsky et al., 2003). Findings such as these support the need to rethink such healthcare facilities for specific vulnerable target groups.
David Nicholson, former chief executive of *England's National Health Services* (NHS), noted that *"Hospitals are very bad places for old, frail people"* and argued for improved elderly care and the reduction of unnecessary and preventable hospitalization (McMurdo, 2013).

Hospitals are historically associated with the treatment of illnesses. This is already evident in the naming in some language areas: in German, for example, hospital means "*Krankenhaus*", which is made up of the terms "Kranken" (sick people) and "Haus" (house) and translates as "*house for sick people*". This negative association is reflected in their form and associated feelings, so it is no wonder that people tend to go to these places only when something feels wrong or in an emergency.
However, this avoidance means that many people fall through the net of preventive care and therefore probably cost us vast amounts of money that is needed for treating unnecessary medical conditions (Heatherwick Studio, 2023, p.12).

The importance of such a facility should not be called into question by these statements! However, the findings show that the design is not conducive to a holistic health-creating environment in the sense of "Health Creation". To achieve a positive mindset in people, we need an environment in which people can feel comfortable and not just want to be there for as short as possible!

3.3.2 general practitioners

This situation also applies to general practitioners (GPs) but on a smaller scale in terms of the number of patients and the size of the facility. GPs are considered the first place to go for health complaints, but the clinical environment aspect also applies here. Added to this in recent years is the increased pressure on these facilities and the impending staff shortage:
According to a sector report of the Dutch bank *ABN Amro* (2023), between 2018 and 2023 the percentage of GPs, who were not able to accept new patients increased from 48% to 60%. To counteract this negative trend, the **consultation time for patients is often shortened** and averages only 11 minutes, which in turn can **harm the quality of care** and possibly lead to misdiagnoses and thus to a deterioration in the patient's state of health. In addition, approximately 2.500 practitioners will reach retirement age (65) in the next five years, which could create an additional stress factor in the healthcare sector.
The **report calls for a rethink in primary care** to reduce the increasing consultation of care facilities such as hospitals and GPs. Considering the aging society and the expected population growth, the focus should be shifted to prevention and improving accessibility for the individual.

3.3.3 findings from the current setting

Looking at the spatial ambiance in a contemporary healthcare facility such as a hospital or a GP, it can be said that the clinical character that has become established over a long period as a result of technical and medical progress is still mostly to be found today.
As already mentioned, it is primarily about function and how processes can be handled as efficiently as possible. Due to such a basic idea, the design of such spaces often takes a back seat and can thus prevent people from doing exactly that in such a hoped-for "healing environment" or even harm patients' health outcomes (Ulrich, 1991, p.97).
Although recently built or renovated healthcare facilities have seen an improvement in design language and general appearance through the use of materials such as wood or color accents, there is often still room for improvement!

In a new health environment, the aim is to rethink these approaches, **overcome these negative associations**, and create a **positive mindset** in people towards this new setting. In this respect, the following strategies could serve as guidelines for a positive place of health (Ulrich, 1991, p.99-102):

1. giving a sense of control

People feel uncomfortable or stressed by a **noisy environment**. In this respect, it is advisable to provide diverse environments that satisfy a wide range of needs.
Wayfinding in a building can also be seen as a stress factor that can make people feel "lost". This can be counteracted with good orientation and wayfinding in the built structure.

2. social support

People who can rely on social support from family, friends, or neighbors experience less stress and have higher levels of wellness.
A public facility should aim to encourage **new social interactions**. In areas where people gather, movable furniture can promote such interaction. The possibility of freely arranging the objects allows smaller or larger groups to form.

3. positive distraction

Sensory stimulation is very important for people. However, it mustn't be too high (discomfort, stress), but also not too low (boredom). For example: Too bright colors, noisy surroundings, or too intense lighting lead to stress, while a monotonous environment can lead to boredom or even depression.

The integration of natural elements such as wood, water, trees, or plants as multi-sensory elements (visual, sound, and smell), as well as art, can be seen as a **positive distraction**.

3.4 architectural and programmatic guidelines

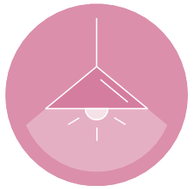
In this section, architectural and programmatic guidelines for the new health environment are summarized, which were formed from the findings of **current healthcare facilities** such as hospitals and general practitioners.

relief for conventional heath institutions

importance of natural lighting

use of natural materials

significance of color influence



importance of the right illumination

natural elements and art as positive distraction

place of information for vulnerable groups

importance of acoustics

IV. the search for a new health environment

4.1 lowering the inhibition threshold of health facilities

As mentioned in chapter 3.3, people often only consult healthcare facilities when it is necessary. However, this can often come too late, as countless illnesses may be prevented by early intervention. These include, in particular, chronic impairments such as cardiovascular problems and type 2 diabetes, which develop over a longer time frame and persist for a longer period – often even for a lifetime (Seychell, 2016)!

The reasons for avoiding healthcare facilities are complex. However, one fundamental influencing factor is the fear of a diagnosis. This fear of a possible confirmation of a disease or a serious diagnosis can prevent people from turning to medical facilities (Heatherwick Studio, 2023, p.8). Other **psychological barriers** include the fear of pain, loss of control over one's body, and depersonalization in the form of rational processes (Marcus & Barnes, 1999, p.32).

The **socio-economic situation** of the individual can also prove to be a barrier to accessing healthcare services. The factors influencing this status include the level of education, employment status, income, social networks, and ethnicity. In the context of health, it can generally be said that "the lower the socioeconomic position, the worse the health" (WHO, 2019).
People in such a situation often have poorer access to healthcare due to financial barriers, which prevent them from receiving medical examinations or preventive measures. In addition, insufficient education and limited health knowledge can affect the ability to respond appropriately to health information. These combined factors lead to an unequal distribution of health resources, which ultimately contributes to unequal health results.
The goal of a future-oriented healthcare system should be to make healthcare services more accessible, especially for the socio-economically vulnerable, to promote health awareness and thus prevent avoidable diseases.

Architecture plays a crucial role in this respect as well: **People often associate medical facilities as "stressful"** (Marcus & Barnes, 1999, p.27). This is due to the efficient and sterile nature of such facilities, which is often reflected in a "hard design". Such a design is in turn unpleasant for patients, visitors, and staff and can therefore harm the health outcome and the psyche of the users (Ulrich, 1991, p.97).

Health centers such as the *Pioneer Health Center* in the UK aimed to overcome these aspects as early as the 20th century to make health more accessible to the general public. Although the center was considered a pioneer in this approach, it was closed in the post-war period due to cutbacks in the health sector and was thus hindered in its possibilities.
This case study is discussed in more detail in the following section:

4.1.1 Pioneer Health Center

The *Pioneer Health Center* was established in 1926 by Dr. George Scott Williamson and Dr. Innes Hope Pearse as the built structure of the "*Peckham Experiment*" in South London. The choice of Peckham as the location for this experiment was chosen through **socio-economic analysis**, as the area had a mix of low, middle, and upper-middle income groups, which according to the researchers represented a diverse target group (Socialist Health Association, 2017). Initially, the activities were conducted on a smaller scale before moving to the building designed purely for the experiment.
This experiment aimed to create a "human laboratory" where people could be taught that health is more than just the absence of disease and that the cultivation of health required a completely different approach than merely curing. They thus attempted to position a **positive health and an antithesis to the purely medical approach** (Lewis & Brookes, 1983, p. 308).

