City Space Architecture

Visions of a City for All.
Resources, Choices and Factors Supporting and Impeding Universal Design in the Urban Development Process

Lilian Müller
Lund University, Sweden
lilian.muller@certec.lth.se

Stina Ericsson
University of Gothenburg, Sweden
stina.ericsson@svenska.gu.se

Per-Olof Hedvall
Lund University, Sweden
per-olof.hedvall@certec.lth.se

Abstract
Despite laws, policies and visions to create cities and societies for all, barriers still exclude persons with disabilities from using buildings and public places. Our study aimed to identify choices made during the urban development process that include or exclude users in the built environment; how and when these choices arise during the process; and what is needed to implement universal design (UD) as a strategy and tool to secure all users equal opportunities in the built environment.

The study involved employees and private actors in city development processes. The participants were asked to identify impediments and support of UD in completed building projects to shed light on choices made during the process and on conditions needed to implement UD along the process. Four workshops were followed by qualitative interviews with key players. The analysis was based on qualitative data from workshops and interviews. Aspects impeding and supporting UD and conflicting visions and goals were identified in all phases, as well as the need for tools to implement UD. The findings show that accessibility for all users is dealt with (too) late in the process, often giving rise to special solutions. Urban trends such as densification and high exploitation can cause the exclusion of some users, and an unbalanced view of sustainable development prioritising ecological aspects puts high demands on users' abilities. The findings also show how UD appears more clearly in remodelling projects than in new constructions. A strong vision from the start to build for all users clearly supports UD throughout the process. Other factors such as pre-studies that include human diversity, allocation of resources and experts' early opinions also prove to be clear drivers for UD.

Overall, the findings reveal a demand for solutions that can maintain early visions and goals throughout the processes. We conclude by providing seven recommendations for addressing these challenges.

Keywords: universal design, urban development, accessibility, public space

Introduction
This article deals with the issue of how, when and why choices are made in the urban development process that might lead to the inclusion or exclusion of some users. What conditions there are for using universal design (UD) (United Nations, 2006) as a strategy and tool in the urban development process, to secure all users equal opportunities in the built environment, is addressed from a Swedish perspective. In this article, UD is used synonymously with inclusive design (ISO/IEC, 2014). The article is based on a study carried out in Gothenburg, Sweden, in 2021.

From previous research, we know that it is not only architects' choices that have an impact on whether the environment will be inclusive or not, but that it is also a concern for all actors involved (Heylighen, Van der Linden and Van Steenwinkel, 2017). However, the use of UD or other inclusive design approaches in relation to the built environment is still limited (Zallio and Clarkson, 2021; Van der Linden, Dong and Heylighen, 2016), and UD is still not adopted as a driver for a more inclusive architecture (Grangaard, 2018).

How buildings, walkways and public places are designed is based on choices and strategies, affected by laws and policies but also by the practitioners' knowledge and experiences. Different choices made during the urban planning process can have inclusive or exclusive effects by supporting or impeding certain people or groups in their use of a building or public space. A wide range of conditions, from topography, available space, time pressures and the economy of the project, down to detailed decisions on selected materials, colours and contrasts, can impact how different persons may use the built environment. There is a need for increased knowledge on what resources, choices and factors are supporting or impeding UD throughout the urban development process.

The rights of persons with disabilities to access and use the built environment are emphasised in the Convention on the Rights of Persons with Disabilities (CRPD), which assigns States Parties far-reaching responsibility to implement the treaty's provisions (United Nations, 2006). Accessibility should be addressed in all its complexity and should include the physical environment, transportation, information, communication and services. What is open or provided to the public must be accessible to all (United Nations, 2014, p. 13). In addition, with the establishment of the New Urban Agenda, the signatory States are committed to reducing inequalities and promoting inclusive, participatory and accessible cities and human settlements (United Nations, 2017).

The CRPD was adopted in 2006. One of the general obligations stipulated in the treaty is the requirement to support and promote UD in research and development of universally designed goods, services, equipment and facilities, as well as in the development of standards and guidelines (United Nations, 2006, Art. 4f). Another commitment is to provide all stakeholders with training on accessibility for persons with disabilities. Related to the built environment, professionals such as urban planners, architects and engineers, along with authorities that issue building permits, are mentioned as examples, since the lack of accessibility is considered to be a result of insufficient awareness and technical know-how (United Nations, 2014, p. 19). Accessibility is stated to be a "precondition for persons with disabilities to participate fully and equally in society" (United Nations, 2014, p. 1).

