

Article

# Co-Designing Age-Friendly Neighborhood Spaces in Copenhagen: Starting with an Age-Friendly Co-Design Process

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**Abstract:** Age-friendly cities and communities are currently attracting much attention as the ageing population becomes a larger proportion of our societies and their needs and aspirations become more diverse, which needs to be reflected in our cities. This calls for older people to play an active role in the design of suitable environments, e.g., by being involved in the design process. With this paper, we present a study where the methodology of co-design was used to engage 100+ older people in a low-income neighborhood in Copenhagen in designing new neighborhood spaces to reflect their needs and wishes. By focusing on the co-design process, and not the design solution, we investigate and present insights across the entire span of the process—from recruitment to implementation—and seek to extract particular elements that contribute to the age friendliness of the process. Recommendations for future co-design processes with older people include focusing on explicit communication and foreseeable steps to create a process that offers multiple and flexible participation options and to upgrade the latter stages of the co-design process through scale 1:1 prototyping and implementation. The findings contribute to both the professional practice of co-designing with older people on a spatial scale, as well as to policy makers and practice stakeholders when initiating initiatives with age-friendly cities and communities.

**Keywords:** age-friendly cities and communities; co-design; neighborhood design; older people



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## 1. Introduction

Globally, the ageing population is rapidly increasing and is expected to reach 22% of the world's population by 2050 [1]. At the same time, the ageing population is more diverse and heterogeneous than ever [1]. This has increased the attention on the diversity of the environments in which older people will be ageing, including age-friendly cities and communities (from now on referred to as AFCCs) [1]. Several scholars support this movement and argue that creating age-friendly environments should happen through a bottom-up approach, where older people are actively involved in the process and where their lives and experiences become the starting point [2–4].

The most common types of involvement where older people play an active role in investigating AFCCs are currently through co-research or participatory research [5–11]. A few co-design projects that do involve older people in the design of AFCCs exist and span from the scale of designing seating in, e.g., the 'Older Person Friendly Seating' project [12], to more strategic urban design in, e.g., the project 'Co-Motion: Mobility and Wellbeing in Later Life' [8]. Other studies include those of The Old Moat project [13] and the Mobility Mood and Place [14]. While the Mobility Mood and Place study focuses on the processual dimensions of involving older people in co-design, it is uncommon in the literature, where the age-friendly design solution is the main outcome. Scott [14] reports on methodological insights with older people, e.g., offering choices within activities to bring out personal strengths to make engagement enjoyable and informal and to plan activities to match the capacities of the group to avoid exhaustion.

Co-design studies with older people that present more in-depth knowledge about the process are primarily found in design fields focused on creating health, welfare and technology solutions or systems to support better ageing. Studies include those of [15–21]. Some considerations from these projects include exhaustion among participants, troubles envisioning intangible concepts and conversation that wanders off [18]. Other challenges include the fact that some older people do not inherently identify with being stigmatized as ‘elderly’, and they may struggle to see the direct benefit for themselves and hence the reason to participate, which can make recruitment and engagement difficult [16,19,20].

As stated, an increased demand lies in applying a bottom-up approach to designing AFCCs [1–4], and as Lui et al. [3] argue, we need to gain more knowledge on the process and not only on the solution when developing AFCCs [3]. In order to obtain more knowledge about ‘how to’ design with older people, we suggest drawing on fields that have stronger traditions in terms of participatory design. For example, co-design where collaboration is at the forefront and where designing the process is as important as designing the ‘object’ [22].

This paper aims to methodologically unfold and discuss two co-design processes carried out with older people in two housing areas in Copenhagen when co-designing neighborhood spaces. Our approach is to provide hands-on tools and insights that are useful for practitioners and policy makers when engaging older people in the co-design of AFCCs.

Hence, the objective of this study does not seek to generate insights into practices that only work with older people, but instead insights into practices that also work when co-designing with older people.

Specifically, we seek to answer the question: What elements are particularly important when designing and carrying out an age-friendly co-design process when developing AFCCs?

Firstly, we introduce our research design and the mindset and methodological background of co-design. Then, the empirical data are presented, and lastly, we discuss insights that turned out to be particularly important for the age friendliness of the process. In relation to the existing body of knowledge, we seek to contribute with knowledge beneficial to future co-design processes with older people when designing AFCCs.

