

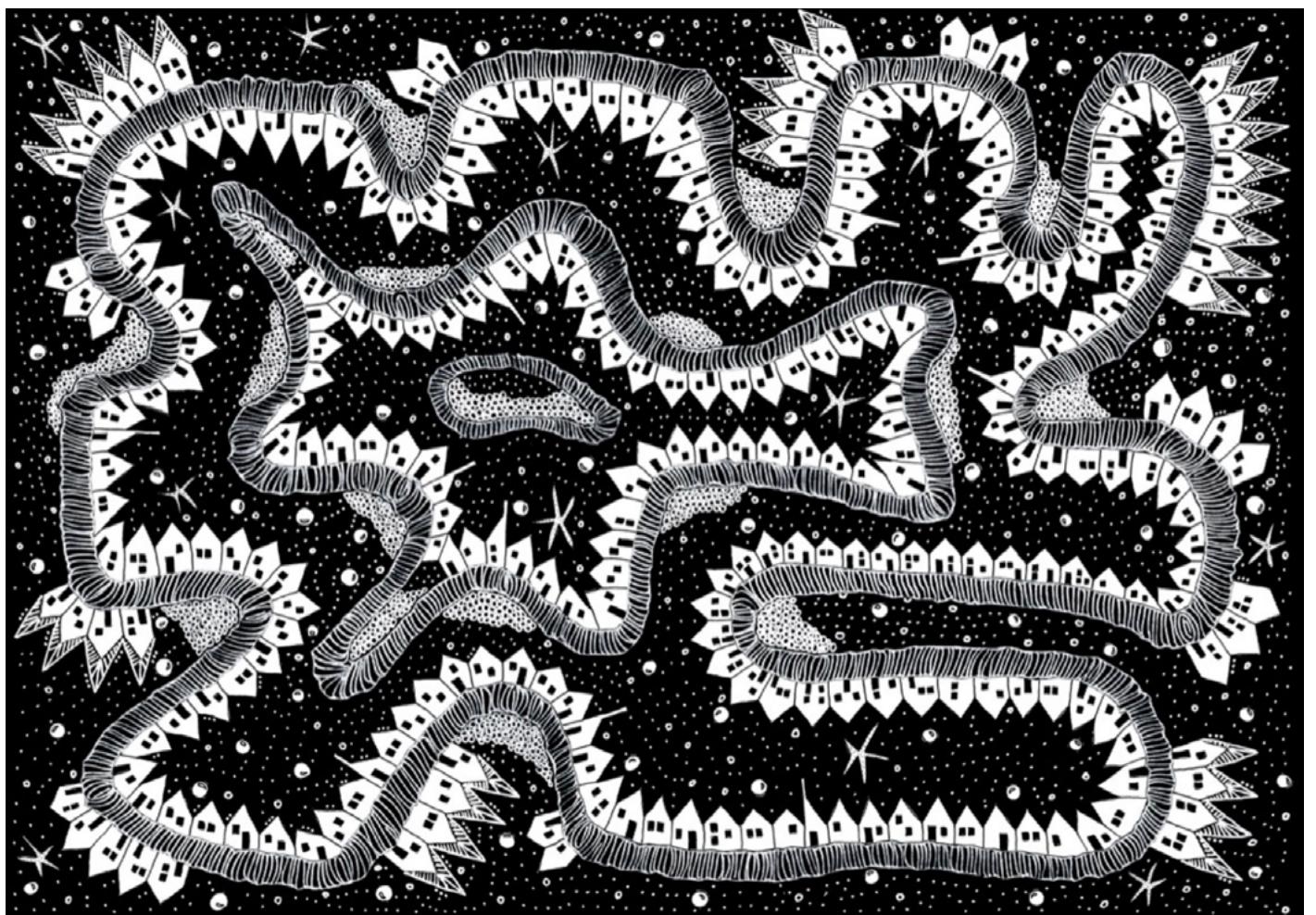
The Silent Epidemic:

**How can playful living environments
alleviate the feeling of loneliness?**

The case of Pendrecht, Rotterdam-Zuid



Fig. 1: *Zoe* by Karina Puente, inspired by the book 'Invisible Cities' (Puente, 2017b)





**How can playful living environments alleviate the
feeling of loneliness?: The case of Pendrecht, Rotterdam Zuid**

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Abstract:

Loneliness has emerged as a pervasive “silent epidemic” in urban environments, disproportionately affecting vulnerable groups such as the elderly, single parents, and children. This thesis explores how playful and sensory-integrated living environments can alleviate feelings of loneliness, focusing on the case of Pendrecht, a post-war neighborhood in Rotterdam Zuid characterized by social fragmentation and high levels of isolation. Grounded in the theoretical framework of *Homo Ludens* by Johan Huizinga, the research highlights playfulness—not merely as structured play, but as spontaneous, sensory-rich engagement—as a catalyst for fostering social connections and well-being.

Recognizing that loneliness cannot be addressed in isolation, the study adopts a holistic approach that considers the broader health of the built environment. It emphasizes that fostering meaningful social connections requires more than just opportunities for play—it also necessitates accessible spaces, clean air, safe environments, and sensory-rich public realms that collectively support physical, mental, and social well-being. Through a multi-method approach combining literature reviews, ethnographic research, interviews, and spatial analysis, the study examines how the built environment influences experiences of loneliness and how sensory integration can encourage intergenerational engagement.

Ethnographic findings highlight specific challenges faced by different age groups—such as social disconnection among the elderly, time constraints for single parents, and limited unstructured, stimulating environments for children—underscoring the importance of holistic design strategies that prioritize accessibility, inclusivity, and environmental quality. The research proposes a set of design guidelines that integrate sensory elements and playful affordances to create welcoming spaces that stimulate curiosity, spontaneity, and connection. The concept of a “playful periphery” around Pendrecht is introduced, envisioning a network of diverse, accessible, and sensory-rich spaces that invite exploration, creativity, and social interaction while promoting environmental health.

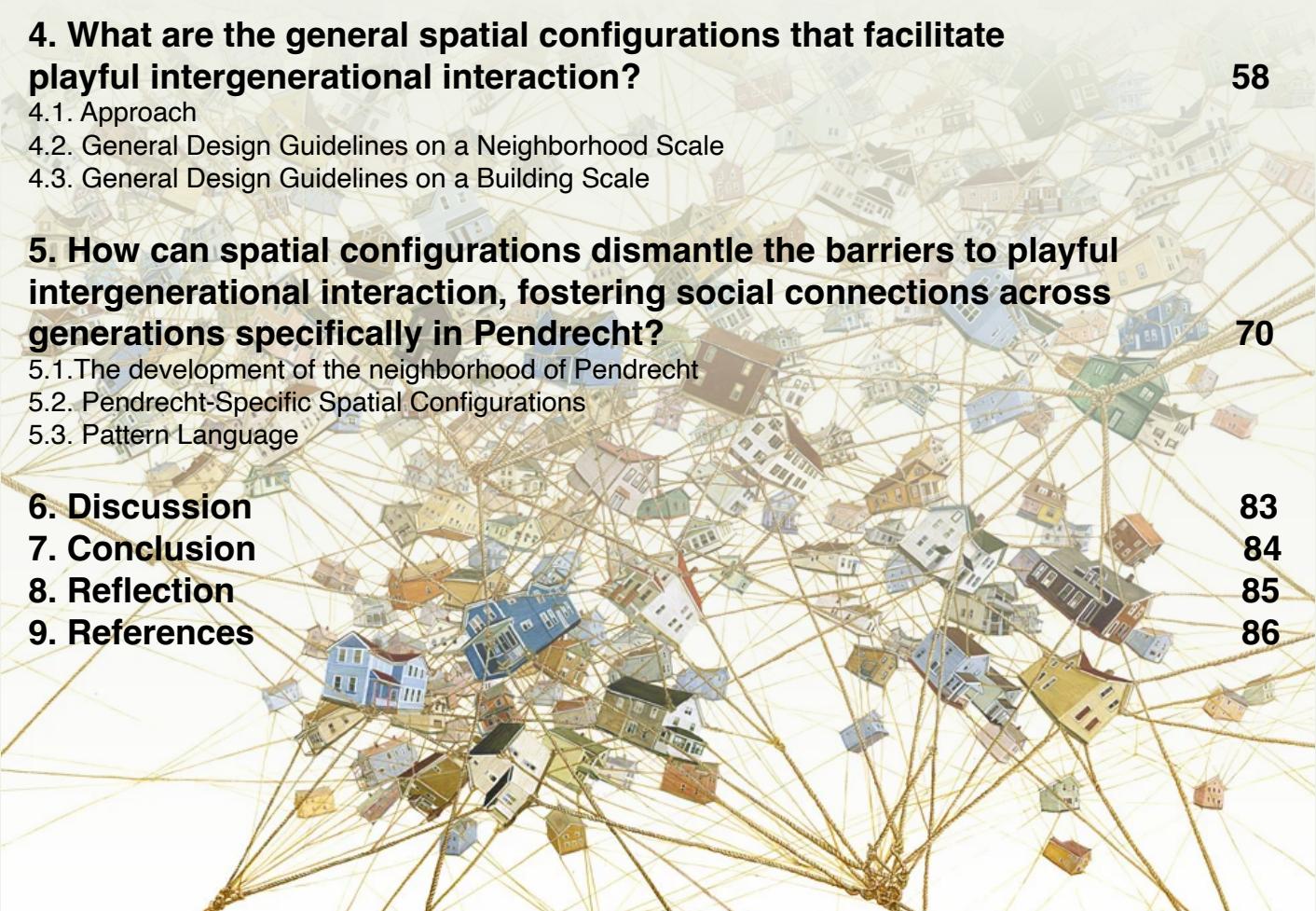
Rather than viewing loneliness as a purely social or psychological issue, this thesis frames it as deeply interconnected with the physical and environmental conditions of urban spaces. By designing environments that are not only playful and engaging but also health-promoting and inclusive, cities can support both individual well-being and stronger community ties. Such spaces become enablers of connection—where clean air, accessible paths, and sensory stimuli work together to create opportunities for interaction, belonging, and emotional resilience.



⁴ Fig. 2: Diomira by Karina Puente, inspired by the book ‘Invisible Cities’ (Puente Frantzen, 2017a)

Contents' Page

1. Introduction	6
1.1. Relevance	
1.2. Background on loneliness and playfulness	
1.3. Background on Pendrecht	
1.4. Defining the living environment	
1.5. Problem Statement	
1.6. Theoretical Framework	
1.7. Objective and Hypothesis	
1.8. Main Research Question and Sub-Questions	
1.9. Methodology	
1.10 Included and Excluded	
1.11 Output	
2. What are the specific causes and manifestations of loneliness among the three different age groups in Pendrecht, Rotterdam Zuid in relation to the physical environment?	20
2.1. Causes and Manifestations of Loneliness	
2.2. Causes and Manifestations of Loneliness in Pendrecht	
2.3. Takeaways	
3. What constitutes as 'play' universally but also specifically to the different age groups in the physical environment of Pendrecht?	38
3.1. Play, Playfulness and Playful Play	
3.2. Playing with the senses	
3.3. Meaning of playfulness per age group in Pendrecht	
3.4 Takeaways	
4. What are the general spatial configurations that facilitate playful intergenerational interaction?	58
4.1. Approach	
4.2. General Design Guidelines on a Neighborhood Scale	
4.3. General Design Guidelines on a Building Scale	
5. How can spatial configurations dismantle the barriers to playful intergenerational interaction, fostering social connections across generations specifically in Pendrecht?	70
5.1.The development of the neighborhood of Pendrecht	
5.2. Pendrecht-Specific Spatial Configurations	
5.3. Pattern Language	
6. Discussion	83
7. Conclusion	84
8. Reflection	85
9. References	86



Introduction

The Silent Epidemic

1.1. Relevance

Loneliness has been in recent years referred to as a ‘silent epidemic’, especially within an urban context. When it has been said that ‘loneliness does not discriminate’, there is evidence to suggest that some are at higher risk of being affected than others, with the government of UK identifying this as ‘growing social injustice’. The topic of loneliness has been discussed heavily during the Covid pandemic with headlines urging for attention towards the elderly, single parents and young people as the most susceptible. When this conversation has slowly died down, do we find these groups in a less isolated and vulnerable position? or are we simply less interested in the discussion because of its reduced broader relevance to the rest of society?

1.2. Background on loneliness and playfulness

Loneliness is separated into three types: emotional, social and existential. The first two relate to the relationship of an individual to others and the latter is an internal structure. Social loneliness relates to a lack of contact to others and emotional is the lack of an intimate bond with others. So in a way one relates to quantity and the other to quality (Wolfers et al., 2021 & BAL, 2024)

Neighbourhood-led initiatives have taken the matter into their own hands by trying to mobilise communities in coming together. The concept of ‘Playable Cities’ with the idea that ‘Cities that play together, stay together’, focus on people and play (Playable Cities, 2023). They aim to foster connection, moments of interaction and social dialogue by using playfulness as a prompt. Other initiatives like ‘Playing Out’ promotes temporary, resident-led residential street closures to enable children to play and neighbours to meet through these ‘play streets’. The Municipality of Rotterdam considers play to contribute to the development of the city as a residential, healthy and attractive city (Gemeente Rotterdam, 2024). Playfulness can act as a way to alleviate these feelings but it may present more useful in mitigating social loneliness than existential. Despite these small scale initiatives, there is still a big research gap in terms of literature and projects that relate to the connection between play and alleviating the symptoms of loneliness.

‘Play has long been identified as an activity that facilitates connections between people, young and old. Most children make friends through play, of various kinds, and play-like activities (hanging out, chatting, sharing hobbies and interests, for example) are also important sites for friendships and relationships for adults.’ (Stenning, 2018)

Apart from a social phenomenon, loneliness and the lack of social interaction is also a spatial one. In the same way that stagnant water provides a breeding ground for mosquitoes to transmit diseases, our physical environment and its adaptation to fuel quietness, emptiness and a perceived solitary existence has meant the increase in the feeling of loneliness. This thesis aims to understand the role that the physical environment plays on this feeling of loneliness and meaningfully integrate architectural language to alleviate this for those that are most at risk.

1.3. Background on Pendrecht

The thesis looks particularly to the South of Rotterdam and more specifically to the region of Pendrecht. Pendrecht is a post-war residential district, whose construction started in 1953, often characterised as a ‘Garden City’ and its ‘stamp structure’. It is a child-rich area, with more than 20% of its inhabitants being below the age of 14. A large proportion of households consists of single-parent families of 23%. Pendrecht is known for its greenery, with well-maintained communal gardens, hedges, and public green spaces. However, these spaces are more ornamental (“kijk groen”) rather than functional, limiting use by children. This to some is due to the modernistic

separation between the functions of housing, work and recreation. Furthermore, the area has experienced a decline in social cohesion after its first generation of residents moved out and a more diverse generation of people now inhabit the neighborhood. More than seventy percent of people are of migration status and of lower income in the area, which are groups that spend proportionately less time in recreational spaces due to less time and mental energy. Thus, retreating inwards and leaving public spaces to lie idle. In 2009, the Minister of Housing referred to Pendrecht as the second worst neighbourhood in the whole of the Netherlands.

1.4. Defining the living environment

This thesis' target is to understand what a successful *living environment* looks like, referring to a co-housing scheme characterised by shared functions and urban space. Housing plays a crucial role in addressing loneliness by shaping the daily interactions and social fabric of communities. Thoughtfully designed living environments promote opportunities for spontaneous encounters following the theory of affordances, building long-term relationships, thereby reducing feelings of isolation. In urban areas, where the paradox between physical proximity and social disconnection is most prevalent, housing serves not merely as shelter but as a platform for community engagement. Co-housing models, with their emphasis on shared amenities and communal spaces, actively foster social bonds and support networks, creating a foundation for improved mental and emotional well-being while effectively countering loneliness.

THE QUALITY OF BEING LONELY IN
A CROWDED CITY IS A PARTICULAR
ONE—IT CAN FEEL LIKE A FAILURE
OF SOCIAL APTITUDE, OR AN
INDIVIDUAL IMBALANCE.



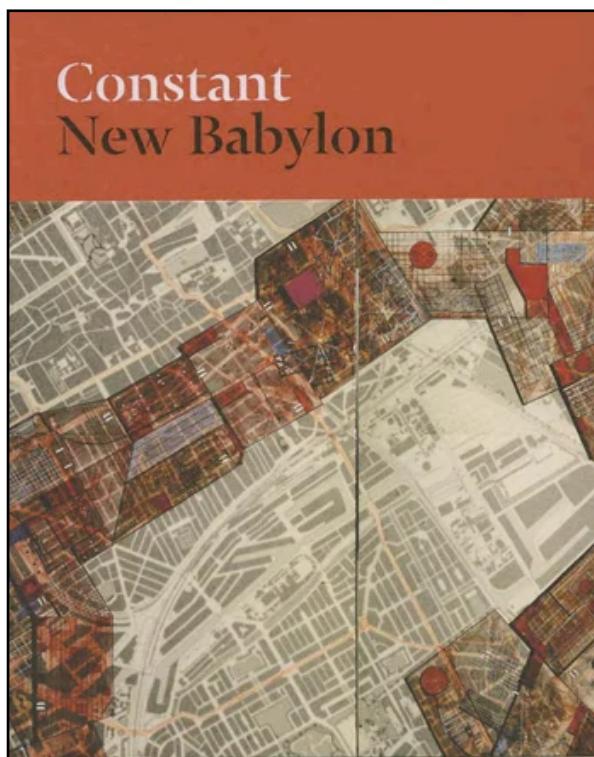
Fig. 4: Our cities are designed for loneliness (“Our Cities Are Designed for Loneliness,” 2018)
Fig. 5: Pendrecht Design by Lotte Stam Besse (Het Nieuwe Instituut, 1960)

1.5. Problem Statement

Loneliness has become an urban challenge of increasing threat. ‘Nearly 1 in 10 Dutch people frequently lonely in 2019’ states CBS (2020). One neighbourhood experiencing even more loneliness is of Pendrecht, in Rotterdam where there is a high percentage of single parents (23%), elderly (16%), children (20%), people of migration status (73%) and low-incomers (40%). All of the aforementioned factors have been used as indicators to susceptibility to loneliness. Traditional urban spaces often lack elements that encourage meaningful social interaction, especially across different generations. This research seeks to explore how designing a living environment centred around the playful everyday moments can serve as a catalyst for intergenerational engagement, fostering connections that alleviate feelings of loneliness in the community.