Conclusions and outcomes of the experiment were drawn shortly after its initiation (Socialist Health Association, 2017):

- The **detection of disorders** that predict the onset of a particular disease can occur **well in advance**, often before the person concerned becomes aware of their health problems.
- These disorders discovered at this early stage are much **easier to treat** than at the later stage when they are usually brought to the doctor.
- Even people with **no visible signs of illness showed low vitality**. Despite available means and resources, there was widespread underutilization, unused capacity, and a lack of expression. Although families were not materially deprived, there was evidence of poor nutrition and lack of exercise. Although they lived in a busy area, there was **social isolation and a lack of connection**.

figure 16. Pioneer Health Center, 1953 (RIBA, n.d.)

A new building was needed to reflect these findings. Designed by *Sir E. Owen Williams*, the new center went **beyond the function of a health center** and also served as a community center by incorporating features such as a gymnasium, cafeteria, an indoor swimming pool, and other recreational facilities and was advertised as a "Family Club".
The building itself was designed to provide a healthy environment for its users in terms of **daylight**, **ventilation**, and **openness design**. Additionally, the interior incorporated lightweight furniture for **flexible utilization** of the space. Besides the users, the focus was also on the biologists, the medical observers, who monitored the activities of the participants through visual connections. However, the essential thing was "observation without interference" (Sargent, 2019).

plans and sections analyze

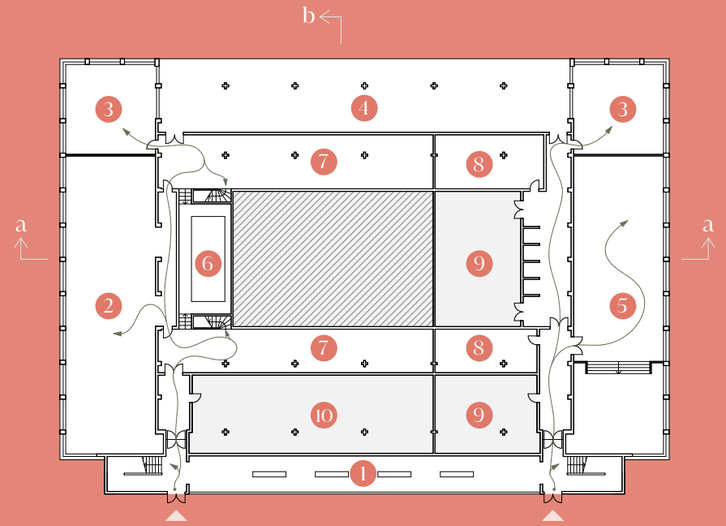
The building itself was constructed in concrete and glass with continuous windows on the exterior to **optimize the use of sunlight** (Socialist Health Association, 2017). At the heart of the building, one could find the indoor pool, which occupied the depth between the ground floor and the first floor and is filled with daylight through a glass roof.

On the ground floor was the entrance area with cloakrooms, which led to the gymnasium, the theater, and the children's nursery which was linked to a covered outdoor playground. In addition, there were separate changing rooms and washrooms for both genders, storage rooms, and the engine room (probably for the pool area and heating) on the ground floor.

On the first floor, there was a cafeteria, where healthy meals were served, and a general lounge area for gatherings. From these two rooms and the corridors leading to them, you could observe the areas of the gymnasium, the indoor swimming pool as well as the theater space.

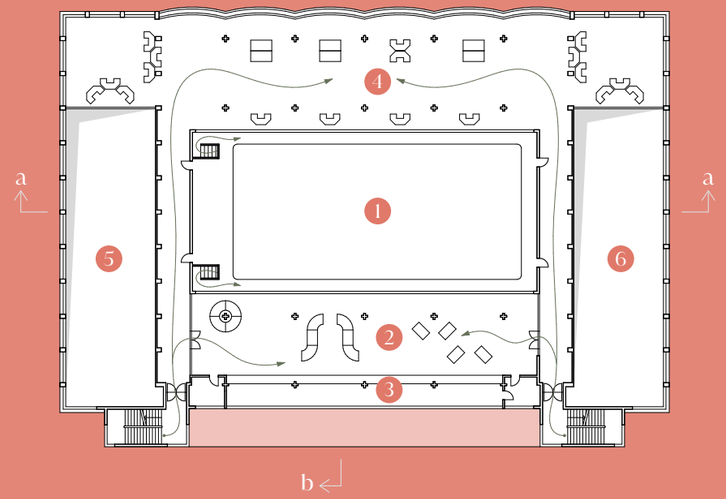
The medical department for individual consultations was located on the second floor. In addition to the medical department, there were also two dental rooms. The rest of the floor was left as an open space with a library, study rooms, workrooms, and indoor games.

The roof terrace on the top level was used for outdoor activities in the form of sports classes or for children as a secured playground.



ground floor

1. cloak room
2. gymnasium
3. nursery
4. outdoor playground
5. theater
6. child's pool
7. changing rooms
8. washrooms
9. storage
10. engine room

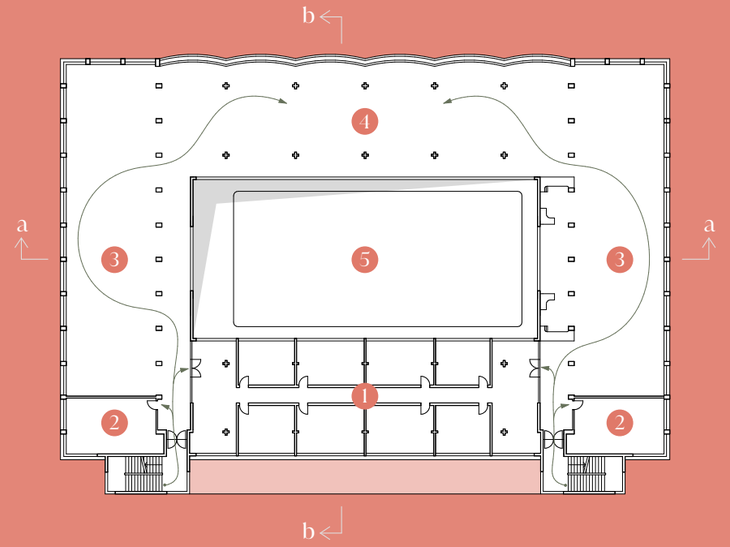


first floor

1. indoor pool
2. cafeteria
3. buffet service
4. lounge area
5. air space gymnasium
6. air space theater

