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The ‘Right’ Place to Age? Exploring Age-Friendly and Diversity-Sensitive Design in a Super-Diverse Neighbourhood.

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Abstract

The neighbourhood is a significant place for older adults in later life, especially given their strong wish to age in place, pointing to the importance of age-friendly design that accommodates older adults’ changing needs. Moreover, the older population is diversifying, highlighting the additional need for diversity-sensitive design, accommodating older adults’ diverse needs. Considering the importance of public places to age-friendly and diversity-sensitive design, this paper explores design that promotes community connection in an age-friendly and diversity-sensitive manner. To do so, a research-by-design study with master students in (interior) architecture was set up in a super-diverse Belgian neighbourhood. After a pre-design phase that immersed students in the neighbourhood and its inhabitants’ experiences, the students engaged in a design phase. Here, they re-designed various public places in an age-friendly and diversity-sensitive manner. The design output illustrates how

various functions and intensities answer the changing and diverse needs of a super-diverse population.

Keywords: age-friendly design; diversity-sensitive design; community connection; research-by-design; architecture

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1. Introduction

Housing and the neighbourhood are considered significant places for older adults' (60+) well-being (Mulliner, Riley, and Maliene 2020), especially as they tend to spend more time inside their homes (Spalt et al. 2016) – as their action radius declines (Smetcoren 2016) – and wish to age in place (Fernández-Carro 2016). The neighbourhood not only plays a critical role in older adults' well-being (Oswald et al. 2011) but also in facilitating or hindering ageing in place, i.e. *'one's journey to maintain independence in one's place of residence as well as to participate in one's community'* (Rogers, Ramadhani, and Harris 2020, 9). However, 'ageing in place' is not always the best option to promote ageing well (Smetcoren 2016). As people grow older, their needs change. For example, their health and mobility often decline, and their housing wants and needs can change in later life (Phlix et al. 2023). Yet, most neighbourhoods are not age-friendly (Rugel et al. 2022), meaning these places are not always the 'right' places to age well. Consequently, a conflict between the ageing body and an unchanged environment can occur (Phlix et al. 2023), i.e. an incongruent residential experience in which older adults do not experience comfort and control within their environment (Golant 2011). As a result, they will employ coping strategies to address the incongruence: (1) assimilative (i.e. changing one's behaviour or environment) and (2) accommodative strategies (i.e. changing one's residential needs or expectations) (Golant 2015). This gerontological theory highlights the importance of the environment in older adults' lives and, following older adults' changing needs, how it can become an obstacle to older adults' wish to age in place. Therefore, this paper aims to move beyond the notion of 'ageing in place' towards 'ageing well in the right place', i.e. *'the ability to live in the place that closest fits a person's needs and preferences, which may or may not be their own home'* (World Health Organization 2015, 225).

The design of the built environment plays a crucial role in this matter (Gilroy 2021). Gilroy (2008) points to the importance of age-friendly design in creating places that support human flourishing. In line with this, Design for Human Flourishing (DfHF) has been explored as a design approach that considers older adults' changing needs and well-being (Stevens, Petermans, and Vanrie 2019b). DfHF aims to facilitate self-actualization by '*consciously and actively interacting with the designed environment*' (Stevens 2018).

Age-friendly environments are accessible and inclusive to a diverse older population, enable active and healthy ageing, and stimulate older adults' abilities and capacities (World Health Organization, 2015). Age-friendly design elements of the neighbourhood are, for instance, access to essential services such as shops, care facilities, leisure activities, public transport within a short distance of the dwelling, safety, cleanliness, proximity to significant others such as family and friends (Mulliner, Riley, and Maliene 2020; Park and Porteus 2019), and wide pavements to promote social interaction (Carroll, Jespersen, and Troelsen 2020). Public places that facilitate social interaction are crucial to age in place (Lewis et al. 2020). Moreover, Luciano et al. (2020) consider community connection an age-friendly design dimension, e.g. sharing and overlooking (green) spaces. Such age-friendly environments can promote older adults' independence, health and well-being (Mulliner, Riley, and Maliene 2020; Park and Porteus 2019).