1.6. Theoretical Framework:

This thesis follows the book *Homo Ludens* (Playing Human) by Johan Huizinga written in 1938, where the Dutch historian and cultural theorist discusses the importance of the play element within culture and society. This book offers a ground breaking perspective on play as the cornerstone for the development of civilisation and culture. This book has reshaped academic discussions in anthropology, sociology, psychology and cultural studies and even urban planning. Huizinga breaks down play into its elements and what constitutes this an important element within human life such as the concept of the ‘magic circle’ which allows people to step outside their own reality for a while. Despite this, the book lacks in empirical evidence and the argumentation is solely based on romanticised examples of the past through a Eurocentric perspective. Furthermore, the author highlights the contrast between our perception of play as ‘unserious’ and the effects on politics, war and law, on a societal level, but not the health of individuals. Despite this, the thesis positions itself in a way to align with the overarching theory presented as that of play as central to our human lives and way of existence.



“I’m not sure anything is learned better than what is learned as a game.”
(Orrock, 2012)

Fig. 6: Constant Nieuwenhuis 1956-1974



Fig.7: Pieter Bruegel, Children's Games, 1560 (Bruegel, 1560)

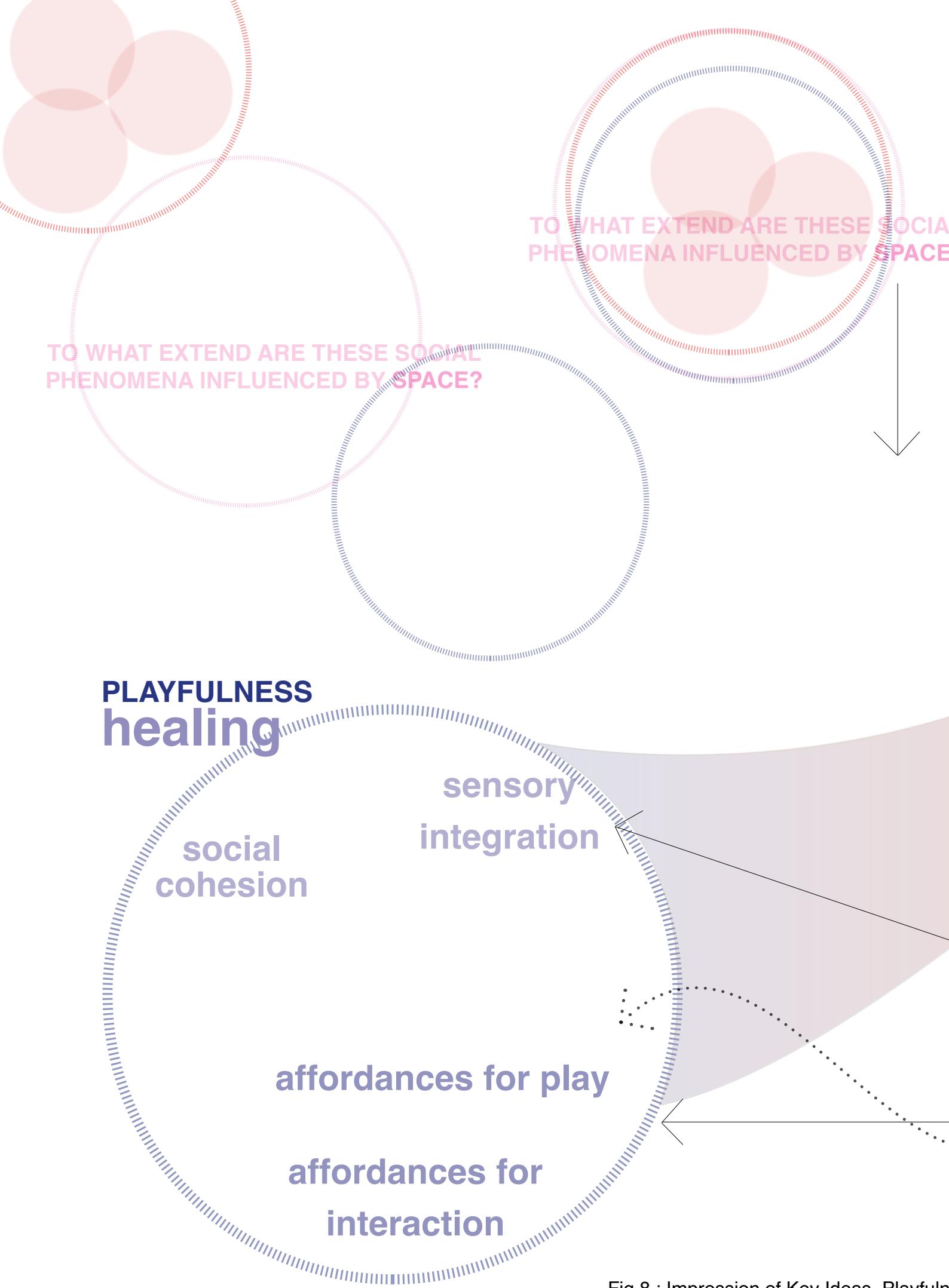
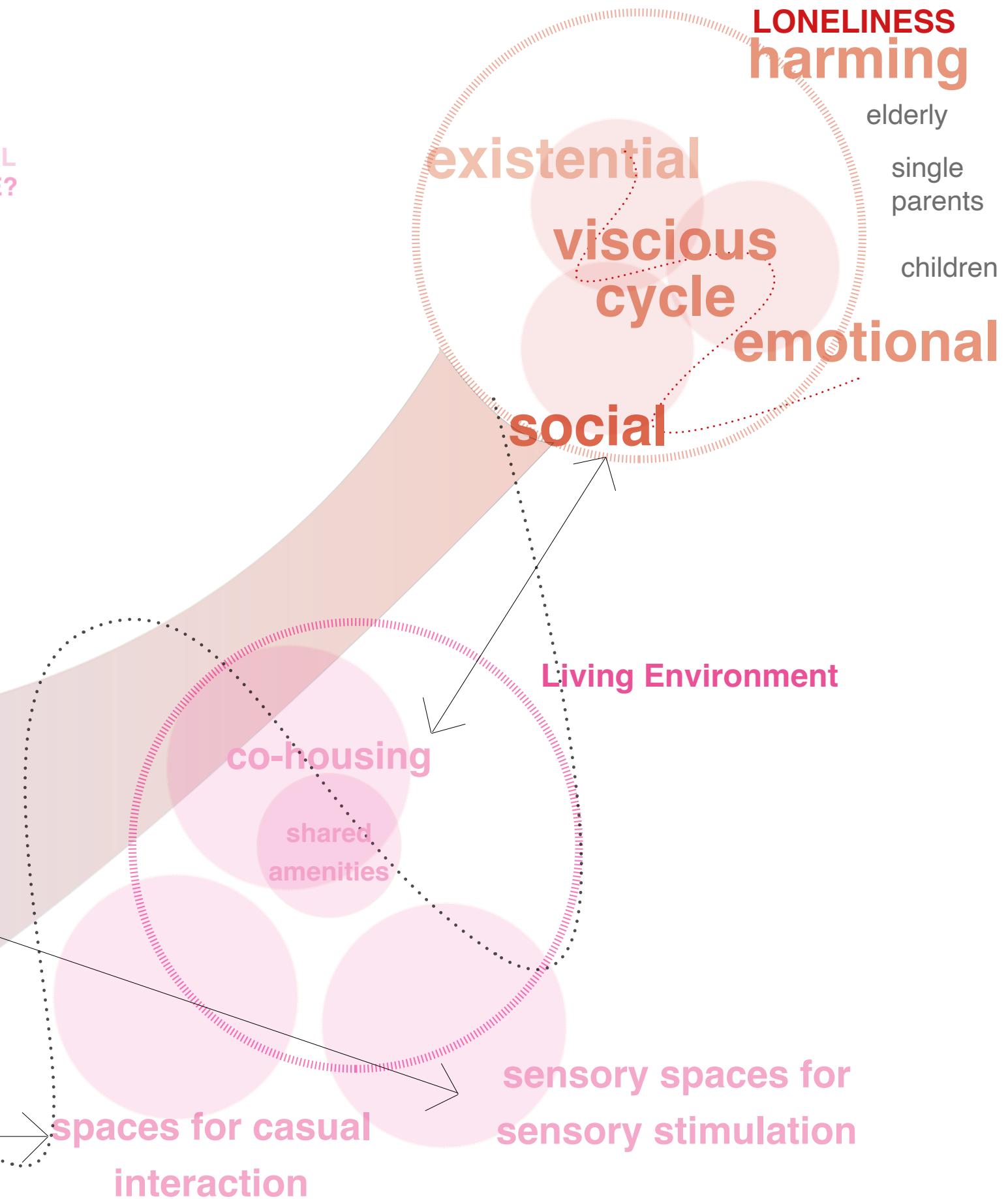


Fig.8 : Impression of Key Ideas, Playfuln



This thesis is further grounded in contemporary academic studies that explore the broader concepts of loneliness and play within urban environments. Works such as *The Architecture of Loneliness* by BAL (2024) delve into how the built environment can intensify or alleviate feelings of isolation, while Schmitt (2023) examines strategies urban planning can employ to address the growing “loneliness epidemic.” Additionally, Wolfers, Stam, and Machielse (2021) provide valuable insights into the social and emotional dimensions of loneliness, particularly among older adults in Rotterdam, offering a localized perspective relevant to this study.

The broader understanding of these notions through the method of literature is balanced through the ethnographical approach, capturing stories of loneliness and play in the specific neighbourhood of the site, in Pendrecht. The ethnographical approach has been chosen to better situate the more universal experiences of loneliness and playing to the specific context of Pendrecht and how these relate to the specific spatial context. Eventually, enabling designing site-specific guidelines for Pendrecht, instead of a generalised demographic of imagined experiences.

For this reason the findings, observations and media gathered are analysed and restructured through animating to better understand and showcase the internal monologue and way of living of the different groups. This will help in formulating design guidelines following this sequential order of living and experiencing space to more meaningfully impact this and turn the perception of a solitary existence to one of connection.

‘...the rehabilitation of Metropolitan lifestyle, the revival of an ideology that accepts the condition of intense and dense cohabitation of people with optimism, and which would restore mythical, symbolic, oneiric, critical and popular functions to the architecture of large urban centers.’

pp.56 from Unit 9 Diploma of the AA in the mid 1970s

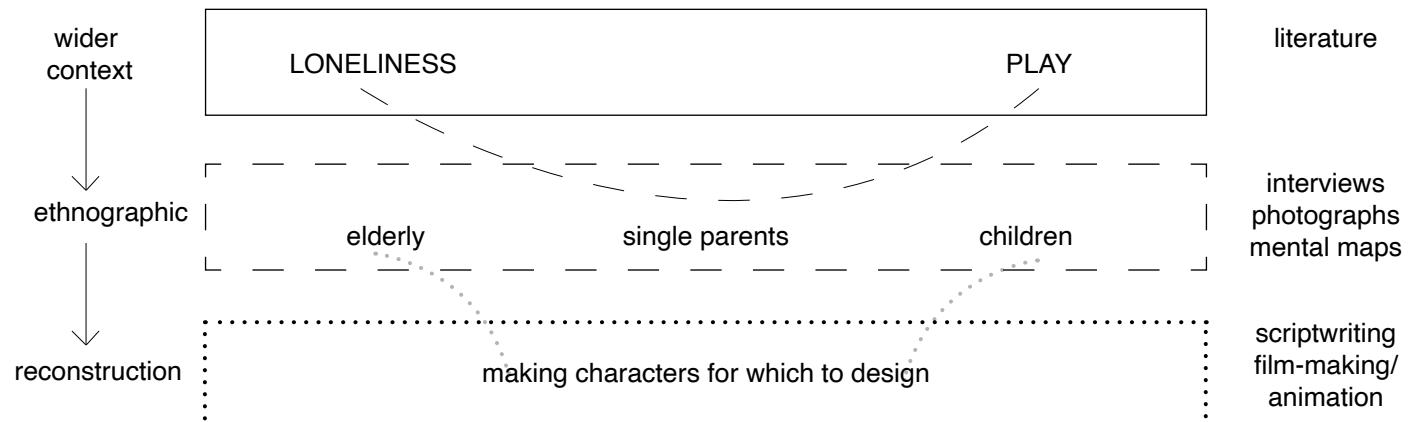


Fig. 9: Theoretical Framework Diagram (made by author)

1.7. Objective and Hypothesis

The goal of the research is to create design guidelines on how playful, sensory spaces that promote interaction can mitigate loneliness. This is done with the case study of Pendrecht, Rotterdam but the principles and guideline should be applicable to other urban neighbourhoods that are experiencing high levels of loneliness. In this way the research aims to design a process, through which the ethnographic process is utilised; by engaging with residents across generations through interviews to build up an understanding of the patterns of inhabitation there. Ultimately, the goal is to use playfulness as a means to connect and form a more cohesive, healthy and resilient neighbourhood.

The research hypothesises that designing a playful living environment will significantly reduce the feelings of loneliness amongst those that decide to be part of the community, in the area of Pendrecht. The feeling of loneliness cannot be cured but, by fostering intergenerational interactions and spontaneous social engagement through sensory integration and diverse playful moments, then a community can slowly and organically form. Under this hypothesis, the result will be building meaningful relationships, ultimately enhancing community well-being and individuals health.

Fig. 10: Ring of Swings (I.N.D [Inter.National.Design] & Studio ID Eddy, 2020)



1.8. Main research question

How can playful living environments alleviate the feeling of loneliness?

Sub-questions

1. What are the specific causes and manifestations of loneliness among the three different age groups in Pendrecht, Rotterdam Zuid in relation to the physical environment?
2. What constitutes as ‘play’ universally but also specifically to the different age groups in the physical environment of Pendrecht?
3. What are the general spatial configurations that facilitate playful intergenerational interaction?
4. How can spatial configurations of play dismantle the barriers to intergenerational play, instead fostering social connections across generations specifically in Pendrecht?

1.9. Methodology

The thesis uses a multi-method approach in order to create a comprehensive understanding of the notions of loneliness and play and their everyday lived experience through physical space in Pendrecht. Each sub-question is addressed using theoretical insights combined with grounded, site-specific data.

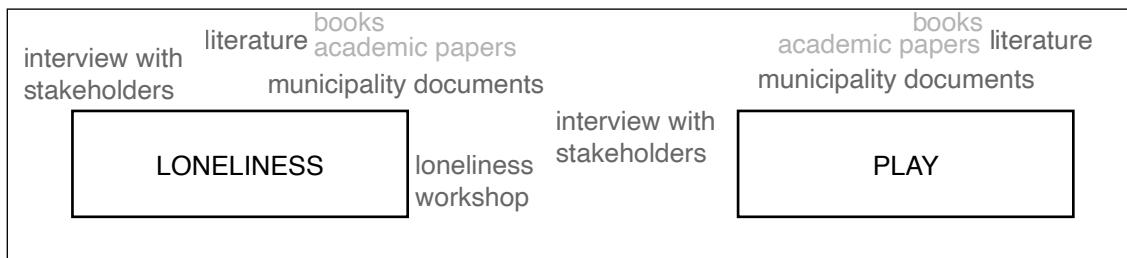
More specifically, the first and second sub-questions, are approached first through a literature review to acquire a broader but academic understanding of the two notions and their physical manifestations. Additional to this, quantitative data is gathered from municipality documents and papers specifically on demographics, health, loneliness, social statistics particularly in Pendrecht. Following this, sessions will be conducted with the three age groups of diverse backgrounds in order to gather personal records and stories at a much smaller scale than before, following the regulations of Human Research Ethics of Architecture of TU Delft. This step is to capture common environmental factors associated with loneliness. Six in depth interviews are conducted per age group. These are made in workshops of 3 people each from the same age group to extract more information from their discussion prompted using cards. Conducting these interviews alongside someone that speaks Dutch is important to ease anxiety that might be induced due to the possibility of the language gap. These interviews were conducted within a duration of 5 weeks where two different community centers were visited twice a week, so the community felt more comfortable to be interviewed. Other activities like cooking, drawing or playing were undertaken. Lastly, ethnographic mapping is utilised as a reconstruction of the entanglement of narratives, observations, quantitative and qualitative data to formulate an understanding of what causes loneliness in the physical space and then it turns how loneliness manifests in physical space as well. The output is displayed in the form of film making (animation) to narrate the internal monologue and experience of the inhabitants. Film-making or animating is a retroactive method in reconstructing ‘as found’ spatial sequence realities as well as to portray a network of meaning absorbed by the locality.

The third sub-question is approached through literature. There is a focus on different scales (neighborhood to building) to formulate spatial arrangements based on environmental psychology that support social interactions. The output of this is a set of general architecture design guidelines that support playful intergenerational connection.