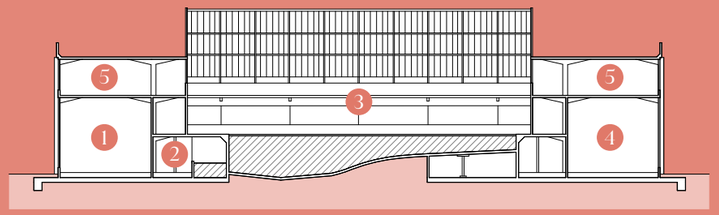
second floor

1. medical department
2. dental room
3. study & recreation area
4. lounge area
5. indoor pool air space



section a–a

1. gymnasium
2. child's pool
3. indoor pool
4. theater
5. study & recreation area



section b–b

1. cloak room
2. outdoor playground
3. buffet service & cafeteria
4. indoor pool
5. lounge area
6. medical department

the center's procedure

The "Family Club" members were invited once a year to undergo a comprehensive health examination. This was organized as a collective examination appointment for the whole family, after which the findings were discussed in detail with the probands. However, **no treatment was carried out, only the findings were presented**. This allowed the individuals themselves to reflect on how they would like to proceed and whether they could find their own solution to the condition. This created the opportunity to take a vested interest in their own health (Sargent, 2019). Nevertheless, the patients were able to seek advice and help, and after identifying the best solution, an arrangement was made with the most suitable facility together with the patient.
In addition to these annual examinations, users were also able to obtain help and advice on specific issues at any time, which created a close relationship with the center (Socialist Health Association, 2017).

findings from the Pioneer Health Center

When considering Peckham's experiment as a whole, the basic idea can still be seen as pioneering a new approach to health. People have been shown to become more engaged with their own health and have created new connections with fellow human beings through involvement with community functions, thus developing a stronger social character. The opportunity to undergo informal health checks alongside leisure activities resulted in more frequent use of these and thus enabled better monitoring of participants' health (Sargent, 2019).
The experiment itself referred to the family as a target group, as according to the researchers, the key to health is a healthy family structure (Lewis & Brookes, 1983, p. 315). Other **target groups such as the elderly or the generally poorer segment of the population were not considered in the experiment** (Lewis & Brookes, 1983, p. 343). In this respect, there appears to be a gap in the study. Particularly given today's aging population and the often-difficult socio-economic circumstances, there is a need for additional action in these fields. Through targeted measures, these people should be given access to health, which takes place in an environment that is not reminiscent of institutional facilities, but in a health-creating environment in a community-like atmosphere.

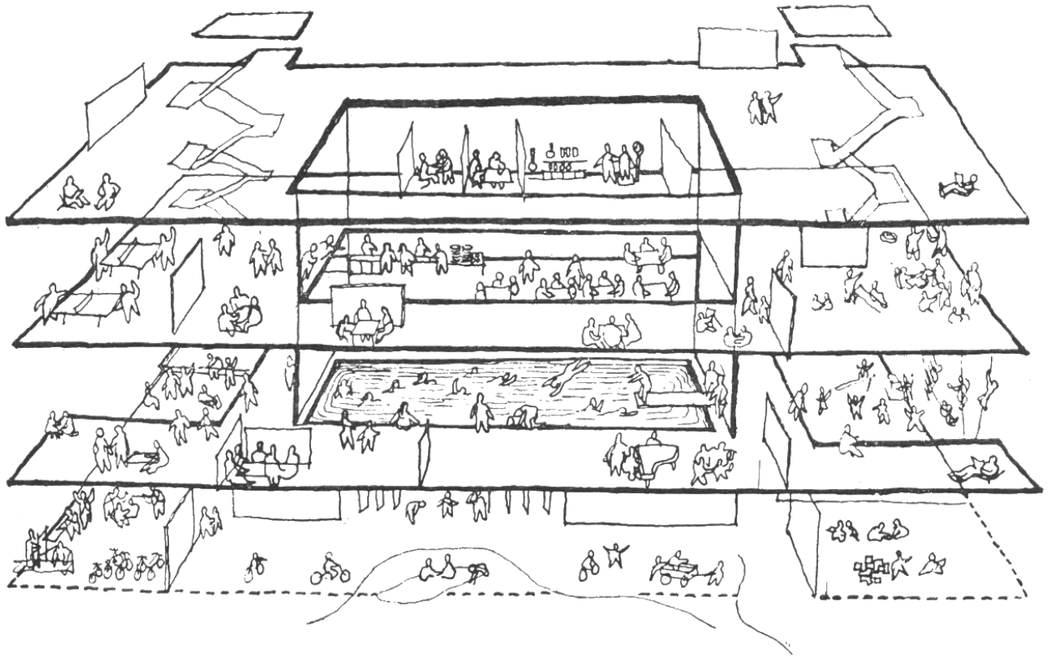


figure 17. spatial sketch of the *Pioneer Health Center* (Darling & Fair, 2022)

4.1.2 architectural and programmatic guidelines

This section summarizes architectural and programmatic guidelines for the new health environment that have emerged from the findings of the approaches to **lowering the inhibition threshold** and the analysis of the **Pioneer Health Centre**.

place of information
for vulnerable groups

possibility of
health checks

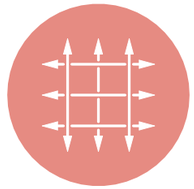
importance of
natural lighting

significance of
natural ventilation

increase of
physical activity

importance of
healthy nutrition

community spaces for
gatherings / discussions



flexibility and
adaptability of space

4.2 human-centered architecture

Human beings spend around 80% of their lives inside built structures, which can influence individuals both positively and negatively (Channon, 2018). Because of this high proportion of lives spent indoors, it is even more important how we design this environment!

In terms of creating a new place for health, the aspects of human-centered or user-centered design play an essential role, as the design of this new health environment can significantly influence the association of users. The aim is for this environment to be **geared towards the user and enable them to realize their full potential**. In this sense, architecture should create spaces that improve people's quality of life by providing comfort and functionality, promoting well-being and productivity, as well as ensuring a sense of belonging (Fidanci, 2023).

These approaches relate not only to the built indoor spaces but also to the planning of the outdoor spaces, whereby interventions can create squares and recreational areas that can strengthen interaction and the sense of community.

4.2.1 identification

Identification with one's environment can play an important role: In order to identify with a space, it is of high importance for the users that they also feel responsible for it. By being given responsibility and identification, **the user becomes an inhabitant** (Hertzberger, 1997, p.28). Herman Herzberger, a Dutch architect, translated this in some of his school projects in the form of "store windows", as shown in figure 19, which made it possible to display the artworks produced, allowing the groups to showcase what they had to offer. This created a constantly changing exhibition in the corridors. A similar approach could also be seen in the project visited during the fieldwork week (chapter 2.1). Small shelves were installed in the entrance niches on the corridor side, allowing the residents to present themselves to the public. This was done in a variety of ways, drawing attention to the diversity of the residents.

In a conversation with a member of a community center in Delft, another important point for identification for a community was mentioned: According to this statement, "**architecture should not be perfect, but should merely create the framework in which people can realize themselves in the future and feel connected to it by interaction**".