However, following migration and globalization, the older population is also ethnically diversifying (Torres 2015). Not only the older population is heterogeneous (ROSEnet 2020), but also the spatial contexts they reside in (Vidovičová and Tournier 2020). Moreover, there is also heterogeneity among older migrants (e.g. cultural characteristics, parenting, social networks, housing). Therefore, one should be mindful of generalizing when it comes to older adults (King et al. 2017) also in applying an age-friendly design approach. The share of older migrants continues to rise, reshaping the older population and their living environments

(World Health Organization 2023). This is important to consider in exploring ‘ageing in the right place’, as a superdiverse context implies diverse needs, complexifying age-friendly design (Rémillard-Boilard, Buffel, and Phillipson 2021). For example, within a superdiverse population, people can have diverse ways of expressing their culture and religion (Hadjiyanni 2009). Also, Carroll et al. (2020) point to the need to take variances in mobility and finances into account in age-friendly design. Interestingly, older adults’ housing needs change as they grow older (Phlix et al. 2023).

Superdiversity initiates from (new forms of) migration and globalization, describing the complex intersection of various sources of diversity (e.g. gender, migration channel, language, ethnicity, etc.) (Vertovec 2007). Superdiversity also becomes visible in public space, which Vertovec refers to as ‘*everyday urban exposure to complex forms of diversity*’ (Vertovec 2022, 4). Moreover, Haacke and Lakes (2017) argue that superdiversity impacts the spatial distribution of older adults, pointing to the need for further research on the intersection. Talen and Lee (2018) state that, in a diverse society, design is critical given its expression in the built environment (e.g. boundaries and visual incoherence due to diverse styles). Such reflections highlight the importance of design in a superdiverse context. To design for diversity, designers should foster social mixing while counteracting the negative consequences of this act. This can help promote volatile, spontaneous interactions across groups. Designing public places that serve various groups and purposes could foster such connectivity. In doing so, Neal et al. (2015) point to the power of green public spaces as they promote social interaction and hold the potential to be inclusive by bringing people from various (ethnic) backgrounds together. Hence, a strong focus on analyzing such potential is emphasized (Talen and Lee 2018). However, this does not come without challenges. For example, Pemberton (2017) argues that identifying and balancing diverse needs is a major challenge of designing in a superdiverse context. Moreover, designers can also be faced with

a paradox as providing new opportunities for mixing can also create conflict and separation, undermining connectivity. Hence, it is important to guard a sense of security (Talen and Lee 2018), a crucial attribute of home in the context of migration (Boccagni 2017). To do so, design should enable social control and allow natural surveillance. For example, by ensuring a view of a public place from within the home or by activating underused, deprived spaces in the neighbourhood (Talen and Lee 2018). DfHF shows potential in designing for diversity as it stresses the need for design to answer diverse users' needs through affording various functions in various intensities (see theoretical underpinnings of the paradigm in Stevens, Petermans, and Vanrie 2019a). According to Vertovec (2022), further research on spaces that facilitate positive cultural and social exchange is needed. However, not much is known about designing for superdiversity, and it requires further research (Pemberton, 2017), especially in a gerontological context (Haacke and Lakes 2017; Sampaio, King, and Walsh 2018). De Vos and Geldof (2019) introduced the concept of 'diversity-sensitive design' to refer to the need for architects to take migrants' needs into account. This paper aims to further nourish 'diversity-sensitive design' as a way to design spaces that answer to the diverse and changing needs of a superdiverse population.

Academic literature highlights the importance of the neighbourhood to older adults' well-being (Mulliner, Riley, and Maliene 2020) and their wish to age in place (Fernández-Carro 2016). Moreover, the importance of providing community connection for both age-friendly and diversity-sensitive design is stressed (Park and Porteus 2019; Talen and Lee 2018). Therefore, this paper explores how design can promote community connection in public spaces of a superdiverse neighbourhood while taking into account inhabitants' changing and diverse needs. To explore the latter, this paper departs from an interdisciplinary approach, combining social sciences and architectural design sciences. Insights from both are needed when aiming to gain insights into the user-environment relationship.