## 2. Research Context and Methodology

### 2.1. Research Context

The context of this study is Sydhavnen (The South Harbour), a deprived area of low socio-economic status (SES) located in the southern part of Copenhagen. A decline in inhabitants has resulted in the area becoming a place where the municipality houses socially challenged people [23]. The demographics of the neighborhood make it one of the most disadvantaged neighborhoods in Copenhagen. The average life expectancy is 73.0 years compared to 80.6 years as the average in Denmark [24]. Additionally, 22.1% of the population is outside the labor market, 32% has no formal education, and 40.2% has a low income [23].

Within this neighborhood, three social housing areas for seniors are located. Two of them are part of this study, while the third felt it did not have the resources to commit. The two senior housing areas are run by two separate housing associations. In both housing areas, some of the apartments are administered by the municipality and are inhabited by other age groups, primarily people with social, mental or physical challenges. Housing Area 1 consists of 441 apartments with approximately 200 seniors. Housing Area 2 consists of 127 apartments with approximately 100 seniors.

### 2.2. Research Project

The research was carried out as part of the project called ‘Move the Neighbourhood with Seniors’ and is part of a larger research network named Activity and Health Enhancing Physical Environment Network (APEN) [25]. The aim of the project is to engage with seniors to co-design interventions in their local built environment in order to enhance their health. A budget of DKK 600,000 was allocated to design and construct three urban installations in the two senior housing areas.

An interdisciplinary team consisting of an architect and an anthropologist used co-design to engage various local stakeholders, including approximately 100 older people. In addition to the seniors, important stakeholders include the two social housing associations, social workers, as well as building consultancies and construction companies.

The overall research spans a period of five years, from 2016 to 2020. This article, however, reports on the phases relating to the co-design process with pre-studies starting in the autumn of 2016 and the co-design workshops taking place in the spring of 2017.

### 2.3. Research Methodology

This research is positioned at the intersection of four disciplines: anthropology, architecture, gerontology and design—more specifically, co-design. All fields have strong individual research traditions, but in combination and in relation to the research aim, which is to gain new knowledge about how to involve older people in the co-design of AFCCs, knowledge is limited. Therefore, an explorative study approach was chosen. As opposed to conclusive research, the goal of exploratory research is not to produce final or definitive answers but rather to qualitatively investigate a given research topic or problem and to drive current and future research design [26]. An exploratory approach is often used in emerging fields or when tackling new problems where little research has been carried out. With this point of departure, we explore through two empirical studies and seek to extract in-depth knowledge about how they informed and guided each other, as well as how this practical and specific knowledge can be discussed from a general perspective to guide future co-design with older people. The empirical data consist of ethnographic and co-design data from before and during the co-design workshops. The specific methods will be described in more detail in Section 4.

### 3. Methodological Background: Co-Design

Co-design is characterized by a participatory approach, where end users become collaborators or partners in a design process [27]. Participants onboard the process in the early stages of a design, even before a design brief is decided upon, and they take part in defining the problems to be addressed [28]. This part of the process is often referred to as the ‘fuzzy front-end’ because of its ambiguity and chaotic nature [27]. After the ‘fuzzy front-end’ follows the ‘traditional’ design process. Brown [29] refers to ‘stages of innovation’, where you work your way through inspiration, ideation and implementation; in short, moving from exploring a problem or opportunity, generating ideas and testing them before bringing them into the real world. Sanders and Stappers [27] articulate it as developing ideas into concepts and then into prototypes that are refined into solutions after feedback from future users. Co-design is considered a community-centered methodology, where designers and non-trained designers work together [27,28]. Non-trained designers include different professional disciplines, practice stakeholders and end users. The approach combines professional expertise with experienced expertise [27,30], and the users can become part of a design team as ‘experts of their experiences’, provided they are equipped with tools to express themselves, are being taken seriously and are genuinely wanted in the process, not just as a formality where the decision has already been made [31].

This naturally expands the role of the designer to be someone who enables others to be creative rather than someone who solely creates solutions based on inputs [31,32]. The level of participation in a user and in a group can vary greatly throughout a process depending on expertise, interests, abilities and effort [27,33]. To optimize levels of participation, this requires designers to be able to identify these opportunities in terms of different skills, interests and abilities to come into play and to set the stage and prepare accordingly for how such processes can take place. The format of the design events or workshops is often used to bring various stakeholders together [34,35].