4.2.2 function for (inter)action

In some of his projects, Hertzberger tried to give spaces such as the entrance or stairs, which are often seen as purely functional, an additional function. By placing benches at the entrance, he created a meeting place where people could spontaneously chat while waiting. Stairs, which are otherwise only used to access the floors, became a playground for children, thus overcoming the "no man's land feeling" and becoming a "**vertical pedestrian walkway**" (Hertzberger, 1997, p.38).
By transforming such functions, one could unconsciously influence the behavior of users (nudge theory, choice architecture) and thus guide them towards a more positive decision and thus perhaps to a healthier self!

figure 18. stairs as *"vertical playgrounds"* (BauNetz, 2023)

4.2.3 multipurpose design

"*Designing objects as an instrument*". This statement by Hertzberger refers to the design of elements in the sense that they should be considered beyond their intended function. Elevations can serve as a seating area or extended parapets on stairs or windows can serve as a workplace (Hertzberger, 1997, p.176-178). In this respect, spatial elevations could also be seen as an opportunity for spontaneous transformation into stages. The aim should be that the **space can be used in different ways**, depending on how the users want to use it. This can also refer to the use of the space itself so that spaces not only have one function but can also be converted for a different activity depending on how they are used without any great effort.

figure 19. appropriation of space (Hertzberger, 1997, p.62)

4.2.4 round the corner

The design of spaces can play a decisive role in how people feel and behave. This perception is even able to alleviate emotional and psychological stress, prevent various stress-induced ailments, or have a positive influence on emotional and cognitive processes (Ritterson, 2023).
A round design language has proven beneficial in this respect: **Round shapes convey a reduced tension** compared to rectangular ones and thus have a more positive effect on people. They convey harmony and softness, making them often used to express care, unity, and emotionality, but also dynamics (Ritterson, 2023).
This was also established in a study in which participants were asked if they perceived rounded or rectangular rooms as "more appealing". **The majority tended to prefer rooms with a round appearance**. This survey was combined with an analysis of brain activity, and indeed, the rounder rooms registered increased activity in brain regions to which reward functions and generally pleasant feelings are attributed (Vartanian et al., 2013).
By creating a rounded design language, one could **increase the users' level of comfort** and thus contribute to a positive association with the environment, which in turn could promote the utilization of the premises.

figure 20. *The Opera Park* (Cobe, n.d.)

figure 21. *Maggie's Yorkshire* (Heatherwick Studio, 2022)

4.2.5 green space / greenery

Greenery is widely recognized for its stress-relieving impact on individuals. In a study, about two-thirds of respondents identified plant elements, such as trees and flowers, as contributors to relaxation and stress relief (Marcus & Barnes, 1999, p.6). This influence occurs both actively, through physical interaction with green spaces, and passively, through the mere sight of plants. The presence of a nearby green space, like a park, instills a positive feeling and a sense of control, knowing it can be easily accessed (Marcus & Barnes, 1999, p.40). Parks that are within **walking distance of around 200-250m** are used significantly more often than those that are further away from buildings (Alexander et al., 1977, p.305).

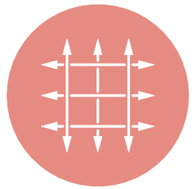
Integrating gardening spaces can also be seen as a shared activity that brings different people together. In this respect, besides the possibility of social interaction, cognitive and motor skills can be strengthened, as well as mental conditions are proven to be enhanced. These positive aspects can generally be summarized in "**horticultural therapy**" and can be applied across all generations (Marcus & Barnes, 1999, p.5). The harvest from gardening can then be used in the new health setting to encourage people to healthy and sustainable food habits, which in turn promotes further engagement between people.

4.2.6 view and seclusion

Creating visual connections enables people to interact and communicate with each other. This allows spontaneous conversations to take place and also increases the feeling of belonging. An atrium or split level can be implemented, which can also increase orientation in the building and enable surveillance in terms of the security of a larger area.
Another possibility for visual connections is openings in walls, which allow people on the outside to observe what is happening behind the walls, which in turn can create incentives to take part in the activities taking place. The same applies to vice versa.
Balancing openness and seclusion is crucial to respect privacy and ensure individuals can choose between introverted or extroverted spaces.

4.2.7 architectural and programmatic guidelines

In this section, architectural and programmatic guidelines for the new health environment are summarized, which were formed from the findings of the influence and opportunities of **human-centered architecture**.



flexibility and adaptability of space

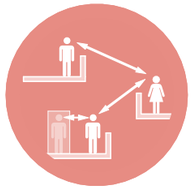
overview and wayfinding

community garden / garden of encounter

community kitchen

round design language

park / green space nearby



visual connections with other users

access routes as communication zones

4.3 intergenerational interaction

We are living in a world of division. We have created a world in which we separate ourselves by class, age, nationality, or income. By doing so, however, we limit ourselves to realizing our possibilities – including those of care. We tend to separate everything we believe to be incompatible: rich and poor, young and old. In terms of age-related segregation, we are now used to placing our younger ones in a kindergarten and the older ones in a retirement home, thus relieving us of our greatest worries. However, if we look at humanity's past, intergenerational living has always been part of our lives (McGuire, 2019), in which young and old lived together and not separately. Over time, this separation has led to **mistrust and a lack of understanding of each other's generations** due to their lack of communication (United for All Ages, 2018). Realizations such as these make it questionable whether such an approach is productive.
A growing body of research (Norouzi, Jarrott & Chaudhury, 2019, p.36) has dealt with the importance and possibilities of intergenerational interactions in recent years and the results are clear: **Mixing matters!** Through such intergenerational mixing, young and old can learn and benefit from each other. One model that can already demonstrate scientific success is that of **Intergenerational Care**!

4.3.1 intergenerational care

The concept of intergenerational care could be implemented as an important part of the topic of "Health Creation". Through early interaction between different age groups, the **awareness of the different generations** is imprinted at an early stage and thus reduces the age segregation that is often encountered! The young children grow into this awareness and see the **elderly as an important part of the community** and can thus benefit from each other's skills and knowledge. In addition, older people living in isolation could be reintegrated into the community to combat the health-threatening loneliness and create a new purpose in life.

In short, intergenerational care is the combination of the facilities of Adult Day Care and Children Day Care (kindergarten or preschool) into one unit, which enables the cooperation and exchange of the **often-undervalued strengths, skills, knowledge, and experiences** of the different age groups (Norouzi, Jarrott & Chaudhury, 2019, p.36) and thus breaks down the barriers of age segregation and forge long-lasting and life-changing bonds (Jayson, 2018, p.1).
Such a program aims to **break older people out of their home isolation** and bring them into contact with people outside their age group. The issue of **combating loneliness** plays an essential role here, as a study by the University of California San Francisco (UCSF) found that loneliness leads to a 60% higher risk of declining health and a 45% higher risk of death (McGuire, 2019). According to the WHO (2023), the effects of loneliness in old age are as dangerous to health as smoking or obesity. These findings illustrate that age-related **loneliness is not just an emotional burden, it's a health hazard!**

A survey conducted within such a program identified that the older participants felt a reduced level of loneliness, reduced aggregation, and improved general health among improved cognitive and motor skills (McGuire, 2019). Participants in another survey felt happier, more interested, loved, younger, and most importantly they felt needed (Jayson, 2018, p. 22)!

The positive effects of the program do not only apply to the older participants but also **influence the development of the younger generation**. Elementary school-age children, who participated in an intergenerational program before entering school, tended to have greater levels of empathy, ability to self-regulate, and social acceptance in comparison to peers who did not attend such a program. Furthermore, the children had higher development scores and were able to demonstrate advanced cognitive and motor skills compared to non-intergenerational peers (McGuire, 2019). It should also be noted that the children developed an enhanced perception of elderly people and people with disabilities through the program (Jayson, 2018, p. 21).