2. Research Context: Kolderbos (Genk), Belgium

Kolderbos is a social housing neighbourhood in Genk, Belgium. Because of its mining and labour migration history, Genk is a superdiverse city (De Vos and Geldof 2019). The majority of its inhabitants (58.8%) are of foreign origin (Statbel 2021), and in Kolderbos, that number rises to 76.8% (Provincies.incijfers.be 2022). This results in a superdiverse population in terms of ethnicity, migrant generation, tenure, age, class, etc., but also translates to the spatial context as the neighbourhood comprises various housing types: apartments (high-rise and low-rise), bungalows and houses.

3. Materials and Methods

This study explores how age-friendly and diversity-sensitive design interventions can promote community connection in public places of a superdiverse neighbourhood, with attention to the changing and diverse needs of the superdiverse population. Considering that age-friendly design risks being imbued with stereotypes throughout the design process (McGinley et al. 2022), we deemed it crucial to apply a bottom-up research approach, departing from lived user experiences instead of starting the design process based on assumptions - and possibly stereotypes (White and Hammond 2018). To do so, a research-by-design study was set up within the master research seminar 'Designing for More' of (interior) architecture at the Faculty of Architecture and Arts of Hasselt University. Research-by-design refers to using design as a method in research to gain new insights (van de Weijer, Van Cleempoel, and Heynen 2014). Hence, design is considered an integral part of the research process (EAAE 2012). For five months, 18 students worked on this study. The research-by-design study consisted of a pre-design and design phase (Figure 1). [Figure 1 near here]

3.1. Pre-Design Phase

The pre-design phase consisted of preliminary research so that students could gain an understanding of and become familiar with the research topic and context (Roggema 2017). First, students received a background in theoretical concepts (e.g. superdiversity, ageing in place). Based on research conducted by the first author, four personas were derived to help students familiarize themselves with the target group (Miaskiewicz and Kozar 2011). Next, students conducted (walking) interviews and observations in Kolderbos, focusing on its diverse inhabitants, including older migrants. The walking interview is a valuable technique as it elicits rich data concerning the physical environment (Evans and Jones 2011). To get acquainted with the history and challenges of Kolderbos, a guided tour was provided by community and municipality workers. Furthermore, students read up on Kolderbos' administrative data and constructed a scale model of Kolderbos. In doing all this, we aimed to capture the variety of lived experiences in a superdiverse neighbourhood, including those of older migrants but – given the focus on public places – also of other inhabitants (e.g. parents, children). Participants were recruited in various ways (e.g. personal network, community workers, snowball method, and door-to-door recruitment). All participants (n = 34) gave informed consent.

The collected data was organized, digitalized, and, if necessary, transcribed. The analysis consisted of an inductive and deductive round, which led to the development of nine themes (green spaces, parking lots and garage boxes, private-public transitions, beacons, waste management and clandestine dumping, use of balconies, safety, play areas, abandoned/underused areas) and identifying four 'active spatial areas' (i.e. much-discussed public places during the interviews). All of these public places were currently underused or appropriated in negative ways. Therefore, these served as the four design sites in the next

phase. The analysis also pointed to diverse needs (e.g. care needs – active ageing, more storage – too large dwelling, space to pray, overlooking a public place, low-maintenance garden, etc.). The stairs were an overall (future) concern for older adults. Pemberton (2017) states that the major challenge of designing in a superdiverse context concerns identifying and balancing diverse and conflicting needs. This resonates with Kolderbos as the analysis revealed various frictions. Both ‘old’ and ‘new’ migrants and an established non-migrant population live in Kolderbos. After the neighbourhood’s construction in the sixties, mainly middle-class workers moved to Kolderbos. In the last decades, a demographic shift has been observed as people from various ethnicities inhabit the neighbourhood. Places with a long migration history can facilitate the place-making of migrants, ‘*at least for those comfortable with diversity*’ (Pemberton and Phillimore 2018, 20). It seems this is the case for Kolderbos. Despite its history of migration, frictions between groups remain, e.g. between homeowners and social renters, between ‘old’ and ‘new’ and long-term and short-term inhabitants of the neighbourhood. Especially the ‘old’, established groups seem uncomfortable with this new notion of superdiversity. This division also translates to the physical space, as most of these ‘established’ inhabitants are homeowners and live in houses in a separate area in the neighbourhood. Hence, such frictions nourish the need for creating community connection.