UD is regarded as an essential driving force for inclusive urban development (Steinfeld and Tauke, 2002). Knowledge of UD is still limited among practitioners, and there is variation in the way the concept is understood and used (Erdtman, Rassmus-Gröhn and

Hedvall, 2021). Something that may also limit the perceived applicability of UD, and therefore its perceived usefulness, is the conception of UD as a legislative term connected to accessibility laws and special needs (Ryhl, 2014). Furthermore, there is often a strong focus on addressing physical accessibility challenges (Zallio and Clarkson, 2021), and accessibility is addressed late in the process (Kirkeby, 2015). Kirkeby states how this can be related to the accessibility requirements in building legislation, which constitutes a form of context-independent knowledge (Kirkeby, 2015). Van Der Linden, Dong and Heylighen point out that the focus on legislation also inhibits a broader understanding of the user, and that more design-oriented formats are needed to understand user needs. To change the mindset of practitioners, they suggest a shift from accessibility to a greater focus on people's spatial experiences (Van Der Linden, Dong and Heylighen, 2016). Old thought patterns are challenged by UD when moving the focus from norm-deviation to diversity (Hedvall, 2022).

Despite laws, policies and visions to create a city for all, barriers still exclude people from using buildings and public places (Egard, 2022; Carvalho de Souza and de Oliveira Post, 2015). The lack of accessible environments is still a significant problem, not least in housing (Plouin et al., 2021), creating particular challenges regarding the ageing population, which calls for large-scale and systematic actions (Granbom et al., 2016). The reasons behind this situation have been described and discussed in previous research, based on several possible causes. Architects have been criticised for focusing on the "normal" or "average" body when designing (Imrie, 2003; Hamraie, 2012; Jones, 2014). A lack of communication between actors, authorities and phases is suggested to be a part of the reason (Frandsen et al., 2012). Other explanations have been sought in urban planning trends, the increased influence of market forces on the planning and construction process, and unequal categorisations of users at early stages (Müller et al., 2021).

In Swedish legislation, the power over spatial planning has lain exclusively with the municipalities for a long time. However, in practice, this power is shared with a wide range of actors from the public and private sectors (Cars and Hedström, 2006). Although dialogue with the citizens directly concerned is formalised in the planning phase by law, the planning monopoly may contain a built-in contrast to user-centred design and co-creation as part of UD processes. The law clearly states which citizens are concerned and invited to leave comments on a plan, and there are undefined limits on how the municipality should handle the received comments.

It is specifically stated as public interest in Swedish building legislation that all planning should support a built environment that is accessible and usable by all citizens (Swedish Parliament, 2010). In this context, it is also interesting to look at what the shift in planning trends and theories might mean to persons who are at risk of being excluded from the built environment. With the shifts in dominant planning theories, a change has also occurred in who defines a public interest. In rational planning theory, it was the planner as expert who could define the public interest; in neoliberal planning theory, it is the market. In postmodern planning, it is questioned whether public interests can exist at all (Allmendinger, 2017, p. 174).

Some special conditions of particular interest are the demands for high exploitation, associated with consequent densification, the use of land previously deprioritised for housing construction, and actual demographic development. In Gothenburg, the politically set goal is to build housing corresponding to a population growth of around

30 per cent until 2035. This is the overall strategy for urban development in the city. At the same time, forecasts show that nearly one in five inhabitants will soon be 65 years or older, which puts high demands on the city to provide accessible and adequately designed housing (Granbom et al., 2016).

The aim of this study was to identify choices made during the urban development process, resulting in inclusive or exclusive environments in the completed building or place; how and when these choices arise during the urban development process; and what is needed to better support implementations of UD. The term "choices" includes both conscious and unconscious choices, as well as missed opportunities for choices. The research questions were the following:

> RQ1: What choices and factors in the surveyed urban development processes contributed to the exclusion of users, with special regard to persons with disabilities, and in what phases did they arise?

> RQ2: What tools and support were useful for employees and private actors in the implementation of UD in different phases of the process?
> The findings of the study are important both for the city and from the citizens' perspective. Identifying underlying causes in the process and behind excluding and including environments is essential knowledge when implementing UD as a tool for inclusive planning.

Methods and materials

For this article, data were collected in workshops and interviews, which were analysed qualitatively (see Figure 1). The study was based on these two different methods of data collection in sequential order. The method is reminiscent of what has been described as sequential research design (Creswell, 2003) with an explanatory-sequential design (Bryman 2018, pp. 762-764), with the difference that only qualitative methods were used in this study.

In the first phase, four workshops were held, where selected key actors from the urban development process participated. Based on the analysis of the outcome of the workshops, six semi-structured interviews were held with six selected participants with different professional roles in the urban development process. In both workshops and interviews, photos were used to contextualise the questions and help participants reflect on the discussed issues (Harper, 2002).

The overall analysis is based on materials from workshops and interviews.
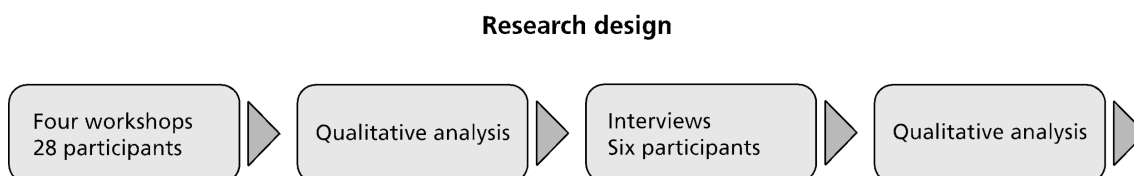
Research design

Figure 1. Overview of the chosen qualitative research design

The urban development process, described by the City of Gothenburg in twelve stages, was divided into four stages, to comply with planning and building laws and regulations (Swedish Parliament, 2010).