"Old People's Home for 4 Year Olds"

The British and later also in Australia adapted television series "*Old People's Home for 4 Year Olds*" generated an international impulse, which resulted in an increased presence in media.
This social experiment attempted to present the above-mentioned positive aspects of intergenerational care and was supported by experts from the health and social sectors to guarantee scientifically valid findings.
In the experiment, ten elderly people and ten toddlers interacted daily over seven weeks in a program specially tailored to the participants (the exact program is not listed in detail here, as this would go beyond the scope of this paper). At the beginning of the study, the elderly participants underwent a strength, fitness, and balance test, as well as a conduction (geriatric depression scale) concerning the

mood of the elderly to determine possible signs of age-related depression. This showed that a large proportion scored worrying low indexes for strength, walking speed, and fall risk, while others showed signs of developing depression or manifested depression (Hembree & Henry, 2022).

At the end of the seven-week experiment, the tests carried out at the beginning were re-examined and the following results were obtained: **All older participants were able to demonstrate increased grip strength, strengthened balance skills, and generally improved fitness. In addition, none of the participants were diagnosed as being at risk of depression!** The experiment has changed the outlook on one's life and hope for the future. Even the most skeptical participants changed their opinion from "I can't really see it making any great difference to us" to "The children had brought great joy" (Johnson & Stewart, 2017).
In the wake of the TV broadcast, more than 40 new centers have been established in Australia alone, bringing together toddlers and older people in one facility with organized activities. This mobilization also attracted the interest of the federal government, which led to millions in funding for the creation of such facilities (Cooper-Douglas, 2023).

design requirments

At the time of the research (December 2023), there is little information available on the spatial requirements of such an intergenerational facility, as existing programs were largely created in the form of adaptations of existing specialized facilities or the form of community centers (Norouzi & Angel, 2023). In general, however, it can be said that **acoustics play an important factor**, as it must accommodate both quiet and loud activities, which may cause discomfort for both older and younger participants (Norouzi, Jarrott & Chaudhury, 2019, p.43). One approach here would be, for example, that there are two separate facilities, but they are connected by various spaces, thus creating a "village-like" environment that is intended to encourage interaction (Norouzi, Jarrott & Chaudhury, 2019, p.44).

The aim is to ensure that interactions are not forced, as this could lead to possible resistance or cause resentment, but that **spontaneous interactions are encouraged** by the influence of architecture (Norouzi & Angel, 2023, p.6). In this direction, the "*nudge theory*" or "*choice architecture*" could be seen as an approach in which the architecture provides incentives for its users to bring about positive behavior or positive decisions, but should still give them the freedom of choice.

figure 22. intergenerational care (ABC, 2019)

figure 23. the intergenerational concept of *"Vollpension"* (Vienna.at, 2022)

4.3.2 intergenerational café

By incorporating an intergenerational café into the spatial program of the health-creating environment, a place for generational exchange could be created. In the spirit of "Health Creation", a new purpose for older people could be generated here through the activity of baking and interacting with people. Furthermore, this could also address the ever-increasing issue of age-related poverty.
The successful model of the intergenerational café "*Vollpension*" has emerged as a case study:

"Vollpension"

"*Grandma makes the best cake*". This statement and the absence of grandmotherly care in the big city gave origin to the Viennese intergenerational café "*Vollpension*" in 2012 and has since evolved into a socio-political statement that aims to change the perception and inclusion of the older population in our society.
The principle is simple: the team is made up of young people ("Jungspunde") and older people ("Omas und Opas"), with the "Jungspunde" taking care of the organization of the café and the "Omas" and "Opas" preparing and serving visitors homemade pastries. Behind this sweet idea, however, there is also a serious issue: fewer and fewer older

people are managing to get by on their monthly pension, putting them at **risk of increasing poverty in old age** (Vollpension, 2023).

Since opening its first location, the café has become a major crowd-puller and already has two locations in Vienna. According to the founders, they were swamped with applications from potential "Omas" and "Opas" when the second location opened!

The *challenges* which this is intended to address (Vollpension, 2023):

- Especially in bigger cities the **points of contact between young and old are limited**
- In the urban areas more and more elderly people **live alone and monetary poverty** in older age is becoming an ever-greater issue
- The intergenerational café as an incentive for elders to remain active and integrated and continue being a **valuable part of society**

Over the years, the Vollpensions portfolio has expanded considerably. A **baking academy** ("Backademie") has been added to the café, where grandmas and grandpas pass on their baking skills to the younger generation, creating an additional point of contact between the generations.

The *goals* to be achieved (Vollpension, 2023):

- Active participation in society instead of isolation in older age
- Self-empowerment through a meaningful activity instead of poverty in the later life
- Dialogue between the generations instead of a growing division between young and old

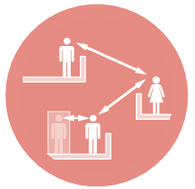
A concept like this could be a crowd-puller, especially in light of **Delft's status as a student city**. Countless international students live here to study – some of them hundreds of kilometers away from home. Such a facility could convey a sense of comfort and thus have a positive effect on the younger generation as well as the older population group. A facility of this kind would allow those interested to pursue a meaningful activity again, thereby combating the increasing isolation in old age and earning an additional income on top of their pension – **especially for the socio-economically vulnerable**!

4.3.3 architectural and programmatic guidelines

This section summarizes architectural and programmatic guidelines for the new health environment that have emerged from looking at spatial programs such as **intergenerational daycare** and **intergenerational café**.

promotion of intergenerational interaction

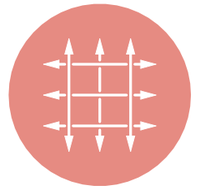
importance of acoustics



visual connections with other users

group and individual areas

café as a meeting point



flexibility and adaptability of space

outdoor activities for all generations

community kitchen

4.4 lessons from the Blue Zones

Health through the right lifestyle? How certain lifestyle choices can have a significant positive impact on your state of health and thus contribute to an above-average life expectancy – this has been established over years of research in the identification of the so-called "**Blue Zones**". Through this research, five such zones have been identified and are formed by Okinawa (Japan), Sardinia (Italy), Ikaria (Greece), Nicoya Peninsula (Costa Rica), and Loma Linda (California, USA).

figure 24 – *Blue Zones* locations (illustrated by author)

The figure behind the concept of "*Blue Zones*" is the American researcher, journalist, and author *Dan Buettner*, who, in collaboration with scientists, demographers, and other experts, attempted to investigate and compare the lifestyles and environmental factors in regions of the world where the life expectancy of the inhabitants was extraordinarily high. The premise of this research is in a nutshell: "**If you can optimize your lifestyle, you may gain back an extra decade of good life you'd otherwise miss**" (Buettner, 2008, p5). In this context, one could refer back to the gap between the life span and the health span described in the introduction. The question here is, **what does this optimized lifestyle look like?**

4.4.1 "Power 9"

From the comparisons of the different "*Blue Zones*", nine factors were identified which, if implemented in everyday life, should lead to an optimized lifestyle, a resulting longer health span, and possibly also a longer life span. These factors were defined as the "**Power 9**" (Buettner, 2008, p.228) and include the following lessons:

1. move naturally

The aim is not to become a marathon runner or do extensive weight lifting. Instead, integrate low-intensity physical activity into your daily work routine, without having to think about it. Here the experts recommend a balance of aerobic, balancing, and muscle-strengthening activities (Buettner, 2008, p.231)

The focus should be on a more physically active daily routine. This includes climbing stairs instead of taking the elevator or walking instead of driving. According to doctors, yoga is seen as good training for balance and can prevent falls in this respect. Gardening is considered a full-range-motion activity and harvest yields lead to a sense of achievement and fresh fruit or vegetables (Buettner, 2008, p.232-233).