3.2. Design Phase

During the design phase, design options are explored, reflected upon and reworked (Roggema 2017). Students were divided into four groups and assigned one of the ‘active spatial areas’ and a persona. After identifying and visualizing a spatial problem statement based on the emerged themes from the analysis, the designing started. Given its focus on user well-being, changing needs, and diversity in functions, the paradigm of Design for Human Flourishing (DfHF) (Stevens, Petermans, and Vanrie 2019a; 2019b) was identified as a suitable and

promising design method to be introduced to the students. DfHF encourages designers to move beyond simply resolving problems and instead create, stimulate or upgrade positive design interventions. A specific technique of DfHF is to seek various intensities in which individuals experience a specific need and accommodate the subsequent behaviours and the spectrum of ensuing spatial design interventions (Stevens, Petermans, and Vanrie 2019a; 2019b). This answers to the need for changing and diverse needs of inhabitants of a superdiverse neighbourhood. This approach resulted in four proposed neighbourhood designs: (i) modular boxes, (ii) an outdoor kitchen and garden shed, (iii) shared garage boxes, and (iv) a multifunctional pathway. Throughout the semester, the student groups were guided by an architect-design researcher and social scientists. Moreover, stakeholders – who were professionally engaged with the research site and trained either in social sciences or design sciences – gave feedback on the preliminary designs.

4. Results: Translating Changing & Diverse Needs to Design

The analysis of the field research conducted in the pre-design phase highlighted the inhabitants' changing and diverse needs. For example, some older inhabitants were challenged to continue their daily walking routine as their mobility declined and the neighbourhood did not provide any benches. Also, regarding diverse needs, some participants highlighted the importance of a Mosque for social interaction, while others met at the community centre. Some inhabitants highlighted spatial and social-cultural divisions within the neighbourhood, while others valued its superdiversity.

As this paper aims to explore design interventions that promote community connection in a superdiverse neighbourhood while considering inhabitants' diverse and changing needs, here, we mainly report on the design phase and reflect on the created design output.

Based on the needs and wants of the inhabitants identified in the pre-design phase, students proposed design interventions for the ‘active spatial area’ they were assigned (Figure 2). Below, we discuss the works of three student design teams¹. First, their research-by-design output is discussed in a descriptive manner, followed by an analysis in which we explain how, via a DfHF approach (i.e. with inhabitants’ well-being in mind), designs can afford various functions and foster various intensity levels. [Figure 2 near here]

4.1. Modular Boxes

The first design is situated at an underused playground located between apartment blocks (Figure 3). Currently, some play equipment (e.g. a swing, slide) is present. However, the area is rather dark because of the large trees and because of the lack of social control, it is currently faced with drugs, graffiti and trash. Therefore, the inhabitants of the research site do not consider this playground safe for their children. [Figure 3 near here]

To promote community connection, students designed modular boxes. The dark, contested and underused area is transformed into a positive, lively place by removing trees and making room for the boxes, which afford a wide range of activities such as gardening, seating, and playing (Figure 4). Inhabitants can use the boxes according to their needs, allowing diverse needs to be expressed in the built environment (Talen and Lee 2018). The boxes with their proper functions are thoughtfully placed throughout the neighbourhood in a way that their design (i.e. the activity they afford on the micro level) together with their position on the macro level (i.e. demarcating areas of specific use) offers a variety of intensities of social interaction to foster community connection on a meso level. For instance, one gardening box is equipped with a small vegetable garden and is part of the boxes’ ensemble, demarcating a BBQ/picnic field and inviting people to garden while also advancing collective cooking.

¹ These designs were chosen because they represent a broad spectrum of affordances (micro, meso, macro-scale), were positively evaluated by stakeholders, and display a diversity of design interventions.