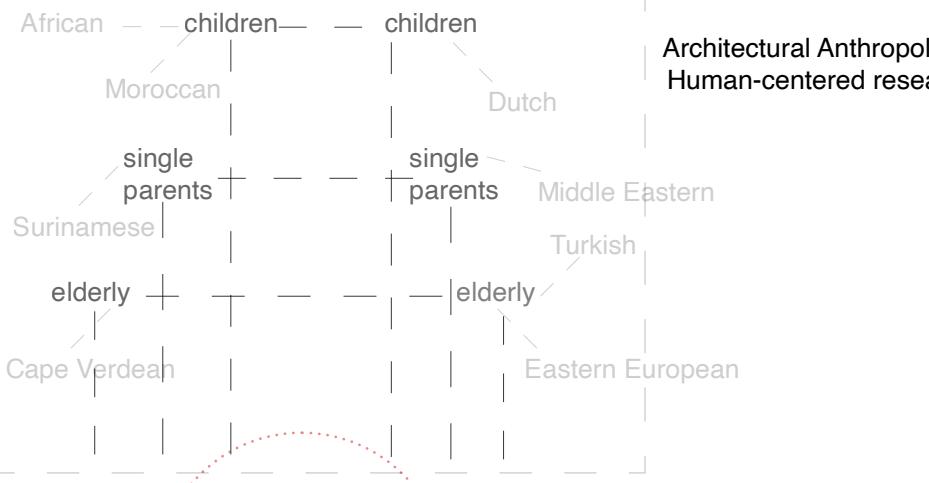
Lastly, the fourth sub-question requires a thorough analysis and mapping of the existing condition within Pendrecht specifically. Basic maps are used from data from the municipality like ‘Leefvelden Voorzieningen Dashboard’ [Living Fields Amenities Dashboard] and the ‘Buitenspeelkaart’ [Outdoor Play Card]. Then, the output from the previous sub-questions is synthesised in order to

produce case-study specific design guidelines, that can address loneliness through playfulness. These form a set of pattern language of design guideliness connecting to those of the previous sub-question that relate to two scales. This is done as a pattern language is more focused on a set of patterns that are simultaneously building on each other and being built by each other, reflecting on how different principles behind the design guidelines influence the experience across scales.

1. Understanding the bigger notions and how they may connect through literature



**2. Interviews:
semi-structured interviews,
mental mapping,
asking for photographs**



mapping of loneliness

what are the synergies of utilising play to alleviate loneliness?

mapping of play

reconstruction

script animation

3. Create three (or six) characters from these stories and research.

4. Reference studies to connect the theoretical framework and lived experiences to space and architecture

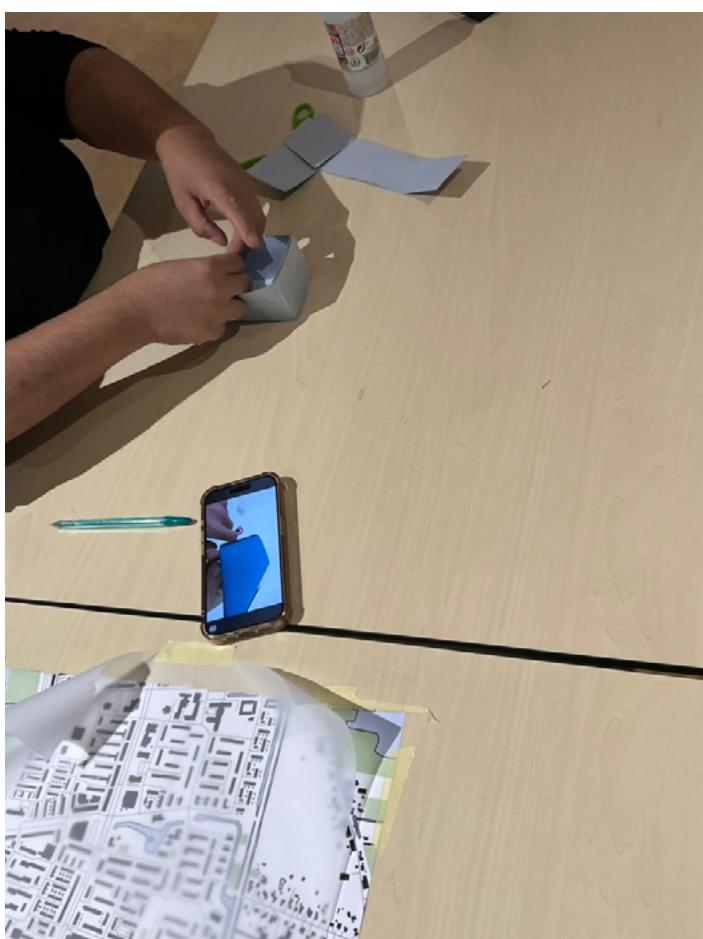
intergenerational housing projects

sensory architecture

intergeneration play environments

Design Guidelines

Fig. 11: Methodology Diagram (made by author)



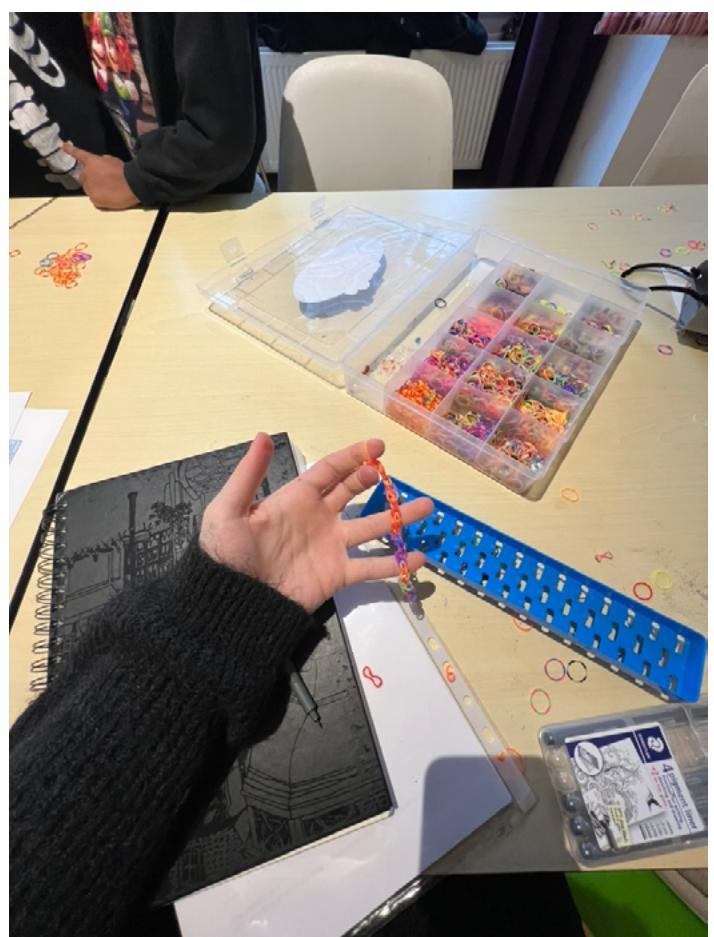
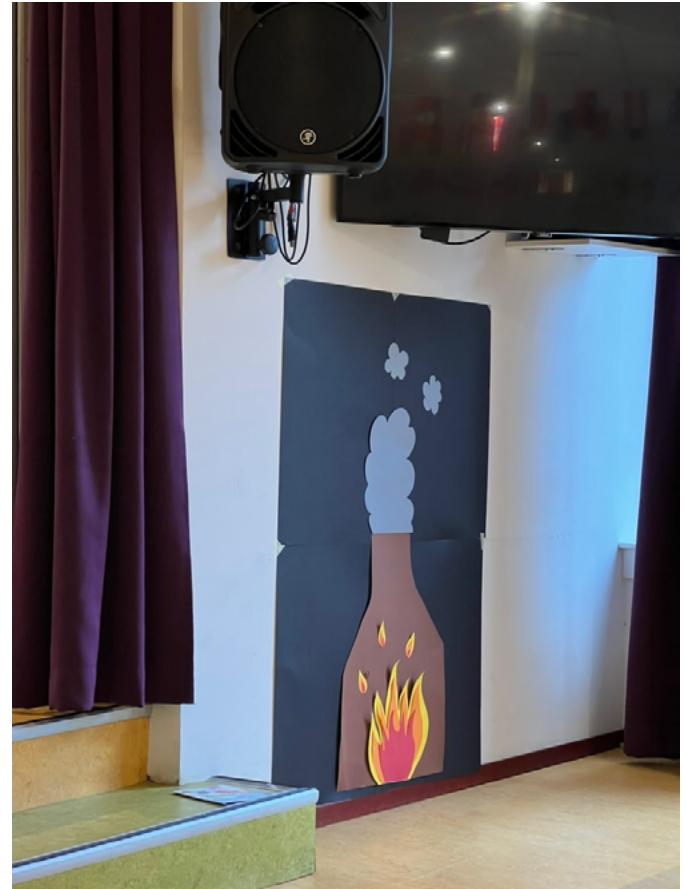


Fig. 12: Impression of the Setting of the Workshops
(photographs by author)

1.10. Included and excluded from the research

There are many forms of playfulness however the framing of the scope of this research focuses more tacit forms, that inherently encourage collective participation and interaction between generations. Thus, what is included **sensory intergenerational spaces** (storytelling circles, sensory games, repair workshops). Additionally, spaces for **solitude**.

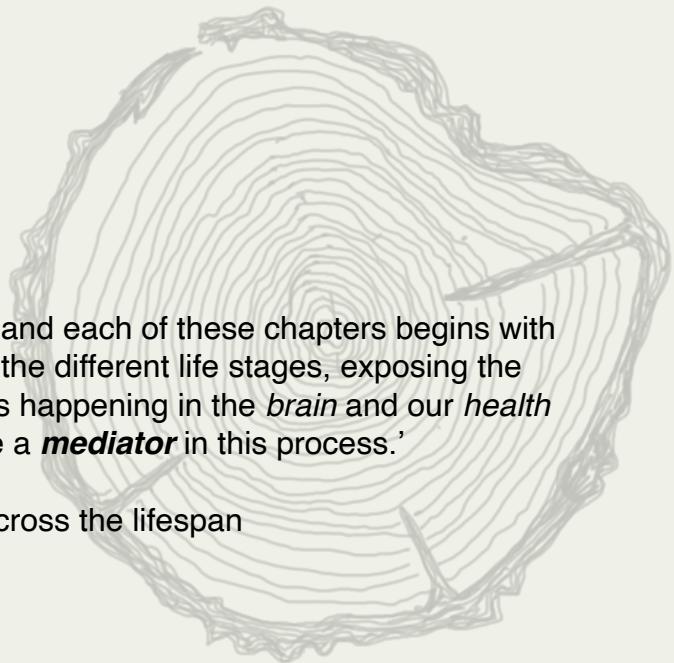
What are excluded are activities that might have other motives that don't align with the autotelic nature of play and playfulness. An example of this is gambling with money (e.g. casino) where the individualistic nature and profit motive fall outside of the study's focus. Also excluded are, highly individualistic and competitive play environments as well as virtual play spaces.

Within this paper loneliness is regarded as the hard and difficult emotion created through a schism of expectation and reality causing frustration and disappointment, where playfulness can act as the repair. All three types of loneliness are taken included as part of the study: social, emotional and existential. However, what is not included is the positive feeling of solitude, which is voluntary, enjoyable and does not carry negative connotations. Lastly, temporary forms of loneliness are part of the human condition however, the study focuses specifically on the chronic manifestation of loneliness, which presents far greater health risks.

1.11. Output

The output of this research is a set of design guidelines for architects on how playful, sensory spaces can promote interaction and help mitigate loneliness. While based on the case study of Pendrecht, Rotterdam, these guidelines are intended to be adaptable to other urban neighborhoods facing similar challenges. Design guidelines provide clear, actionable steps for creating playful, inclusive spaces, through a pattern language, which organises these guidelines into interconnected elements across scales. This approach highlights how spatial configurations can work together to foster social interaction, allowing for both specific interventions and adaptable applications.





'Our human story begins with the brain and each of these chapters begins with an overview of brain development at the different life stages, exposing the **symbiotic** relationship between what is happening in the *brain* and our *health* status - and how *play* can be a **mediator** in this process.'

Play for Health across the lifespan

'It is joy to be hidden, but disaster not to be found.'

Donald Woods Winnicott (Paediatrician and Psychoanalyst)
(BAL, 2024)



un-found, unseen, un-mirrored

2. What are the specific causes and manifestations of loneliness among the three different age groups in Pendrecht, Rotterdam Zuid in relation to the physical environment?

The physical experience of loneliness

2.1. Causes and Manifestations of loneliness

Loneliness is a universal emotion and experience, which as mentioned previously is usually categorised into the categories of social, emotional and existential loneliness. The latter is often omitted from literature or field research.

According to data ‘people in poor health or with disabilities, LGBTQ people, and single parents are particularly susceptible, as are young people (who seem to be uniquely struggling right now).’ (Schmitt, 2023) The World Health Organisation (WHO) spreading awareness through the Social Connection Initiative that loneliness is closely linked to conditions like anxiety, depression or even having a stroke and early death. Loneliness has been said to be twice as dangerous to obesity and the equivalent of smoking a pack of cigarettes each day (Schmitt, 2023). It is important to highlight here that the study is looking into chronic loneliness and not situational.

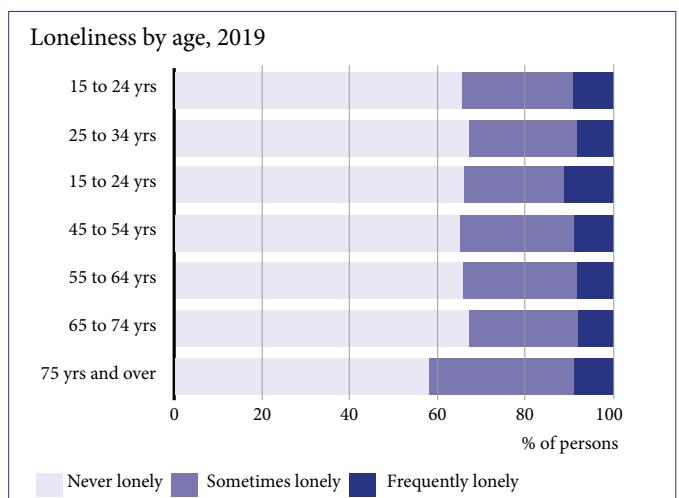
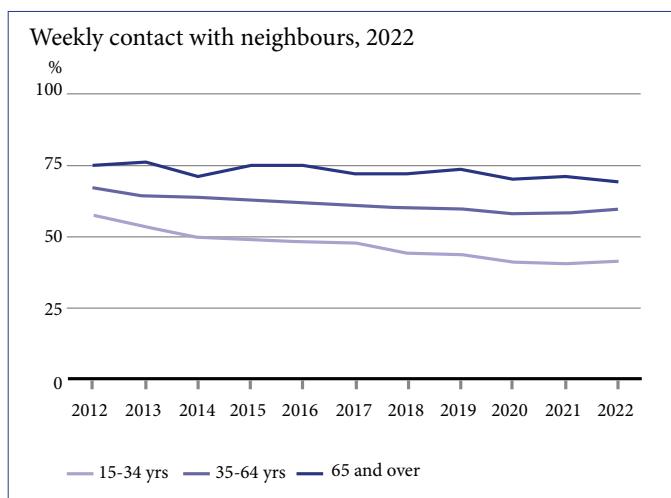
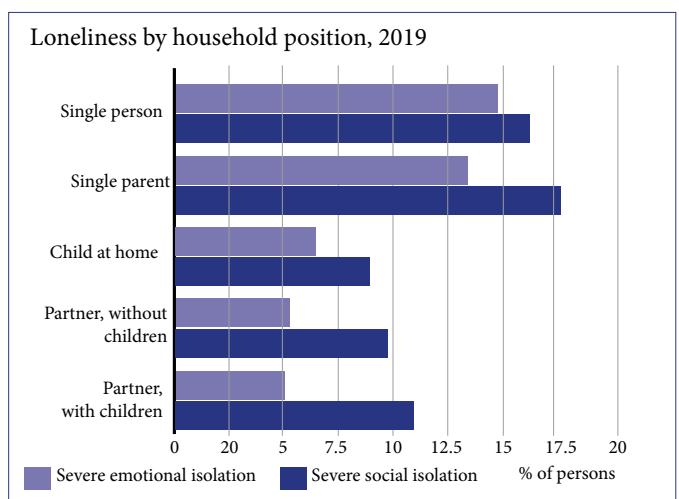


Fig. 13: (CBS Netherlands) redrawn by author

Fig.14: (CBS Netherlands) redrawn by author

Fig.15: (CBS Netherlands) redrawn by author



As shown from the graphs loneliness happens across all ages. However, those most socially and emotionally lonely are those who are single or single parents. Casual, social interactions seem to be decreasing as shown by the weekly contact with neighbors. These are statistic in the Netherlands but more specifically, Pendrecht is one of the loneliest neighborhoods where 31% say they strongly agree with being lonely in general compared to 27% in the rest of the Netherlands. Pendrecht ranks higher on all categories, with 27% saying they strongly feel socially lonely compared to 24% and 33% saying they strongly feel emotionally lonely compared to 28%. This is a third of the population of the neighborhood saying they *strongly* feel emotionally isolated. Noteably, people of migration status scored higher than those who are not (CBS Netherlands, 2020).