Envisioning new futures is inherent in the working practice of designers and architects through, e.g., making, drawing, sketching, prototyping, etc. However, most co-design participants have no training in these disciplines and will be most comfortable speaking

and writing. Co-design scholars suggest working through a framework of tell, make, enact where different modes of expressing oneself support each other through tools and techniques for doing so [36,37]. Telling is often used to reflect on the existing situations, as well as articulate future situations. Making is concerned with trying out ideas and making them tangible through tools, prototypes or probes. Enacting works well to bodily express future scenarios or situations of how things could be [36].

#### **4. Materials and Methods: Designing and Carrying out an Age-Friendly Co-Design Process**

This section presents our methods and empirical data in the form of the considerations regarding how the process was designed from a co-design perspective targeting two groups of low-income older people. The following data stem from the ethnographic fieldwork and co-design workshops, e.g., photos and audio recordings, transcripts, fieldnotes and design artefacts created by participants. All workshops were audio recorded and subsequently transcribed. These comprehensive transcriptions, together with the images, design artefacts and fieldnotes, formed the analysis of the material through triangulation. First, the authors carried out individual analysis, followed by collaborative analysis.

##### *4.1. Pre-Studies: Planning and Recruitment*

The process was intended to cover the respective stages of a design process, starting with immersion, moving to ideation and prototyping, before proceeding to refinement and implementation [27,29]. The pre-studies heavily influenced how this overall strategy became operational, and both researchers carried out six months of pre-studies prior to the actual design workshops. These consisted of ethnographic fieldwork in the area [38], e.g., participant observation during social activities [39] and go-along interviews ( $n = 16$ ) [40–42]. The pre-studies aimed to gain a thorough understanding of the social and physical contexts to build good rapport and to determine on which cognitive, social and physical level the co-design process could unfold.

The research team collaborated closely with the social staff during this stage. Recruitment took place through various channels, e.g., taking part in knitting groups and bingo mornings, directly through the go-along interviews, as well as through printed invitations. The invitation was worded carefully in collaboration with the social staff to ensure a suitable 'casual' tone and language. The invitations stressed that everyone regardless of age was invited to take part, that the residents were the experts and that we needed their help in order to collectively design new and better neighborhood spaces. Graphically, we used the invitation to visualize the series of design events and dates in order to break down the process from abstract to concrete and create coherence between the workshops [35]. The social staff advised us to state on the invitations that all events were free of charge and that complimentary coffee and tea would be served. Due to the low-income status of the neighborhood, previous experiences had shown that confusion about this topic would stop people from attending events. Lastly, we were advised to add a photo of the main researchers on the invitation, since many residents had problems remembering the names of the staff and the authorities in the area.

In the beginning, there was a general concern that the project would not result in a design outcome or that the outcome would be pre-determined, which required us to continuously emphasize the open-ended and exploratory approach of co-design [31,43]. However, we decided to take this concern seriously and mention the word 'party' ['Fest' in Danish] in the invitation in order to ensure that this was planned as a natural step in the process (see Figure 1). The invitations were distributed to approximately 500 mailboxes, as well as being displayed in the stairways of the building blocks.

**INVITATION til beboerne i**

Over tre torsdage afholder vi fra Arkitektenskolens nogle workshops i selskabslokale i kælderens i nr. 14.

Vi skal finde på nye ideer til nogle af udearealer og vi har brug for din hjælp. Vi fokuserer primært på løsninger målrettet folk i alderen 60+, men alle stemmer og kræfter er velkomne.

Vi håber, at du vil være med. Også selvom, du ikke har mulighed for at deltage i alle workshoppenes.

Der vil være **GRATIS** kaffe, kage og muleposer med en overraskelse.

Vi glæder os til at designe sammen med jer.