Another solitary-positioned gardening box contains a small green-leaved tree that offers a vista onto the playpen but provides enough shade and privacy for, e.g. an older adult whose need for social mingling is restricted to observing others – a need that emerged from the pre-design phase and that differs from others’ more active social needs. The boxes can also be used as various seating arrangements allowing inhabitants to choose a spot that facilitates their needs. For example, at the edge of the area or close to a pathway to observe, greet, or talk to passers-by. Some boxes will be fixed, while others will be mobile to accommodate this. Providing both can balance the need for affordances nearby (e.g. social activity for older persons with declining mobility) and affording diverse needs. Moreover, a fixed box can serve as a recognizable beacon. In terms of age-friendliness, such adaptivity, while also providing stability, could be especially valuable in retaining residential normalcy as it affords activities that contribute to older adults’ individual balance of comfort and control over the environment (Golant 2015). [Figure 4 near here]

On a macro level, the design has the potential of demarcating areas for specific use and thereby creating softer borders between the areas in which these are present. Research from De Vos and Geldof (2019) discusses the threshold between public and private spaces in diversity-sensitive design, which is often very harsh in Kolderbos. The authors highlight the importance of zoning by providing broader transition zones. The modular boxes can fulfil this purpose. For example, the laundry line boxes attached to the apartment blocks can attract people out of the apartments and soften the hard border between the apartment building and the public space. In doing so, community connection is also promoted across various intensities by bringing neighbours together within this transition zone.

The allocated public space for this group of students is currently underused, which can negatively affect inhabitants’ sense of security (Talen and Lee 2018). Most inhabitants avoided the area. Given the promotion of social mixing and the possible conflicts associated

with it, Talen and Lee (2018) point to the need for designers to provide security to design for diversity. Thus, through their DfHF approach, the students also tackled the aspect of security by providing a safe and secure circulation plan throughout the neighbourhood. Moreover, the new open space allows for more social control, promoting security and safety. The latter has been highlighted as important elements of age-friendly and diversity-sensitive design (Mulliner, Riley, and Maliene 2020; Park and Porteus 2019; Talen and Lee 2018).

Taking a bird's eye perspective, these boxes are developed to cover certain general needs (e.g. social contact, healthy eating, proximity and neighbourliness) but are especially designerly detailed to echo intensity levels of community connection that stretch throughout each need on a personal level and throughout functions or areas on a spatial level. By allowing various intensities and forms of social interaction and control, inhabitants can use the space according to their individual, changing and diverse needs.

4.2. Garden Shed & Outdoor Kitchen

On the study site, houses and apartment blocks are located in separate clusters. The housing cluster is characterized by small dead-end streets (Figure 5), which can be considered disruptive to community connection (Talen and Lee 2018). Some of these streets connect to a forest through small crossing roads and hidden shortcuts. However, the forest – located at the edge of the neighbourhood – is underused, threatening security (Talen and Lee 2018) as some inhabitants indicate that it is unattractive and lacks a main entrance and social control. [Figure 5 near here]

Although Kolderbos has a longstanding history of diversity, its superdiverse composition sometimes leads to friction, as discussed before. Therefore, students focused on design that could break such spatial and social segregation barriers by creating a new public place on

‘neutral’ ground. First, by removing some trees, students created an open space to make room for design interventions that facilitate social activities. The wood from the chopped trees is used to create a natural playground for children. In addition, students provided a stage in the forest that can be used for various activities such as dance classes, outdoor classroom, playground, etc. (Figure 6). This way, the forest becomes more attractive to diverse users (e.g. children, parents, grandparents). Furthermore, students designed a community kitchen in the forest. The kitchen module provides utensils used in various cooking cultures so all residents can cook their preferred meals. In doing so, this design serves various groups and can facilitate cross-cultural volatile interactions (Talen and Lee 2018) and possibly resolve frictions (e.g. by showing someone how to use such utensils or sharing recipes). Finally, students designed a garden shed to be placed at the end of the dead-end streets. According to Talen and Lee (2018), providing a public space at the end of a dead-end street can counter their disruptive influence on community networks. Besides providing shared tools, the shed is also equipped with a pull-out cabinet that can be used to share, donate and trade (e.g. books, toys). In doing so, the design facilitates social support among neighbours. This could be especially valuable to older inhabitants, as research has shown that lacking social support in later life can negatively impact older adults’ well-being and health (ROSEnet 2020). [Figure 6 near here]

The shed and outdoor kitchen can function as public gathering places or can be reserved for semi-private activities. However, when installing facilities for shared use, the management perspective needs to be considered. Students foresaw the management of the outdoor kitchen in the community centre, which is located in the apartment area of the neighbourhood. This way, the impact of the design breaks through the separate social bubbles of both areas. So, in addition to tackling cultural frictions, the design ensures that homeowners and apartment renters mix and get to know each other.