2. 80% rule

This lesson occurs from the Japanese Blue Zone, where people **stop eating when their stomach is 80% filled**. This method is proven to increase heart health and promote weight loss, reducing the risk of developing high blood pressure (Buettner, 2008, p.233).

3. plant slant

The focus should be on the intake of unprocessed food. Meat should only be consumed in moderation while **most of the diet should be plant-based**. It is proven, that vegetarians tend to live longer than those who eat meat regularly (Buettner, 2008, p.239).

4. grapes of life

Epidemiological studies have shown that **one glass of beer, wine, or spirits may be connected with some health benefits**. For instance, a wine for dinner gets an event, so people tend to eat slower. It is also proven, that one or two glasses reduce stress and lower the effects of chronic inflammation. But it's about balance - because alcohol also contains toxins for other parts of the body when consumed in excess (Buettner, 2008, p.243-245).

5. purpose

In the Japanese Blue Zone **Ikigai** is used in the sense of purpose and is translated as "*why I wake up in the morning*". It is scientifically proven, that people who have a clear goal in life live longer than those who do not. This purpose differs from person to person and also includes learning new activities. This increases brain activity and is kind of a strength training for the brain, which decreases memory loss and maybe even shifts the onset of Alzheimer's (Buettner, 2008, p.245-247).

6. down shift

It is interesting to see, that people who made it to 100 seem to exude a **sense of sublime serenity**. This slowing down is also associated with one's body's

reaction to stress. A small dose of stress can be beneficial to prepare for a traumatic event or help us heal, but chronic inflammation can turn our bodies on themselves. Giving yourself a break can reduce this inflammation. Meditation is seen as an important tool in this sense and improves concentration and reduces worrying (Buettner, 2008, p.248-250).

7. belonging

Most of the Blue Zones were driven by faith. It was also proven that people, who **attended church services regularly, tend to live longer**. Belonging to a certain religious community resulted in better physical activity levels and higher self-esteem (Buettner, 2008, p.251-252).

8. loved ones first

A majority of people who made it to 100 put **family first**. They build their life around this core and can rely on a strong supportive network. It is also common for the younger generation to look after the older members, which in turn strengthens the sense of belonging (Buettner, 2008, p.254-255).

9. right tribe

This lesson is seen as the most important one: Social connectedness is deeply integrated in all Blue Zones. In a nine-year scientific investigation, it was found, that people who had a low level of social interaction were two to three times more likely to die during this study. A superior social support network therefore appears to be associated with longevity (Buettner, 2008, p.258-259).

4.4.2 the creation of a Blue Zone

To prove these findings, *Dan Buettner* had to put these principles into practice:
In 2009, Albert Lea, USA, served as an urban laboratory with around 18.000 participants, aiming to increase life expectancy by two years through applying the *lessons from the Blue Zones*.
At the beginning of the experiment, health-related data such as body mass index (BMI) and eating habits were recorded to calculate the average life expectancy of the people.
Implementing Blue Zones lessons involved creating **healthier grocery stores**, fostering walking groups for new friendships, and adapting the environment into a **more walkable and bike-friendly city**.
After a year, results showed a **remarkable 3.1-year increase in life expectancy**, validating the ability to create a Blue Zone through lifestyle adaptations (Buettner, 2023, 07:26-12:38).

figure 25. nine rules of the Blue Zones (illustrated by author)

4.4.3 "Health Creation Power 4"

Considering the lessons of the *Blue Zones* in terms of *Health Creation*, four aspects are essential and important to implement in a new place for health and are referred to as "**Health Creation Power 4**" in this research: (1) the importance of physical activity, (2) the power of proper nutrition, (3) the creation of (new) purpose and (4) social connectedness!
In the following section, these aspects will be discussed in more detail, and how these could be transferred into an architectural language and coordinated (spatial) program components:

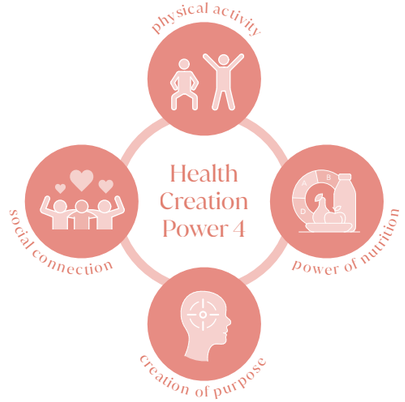


figure 26. diagram of "*Health Creation Power 4*" (illustrated by author)

1. physical activity

People should not be forced to exercise just because a doctor tells them to. Instead, people should be encouraged to integrate low-intensity physical activities into their everyday lives. This can be achieved simply by creating an **attractive stairway environment**, which possibly goes beyond the pure purpose of providing circulation and becomes a place of social exchange – as *Herman Hertzberger* already translated in his projects. The *nudge theory* can be used again here, whereby certain impulses could encourage people to make positive decisions.

Gardening has emerged in the *Blue Zones* as an activity that involves a **wide range of movement** and helps to reduce stress (Buettner, 2008, p.118-119). This activity could also be used to establish new social contacts in the form of a **communal garden** or by involving people in the **maintenance of the green spaces**. The principle of self-management could be applied here, whereby people feel responsible for a certain area and thus generate a certain purpose.

In addition to such "*unconscious*" *activities*, other sporting activities should be made available to provide users with a broad spectrum. This should include **indoor and outdoor activities** in the form of sports equipment, but also guided sports sessions in groups. Yoga and balance exercises have proven to be beneficial for physical strengthening (Buettner, 2008, p.155) and could be introduced to people in the form of "*social prescription*" (see chapter 3.2).

In terms of **prevention**, "*fall prevention classes*" could also be offered here to "teach" people how to fall correctly, which could avoid subsequent injuries. The need to expand such an offer was also emphasized in a discussion conducted by Eline Koes with the municipality of Delft, as well as in a conversation with a physiotherapist (see chapter 2.3).
The premises for such wide-ranging activities should be flexible in their use and also allow new activities initiated by the community.

2. power of nutrition

As the *Blue Zones* have shown, a predominantly **plant-based diet has proven to be beneficial to health**. However, it is not prescribed to avoid meat altogether but to consume it in moderation.

In the spirit of Health Creation, cooking sessions in a show kitchen could be used to **encourage people to eat more healthy food**, which they could then later integrate into their everyday lives and perhaps be inspired to try out healthy recipes themselves.
A **self-organized nearby vegetable garden** could provide fresh ingredients, where the self-grown and harvested products are processed into nutritious meals. These sessions can be seen as healthy eating training, but also as a community event where the community comes together and new connections can be made.

When visiting a local community organization, a weekly organized dinner has established itself as a central meeting point for the community that also welcomes new people. This shows that nutrition not only has the power to **positively influence health through its nutrients but can also bring people together** and thus lead to the formation of a community.

3. creation of purpose

Ikigai is used in the Japanese *Blue Zone* as the reason why someone gets up in the morning. This is also strongly connected with **physical, mental, and emotional well-being and creates a sense of being needed and motivation in a person**. This could be seen as the simple responsibility for a certain field

within a community – like taking care of watering the plants, helping with voluntary work, or looking after younger community members.