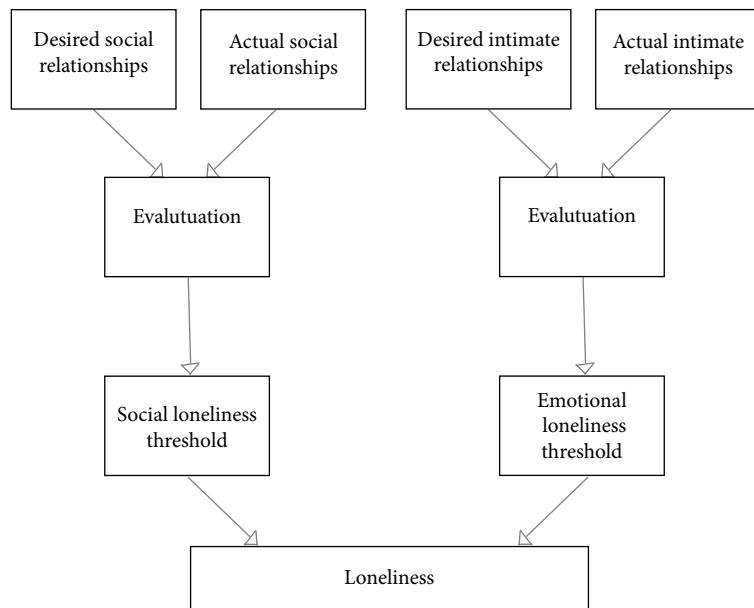


Fig. 16: Loneliness as a subjective emotion caused by frustration and disappointment between expectations and reality (Donnissen, 2023)

2.2. Causes and Manifestations of loneliness in Pendrecht

Despite the previous argument that loneliness, and hence by extension its causes and manifestations, are a universal phenomenon, there are also specificities to each locality. Meaning that despite the universality of the emotion, the causes and manifestations of the emotion in space can be specific and internal to a group inhabiting a particular area, as part of their collective memory and collective mental understanding of space.

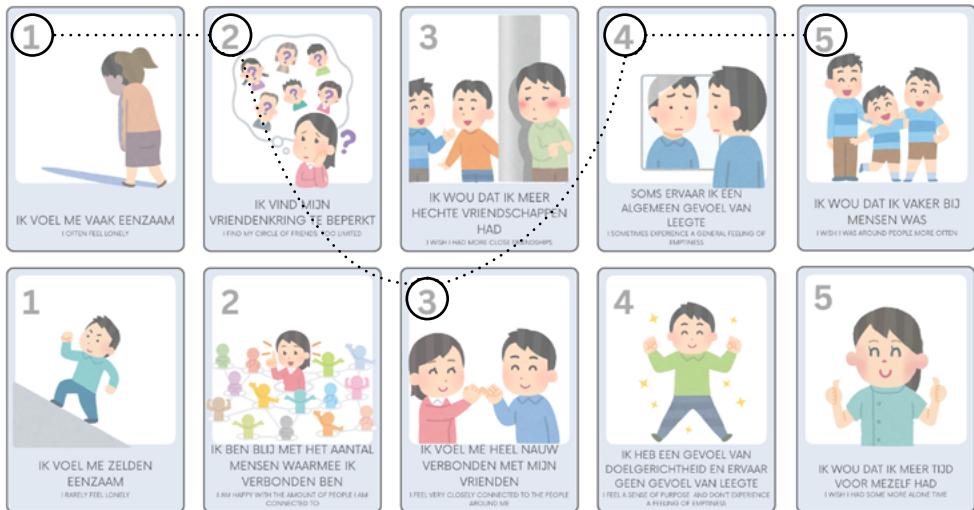
For this reason, at the three workshops conducted with the three different generations an assessment of loneliness was made based on the Jong-Gierveld loneliness questionnaire and scale. This was done through cards instead of a questionnaire to make the process more approachable to the volunteers. In total, eighteen people were interviewed in depth, six people per the three age groups.

Meaning of loneliness per age group



Fig.17: Cards made by author for interviews

70 years old
Dutch
woman



**social
existential**

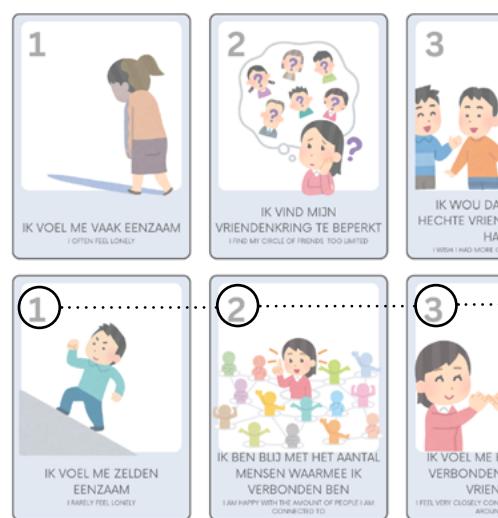
'I have a small circle with which I am happy with. However, more and more of my friends have passed away which is very hard for me.'

'I find it extremely difficult to form new connections. Especially with younger people.'

'I have a good network and feel I have formed good meaningful relationships.'

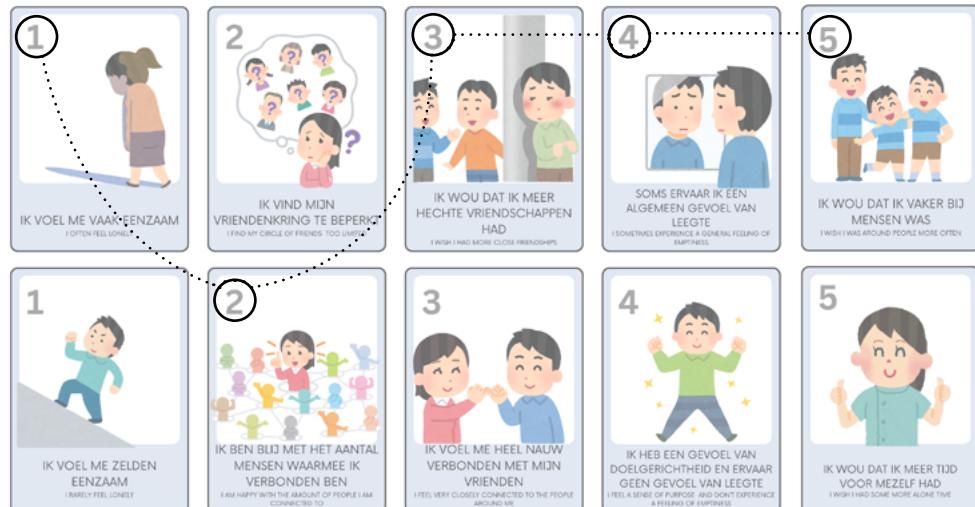
'Nature is very important to me.'

71 years old
Dutch
woman



90 years old

Dutch woman



'Ever since my husband died I have been experiencing a lot more loneliness because I now live alone and my everyday life is very different.'

'The weekends are the most lonely time. This is because everyone is out and busy and no one is visiting.'

'Sometimes several days go by without talking to someone.'

'My daughter visits once a week.'

'I live in a grey neighborhood but I feel I know quite a few people because we organise meet ups where each friend brings another friend.'

'I keep myself busy by joining a choir and offering English lessons to people. I still remain physically active and try to be part of the community as much as possible.'

'I feel I have enough time alone and with others.'

**no
loneliness**



Fig.18: Conversations from session with Group 1

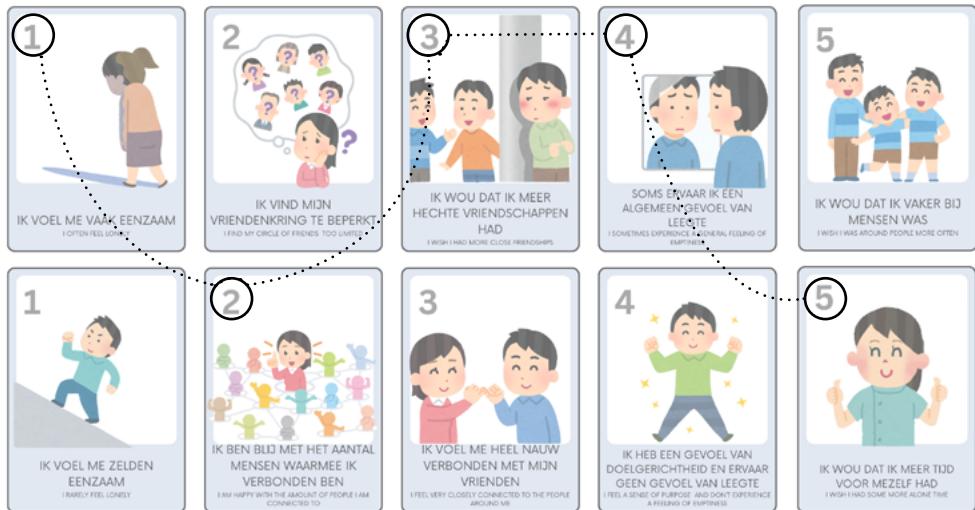
The physical environment is particularly unfriendly to people of older age, leading to isolation in the private home. For example, the lack of smooth pathways, places to seat and rest also reflected in Gehl's and Steinfeld's and Maisel's work. Additionally, from a social perspective, the elderly perceive younger people as mostly a 'transient population' in the big city. This might lead to less willingness to try to connect to other people, especially of younger ages, because they look for very stable relationships. A transient population refers to the constant influx and out-flux of people in big cities, such as students and young professionals, who may not have long-term plans to stay. This perception, even if it doesn't align with the reality of younger people who live in Pendrecht, may demotivate older people to connect. As a result, they might remain more isolated as years pass. Hence, the lack of intergenerational interaction opportunities is a particular contributor to loneliness.



Fig.19: Summary from session with Group 1



37 years old
woman
mother of 5



'I often feel lonely but I don't think I have enough time to do something about it. I would like to know more people and have more close relationships with the people I already know but that requires a lot of time and energy, which I do not have. So I somehow made peace with it.'

'I have managed to find a balance and have enough time alone but it has taken a lot of effort to reach this stage.'

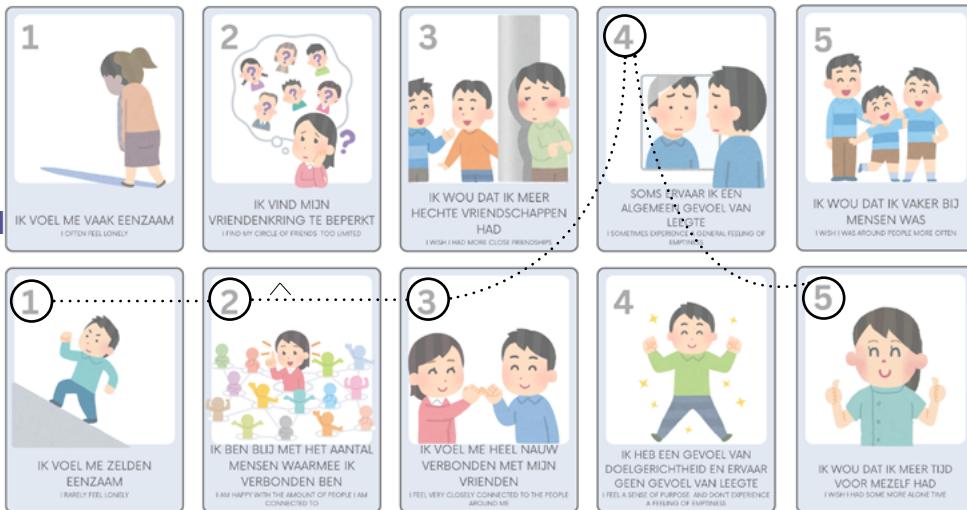
'I never feel lonely.'

'I would like to have time to spend with my existing friends but we are all very busy.'

36 years old
woman
mother of 1



32 years old
woman
mother of 2



emotional more time alone needed

'I feel like I am only surrounded by children. I know this might not be the reality but this is what it feels like because everyone I know is also through my children.'

'I feel I know enough people and already have strong relationships with my friends but I used to work and now that I don't I feel like a part of me is missing.'

'I wish I had more time to take care of myself and do the things I like.'



emotional more time alone needed

'I wish I had more time alone but because I only have one child I need to be with him all the time as he doesn't have someone else to play with.'

*'I am religious so I do not feel a sense of emptiness.
I feel I have a strong sense of purpose.'*

Fig.20: Conversations from session with Group 2

One of the main challenges for single parents is having time and energy to spend in public space, which as a consequence has negative effects on children. This stems from the fact that single parents have to support their household with usually lower per household income. This means that there are often time constraints as work-life balance is harder to achieve and in addition to many hours of work, the burden of all things that have to do with taking care of the child fall on a single person. This doesn't leave time nor mental energy to engage in public activities. This is further exacerbated by the lack of **proximity** to these public environments, which makes them more difficult to access due to long commutes, more time and energy required. This includes spaces where both the parents and children can socialise. Lastly, stigma and societal expectations around single parenthood can discourage people from integrating into their community.

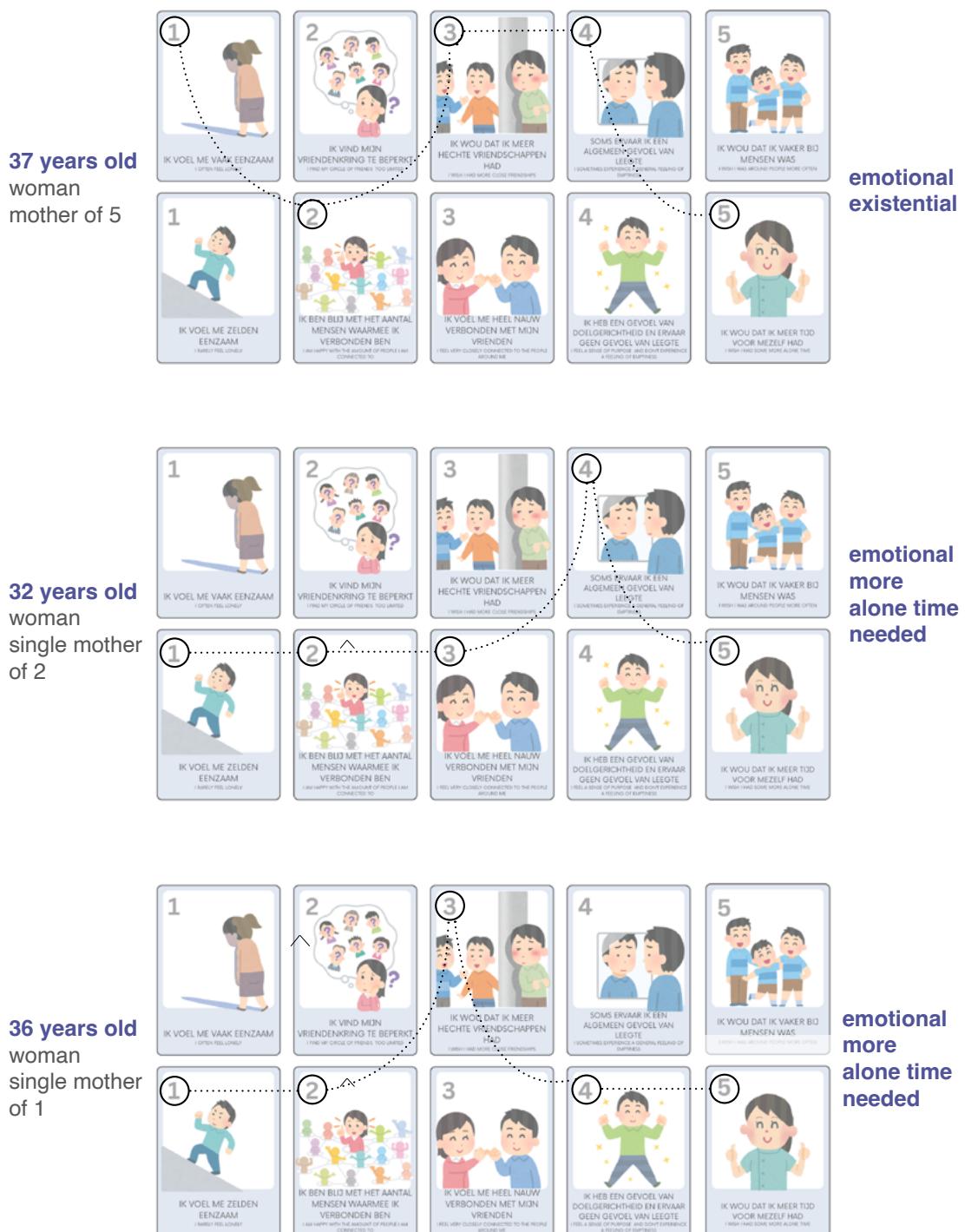
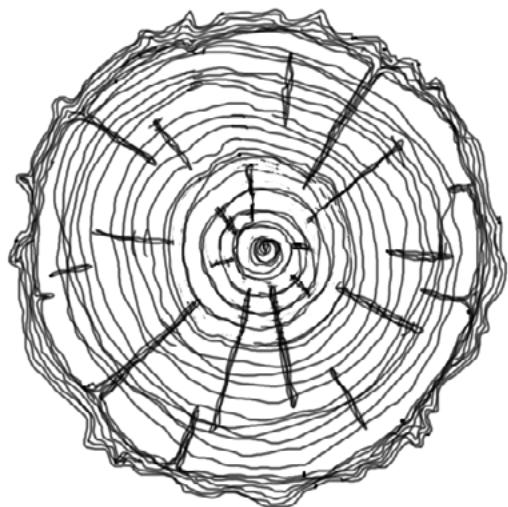
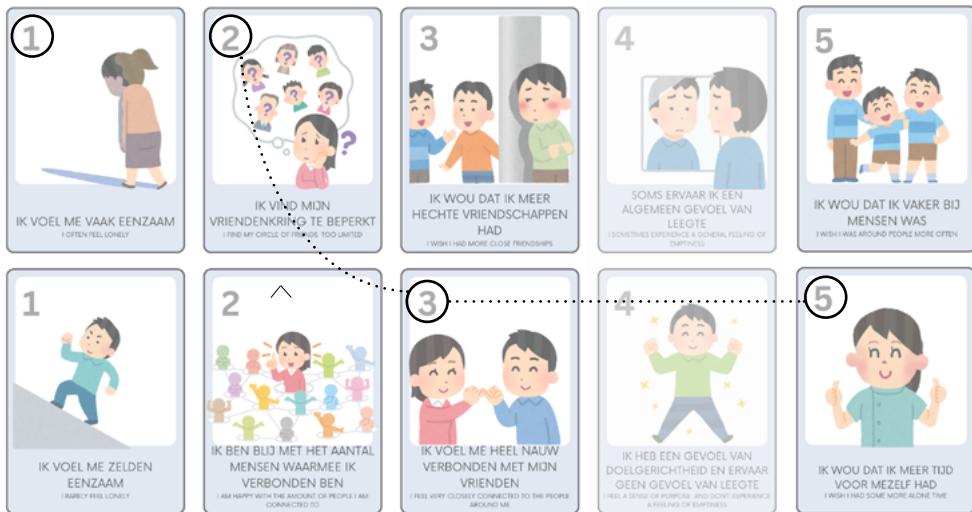


Fig.21: Summary from session with Group 2

'For single parents or those often home alone, the presence of known neighbours was often seen as very important. For new parents, the proximity and familiarity of neighbours to hang out with seemed to make meeting new friends feel easier and safer.' (Stenning, 2018)



**10 years
girl**



**social
existential**

'Yes, I do feel lonely.'