Sidse (tlf: 4170 1608)  
og Kamilla (tlf: 4170 1783),  
Arkitektenskolens København

**Workshop 1 - 6/4 kl. 13-14**  
Vi skal sammen forstå områdets gode og mindre gode steder og behov

**Workshop 2 - 20/4 kl. 13-14**  
Vi skal sammen finde på nye ideer og designforslag, der kan forbedre området

**Workshop 3 - 4/5 kl. 13-14**  
Vi skal sammen prøve ideerne af - måske udenfor, hvis vejret tillader det

**Præsentation - 24/5 kl. 13-14**  
Den færdige designløsning præsenteres

**Sensommeren**  
Vi holder indvielsesfest!



Figure 1. Invitation.

To many non-designers, creativity is often thought of as a skill that is limited to rare individuals in the arts and sciences [32], and words such as ‘design’ and ‘workshops’ may be unfamiliar and can evoke uncertainty as to whether one can contribute to this. To accommodate for this potential uncertainty, we created a cultural probe (see Figure 2) in the form of a mapping exercise and distributed it along with the invitations [37,44]. This was implemented partly to gain knowledge about the perception of the neighborhood spaces from the residents who would perhaps not attend the workshops, but equally importantly, we wanted to give the participants a taste of what a design activity could look like and to transform the abstract and fluffy words into a tangible and inspirational task [36] (see Figure 3).



Figure 2. Cultural probe.

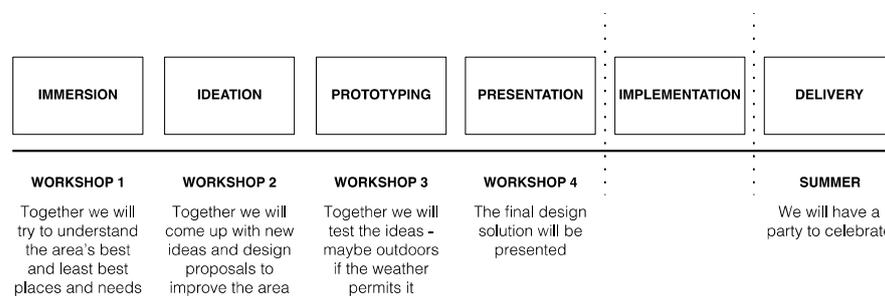


Figure 3. The co-design process. The top row displays the design terms. The bottom row details how it was explained to participants.

#### 4.2. Workshop Structure and Facilitation

The two co-design processes were carried out in parallel in the two housing areas, typically two days apart. We used the format of workshops to encourage collaboration and to foster commitment [34,45] through a series of design events that would tie the process together [35]. The respective workshops were structured around one or two design

activities, and every workshop started with an introduction of the day's program and a recap of what had happened the last time. After the design activity, a plenary recap summarized the workshop along with a few words about what would happen in the subsequent workshop. By using the same format with some simple steps, we aimed to create a safe and comfortable environment. Repetitions were used consistently to articulate the connection between the different workshops and to guide participants through every step of the respective workshop. After each workshop, process posters were displayed in the housing areas to create visibility and to invite residents to take part in the next workshop (see Figure 4).



**Figure 4.** Process poster.

The format of each co-design activity was structured around one simple principle, which aimed to give voice to everyone by acknowledging the individual within the community [45]. Every design activity started as an individual exercise, where each participant had the chance to get started, reflect and work at his or her own pace. This was followed by a plenary round that served two democratic purposes: being heard and listening to one another. This mode of working combined making with telling, as participants would almost always express themselves through their models or design artefacts [36,37].

It was entirely up to every individual whether he or she wanted to present to the group, and the facilitator made sure to keep order in the room during each presentation and to make sure the conversation did not wander off [18]. Aligned with other co-design projects with older people, it was important to create a safe format taking into account both individuals who feel comfortable contributing in group settings, as well as those who feel more comfortable in one-on-one situations [14]. Several times during each workshop, the expert role of the older people was emphasized [27,30] and the fact that there were no right or wrong answers to the activities. Each participant was given a tote bag (see Figure 5) with a design kit as an attempt to create a design community with a shared visual identity. The bag carried the project logo and consisted of a folder, a pencil, a name tag and some sweets.



**Figure 5.** Tote bags with design kits.

From Housing Area 1, the same people participated in the majority of the workshops, with the exception of the occasional missed session from some due to other commitments (e.g., hospital appointments). In Housing Area 2, the repeatability of the participants varied significantly more. A core group of 4–5 people showed up for all the workshops, and others joined more sporadically.