In the new spatial health program, this could be implemented with **intergenerational daycare**, where older adults can interact with toddlers and pass on their knowledge to the next generation, by also benefitting from the presence of the younger ones.

The creation of an **intergenerational café** enables older people who love baking to rededicate themselves to their passion, overcoming the loneliness that often comes with age and tackling the increasingly common problem of poverty in old age.

By creating a new activity program and the opportunity to learn new skills, such as sports or creative work, people have a new task that not only keeps them busy but can also contribute to increased motor and sensory skills, as well as social interaction.

4. social connectedness

As already mentioned in the "*Power 9*", social connection is seen as one of the crucial factors across all Blue Zones.

Social interaction is even more important in older age, as a **lack of social interaction increases the chances of developing depression symptoms** (Lee et al., 2021) whereby the motivation to be physically active decreases which can lead to a higher mortality (House et al., 1988). Due to spatial programs such as intergenerational daycare, community cooking sessions, the possibility to learn new skills, and an intergenerational café as a meeting place for the generations, people are getting **(re)integrated into society** and thus regain a certain drive and a general sense of purpose in life. Such connections with people also open up opportunities outside this new place of health, for example, older adults can look after toddlers of new acquaintances from the facility. **The aim should be to strengthen the sense of community and togetherness!**

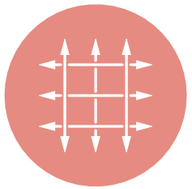
4.4.4 architectural and programmatic guidelines

In this section, architectural and programmatic guidelines for the new health environment are summarised, which have emerged from the research and the benefits of lifestyle adaptation through the **Blue Zones** approach.

increase of physical activity

importance of healthy nutrition

community kitchen



group and individual areas

creation of purpose and responsibility

strengthening of the community

community garden / garden of encounter

learning of new skills

V. discussion & conclusion

5.1 discussion

This research attempted to **raise the need for a new place for health**, moving beyond the traditional clinical healthcare institutions to create an environment where **people positively associate health** and go well beyond the mere absence of illness.

Health Creation as an approach is used in this research as the positive attitude toward health. Through its holistic process, individuals and entire communities gain a sense of purpose, hope, and control over their lives and by doing so enhance overall health and well-being. The focus should be away from the "what is the matter with you?" approach and towards a "what matters to you?" philosophy!

Through fieldwork, interviews, observations, literature studies, documentaries, and case studies, it was possible to get a better understanding of current healthcare facilities and which challenges need to be tackled to create a new place of health, beyond the current institutional approach.
The aim of this study was therefore to find out *how the principles of Health Creation can be embedded into architecture that supports (elderly) people in remaining both physically and mentally active as well as socially integrated.*

In the following sections, the corresponding subquestions are addressed:

I. What spatial and design elements are needed to make the new health environment welcoming to the public?
This research briefly examined contemporary healthcare facilities, such as hospitals and general practitioners, as the first point of contact for health concerns. It aimed to explore the reasons behind the negative spatial and emotional perceptions that individuals often associate with these places. In this regard, it should be noted once again that it is not the function or the medical services that are being criticized, but rather that these are still places that are largely concerned with illnesses and their treatment, which is why many people associate these spaces negatively. However, health should be viewed from a positive perspective and not just a concern when you no longer feel well. **Raising awareness about health could enable new opportunities to arise so that people's full potential can be realized, thus enabling an improved self.**

From these findings, initial guidelines emerged that could be conducive to overcoming the clinical environment, and it appeared, that experts are already calling for a rethink of primary care to reduce the increasing consultation of care facilities such as hospitals and GPs.

Lowering the inhibition threshold for reaching out to healthcare services was identified as crucial, as it is linked to psychological barriers and socio-economic status, which puts people at risk of falling through the net of preventive care.
The *Pioneer Health Center* (Peckham Experiment) initiated an attempt in this direction in the first half of the 20th century. Although the combination of informal health checks and recreation activities had a positive impact on people in terms of increased interest in their health, it is critical to note that only middle-class citizens were targeted. People who were socio-economically worse off or elderly people were completely left out of this experiment. The aim of a contemporary implementation should be to give these vulnerable groups in particular better access to health – **because health is everyone's right!**

As health should be about the human being, it is all the more important that the architecture also relates to them. It has been found that the environment in hospitals or GPs focuses primarily on efficient processes resulting in a "*psychologically hard design*", meaning that humans tend to play a subordinate role, as little attention is paid to the emotional situation of individuals. A human-centered or user-centered architecture could intervene in this direction. The aim here is to respond to the needs of the users to support them in realizing their full potential. In this respect, the possibility of identification, a rounded design language, flexible spatial design, and access and visual connections to green space have proven to be beneficial.

II. What are the potentials of Health Creation apart from a hospital setting and instead in a health-creating environment?
The aim of this new environment to be created should be to **relieve the pressure on healthcare facilities** such as hospitals or GPs, which are currently approaching their capacity limits. The integration of informal health checks could be particularly crucial here, whereby people can seek health advice if necessary. This should take place in an environment that has a community-related character through the **integration of leisure activities**, based on the ideas of the *Pioneer Health Center*.

By applying the method of "*social prescription*", the misconception that health is achieved primarily through medical intervention is to be overcome. In this respect, the **principles of the Blue Zones**, which are geared towards increasing life and health expectancy through specific lifestyle adjustments, can be brought closer to citizens. Through a combination of increased physical activity, healthier eating habits, a deeper social connection, and the generation of a (new) purpose, the aim is to support older people in particular in maintaining their independence.

For an implementation of the Health Creation approaches, it should be noted that a rethinking of the political and financial approach to health is necessary. According to *Jet Bussemaker*, Professor of Science, Policy and Social Impact in Health at Leiden University, in the Netherlands out of €5.000 spent per person per year on healthcare, only €25 is spent on **prevention** (Bussemaker, 2022, p. 21) –this equates to **just 0.5% of all healthcare spending** per person!
The Netherlands is not alone in terms of low spending on preventive measures: although the proportion is higher in the UK at around 5% (Heatherwick Studio, 2023, p.23) or Austria at 3.1% (Österreichische Sozialversicherung, 2016), there remains room for improvement. Insights from Health Creation and the Blue Zones, which could contribute to extending the health span and thereby also improve people's quality of life, could potentially reduce expenditure on treatments and thus relieve the burden of the healthcare sector and the individuals.

III. How can architecture promote mental activity and social interaction and thus increase the awareness and integration of the elderly in our society?

Social isolation is a health threat to individuals.
Older people in particular are at risk in this respect due to a shrinking circle of contacts as they get older. This often can lead to loneliness, which puts older people at risk of entering a "*vicious circle of aging*". The consequences of this can be depression, which in turn leads to a reduced desire for social interaction, which is also associated with a minimized enjoyment of physical activity, which only pushes infirmity forward. The goal should be to avoid people entering this "*vicious circle of aging*" in advance or to release them from it!
The creation of a community-like environment could be beneficial in this direction. This makes people feel part of something bigger and thus develop a sense of purpose, which makes them feel needed. Room program components such as an **intergenerational daycare** as a point of social interaction among the generations, an **intergenerational café** as a neighborhood living room, a **wide-ranging program of activities** to increase interest in learning new skills and sports or areas where people can linger and carry out their activities such as learning, working, reading, etc. could serve as a hub for the neighborhood, but also for interested parties from all over Delft.