'I would like to know more people.'

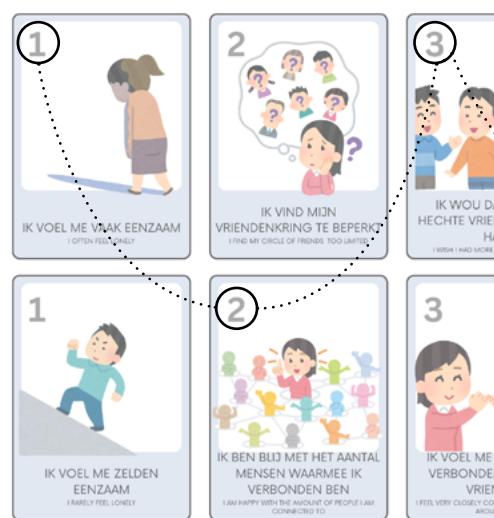
'Yes I want more time alone.'

'I don't feel lonely.'

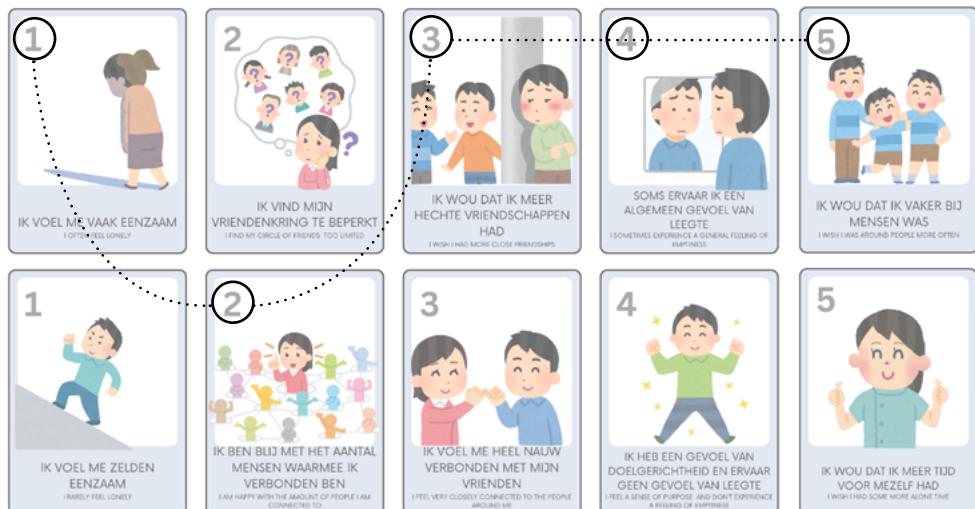
'I already know a lot of people but I wish I had more best friends.'

'I wish I had more time alone.'

**5 years old
girl**



**9 years old
boy**



**emotional
existential**

'Yes, I do feel lonely.'

'I wish I knew more people but I don't want more best friends.'

'I wish I had more time with others rather than alone.'



emotional

Fig.22: Conversations from session with Group 3

Childrens' experience of loneliness is caused by many socio-spatial factors. Some examples include the lack of accessible 'third spaces', structured school schedules and lack of time from the single parents to spend in public space. When referring to 'third space' in relation to children, this includes parks, playgrounds and community centers designated to meet and interact. The structured school system further exacerbates the problem as it prioritises output over peer-driven social opportunities. As mentioned, the problem of unequal access to public space such as green outdoor spaces or social activities by people of lower-income groups is a particular one. Lastly, the role of over-reliance on digital forms of communication create a false reality of connection and accessibility to everyone, leaving a form of distaste when this is not materialised in reality. Hence, it is important for children to have more time to spend alone in less structured environments.



Fig.23: Summary from session with Group 3



2.3. Takeaways

The main takeaways are that there are lonely and not lonely people within each age group. However, single parents seem to be less lonely. This contrasts the data for the Netherlands that indicate that having a partner might be the most telling indicator of severe social and emotional loneliness as single people and parents scored the highest. The disparity between the two might lie in the stigma around loneliness, whereas admitting to needing more time alone as a parent is more socially acceptable. Another possible answer might be that single parents might have too little time to even think about being lonely. On the other hand, surprisingly children were very forward about experiencing loneliness and even needing time alone. The concept of existential loneliness or 'general feeling of emptiness' was very hard for the children to respond to and hence it was left unanswered.

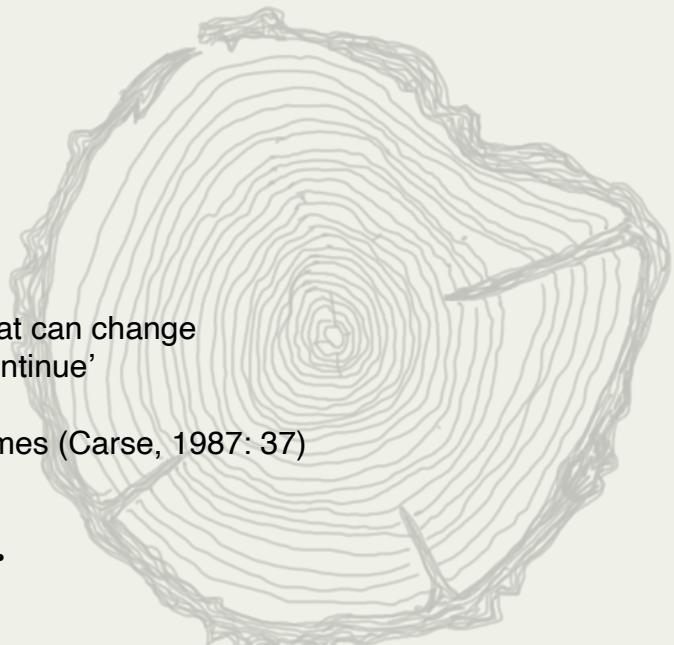
Interestingly, in adults, when the recipient responded that they do sometimes feel lonely, this always but in one case corresponded to a feeling of emptiness or existential loneliness. In elderly this was followed by wanting to be around people more, whereas in single parents this was followed by wanting to have more time alone. The overwhelming nature of big cities, through the fast pace and changing character can lead to sensory overload, leading to people withdrawing from society. The disparity between the overly stimulating public environment and the non-stimulating private home also creates an unhealthy schism within an individual's idiosyncrasy, if this transition happens drastically.

Most factors keeping people apart are regarding a perceived difference in values, between age groups but also culturally, so altering this perception first is important. On a more general level, the effect of 'negative politeness' is also a social cause for the feelings of loneliness across generations and migration backgrounds. This is when in crowded urban environments, people avoid to engage with one another in order to not intrude or seem impolite. This reduces opportunities for small talk, and gradually getting to know one-another. The spatial implication of this is the dimensions of proximity. Despite this, there is always a personal choice that has to be made in allowing one self to rely on someone else and engage casually or simply keep to ones' self. Furthermore, our vertical cities have become an increasing facilitator of loneliness. As we have yet to find ways to integrate our cities vertically through hybrids. Hence, for now we try to bridge through horizontal planes but build our cities up, leading to barriers and an increasing trend towards private space, leading to isolation over integration into society.

Noteably, more people seem to be emotionally lonely (5) than socially (2), which also contrasts general statistics about the Netherlands, which show social loneliness always being higher than emotional loneliness. This also depends on the different age groups however as emotional loneliness is higher in young people aged 15-25 and the other way around in older adults as per the work of de Jong Gierveld. These disparities show that in this research it is important to zoom in and out at the different scales as they might be suggesting different stories, which are both equally relevant.

Following this procedure, the level of synergies in combining these three age groups seems very promising. Despite this, contrasting the initial hypothesis, integration between children and elderly seems to be more important in relation to play. This will allow parents more time alone, which they seem to need. This aligns with literature, where according to Whitaker as an adult with responsibilities it is important to find balance between work, rest and play (2021). But of course, the condition of rest must be met before that of play and so as a first step it is more important to offer some time alone to these single parents.





'only which that can change
can continue'

Finite and Infinite Games (Carse, 1987: 37)



'playing is a special type of human activity - an anthropological constant'

Walz (2010:11)

3. What constitutes as ‘play’ universally but also specifically to the different age groups in the physical environment of Pendrecht?

Play: a ticket out of loneliness

3.1. Play, playfulness and playful play

Play has been long discussed, with many offering different interpretations of the notion. For example, Groos identified play as unique to the first stage of life, in practising essential skills. Schiller’s ‘surplus energy’ theory considered play as a relaxation mechanism whereas on the other side of the spectrum psychoanalytic theorists on the early twentieth century framed play as a means to expel and restore rather than release (Whitaker, 2021). Some of these theories are often challenged within the contemporary discourse.

However, the play debate consistently returns to the word of Johannes Huizinga of *Homo Ludens*. This is where the author offers a definition of play as a voluntary, autotelic, intrinsically motivated and which breaks from ordinary life in a ‘magic circle’. This magic circle means stepping outside of the rigid structures of daily life and communicating in a more fluid and open manner. Noteably, Huizinga characterises play as ‘non-seriousness’ but rejecting the idea that play is non-serious. Hence, recognising the ability of non-seriousness to seriously affect the most important aspects of our life. In *Homo Ludens* the strong relationship between culture and play is explored, and the argument made is that all of culture is developed through this broader understanding of play. Lastly, play is presented as a lifelong need however, play manifests differently within each age group (Gillin & Huizinga, 1951).

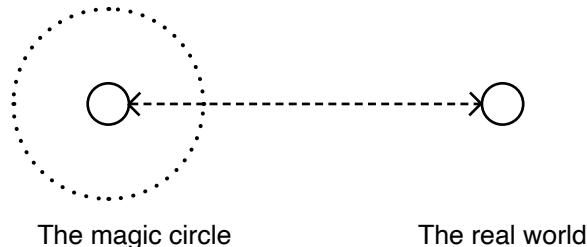


Fig.24: The Magic Circle from *Homo Ludens* (redrawn by author)

This understanding of play seems to be in decline. Our everyday understanding of play has become increasingly more institutionalised and even becoming goal-oriented over the free process of play. This is not to dismiss the role of structured play, especially in the early stages of childhood however, this labeling of free play as frivolous, unsafe and irresponsible is harmful as we are dismissing the cognitive benefits of this type of play leading to the ‘adultification of infancy’ (Frohlich et al., 2012). *What we consider problematic is first, that these public health efforts might be neglecting children’s complex experiences of and preferences for diverse forms of play, and second, that when play is promoted predominantly as a health practice, it might not maintain its unproductive, intrinsically motivated, and pleasurable character—the qualities for which play is so often valued* (Alexander et al., 2014). Furthermore, the idea of ageless play is an important one. For example, the Finnish model incorporates at least three generations in play, meaning that all playgrounds should be designed for cross-generational interaction. This model of ageless play promotes the idea of active ageing to improve health and wellbeing (Dawson, 2017).

The distinction between **play** and **playfulness** is important within this paper, even though both themes resonate heavily. Playfulness is the light-hearted and positive disposition characterised by spontaneity and flexibility, which has an inclination to deviate from social pressures or expectations (Whitaker, 2021 & Tonkin & Whitaker, 2019).

'The ambiguity of play made plain that there is not something inherent in an action or experience which labels it as play, but rather that it is the context within which it occurs, and the meaning attributed to it by the player, which defines it as such.'

The Ambiguity of Play by Sutton Smith 1997

Recognising that play is the everyday understanding of the word can sometimes not fulfil the 'pleasure principle' (e.g. aggressive sports) it is then important to make a distinction between play and playful play. According to the quote above play is not so much a particular activity but a malleable notion that is being shaped around context and our internal frameworks. However, it is still important to try to categorise play and find ways to prompt playfulness and playful play.

3.2. Playing with the senses

As mentioned before, the study deals with playfulness and hence sensory integration. Studies explore how multisensory design and sensory stimulation—through visual, auditory, olfactory, and tactile systems—can modulate emotional states, improve mental health, and foster deeper connections between individuals and their environments. Theories like Juhani Pallasmaa's haptic architecture, highlight how engaging all the senses create spaces that evoke emotions, strengthen memory, and promote well-being. The bidirectional relationship between sensory input and mood, shows that sensory-rich environments not only alleviate depressive symptoms but also enhance engagement and belonging. By focusing on elements like light, acoustics, materials, and storytelling, multisensory design can transform spaces into immersive, emotionally resonant experiences that prioritize human connection and mental health. (Canbeyli, 2021; Saxena & Sehgal, 2024)

Gibson's theory of affordances posits that we perceive our environment in terms of the actions it enables. Rather than simply processing sensory information, we directly see objects and spaces as having potential uses relative to our abilities. This means that every sensory element—light, sound, texture, and scent—naturally cues us to interact with the environment, making multisensory design a powerful tool for creating playful, engaging living spaces (Gibson, 1979, pp. 185–272).

3.3. Meaning of playfulness per age group in Pendrecht





Fig.25: Cards made by author for interviews

**perception
of
different
values
between
Dutch
nation-
als and
1st/2nd
generation
migrants**

70 years old

Dutch
woman



'I prefer collective type of play but also doing crossword puzzles and reading books alone at a library.'

'I find it extremely difficult to connect with younger people since they usually come from different countries and so we have a difference in values.'

'I prefer collective play, even if that is playing online with other people.'

'I like to work with my hands but I am also part of a choir.'

'I find playing with younger people especially regarding from experiences of others I have heard about but I do not do it enough. I think it would be a good idea.'

71 years old

Dutch
woman



90 years old
Dutch woman



crafting
and other
creative
tasks as
essential

'I prefer playing collectively. I also like to make things and other crafts like diamond painting.'

Since I live in a grey neighbourhood, I feel like it would be amazing to interact with younger people. They give you a different type of energy. Whereas, if we only interact amongst ourselves we remain in our own thoughts. I miss hearing a child's voice and laughter.

variety of
activities
and people
is
important



Fig.26: Conversations from session with Group 1

Older adults often have more time and face less work-related stress, allowing them to focus on managing transitions such as retirement and other life changes. Research by Age UK highlights that participation in creative and cultural activities significantly enhances overall well-being. These activities foster social connections (building support networks) and promote positive emotions, such as greater optimism and improved coping abilities (Agate et al., 2018).



Fig.27: Summary from session with Group 1



37 years old
woman



only have time to play with their children during the weekend

'I play with my kids only and mostly during the weekends because there is no time during the week.'

'Thankfully, my children play amongst each other to keep occupied.'



'I play football still but less so than a few years ago. Still, I will play with my daughters or even with others whenever I get the chance.'

'We also play hide and seek and other active games they like.'

36 years old
woman



32 years old
woman



crafting
and other
creative
tasks as
essential

'I also only play with my children and only during the weekends.'

'I sing at the church with my two daughters and the rest of the community.'

plays
football
and also
with her
two
daughters

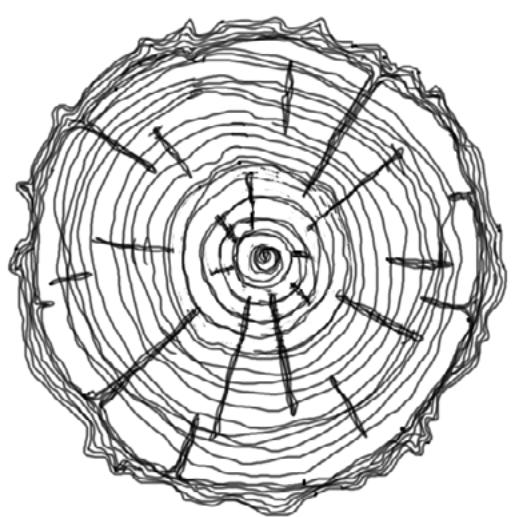


Fig.28: Conversations from session with Group 2

For adults, play takes the form of leisure, recreation, and activities that provide a sense of fulfillment. According to Maslow's hierarchy of needs (1943), these pursuits help address fundamental needs such as self-actualization, esteem, love, safety, and psychological well-being. Balancing time for work, rest, and play is essential for maintaining overall health (Whitaker & Tonkin, 2021). Additionally, play serves as an effective mechanism for coping with stress (Agate et al., 2018).



Fig.29: Summary from session with Group 2



**10 years old
girl**



'I like to play with others in an active way.'

'I like to play with my family and my teachers.'

'I want my mum to be there.'

'I prefer games based on fantasia.'

'I like playing with others but I also like crafting.'

'I like playing with my family, teacher and neighbours.'

**5 years old
girl**



**9 years old
boy**



'I like variety so it depends.'

'I prefer to play with girls.'

'I like to play with my family.'

'I prefer playing at a playground but I prefer if my parents are not there.'

'I prefer games where you get to make your own rules and stories.'

'I like variety but at a playground and my mum to be there.'

'I prefer fantasia.'



Fig.30: Conversations from session with Group 3

Children benefit greatly from learning through play, and families that engage in play together often experience greater happiness and connection. According to Vygotsky, play is essential for children as it facilitates rich social interactions involving the use of symbols and rules. This process aids in the development of key cognitive skills such as planning, memory, and decision-making (Whitaker, 2021). It also encourages abstract thinking, self-regulation, and impulse control (Şatiroğlu et al., 2023).