These design interventions cannot be considered separately as they work together to facilitate community connection and social support among inhabitants, regardless of ethnic background or housing type. For example, the tool shed can be used to set up a social event like a ‘chore day’ where inhabitants work together on building the playground in the forest, followed by a neighbourhood barbecue using the outdoor kitchen. It helps to build trust between neighbours. Such an event not only brings people together but also enables inhabitants to participate in the re-design of their neighbourhood, facilitating a shared sense of ownership in which the proposed design can serve as a platform to do so.

4.3. Garage Boxes

The location of this design team’s work focuses on the social apartment blocks and their in-between spaces (Figure 7). Currently, the apartment blocks are lined up facing each other, and between their facades lies a driveway with parking spaces. At the backside of each block lies an open, undefined, green public space, which residents often appropriate due to their lack of private storage and outdoor space. This renders both positive (e.g. trampolines, vegetable gardens) and negative appropriations (e.g. cars parked on the grass). Furthermore, in between apartment blocks, a series of four garage boxes are located. The garage boxes are, like the apartments, rented out by the social housing company and often used as additional storage.

[Figure 7 near here]

The design of this students’ team departs from creating green traffic-free zones between every two apartment blocks by moving the parking spaces towards the back of the apartments. This way, the living rooms of the apartment blocks now overlook green space. This new open space at the front of the buildings can be used for various purposes (Figure 8). For example, as a play area for children, a gathering area for neighbourhood parties, a place for a vegetable garden, or an informal meeting space. In addition, some benches, tables, and pathways

towards the apartment blocks and garages have been added. This way, the shared green space becomes clearly defined, promoting the previously condoned appropriation of inhabitants and discouraging negative appropriation (e.g. parking cars in front of the building). Moreover, as mentioned before, creating public places that afford various functions can contribute to community connectivity in diverse neighbourhoods (Talen and Lee 2018). [Figure 8 near here]

Next, students noticed the potential of the location and structure of the garage boxes as a ‘social glue’ for a fast-changing population inhabiting the social apartments. Their design proposal concerns opening up the garage boxes for collective use. One of the boxes will become a storage space with various lockers. Other options are a garden box, garbage storage, or laundry room with ironing facilities that are operable by coins distributed at the community centre. All transformations are based upon deficits in the private living space of the apartments and foster social interactions. Moreover, the transformed garage boxes allow for a more controlled use of the private space and appropriation of the public space. For example, by providing storage, balconies can be cleared and used for sitting in the sun, overlooking the green space, and watching children play. This also benefits the look of the façade of the building. To guard security, the garages are only accessible with a security badge held by the inhabitants of the surrounding apartments. Moreover, the garage doors are replaced by glass doors to allow for more light and social control. Such interventions provide a sense of security in the design, an important attribute of the home (Boccagni 2017), which should be considered when designing for diversity (Talen and Lee 2018).

For their design, students focused on creating community connection, one of the age-friendly dimensions identified by Luciano et al. (2020) situated on the neighbourhood level. The design facilitates social mingling by attributing a collective social function to the garage boxes and green space between the apartment blocks. The co-owned green space in between