On average, every workshop had fourteen people participating, and for the remaining activities, it varied according to availability and interests. The topic of ‘more birdlife’ illustrates this. Except for one person, the people that showed up for the bird life lecture were not the same as the people that joined to build the bird boxes, illustrating that some were interested in the knowledge around the topic, while others were interested in the practical aspect of building. Table 1 outlines the number of participants for every design activity.

**Table 1.** Participants for every co-design activity.

	Housing Area 1		Housing Area 2		Total
	Men	Women	Men	Women	
Mapping	3	10	5	14	32
Collage Making	3	10	5	14	32
Model Making	2	8	6	6	22
Prototyping	5	11	3	4	23
Presentation	6	13	12	5	36
Bird Life Lecture	1	5	4	2	12
Bird Boxes	0	1	6	0	7
Common Areas	-	-	11	8	19

#### 4.3. Workshops and Implementation Events

##### 4.3.1. Workshop 1: Mapping and Collage Making

The aim of this immersion workshop was to identify likes and dislikes within the existing neighborhood spaces and to create a common understanding of the various opinions and perceptions among the larger group of neighbors. The first step was an individual mapping exercise, followed by a collective map compiling all answers (see Figure 6).



**Figure 6.** Board with compiled mapping answers.

For most of the participants, this exercise was their very first encounter with the term ‘design workshop’ and was an opportunity to introduce design as playful. A previous study had shown that if participants enjoy what they are doing, they contribute much more effectively [14].

Additionally, this was an opportunity to articulate critique about elements in their surroundings, which is an essential resource for design when identifying problems and ideating [21] and, as Brandt and Eriksen [46] state, everyone will bring experiences and interests, and hence starting from a blank slate is not possible.

The mapping exercise was followed by collage making, asking participants to visualize how they experienced an existing outdoor area of their choice (see Figure 7). Participants were provided with photos (approximately 30), which had been selected based on findings from the pre-studies, as well as references to topics from the WHO age-friendly cities guideline, trying to include both local and global challenges and potentials [1].



**Figure 7.** Example of participant working with her collage.

Some lessons learned that we brought from one process to the next and to the forthcoming workshops were: Some participants with cognitive declines found the exercises difficult and needed one-on-one assistance from a facilitator, while others fully enjoyed the creativity and, e.g., created more than one collage. The analysis of the data, specifically the image material, demonstrated these different situations, where some participants needed a lot of help, while others did not (see Figures 7 and 8).



**Figure 8.** Example of participant working with her model with the support of a facilitator.

This highlighted the wide span with regard to individual abilities and taught us to keep future exercises very robust in order to accommodate various participant levels, as well as having more facilitators. Additionally, the number of photos to choose from was a bit overwhelming.

#### 4.3.2. Workshop 2: Model Making

The aim of this workshop was to transition from immersion to ideation. After a recap of the findings from the last workshop, participants were asked to individually build a model of a new desired outdoor space in their neighborhood. In order to allow the participants to work with the activity on their preferred level, the activity was designed to be open to interpretation in terms of activities and functions, while at the same time encouraging them to give very concrete input into, e.g., materials and tactility, functionality and aesthetics, through different tools [36,37]. Materials included polystyrene, salt dough, images, sticks, paper clips, etc. Additionally, every participant was given a cardboard model of a man to use if they wanted to 'walk' through the new space when they presented their model (see Figure 9).



**Figure 9.** Participant with her models.

The vast majority of participants used only images and the piece of polystyrene to explain their ideas (see Figure 10). Some participants used salt dough to build, e.g., a beehive, a double curved bench and a sculpture. A lot of the participants were very explicit about which materials and functions they preferred, thereby bringing forward interesting discussions about, e.g., tactility and accessibility, which were extremely valuable in the sketching phase.



**Figure 10.** Example of models made by participants.

#### 4.3.3. Workshop 3: On Site Prototyping

The initial analysis of the data collected from previous workshops was presented in the form of a list using colors to visually and transparently illustrate what suggestions had come up and how many times they had been mentioned. The aim of this list was to gain a democratic understanding and to collaboratively agree on what to move forward with.