On a social and emotional level, play helps children develop critical skills, including active listening, focused attention, conflict resolution, and the ability to form meaningful relationships.

For teenagers, having a passion—driven intrinsically rather than extrinsically—plays a vital role in their development. Additionally, playful communication can help foster creativity and connection.



Fig.31: Summary from session with Group 3



3.4. Takeaways

One significant takeaway is that children and elderly have a lot more time to play. On the other hand, parents usually play during the weekends and predominantly with their children. This further supports the argument that parents need to be given more time alone through offering opportunities for play between elderly and children.

As could be expected, elderly and parents preferred more stationary play whereas children expressed liking active play more or both types. Also, playing with only one gender does not seem to be an important consideration for any of the age groups. A key takeaway is that all participants wanted or already did play with different generations. Despite this, one elderly participant expressed her worry that due to coming from different backgrounds there would be a difference of values between the participants of different ages, hence not allowing them to connect. Despite this, I think this is where connection through play brings the greatest advantage. Play provides the level field and common ground between people that seem to be a lot different than what we are when we play. Most participants expressed a liking for variety and change however, elderly seem to enjoy nature more whereas children prefer playgrounds. Another difference is that elderly prefer more fixed types of play whereas children prefer games based on fantasia and their own rules. This contrasted what the parents had predicted from their children where they misjudged in an exaggerated manner their childrens' preference for structured forms of play and being supervised to a greater extent than what the children actually suggested.

Overall, variety seems to be an important component. This variety is reflected to some extent in the Municipality of Rotterdam vision in creating 6 types of play environments that vary in scale; from urban meeting places to pocket parks and residual spaces. However, the same variety is not reflected in the existing visions about broadening the range of play environments to include inter-generational play or free and unstructured play.

A sense of safety is also important for both parents and children through some sort of supervision. Lastly, it is especially important that access to all environments is universal and equitable to allow people with diverse mobility baselines to interact together.

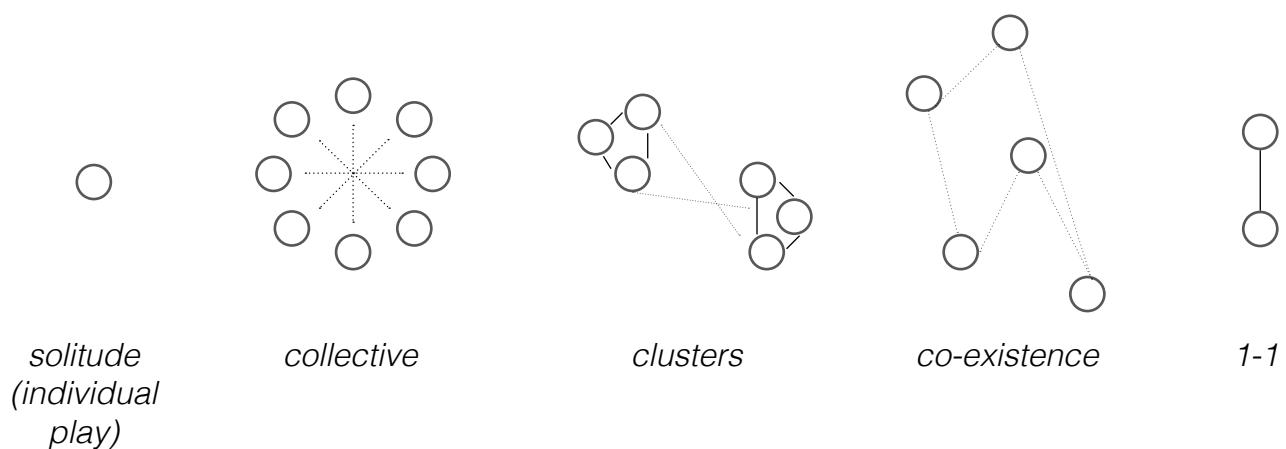


Fig. 32: Variety in types of interaction (made by author)

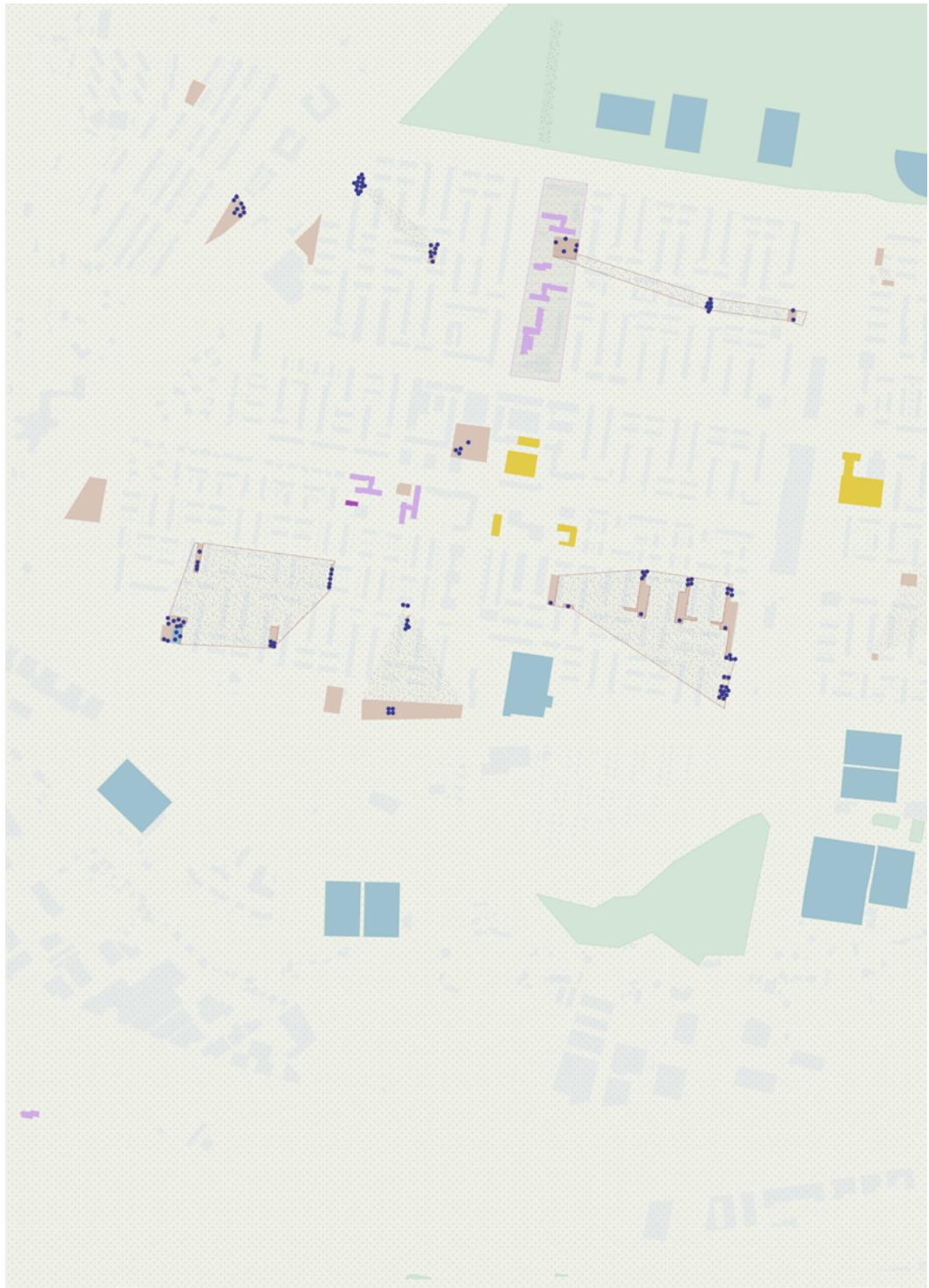


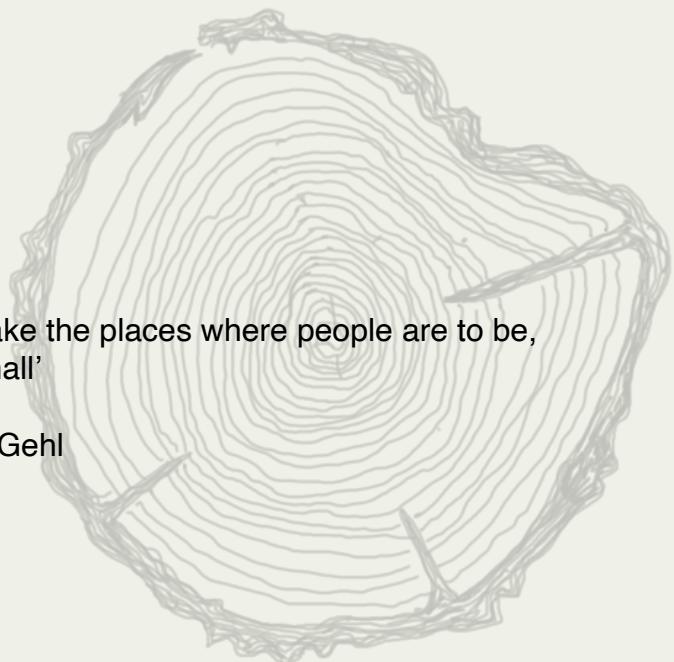
Fig. 33: Existing clusters of play environments in Pendrecht (made by author)

“The desire for playful activities is universal and transcends age in the human species” (Whitaker & Tonkin, 2021). Research highlights that intergenerational play not only reduces feelings of isolation and loneliness but also fosters more positive perceptions across age groups (Zhang, 2018). Younger participants often benefit from support and guidance, while older individuals gain energy and a sense of pride through opportunities for mentoring and caring. However, leisure activities may be limited by various constraints: intrapersonal factors (e.g., anxiety or perceived lack of skill), interpersonal factors (e.g., differing interests), and structural barriers (e.g., health issues or lack of time) (Agate et al., 2018; McGeorge et al., 2021).

The ‘Right of the Child’ protects the rights of children to play through the United Nations. One has to wonder, what is the fundamental difference between children and adults that place play as central to the health of the first but leave no room for it when considering the latter? In a society of increased isolation and individualism, fleeting encounters and recognising each other becomes really important. According to psychologist Gordon Allport ‘prejudices, hatred and racism arise from a lack of contact.’ whereas ‘contact leads to more trust, solidarity and more mutual help’ leading to being more tolerant with each other (PLATFORM31, n.d.). Contact is also contagious leading to a virtuous cycle, contrasting the vicious cycle of loneliness. Hence, encounters, opportunities for reliance on others and affordances to play become central elements to creating the breeding ground for an interconnected community. Concluding from the aforementioned research, within the study of salutogenesis, the study of production of good health, we should consider the provision of play in all people’s life an essential component of health, as a preventative as well as healing measure to the stresses of our modern world.

Based on observation, there is a real opportunity for creating these *affordances* for play and playful contact through children. This is because through all workshops conducted, children seemed to not care about background or language barriers as they try to communicate and interact with everyone in any way that they can. This can be used as a great advantage in integrating diverse communities together, such as Pendrecht.





'Think big but always remember to make the places where people are to be,
small'

Jan Gehl



4. What are the general spatial configurations that facilitate playful intergenerational interaction?

Rooted Living

4.1. Approach

This study approaches the challenge of loneliness through the lens of universal design, embracing the belief that spaces designed for inclusivity benefit all. To alleviate feelings of isolation, it is not beneficial to address loneliness in a vacuum. Instead, we must shape a built environment that whispers invitations to connect, offering a stage for spontaneous interactions and meaningful bonds to flourish, through designing for affordances of interaction between all. This section follows the work of Jan Gehl in '*Cities for People*', the Global Designing Cities Initiative's '*Designing Streets for Kids*' and '*Universal Design*' by Steinfeld and Maisel. Hence, the following Design Guidelines stem from the aforementioned research as well as the theory of 'affordances' by James Gibson.

'Experts agree that the problems associated with loneliness do not demand specific 'loneliness solutions' but 'holistic and person-centered services, aimed at promoting healthy and active ageing, building resilience, and supporting independence.' (Whitaker, 2021)

4.2. General Design Guidelines on a neighbourhood scale

1. Spatial Proximity and Syntax

Spatial proximity should be utilised to facilitate public, communal and intimate environments. Also, a ring-like and shallow spatial syntax invites serendipitous encounters, allowing even a journey home to act as a journey of potential connections.

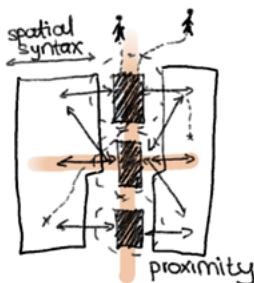


Fig. 34: Spatial Proximity and Syntax (made by author)

2. Routes, Walking and Way-finding

Movement through a neighbourhood should feel intuitive, like a stream flowing effortlessly to its destination. Main routes should be clear and inviting, with smaller side streets providing short-cuts and intrigue. Wide, even sidewalks, clear signage, and thoughtful surface materials enhance accessibility, creating paths that offer ease instead of frustration (Lucas, 2020).



Fig. 35: Routes, Walking and Way-finding (made by author)

3. Soft boundaries and edges

Installing soft boundaries, full of activity, especially on the ground floor is essential in keeping a loop of interaction between users. 80% of short-term encounters between neighbours occur on the pavement at the front door. Hence this threshold is key for setting a rhythm of daily greetings, slowly building on the fabric of the community.



Fig. 36: Soft Boundaries and Edges (made by author)

4. Variety with Layered Spatial Hierarchies

Spaces should accommodate diverse scales of interaction, from intimate nooks for storytelling to expansive zones for physical activities. Ensuring diverse design elements and environments to cater to different activities can allow a layering of people of different ages to engage simultaneously , fostering organic modes of connection based on the likings of the individual.

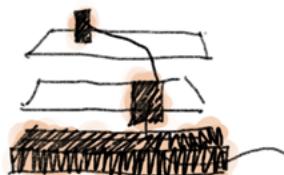


Fig. 37: Variety with Layered Spatial Hierarchies (made by author)

5. Sociopetal Space to Sit

Allow space to sit and rest which should suit the type of social interaction desired. Designing for spaces to sit can transform those not able to engage in one activity from passers-by to participants.



Fig. 38: Sociopetal Spaces to Sit (made by author)

6. Slowing people down through narrowed paths

Narrowed paths, sensory integration and opportunities for curiosity can slow people down with the intention of enhancing spontaneity. In these slower spaces, interactions take root, and moments of stillness transform into opportunities for playfulness.



Fig. 39: Slowing people down through narrowed paths (made by author)

7. Empty space

In emptiness lies possibility. Unstructured green spaces offer room for free play, quiet reflection, and organic social interactions. Studies suggest that individuals with over 30% green space within 1600 meters of their home feel significantly less lonely than those with less than 10% (van den Berg et al., 2017). The absence of formal design becomes a gift, offering tranquility and freedom.



Fig. 40: Empty Space (made by author)

8. Connection to nature

The natural environment can provide a soothing atmosphere through its smells, colours and movement. A close relationship between people and nature leads to more happiness so integrating this within the overall scheme is important.



Fig. 41: Connection to nature (made by author)

9. Eyes and ears on the street/ play area

Familiarity breeds comfort. The watchful presence of neighbours and the natural surveillance of shared spaces foster a sense of safety and community. For single parents, new residents, or anyone seeking connection, the proximity of welcoming neighbours can transform a space into a sanctuary.

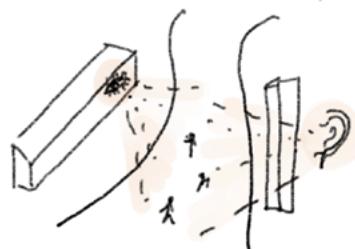


Fig. 42: Eyes and Ears on the Street/ Play Area (made by author)



Fig.43: I Love Street by MVRDV, COURTESY OF GWANGJU BIENNALE FOUNDATION (2017)

9. Eyes and Ears on the street/ play area

8. Connection to play areas

7. Empty Space

6. Slowing People Down

4. Variety with Lay

2. Routes, Walking

communal

communal





Fig.44: Design Guidelines neighborhood scale (made by author)

4.3. General Design Guideliness on a building scale

1. Careful Circulation

Designing for affordances of playful interaction and connection through careful planning of circulation movements and layouts, where people spontaneously meet through the principles of forced interaction.

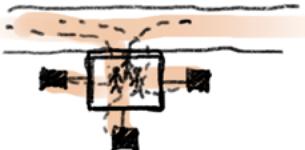


Fig. 45: Careful Circulation (made by author)

2. Programmatic Design

Linking to circulation, sequencing movement through the uses of each space to plan for 'chance encounters' through shared basic amenities such as laundry to centralised communal hubs in the form of repair workshops or storytelling.



Fig. 46: Programmatic Design (made by author)

3. Shared amenities and Shared Activity anchors

Shared amenities and linked activities like a garden for collective gardening, repair workshop, a kitchen and laundry can bring people together for practical reasons as well as enjoyable activities. These should be nodes to the circulation and program of the building in order to form a collective attitude. These act as 'third' shared spaces of non-institutionalising character.



Fig. 47: Shared Amenities and Shared Activity Anchors (made by author)

4. Clear signage and Visual Cues

Wayfinding should be intuitive, with clear signage, contrasting colors, and tactile surfaces guiding every user. These visual and physical cues ensure accessibility and ease, making the space welcoming to all.



Fig. 48: Clear Signage and Visual Cues (made by author)

5. Sensory Integration

Sensory elements—soft lighting, fragrant gardens, the gentle murmur of water—create environments that engage and delight. Green spaces and natural textures resonate across generations, evoking shared wonder and calm. Soundscapes, such as that of water are soothing and calming. Additionally, soft materials and textures add to the feeling of comfort.



Fig. 49: Sensory Integration (made by author)

6. Quiet Zones

Solitude is as essential as connection. Spaces for reflection and individual activities offer balance, reminding us that moments of quietude enrich the symphony of community life. Overstimulation is as common in elderly, as adults in surprisingly also children as expressed through the interviews.