two apartment blocks will bring life to the area and, in doing so, stimulate social interactions. Luciano et al. (2020) stress the importance of designing shared spaces in an age-friendly manner as such spaces provide older adults with opportunities to interact socially. With the changing and diverse needs of the older (migrant) population in mind, the proposed design further builds on this by providing and highlighting various intensity levels of social mingling. Hence, the green space serves as a semi-public 'stage' that affords and stimulates social mingling on various intensity levels. This way, inhabitants have control over their preferred use and intensity level of the space. For example, going outdoors to work in the vegetable garden alone or meeting with friends at the picnic table. However, social interaction can also take place at a very low intensity. For example, by looking at people outside. Overlooking communal and green spaces is considered an age-friendly attribute (Luciano et al. 2020). Especially for older adults, whose mobility radius can shrink in later life (Gilroy 2008), overlooking their neighbourhood can help sustain their relationship with the physical environment. This makes them feel more connected to the community (Luciano et al. 2020). Hence, by affording various functions and intensities in public green spaces, the diverse needs of a superdiverse population can be met. In line with Neal et al. (2015), we argue that this could stimulate social interaction in a superdiverse context (e.g. across ethnicities and generations).

5. Discussion: Reflections & Lessons Learned

In conducting this exploratory exercise of implementing age-friendly and diversity-sensitive design in public places of a superdiverse neighbourhood to promote community connection while answering to changing and diverse needs, below, we reflect on lessons learned throughout the process.

5.1. Creating Community Connection via Design for Human Flourishing

Departing from the importance of community connection to age-friendly and diversity-sensitive design, the designs focused on facilitating community connection via DfHF. In previous DfHF exercises, it was found that one ought to search for different intensities of experience within the activities that foster certain user needs (Stevens, Petermans, and Vanrie 2019b; 2021). Here, various intensities of social interaction, mix, and support were facilitated in the proposed designs to promote community connection in the neighbourhood. In all designs, a shared public place was provided in which diverse needs can be provided. For example, the modular boxes afford various functions. The designs stimulate various intensities of social interactions that could form the basis of community connection across fractioned groups. Moreover, the designs facilitate visual contact between residents (e.g. by cutting down trees and moving the green public space towards the front of the apartment blocks) so that social interaction and opportunities for support become more visible. Social support can be valuable in counteracting age-related challenges and promoting older adults' well-being (Merz and Huxhold 2010). Furthermore, we argue that community connection and social support contribute to 'ageing well in the right place'. For example, if the garden upkeep becomes challenging, the shared garden shed affords opportunities to interact with and (receive) support (from) neighbours. By creating a public shared green space between apartment blocks, various intensities of social interaction are afforded (e.g. meeting, passing by, overlooking), allowing flexibility parallel to older adults' changing needs. However, although this shows the power and potential of public space in age-friendly design, in line with previous research (Luciano et al. 2020; World Health Organization 2007), this is only one of multiple dimensions and, for example, the private dwelling will also play a critical role in whether or not the living environment is the 'right' place to support 'ageing well'.

In line with the theory of DfHF, this paper further enlightens the importance of design intensities of community connection on both a micro and a macro level (e.g. modular boxes). Furthermore, this study's novelty lies in the highly complex environment in which DfHF was applied: a diverse group of users with diverse backgrounds, needs and wants. Therefore, the activity levels on which a designer applies the intensity approach also become layered. On a micro level, individual needs are tackled so that the design allows for various intensities that address the diverse needs of its superdiverse users. On a macro level, the interventions need to be reviewed in light of an ever-enriching environment where many activities are to be offered, and individuals take part with their proper set of intensity requests.

Finally, in line with the positive approach of DfHF, the proposed designs show how design can change the environment in a way that moves beyond merely combatting existing problems. For example, the designs are attentive to accommodating cultural, social and spatial frictions in the neighbourhood (e.g. outdoor kitchen) while providing a foundation for supportive relations between inhabitants via various functions and intensities.

5.2. The Role of Design in Residential Normalcy

Bringing architecture and social sciences together and looking at this design exercise from a gerontological perspective specifically, the literature has highlighted the pivotal role of the built environment in older adults in later life (Mulliner, Riley, and Maliene 2020). From an environmental gerontological perspective, Golant (2015) introduces 'residential normalcy', highlighting how older adults revert to coping strategies if the environment challenges their residential normalcy. Considering our research insights, we argue that by providing age-friendly neighbourhood design in various intensity levels fitting different and changing needs – and in doing so, facilitating community connection – design can assist in retaining residential normalcy. For example, by changing the environment's design, older adults do not