This was followed by on-site prototyping and discussions about potential design solutions that could address some of these needs and wishes. The aim of this activity was to introduce architectural and contextual considerations, such as scale, location, shape, size, heights, distances, texture, etc., in an attempt to move from abstract ideas to concrete suggestions. While prototyping in architecture can be difficult due to scale, time and cost [47], we tried to use low-cost materials, such as cardboard boxes, to test small add-on tables on existing benches (see Figure 11), as well as thick colored rubber band to outline size, shape and location of a new covered meeting place (see Figure 12). Enacting different scenarios on site of how things could be was valuable for the participants to start envisioning future situations [36,37]. One lesson from this workshop was to allocate enough time to go outdoors, as the transition from indoor to outdoor required many people with mobility aids to use, e.g., an outdoor lift or to walk a certain distance.



**Figure 11.** Prototyping add-on tables in Housing Area 1.



**Figure 12.** Prototyping on grass with cardboard and rubber bands in Housing Area 2.

#### 4.3.4. Workshop 4: Presentation

In preparation for this workshop, the design team had sketched design solutions that were agreed upon in the previous workshop. The aim of this workshop was to communicate the solution and to discuss adjustments and refinements with the participants.

The solutions were presented in the form of drawings (plan and section) complemented by reference photos (see Figure 13). In the first housing area, the section lines on drawings turned out to be too implicit and were mistaken for movement lines, which prompted us to make this more explicit in the second housing area. Reference photos showing larger concepts were a bit hard to grasp for some participants who thought that this would be exactly how the finished result would look. As far as the minor details or materials of the solutions were concerned, the reference photos were interpreted well. The workshop ended with a consensus about moving forward with the proposals.



**Figure 13.** Participants with drawings.

#### 4.3.5. Implementation Events

In line with the research aim of this paper, ‘implementation’ is defined here as events and construction activities in which the older participants actively took part, hence excluding work carried out solely by professionals. These events were planned in collaboration between participants and the research team and were guided by interests, abilities and project resources. These additional events had to be planned on a balanced level, bringing momentum from the workshops while not exhausting the participants.

Invitations for the respective events were displayed in the building hallways with a minimum of one week’s notice. The events were: a lecture about bird life in cities and a day of building bird boxes (jointly for the two housing areas), and three days of building two common areas for social interaction (in Housing Area 1). For the joint event ‘lecture

about bird life in cities', transportation was arranged from one housing area to the other housing area where the lecture was held.

For building bird boxes, a local men's group volunteered to take the lead. They were provided with technical drawings and prepared assembly kits to be built on the day of the event (see Figure 14).



**Figure 14.** Moments from the implementation days, building bird boxes and common areas.

For constructing two common areas for social interaction, the research team collaborated with a professional team of carpenters with experience in social work. The event ran for three continuous days and the tasks included, e.g., sanding wood pieces, disassembling benches, oiling wood, planting and watering flowers (see Figure 14).

In both housing areas, the process ended with a party, collectively celebrating the joint work.

## 5. Results and Discussion: Age Friendliness in Co-Design Processes

In this section, we discuss insights from the two co-design processes that proved to be particularly important in terms of the age friendliness and which, in relation to the existing body of knowledge, can help direct future co-design processes of AFCCs.

### 5.1. Explicit Communication and Foreseeable Steps

The open-ended co-design process holds numerous uncertainties for all parties involved. While designers are trained to embrace this uncertainty and to trust the creative process in order to push innovation, non-trained designers are not [27,29]. For any collaborator (not limited to older people) to trust the process, the process must be translated from the abstract to the concrete and from the implicit to the explicit.

With regard to this age group, scholars notice that older people can be easily distracted and go off on a tangent [18], which can drag out the time, shift the focus from the actual topic and cause great annoyance among co-participants. Naturally, firm facilitation is key to addressing this, but we found that communicating the clear structure of the workshop format and the foreseeable steps within each workshop and between the series of workshops [35] helped the participants to accept sticking to the schedule and to remind themselves and each other of this, so the conversation did not wander off. Several participants expressed that the workshop format was very suitable for staying on track. As one participant put it: *'if it wasn't for this workshop format, we would still be here arguing'*.