Fig. 50: Quiet Zones (made by author)

7. Outdoor/ Sheltered areas

Offering both outdoor and sheltered options for meeting and staying is important in order to provide ground for meeting for every weather condition, like in a sunny afternoon in the garden and around a fire in a windy and rainy December day.



Fig. 51: Outdoor/ Sheltered Areas (made by author)

8. Ambiance and Atmospheres

Creating a pleasant and stimulating environment through a non-institutional character where there is no glare, too much noise but a pleasant ambient atmosphere is created. On the other hand in specific spaces such as a storytelling space the room can be designed to be more intimate to fit the specific atmosphere best suited for the function. Daylight and view to the outside are really important.



Fig. 52: Ambiance and Atmospheres (made by author)

9. Adaptive features and elements

Design elements such as big steps that can also act as forms of play for children, and sitting space for older people are important to keep people around each other even if they engage in different tasks as well as to co-create their environment. Additionally, personalised elements or spaces can make the environment feel more homely.



Fig. 53: Adaptive Features and Elements (made by author)

10. Playful Threshold and Transitions

Spaces that evoke curiosity draw people together. Tactile corridors, sensory installations, and inviting transitions between rooms slow people down, encouraging serendipitous encounters and shared delight. This works hand-in-hand with the idea of slowing people down on an urban scale.

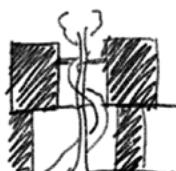
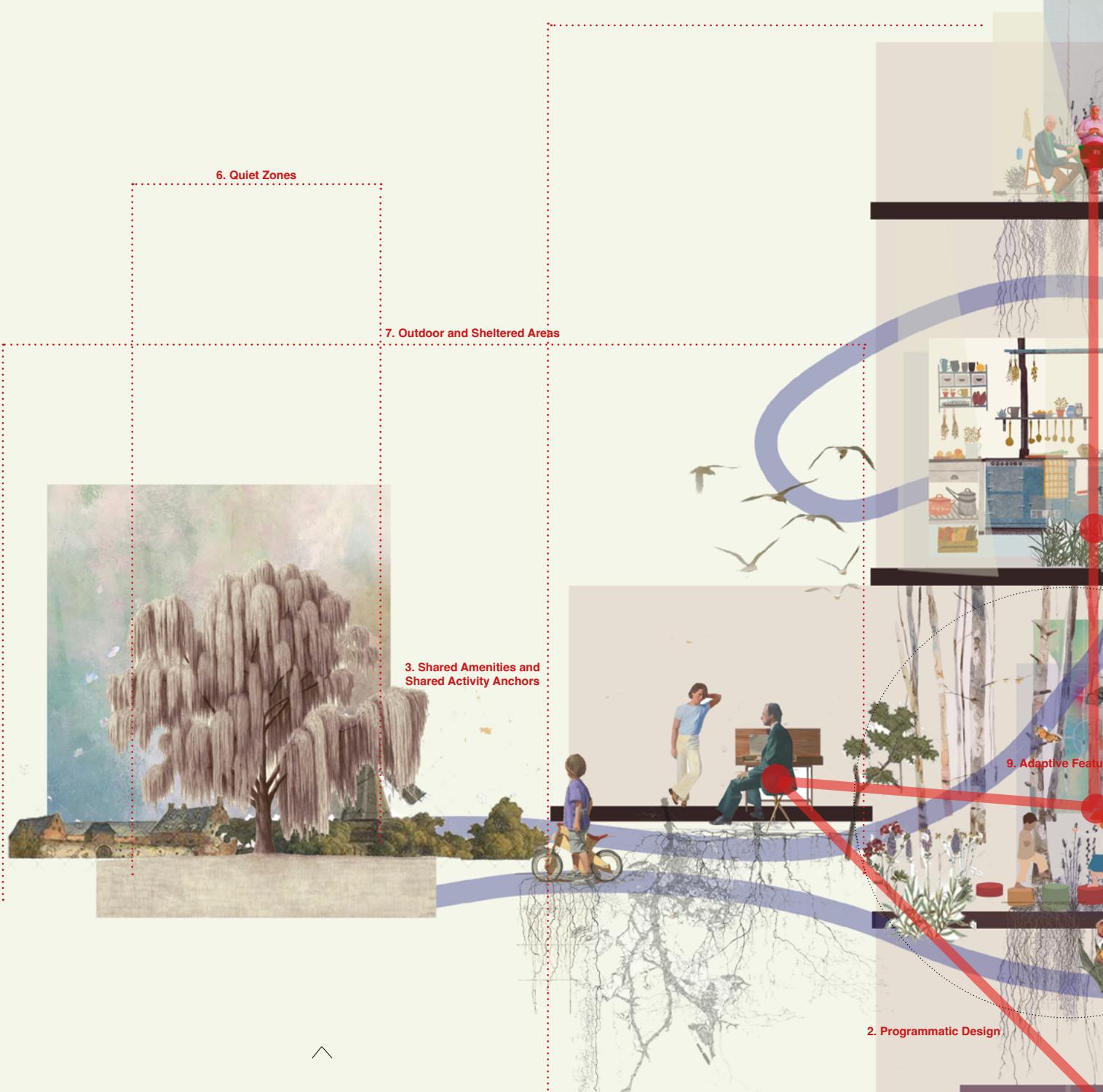


Fig. 54: Playful Thresholds and Transitions (made by author)



All of the above elements enhance independence whilst making the prospect of reliance a more welcoming concept. Reliance is often seen in negative light in our fast-paced, individualistic, modern worlds, however studies looking into intergenerational interaction show that the participants of the two age groups developed positive general perceptions towards the members of the other age group through helping each other. Specifically, young participants reported a significantly greater degree of perceptual changes in attitudes towards old adults (Zhang, 2018). Hence, in many ways helping each other strengthens relationships between us.

The art of designing for intergenerational connection lies in weaving spaces that celebrate the rhythms of human interaction. Whether on a neighborhood or building scale, these environments are more than physical constructs—they are invitations to belong, to play, and to rediscover the joy of connection across generations.

How can an urban ensemble centred around the notion of play alleviate the feeling of loneliness?

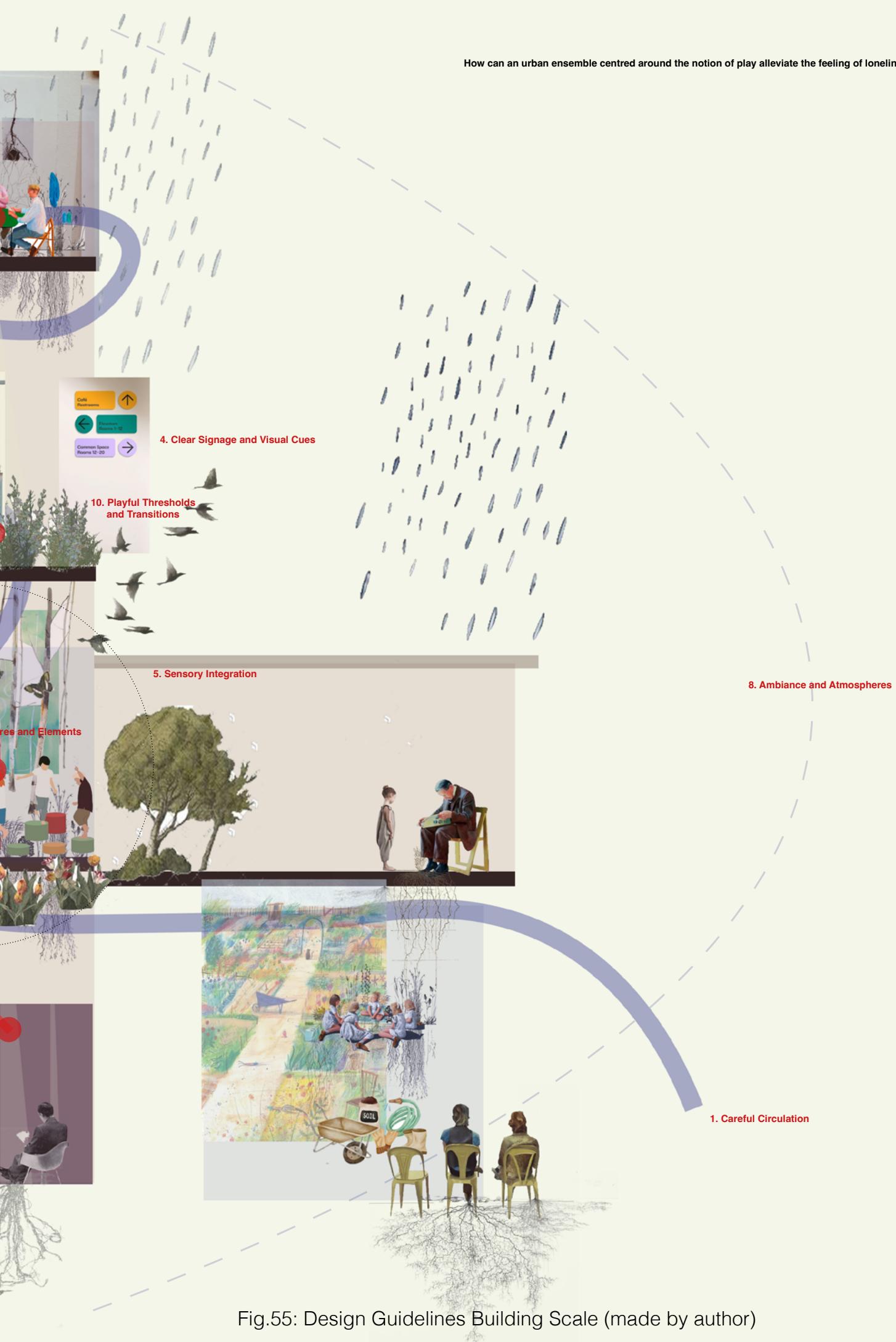


Fig.55: Design Guidelines Building Scale (made by author)



Loneliness doesn't necessarily require physical solitude, but rather an absence or paucity of connection, closeness, kinship: an inability, for one reason or another, to find as much intimacy as is desired.

'The Lonely City: The Art of Being Alone'
(Laing, 2017)



5. How can spatial configurations dismantle the barriers to playful intergenerational interaction, fostering social connections across generations specifically in Pendrecht?

The Pendrecht Case: Pattern Language

5.1. The development of the neighborhood of Pendrecht

Pendrecht, a post-war district in Rotterdam, was originally envisioned as a model of livability, with its design rooted in the neighborhood concept and cluster planning. However, over time, the area has faced challenges such as social cohesion issues. Its historical emphasis on uniform housing blocks and open green spaces offers a foundation, but its current social fabric often reveals barriers—physical, cultural, and psychological—that hinder connections across generations. Spatial configurations of play can act as mediators, dismantling these barriers and creating environments where people of all ages feel welcome and inspired to engage.

The area declined after 1975 due to the development of the suburbs with people moving away and Pendrecht attracting a different demographic, whereby the new diverse area faced a decreasing level of engagement. Hence, Pendrecht entered a restructuring process from 1995, with a long-term vision called “The New Garden City,” focusing on a balanced mix of housing types, including family homes and affordable options.



Fig.56: Scattering of playful environments in Pendrecht (made by author)



Fig.57: Dense Built up area of Pendrecht, map at 1:10,000 (made by author)

As mentioned before, Pendrecht is a highly built-up area, where green spaces are mostly ornamental and not highly utilised. The staticness of the area has not allowed people to easily connect as public space has become a transient space instead of one fostering playful interactions.





Fig.58: Pendrecht and Zuidwijk with clusters of playgrounds and future plans, map at 1:10,000 (made by author)

For this reason, zooming out and considering Pendrecht and Zuidwijk together the opportunity of creating a playful periphery to these two neighborhoods, seems more clear. This is with the idea that this playfulness of the periphery will slowly seep into the individual neighborhoods themselves which currently find themselves in a more static and fixed state.





Variety in urban play environments is crucial for fostering a healthy and inclusive community. This map illustrates diverse opportunities for engagement within this playful periphery—ranging from arts and culture to sports, nature-based activities, and unstructured spaces. Noteably, there are also sections specific to fortoring intergenerational connection that are designed with the principles of universal design. Such variety not only caters to different interests but also promotes engagement with different areas of the city rather than concentrating activities in a single location. This enriches the user experience but also supports the vitality of various urban spaces, ensuring a more dynamic and interconnected environment.





5.2. Pendrecht-Specific Spatial Configurations

1. Bridging Physical and Functional Separation Through Layered Spatial Design

The fragmented layout of Pendrecht can be re-imagined by introducing layered spatial hierarchies that cater to varying needs. This can be done based on the previously outlined design guidelines across the scale: from neighbourhood to building.

- Neighbourhood Scale:

Spatial Proximity and Syntax,

Soft boundaries and edges

Variety with Layered Spatial Hierarchies

- Building Scale:

Careful Circulation

Programmatic Design

Shared Amenities and Activity Anchors

Outdoor/ Sheltered Areas

In terms of the program of such a project that prioritises intergenerational interaction through tacit or ageless forms of play or playfulness, spaces for activities like storytelling, passing of skills (such as knitting, digital skills, repair workshop for bikes, building together and crafting) can become central to the sequencing of spaces and movement to blend these age groups together. Activities for the weekend might also be a good idea considering that during the interviews the elderly group expressed an exaggerated feeling of loneliness during the weekends. Therefore, a special activity like a market during that time can help. Programming playfulness within simple, every day moments.

2. Reinvigorating Public Spaces with Universal Design Principles

Barriers to access, such as uneven pavements or lack of seating, can discourage participation, especially among the elderly or those with limited mobility. Universal design principles—like smooth pathways, tactile way-finding, and adaptable furniture—make spaces accessible to everyone, breaking down physical limitations and fostering spontaneous interaction. More specifically within Pendrecht, the car dependence has lead to some safety problems with reports of people speeding in front of schools, parks and on main streets. The introduction of child-friendly routes according to interviews with people from the municipality, highlighted that these were not enough. Therefore, controlling access of the car in these more spontaneous and playful areas is key to the success of the scheme.

- Neighbourhood Scale:

Routes, Walking and Way-finding,

Soft boundaries and edges

Sociopetal Spaces to Sit

Slowing People Down

- Building Scale:

Careful Circulation

Clear signage and Visual Cues

Outdoor/ Sheltered Areas

Ambiance and Atmospheres

Adaptive Feature Elements

Playful Thresholds and Transitions

3. Inviting Collaboration

Playfulness should not be confined to children. In Pendrecht, introducing intergenerational play anchors—such as storytelling spaces, or shared gardens—can attract diverse age groups. Such spaces, like a community garden, can offer opportunities for older generations to pass on knowledge while children learn to explore nature. Co-creation opportunities are also a great way to bring people closer together and learn from each other's more organic ways of doing and knowing.

- Neighbourhood Scale:
 - Spatial Proximity and Syntax,*
 - Routes, Walking and Way-finding,*
 - Soft boundaries and edges,*
 - Variety with Layered Spatial Hierarchies*
 - Socio-petal Spaces to Sit*
 - Slowing People Down*

- Building Scale:
 - Careful Circulation*
 - Programmatic Design*
 - Shared Amenities and Activity Anchors*
 - Sensory Integration*
 - Outdoor/ Sheltered Areas*
 - Ambiance and Atmosphere*
 - Adaptive Feature Elements*
 - Playful Thresholds and Transitions*

4. Combating Inflexibility with Universal Design and open spaces

In Pendrecht, where the neighborhood's post-war urban fabric has been criticized for its rigid zoning and aging infrastructure, universal design and empty space present a pathway to adaptability and inclusivity. Universal design advocates for environments that are accessible and usable by all, regardless of age or ability, while the strategic use of empty space ensures flexibility for evolving needs and spontaneous activities. This can foster unstructured forms of play and can accommodate for seasonal and even future changes. Together, these principles can combat inflexibility and foster intergenerational connections.

- Neighbourhood Scale:
 - Routes, Walking and Way-finding,*
 - Empty Space*

- Building Scale:
 - Careful Circulation*
 - Adaptive Features and Elements*
 - Playful Thresholds and Transitions*

5. Ensuring safety within Open space

Safety is fundamental to the success of open spaces, particularly in fostering intergenerational play and interaction. In Pendrecht, where perceptions of insecurity have historically been a concern, ensuring safety in open spaces can rebuild trust in the neighborhood's shared environments. Thoughtful design and strategic interventions can transform these areas into welcoming havens for all.

- Neighbourhood Scale:
 - Spatial Proximity and Syntax,*
 - Routes, Walking and Way-finding,*
 - Soft boundaries and edges*
 - Socio-petal Spaces to Sit*
 - Zones for dogs and pet free play areas*
 - Eyes and ears on the street/ play area*

- Building Scale:
 - Careful Circulation*
 - Programmatic Design*
 - Clear Signage and Visual Cues*
 - Quiet Zones*
 - Outdoor/ Sheltered Areas*
 - Adaptive Features and Elements*

In Pendrecht, spatial configurations of play can transcend barriers by blending physical accessibility, cultural inclusivity, and emotional safety. By layering opportunities for engagement, embedding play into the everyday, and fostering community ownership, these spaces can nurture the connections that bind generations together. Through thoughtful design, Pendrecht can evolve into a neighborhood where intergenerational play becomes not just possible but inevitable, weaving a stronger social fabric for all.