However, for people to feel connected to such an environment, they must be able to realize themselves in it and identify with it. In this respect, **human-centered architecture** comes into the picture again, as the social interaction of people can be nudged through purposeful design in the form of **flexible room layouts and furniture, entrance areas, or access routes**. The guiding principle in this direction should be "*function for (inter)action*". The architecture should provide the framework but still leave room for people to express themselves.

Looking at these findings, one might think that the ideal solution would be to include these programmatic points in a residential project so that (elderly) people can step out of their apartments and interact with this environment immediately. However, experience from the field week, where a public facility in the form of a library was integrated into the residence for the elderly, showed that people appreciate such a facility, but would prefer it to be an independent facility in the immediate vicinity. People should not be forced, as this could make them feel restricted in their self-control, which in turn can result in a feeling of displacement and disempowerment.
Instead, the new health-creating environment should generate an accessible place of community where (elderly) people from the area and the whole of Delft can exchange ideas, share experiences, and in doing so, (re)awake a sense of self-interest – and, above all, experience a renewed sense of being valued and needed.

5.2 conclusion

This research aimed to identify the existing and upcoming challenges of the health sector and general misconceptions about health. In this regard, the objective was to conceptualize new architectural spatial approaches that can tackle these challenges to introduce **a new approach to health that considers health as a holistic concept**.

From the in-depth research, it emerged that **vulnerable groups such as the elderly and the socio-economically disadvantaged** have a particular need for access to health and social inclusion. These two groups emerged as the target group for the new health environment to be created, but it must be said that the topic of health should be seen as a comprehensive approach and should therefore also be accessible to the general public – **because health is everyone's right!**

Health Creation has proven to be a guiding principle in this respect, as it goes beyond the purely medical view of health and also **considers mental and social aspects alongside physical health**. The spatial environment in which this is to take place has a key role to play in achieving such a rethink of the topic of health because such a setting has a significant influence on how we feel!

To create this antithesis to the existing healthcare environment, it was important to understand this environment and briefly discuss its problem. This raised the issue of the **often perceived cold, machine-like and anonymous appearance of existing facilities** such as hospitals and GPs, which Roger S. Ulrich (1991, p.97) refers to as "*psychological hard design*". It should be mentioned here that the importance of such facilities should not be questioned, but this environment does not seem suitable for making people aware of their own health, because from experience people spend as little time there as possible!

In the mid-20th century, the built structure of the *Peckham Experiment* in London attempted to position itself in this respect. The **Pioneer Health Centre combined recreation and medical health checks** in a community setting, fostering increased health awareness and self-interest. Despite such promising results, however, the outbreak of the Second World War prevented the center from realizing its full potential and it was permanently closed due to post-war cutbacks. The essence of the combination of community functions and the possibility of health checks is taken up in this study as a way of bringing healthcare closer to the people.

As the new health environment is to be created for people, it is important that the architecture also focuses on them as users.
Approaches by *Herman Hertzberger* and *Christopher Alexander* in the direction of **human-centered architecture** are considered pioneering in this respect. Aspects such as the creation of **user identification** in their environment, **flexible and adaptable design elements**, or the importance of balanced **visual connection and seclusion** have emerged as important design principles.
The psychological impact of appearance is significant as well. Research indicates that **round shapes** are considered more attractive and have been linked to heightened brain activity in regions related to reward functions and overall positive emotions. This association suggests an enhancement in user comfort.
Access to **green space**, active interaction in the form of **gardening**, and the visual connection to **elements of the plant world** as a "positive distraction" have also been shown to increase comfort.

Social aspects of well-being play a major role in the area of "Health Creation". In this respect, increased intergenerational interactions could contribute to increased social inclusion of older people.

Intergenerational care has positioned itself as a promising methodology in this regard. Here, young children and older people are brought together in a type of daycare and interact in coordinated activities. The social experiment "*Old People's Home for 4 Year Olds*" was able to show that both the younger and older generations can benefit from joint interactions. The older participants were able to show **increased overall fitness, changed their outlook** on their lives, and were also able to **eliminate signs of age-related depression**. The younger participants showed increased development scores and demonstrated advanced cognitive and motor skills compared to non-intergenerational peers and showed an enhanced perception of elderly people and people with disabilities!
The case of "*Vollpension*" in Vienna, an **intergenerational café**, has developed from an initial "grandmother's miss in the city" to a socio-economic statement. Creating a new occupation and the opportunity to interact with diverse people, not only combats age-related isolation but also attempts to **tackle the problem of age-related poverty**.

"*The Lessons of the Blue Zones*" have shown how the quality of life and therefore also the prospect of a "*healthy life expectancy*" can be influenced by

adapting one's lifestyle. Nine groundbreaking rules, referred to as the "*Power 9*", are the result of years of research into five areas of the world where people live to an above-average age. From this, four key aspects have crystallised for Health Creation: the importance of **physical activity**, the power of **proper nutrition**, the creation of **purpose**, and **social connectedness**. These can be realized by generating new activity programs and translating them into architectural elements that encourage movement, such as attractive circulation routes and gardens, which in turn can be used to introduce people to healthier eating habits, or communal areas that encourage social interaction between people.

During a one-week stay in a Dutch "*residence for the elderly*" at the beginning of the study, it was found that residents favor facilities that encourage social interaction and provide activities to maintain both their physical and mental condition.
The care facility mentioned had a public library, but this was perceived rather negatively. This was because it was integrated into the housing complex with no physical separation, which created a feeling of "exposure" among the residents. Nevertheless, they appreciated the library function itself in their immediate surroundings.

These findings suggest that (elderly) people value such facilities but do not necessarily want them integrated into their immediate living environment. When implementing them in a new healthcare environment, such functions should be close by, but placed independently of the housing setting – in the sense of **nearby care**.

The above-mentioned findings should serve as a solid basis for the creation of a new health environment that can be accessible to the target groups of older people and socio-economically disadvantaged people, but also to the broader public in general.

The most important architectural and programmatic guidelines for this can be found in the following section. Aspects that appeared several times in the study have been highlighted.

5.3 glossary of design guidelines

healthcare aspects

possibility of health checks

individual living with nearby care

relief for conventional heath institutions

importance of caregivers' health

place of information for vulnerable groups

importance of healthy nutrition

education about healthy life habits

mental aspects

learning of new skills

creation of purpose and responsibility

awareness of mental health

programmatic aspects

outdoor activities for all generations

community garden / garden of encounter

community kitchen

cafè as meeting point

increase of physical activity

shared activities

community spaces for gatherings / discussions

intergenerational interaction

public library in reachable distance

therapeutic climbing / bouldering

architectural aspects


park / greenery space nearby


significance of natural ventilation

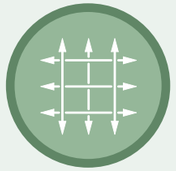

significance of color influence


group and individual areas


round design language


importance of acoustics


use of natural materials


flexibility and adaptability of space


importance of natural lighting


importance of the right illumination


natural elements and art as positive distraction


visual connections with other users


age-friendly stairs


access routes as communication zones


overview and wayfinding


sufficient seating and rest options

sources and figures index

sources index

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