We found it to be particularly important with this age group to communicate and divide the different stages into clearly foreseeable steps, since some seniors would express their concern about the duration of such long-term projects in relation to the time aspect of their everyday life. As several participants expressed it: *'we might not be here tomorrow'*.

One example from our analysis shows how this continuous shift between the different stages was communicated and repeated to create a solid common understanding of how

project principles and design activities were intertwined. This was done on multiple levels, e.g., highlighted in the invitation and continuously articulated in the workshops and in the design activities, and it sought to ensure that everyone could follow the steps and could jump in and out throughout the project and still contribute.

*Facilitator 1, in Workshop 1: 'And today it is not about coming up with solutions; today is more about identifying needs. And then we will go back and go through the material and when we meet again for Workshop 2, we will start discussing what functions can meet these needs ...'*

Other studies that touch upon communication with older people encourage plain or accessible language and straightforward sentences [1,11]. We add to this transparency and explicit communication. Explicit communication includes the importance of communicating how the steps in a design process are linked, as this is what ties a process together [35] and, further, clearly communicating the experimental and creative dimension of how designers work [32]. If not communicated explicitly, this can cause a feeling of condescension. Two participants opposed the childish dimension of working with mapping and photos, and the comments included:

*'We are being treated like a group of school children'*

*'You came with some drawings and toys of some sort'*

*'We don't need to spend an hour placing dots on a map'*

Juggling the playfulness of design while still ensuring that people feel they are being taken seriously was an interesting outcome of this study. This explicitness is perhaps even more critical to articulate when working with older people in order to counteract the feeling of ageism. Ageism can be imposed on older people both by themselves and by others through a prejudicial and discriminatory attitude [48].

Other important things to make explicit and predictable for this age group are very concrete issues, such as arranging logistical transportation if certain co-design events are taking place in locations that seniors would find difficult to get to by themselves and could hence prevent them from participating.

## 5.2. Multiple and Flexible Participation Options

This project reports on multiple participation levels, from 'non-participation' to 'degrees of citizen power', to borrow the terminologies of Arnstein [49]. Some people did not show up and hence did not consent to the changes being made in their neighborhood spaces. This will most likely always be the case, but nevertheless, this issue needs to be mentioned, as it must be seen as a topic for improvement within the field of co-design, especially with low-income and marginalized groups who can be hard to reach. Accordingly, the tasks of the designers in this project ranged from facilitation and translation to simply coordinating and supporting when the participants took over and, e.g., renovated benches and needed support with buying sanders, drills, etc., for the projects. Hence, our core area of work was to best support the participants and the community and equip them with adequate tools for expressing themselves [27,33].

During the workshops, this meant designing activities that were not too difficult for the less 'agile' and not too easy or boring for the more 'agile'. As found in a similar study, one take is to design the tools so that participants are offered choices and can engage in ways that they themselves consider to be their own perceived strengths and interests [14]. In this regard, it is necessary to understand 'ageing' as a dynamic and changing process where you might consider yourself old in some ways and not others, where your expertise changes and where various experienced experts will be present in a group. Brandt et al. [16] refer to this with the term as 'situated elderliness', meaning that you might be impaired with regard to one sense, e.g., visual impairment, but without feeling old in general.

Turning this experienced and situated expertise into an active asset that is just as valuable as the professional expertise requires an acceptance of your own limitations as

a design team and communicating that openly to the participants. One participant summed it up nicely when being asked by a journalist what it was like to work with professional designers: *'They have the professional expertise, but we have the experience'*.

Flexibility turned out to be a key point when working with this age group. As noted by other scholars [19], older people are not necessarily members of a formal organizational practice, and hence, the approach needs to account for this. Similar to previous work, we found that the level of participation in a user can vary greatly throughout a process depending on expertise, interests, abilities and effort [27,33]. They will engage if they find certain tasks or events relevant and if it fits into their everyday schedule, as life will get in the way. Examples of everyday interruptions during our process included participants going for scheduled surgery or doctors' appointments and attending a funeral. If commitment to the entire package of the co-design process had been required, this would naturally have stopped people from coming. Hence, the process needs to consist of flexible and optional elements that respect the individual's contribution to the design process [18].