have to change their behaviour or mindset. This way, the adaptive responsibility of older adults is removed and shifted to the environment's design. As older adults' incongruent experience is portrayed in the environment (e.g. avoiding stairs), a more adaptive design is called for. The environment's design is also crucial to answer the need for adaptivity (e.g. various functions and intensities) stemming from changing and diverse needs. Designers are centrally staged and hold the power to counteract the need for assimilative behaviour (Golant 2015) by altering the environment. However, facilitating more adaptable environments does not equate to designing generic, so-called 'multifunctional' environments. Instead, the design mindset should shift to recognizing and anticipating the changing needs of older adults. Moreover, in line with the DfHF approach, the designs move beyond merely spatially supporting the coping strategies of older adults as they focus on creating positive experiences by offering opportunities to fulfil the needs of an 'active' user in that environment (Stevens, Petermans, and Vanrie 2019b).

5.3. *Intertwined Social and Physical Infrastructure*

In Kolderbos, the current space acts as a barrier, for example, for social interaction. Although design has the power to remove those barriers, it is important to note that the proposed designs serve as a 'stage' for social interaction to take place. In other words, just changing the space will not necessarily tackle the current problems or answer users' needs. Heynen also refers to space as a stage '*on which social life unfolds*' (2013, 349), highlighting the reciprocal relation between social and physical infrastructures, affecting one another. In line with this, for the proposed designs to 'work', we need to look beyond merely the physical infrastructure. We argue that, for its effect to flow through to the social infrastructure, a catalyst is needed to kick-start and exemplify the use of the design. For example, to use the outdoor kitchen and shed, the community workers could organize a 'chore day' followed by a

neighbourhood barbeque to inaugurate the design. Moreover, the design should be maintained to sustain the positive reciprocal relation between social and physical infrastructure. For example, if one of the proposed designs starts to look rundown, it risks a change in its use or being underused, negatively affecting community connection (Talen and Lee 2018). It is, therefore, important that various involved stakeholders support the design. For example, community workers and inhabitants could play a crucial role as active agents in introducing and maintaining the designs. By creating and sustaining the design interventions, we argue that they can have a positive effect on the social infrastructure of the place, which, in turn, could again strengthen the physical infrastructure. Hence, this interdisciplinary design exercise contributes to the exchange between social sciences and architectural design sciences by highlighting their reciprocal influence.

5.4. Possible Futures & Societal Impact

Finally, as design holds the power to enable imagination (De Carli and Frediani 2021), the study shows the potential of design to visualize possible futures (Pollastri et al. 2017) and kick-start conversations with various stakeholders (e.g. the municipality, the community workers) on these possible design prospects. Moreover, the designs can also be valuable for (future) users to imagine possible design avenues. Further research on the use of research-by-design and the impact of design in conversations with older migrants would be interesting in research on ageing well in the right place within a superdiverse context.

5.5. Limitations & Future Research

Looking back on ‘ageing in the right place’, it seems that whatever constitutes the ‘right’ place depends on individual needs and the local context, especially in a heterogeneous,

superdiverse setting. It is important to note that the proposed designs are context-dependent (i.e. local, small-scale project) and developed by students. Hence, we do not present these as a ‘way to go’ for age-friendly and diversity-sensitive design. As this paper is merely an exploratory exercise of age-friendly and diversity-sensitive design, further research in various contexts would enrich our understanding of how these approaches can be combined and complement each other. Through this exercise, we considered the interdisciplinary and bottom-up nature highly valuable as it allowed the designs to depart from inhabitants’ residential needs and wants. Therefore, we argue that in further research on designing age-friendly and diversity-sensitive, designers must adopt the right mindset (i.e. acknowledging and recognizing superdiversity) and research methodology (i.e. bottom-up, departing from the diverse needs of future users).

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Figure captions

Figure 1 Research-by-design study design

Figure 2 Overview of design sites

Figure 3 Design site: Underused playground in Kolderbos

Figure 4 Modular boxes affording various activities

Figure 5 Design site: Dead-end street

Figure 6 Overview of proposed design interventions in the dead-end streets and adjoining forest

Figure 7 Design site: Apartment block and surroundings

Figure 8 Overview of proposed design interventions

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