5.3. Pattern Language

*General Design Guidelines
on Neighborhood Scale*

*Pendred
Guidelines for*

Spatial Proximity and Syntax

*Routes, Walking and
Way-finding*

Soft boundaries and edges

*Variety with Layered Spatial
Hierarchies*

Sociopetal Space to Sit

Slowing people down

Empty space

*Zones for dogs and pet free
play areas*

*Eyes and ears on the street/
play area*

*Bridging Physical
Separation Through
Spatial*

*Reinvigorating Public
Universal Design*

Inviting Co

*Combating In
Universal Des
Space*

*Ensuring safer
space*

*Routes, Walking and
Way-finding*

Soft boundaries and edges

*Degree of
repetition*

Spatial Proximity and Syntax

Sociopetal Space to Sit

*Variety with Layered Spatial
Hierarchies*

Slowing people down

Empty space

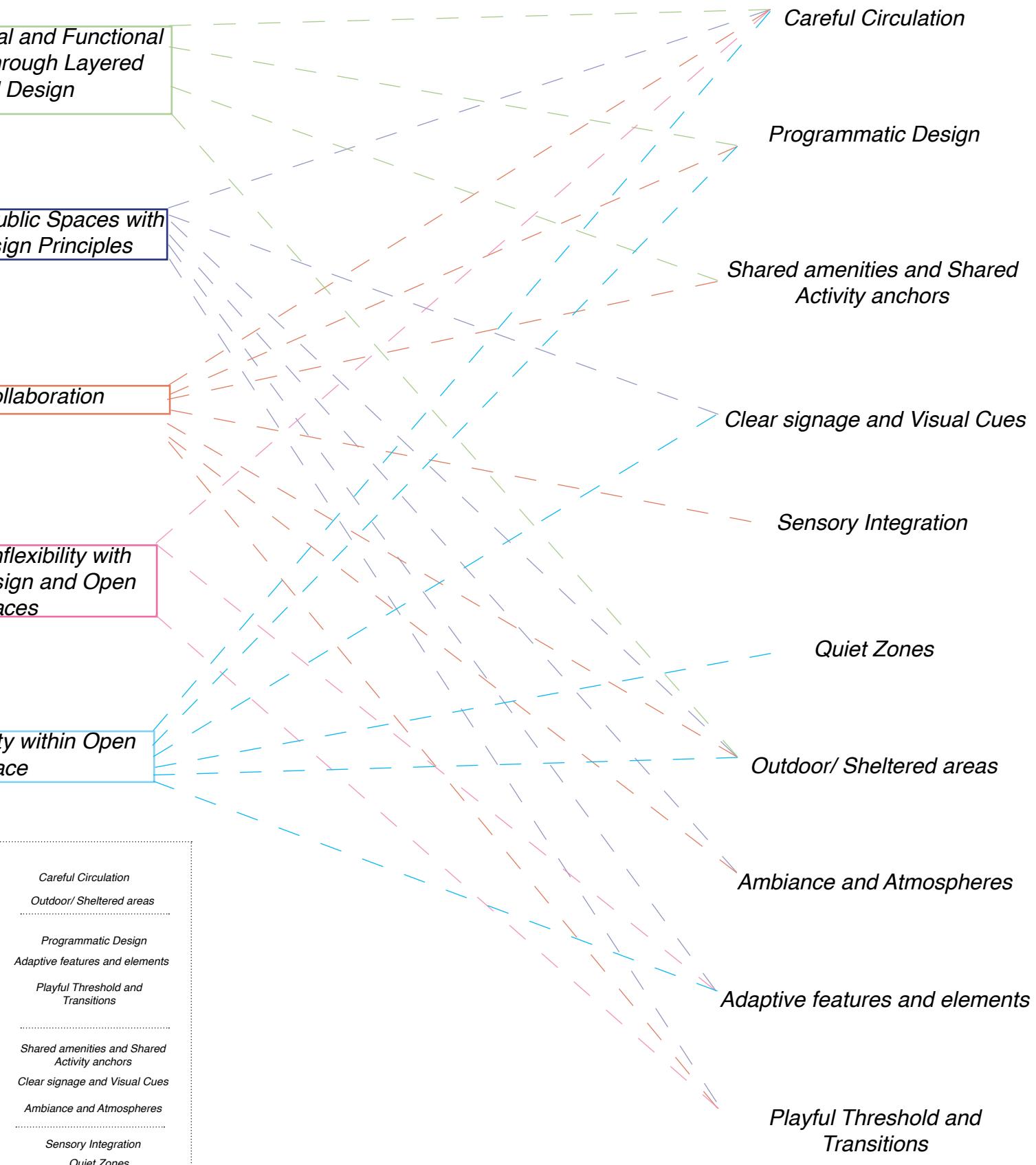
*Zones for dogs and pet free
play areas*

*Eyes and ears on the street/
play area*

Fig.61: Pattern Language for Pendred

Light Design for Playfulness

General Design Guidelines on Building Scale



After a seven days' march through woodland, the traveler directed toward Baucis cannot see the city and yet he has arrived. The slender stilts that rise from the ground at a great distance from one another and are lost above the clouds support the city. You climb them with ladders. On the ground the inhabitants rarely show themselves: having already everything they need up there, they prefer not to come down. Nothing of the city touches the earth except those long flamingo legs on which it rests and, when the days are sunny, a pierced, angular shadow that falls on the foliage.

There are three hypotheses about the inhabitants of Baucis: that they hate the earth; that they respect it so much they avoid all contact; that they love it as it was before they existed and with spyglasses and telescopes aimed downward they never tire of examining it, leaf by leaf, stone by stone, ant by ant, contemplating with fascination their own absence.

(Calvino, 1972)



Fig.62: Aziz, Y. (2011). Invisible Cities - BAUCIS.

6. Discussion

This study explored how playfulness and sensory integration in urban design could alleviate loneliness, particularly in Pendrecht. The findings suggest that while spatial interventions alone cannot fully resolve loneliness, they can create opportunities for spontaneous intergenerational interactions, which are key to fostering social cohesion. The research emphasizes the role of sensory-rich, playful environments in lowering social barriers and encouraging engagement, to deepen emotional connections to place.

The focus on intergenerational interaction expands on Zhang's (2018) work, highlighting that shared spaces catering to diverse age groups—such as communal gardens or layered play areas—can promote social mixing. However, while existing literature (Schmitt, 2023) frames urban loneliness primarily as a social issue that design can help mitigate, this study suggests that the success of spatial interventions is highly contingent on individual and cultural dynamics.

Sensory integration was identified as a promising strategy for promoting inclusivity, consistent with Canbeyli's (2021) findings on sensory stimuli's positive impact on mood. Yet, this study also questions the universality of such benefits. While multi-sensory environments can attract diverse users, they risk overstimulation, especially for elderly individuals or those with sensory sensitivities—an area underexplored in existing literature. The research has done efforts to rebalance this by also proposing quiet and private spaces.

Methodologically, combining ethnographic research, spatial analysis, and the creation of a pattern language offered a holistic framework for understanding loneliness in Pendrecht. Ethnographic mapping, inspired by Pink et al. (2020), allowed for nuanced insights into residents' spatial experiences. However, limitations such as small sample sizes and language barriers—echoing Holligan's (2019) concerns about researching sensitive topics—likely constrained the depth of findings, particularly regarding emotional and existential loneliness, which remains difficult to capture through spatial analysis alone. The interview cards developed for this study, while tailored to Pendrecht's specific social and spatial context, maintain a level of generality that allows for adaptability in other settings. Designed to explore themes of loneliness, playfulness, and spatial engagement across age groups, the cards focus on universal experiences, making them applicable to diverse urban contexts. However, their effectiveness depends on cultural sensitivity and context-specific adjustments. Future researchers can modify the prompts to align with local social dynamics, enabling broader use while preserving the core inquiry into how environments influence social interaction and well-being.

The proposed pattern language, drawing on Alexander (*A Pattern Language*, 1977), offers a conceptual framework for designing playful, sensory-rich environments adaptable to Pendrecht and similar urban contexts. However, the study recognizes that without community engagement and supportive social programs, these spatial interventions may fall short in fostering sustained connections.

In conclusion, this research reinforces Gehl's (*Cities for People*, 2010) argument for human-centered urban design, while also highlighting the limits of spatial solutions in addressing complex social issues like loneliness. It suggests that while playful, sensory environments can facilitate social interaction, they must be part of a broader, integrated approach that includes cultural, social, and policy considerations.

7. Conclusion

This research set out to explore how an urban ensemble centered around the notion of play can alleviate feelings of loneliness, focusing on the case of Pendrecht, Rotterdam Zuid. By examining the relationship between loneliness and the physical environment, the study revealed that carefully designed, playful spaces can serve as powerful catalysts for fostering social connections and bridging generational divides.

1. Causes and manifestations of loneliness across age groups:

The study found that loneliness in Pendrecht is deeply influenced by social dynamics and the physical environment, with distinct causes across different age groups. Elderly residents often experience isolation due to reduced mobility, shrinking social networks, and inaccessible public spaces. Single parents face time constraints and limited inclusive spaces that support both adult and child engagement, reducing opportunities for social interaction. Children encounter loneliness through structured routines, lack of spontaneous play opportunities, and inadequate, uninviting play spaces that restrict unstructured social interactions, especially across generations.

2. Understanding ‘play’ and the role of playfulness and sensory integration:

The study highlights playfulness—spontaneous, open-ended engagement—as a universal connector across ages. While children prefer active and imaginative play, adults and elderly residents gravitate toward sensory-based, collective activities. Playfulness fosters joy and social connection but, sensory-rich environments invite deeper engagement, spark spontaneous interactions, and create inclusive spaces where different age groups can connect, reducing feelings of isolation.

3. General spatial configurations for intergenerational interaction:

Thoughtful spatial configurations are key to reducing loneliness by fostering natural, intergenerational interactions. Layered spaces accommodate diverse activities, encouraging different age groups to share the same environment—like a garden where elderly residents tend plants while children play nearby. Sociopetal seating promotes face-to-face contact, facilitating casual conversations that help break social isolation. These configurations transform passive spaces into active social hubs, helping to rebuild community ties and reduce isolation.

4. Dismantling barriers to intergenerational play in Pendrecht:

The research develops a pattern language specific to Pendrecht, synthesizing design strategies to address its spatial and social barriers to intergenerational interaction. This framework connects broader principles—like universal design and sensory integration—to local needs, proposing linked play spaces, shared gardens, and safe, walkable routes. By layering these elements, the pattern language fosters spontaneous, cross-generational encounters, transforming underused spaces into inclusive social hubs that help reduce loneliness.

Overall, the findings underline that loneliness, while deeply personal, is often exacerbated by physical environments that limit opportunities for meaningful social interactions. In contrast, spaces that encourage collective playful interaction—through sensory, interactive, and inclusive design—can nurture a sense of belonging and community. Playfulness seems to be more successful at targeting social loneliness, than emotional or existential but can act as a way out of the vicious cycle. By framing loneliness and play as interwoven phenomena, and considering this as part of a wider system of holistic design, the study contributes to broader discourses on urban resilience, social well-being, and inclusive design. It emphasizes that architecture has the potential to not only shape the physical world but also to re-imagine social dynamics, fostering environments where people of all ages can connect, play, and thrive.

8. Reflection

This study offers valuable insights into the relationship between loneliness, playfulness, and the built environment, but it is essential to acknowledge its limitations. The small sample size—six participants per age group—inevitably narrows the diversity of perspectives and limits the generalizability of the findings. While the data highlights common struggles, it serves more as an indication of social dynamics than a comprehensive representation.

Language barriers posed a significant challenge, potentially limiting the depth and authenticity of responses, despite efforts to build trust through repeated visits to community centers and the use of translators. This raises concerns about inclusivity and whether the research fully captured the complexity of loneliness in Pendrecht's diverse community.

The use of small group interviews was both a strength and a weakness. While group settings encouraged openness, they also risked social conformity, where participants echoed dominant narratives, especially around sensitive topics like loneliness. For instance, when one participant dismissed feelings of loneliness, others sometimes followed suit, reflecting Holligan's (2019) observation that loneliness is often under-reported due to social stigma.

A notable gender imbalance further shaped the data. Most single-parent participants were women, reflecting caregiving norms but limiting male perspectives. This imbalance may have skewed the findings, especially considering Wolfers et al. (2021) note that men are more likely to experience emotional loneliness, a nuance that may have been underexplored.

Crucially, the study likely under-represents the most isolated individuals—those caught in the deepest cycles of loneliness who may not frequent community spaces. This highlights an ethical challenge: traditional qualitative methods risk amplifying more socially connected voices while silencing those most affected. Alternative approaches, such as home visits or anonymous surveys, might better reach these hidden populations.

Ultimately, while this research sheds light on how playful, sensory environments can support social connections, it also reveals the limitations of spatial research in addressing the emotional depths of loneliness. Future studies should adopt more inclusive and adaptive methodologies to engage with those often left unheard, ensuring that the spaces we design truly serve the most vulnerable.



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List of Figures:

Fig. 1: Puente Frantzen, K. (2017b). Zoe. In ArchDaily. https://www.archdaily.com/805442/italo-calvinos-invisible-cities-illustrated-again/58a49af5e58eceecc00005b-italo-calvinos-invisible-cities-illustrated-again-photo?next_project=no

Fig.2: Puente Frantzen, K. (2017a). Diomira. In ArchDaily. <https://www.archdaily.com/805442/italo-calvinos-invisible-cities-illustrated-again/58a49721e58eceecc00004d-italo-calvinos-invisible-cities-illustrated-again-photo>

Fig.3: Casey, A. (2010). Interdependence. In AmyCasey. <https://www.amycaseypainting.com/2010?lightbox=imageld8>

Fig. 4: Our Cities Are Designed for Loneliness. (2018). In Vice. <https://www.vice.com/en/article/our-cities-are-designed-for-loneliness-v25n4/>

Fig.5: Het Nieuwe Instituut. (1960). Lotte Stam-Beese, structuurschets ROCA (Rotterdam-Oost /Capelle aan den IJssel) studies, krijt en kleurpotlood op calque, februari 1960. In Platform Wederopbouw Rotterdam. <https://wederopbouwrotterdam.nl/artikelen/lotte-stam-beese-en-de-wederopbouw-van-rotterdam>

Fig. 6: Constant Nieuwenhuis 1956-1974

Fig. 7: Bruegel, P. (1560). Children's Games. In JOURNAL OF HISTORIANS OF NETHERLANDISH ART. <https://jhna.org/articles/homo-ludens-pieter-bruegels-childrens-games-humanist-educators/>

Fig.8 : Impression of Key Ideas, Playfulness as the Healing quality to Loneliness through a Playful Living Environment (made by author)

Fig. 9: Theoretical Framework Diagram (made by author)

Fig. 10: I.N.D [Inter.National.Design], & Studio ID Eddy. (2020). Ring of Swings. In ArchDaily. <https://www.archdaily.com/948840/ring-of-swings-ind-inteationaesign-plus-studio-id-eddy>

Fig. 11: Methodology Diagram (made by author)

Fig. 12: Impression of the Setting of the Workshops (photographs by author)

Fig. 13: (CBS Netherlands) redrawn by author

Fig. 14: (CBS Netherlands) redrawn by author

Fig. 15: (CBS Netherlands) redrawn by author

Fig. 16: Loneliness as a subjective emotion caused by frustration and disappointment between expectations and reality (Donnissen, 2023)

Fig. 17: Cards for interviews (made by author)

Fig. 18: Conversations from session with Group 1 (made by author)

Fig. 19: Summary from session with Group 1 (made by author)

Fig. 20: Conversations from session with Group 2 (made by author)

Fig. 21: Summary from session with Group 2 (made by author)

Fig. 22: Conversations from session with Group 3 (made by author)

Fig. 23: Summary from session with Group 3 (made by author)

Fig. 24: The Magic Circle from Homo Ludens (redrawn by author)

Fig. 25: Cards made by author for interviews (made by author)

Fig. 26: Conversations from session with Group 1 (made by author)

Fig. 27: Summary from session with Group 1 (made by author)

Fig. 28: Conversations from session with Group 2 (made by author)

Fig. 29: Summary from session with Group 2 (made by author)

Fig. 30: Conversations from session with Group 3 (made by author)

Fig. 31: Summary from session with Group 13 (made by author)

Fig. 32: Variety in types of interaction (made by author)

Fig. 33: Existing clusters of play environments in Pendrecht (made by author)

Fig. 34: Spatial Proximity and Syntax (made by author)

Fig. 35: Routes, Walking and Way-finding (made by author)

Fig. 36: Soft Boundaries and Edges (made by author)

Fig. 37: Variety with Layered Spatial Hierarchies (made by author)

Fig. 38: Sociopetal Spaces to Sit (made by author)

Fig. 39: Slowing people down through narrowed paths (made by author)

Fig. 40: Empty Space (made by author)

Fig. 41: Connection to nature (made by author)

Fig. 42: Eyes and Ears on the Street/ Play Area (made by author)

Fig. 43: I Love Street by MVRDV COURTESY OF GWANGJU BIENNALE FOUNDATION (2017)

Fig. 44: Design Guidelines neighborhood scale (made by author)

Fig. 45: Careful Circulation (made by author)

Fig. 46: Programmatic Design (made by author)

Fig. 47: Shared Amenities and Shared Activity Anchors (made by author)

Fig. 48: Clear Signage and Visual Cues (made by author)

Fig. 49: Sensory Integration (made by author)

Fig. 50: Quiet Zones (made by author)

Fig. 51: Outdoor/ Sheltered Areas (made by author)

Fig. 52: Ambiance and Atmospheres (made by author)

Fig. 53: Adaptive Features and Elements (made by author)

Fig. 54: Playful Thresholds and Transitions (made by author)

Fig. 55: Design Guidelines Building Scale (made by author)

Fig. 56: Scattering of playful environments in Pendrecht (made by author)

Fig. 57: Dense Built up area of Pendrecht (made by author)

Fig. 58: Pendrecht and Zuidwijk with clusters of playgrounds and future plans (made by author)

Fig. 59: Playful Periphery as plan for Pendrecht and Zuidwijk (made by author)

Fig. 60: Diverse Playful Environments in Periphery (made by author)

Fig. 61: Pattern Language for Pendrecht across the scales (made by author)

Fig. 62: Aziz, Y. (2011). Invisible Cities - BAUCIS.