### 5.3. Scale 1:1 Prototyping and Implementation

Traditionally, the act of prototyping is often given a lower priority in design processes in spatial design, mainly due to the time frame and the budget that the scale would require [47]. In this study, we found that the prototyping on the spatial scale helped to speed up the process. As Brown [29] points out, prototypes can actually help develop ideas faster: *'Put as little time and effort into prototypes as you can and still generate useful feedback and drive an idea forward'* ([29] p. 4). Insights from this study taught us that the stage of 1:1 prototyping was crucial when it comes to neighborhood design and this age group, as it allowed testing the ideas in their real setting and revealed age-related details about new ideas in the existing context. A simple journey with participants walking on grass turned out to be a prototyping exercise in itself, as it started a discussion about what type of ground is suitable for a walker. One could argue that with this age group, embodiment is required in order to reveal details. This aligns with the enactment suggested by Brandt et al. [36] where the bodily presence becomes important for acting out a future scenario.

We also found that prototyping was valuable in gaining common understanding in age-related issues that go beyond your own experience, helping to grasp the dynamic aspect of ageing where you are not only designing for yourself but for your potential future self or for someone else. A prototyping activity from this study highlights a situation where ageing needs were discussed and tested from multiple perspectives; one agile participant moved around with the material in the form of cardboard, while another used her walker as a physical placeholder, and others contributed with comments and inputs in the negotiation of what kind of seating arrangements could fulfill most needs in a future situation. The walker, in this case, becomes a powerful tool rather than merely a disability aid.

Further, involving older people in the implementation of neighborhood design can be challenging and perhaps even impossible if the implementation has a scale and complexity that can only be carried out by professional workers. However, involving older people in minor and less demanding neighborhood changes holds great potential to bring out personal and community resources and to create solutions where the details are tailored to the participants. When constructing raised flower beds, we saw multiple examples of how participants took on implementation tasks. A group of less physically mobile participants took part in sanding the pieces of wood, including a man with Parkinson's disease and a man who did not speak Danish and hence could not communicate verbally but could still engage in material dialog when participating [36,37]. Another man with poor physical health was not actively participating throughout the actual construction of the flower beds; however, he quickly offered to be in charge of the watering hose and to water the plants for the entire duration of the summer. Implementation, of course, requires a respect of how much a community wants to take part in certain stages to avoid burnout [50]. Recommendations from this study include teaming up with professional workers who understand social work with older people and hence can take part in the planning and

preparation of implementation tasks that span across multiple levels of contribution and sustain it within the community.

## 6. Conclusions

A co-design process always needs to be targeted to the specific context in which it will be carried out. However, we suggest being especially aware of some guiding principles when co-designing with older people. We argue that the strongest examples of ‘age-friendliness’ occur when communicating the complexity of an open-ended and abstract co-design process through explicit communication that transforms the process into foreseeable steps that participants can follow and that align with their everyday life.

Furthermore, the contribution of various experienced experts should be emphasized in order to bring out resources on as many levels as possible. This can be achieved by ensuring that the process holds options for multiple and flexible ways of participating. Lastly, we recommend upgrading the latter stages, such as scale 1:1 prototyping and implementation, since this, in addition to fostering empowerment and ownership of a process, can generate crucial insights into age-related issues that go beyond what can be developed in the earlier stages of a co-design process that does not take place in the 1:1 scale.

With this study, we furthermore seek to present visual insights into a process through the images included in order to inspire and give an idea of what co-design activities with this age group could look like. These images also seek to contribute to the discussion about articulating the creative and ‘playful’ dimension of design in order to distinguish it from the ‘childish’ aspect and serve as a reminder to age-friendly designers that they need to communicate this dimension explicitly, in particular to this age group, in order to avoid any insinuation of ageism.

Future directions for research in this area include trying out such low-cost co-design processes in different contexts. The methods and tools developed and used during this study are low cost and easily applicable to other contexts. The authors trialed this in a Greenlandic context (forthcoming publication, 2022) where the tools and the process were adjusted to a different cultural context and, e.g., printed low cost on site. When adjusting and adopting such processes to a local context, it is of great importance to build on existing local cultural and community resources, regardless of the economic setting. While the project reported in this paper had funding for implementation prior to commencing, local community resources were still crucial in making implementation take place. In low-cost settings, such community resources and assets will be equally important.

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