1. Early stage – the visionary and general planning stage
2. Planning phase – the detailed development planning and design phase
3. Building permit phase
4. Construction and completion phase

This division was made at an early stage, and was helpful when recruiting participants for the study, as it matched both organisation and working methods among public and private actors.

Data collection
Workshops
The workshops were chosen for their possibilities to involve the different actors in common, open and equal discussions; and to create a shared ground for reflections for future solutions (Soini and Pirinen, 2005). Participants in the workshops were selected based on their professional roles as municipal employees from different departments in the city administration, as representatives from the private business sector in the construction industry, and as a representative from the local umbrella organisation for persons with disabilities (OPD). In total, 28 people participated in the workshops.
The participants were specifically selected to represent each stage of the urban development process. Participants from the city, the industry and OPD were present in all four workshops.
Each workshop lasted 3.5 hours, with 9 to 15 participants at a time. Each participant took part in the relevant workshops depending on each person's professional role.
The workshops were organised from the end to the start of a project, going backwards. As the last phase of the process was discussed in the first workshop and the first phase in the last workshop, there were possibilities for the participants to assess the whole chain of events in the process, from the most evident stage back to the early, visionary stage.
In the workshops, participants with their professional roles linked to the actual stage of the process were given the opportunity to reflect upon the presence and absence of UD in selected cases of recently completed buildings, places and urban development projects. Each selected case was part of a previous multiple case study on UD in the built environment. For this study, 16 photos from the case study were selected as starting points for the discussions among participants on what, and when in the process, decisions and choices were made that had a significant impact on the result, seen from a UD perspective. The participants were asked to identify how UD was supported or counteracted in the examples, to shed light on design choices that arise during the process, and on the conditions required to promote a more inclusive design. What kind of support or tools were needed in order to improve the working methods was another main question handled during the workshops, discussed in smaller groups.
Discussions were moderated by representatives from the City's Real Estate Department. Documentation from the four workshops took the form of notes written

by members of the project team, and the notes were also shared and discussed in the evaluations after each workshop.

Interviews

After the analyses of the outcomes from the workshops (see the analysis section below), six qualitative interviews were conducted by Lilian Müller. The purpose of the interviews was to gain a deeper picture of the responses that emerged from the workshops. The selected interviewees were key players from various phases of the urban planning process, from the city and the industry. The interviews served as a method to deepen the understanding of and explain the outcomes of the workshops. Analysing the outcomes of the workshops provided a basis for selected themes in the semi-structured interviews.

This type of interview was chosen as it leaves room for follow-up questions and openness for the participants' reflections, while still being focused on the selected themes (Bryman, 2018, p. 563). The flexibility of the interview method offered opportunities to let the participants contribute in-depth reflections and thereby ensure rich data; this was also strengthened by the varying competencies among participants (Maxwell, 2009; Yin, 2011, pp. 84-87).

Key topics linked to each phase were formulated into questions that focused on why things happened during the process, and how other ways of working could improve the outcome in the form of a more inclusive built environment.

The interviews followed three months after the workshops. Five of the six interviewees had participated in at least one of the workshops. They all represented different phases of the process: an urban planning officer working in the early stage, an architect working in the planning phase, a project leader at the traffic department, an administrator at the building permit office, a project leader employed by a private company in the building industry, and a building inspector responding to the final approval of building projects. The interviewees were asked to give an expanded picture of the conditions and circumstances outlined in the workshop discussions. The interviews were based on photo elicitation as a method, to bring about a deeper discussion on the cases' results and their causes, and to validate the discussions from the workshops (Harper, 2002). The interviews were designed for each phase and each actor's role, with questions formulated based on findings from the workshops and photos.

The six interviews lasted between 30 and 60 minutes. All of them were audio-recorded and transcribed by Lilian Müller

Analysis

The analysis was qualitative, based on data collected from the workshops and interviews, in the form of notes from the workshops, transcriptions and recordings of the interviews. Findings from the workshops and interviews were also further validated by the timelines created in the discussions of cases.

In the first step, the workshops were analysed. Based on the explanations given by the participants, the photos were linked to the phase in the process where decisive choices and decisions were made. To seek an answer to the question "when" the including/excluding design choices took place, the replies were sorted along a timeline (see Figure 2 in *Findings*). The analysis of the participants' statements was organised and

sorted inductively (Yin, 2011, pp. 97-99), ending up in the main critical aspects and stages.

In the second step, the results including the interviews were organised and analysed from transcriptions and recordings. Finally, an overall analysis was made from the complete collected materials.

The answers to RQ1 were drawn from the participants' interpretation of selected photos from completed projects, and the timelines revealing the critical aspects and stages (Harper, 2002). RQ2 was answered by the experiences and requested support as expressed by the participants, divided into the different phases and areas of support, and also sorted into sub-categories and main themes (Graneheim and Lundman, 2004).

It was important in the study to create an open climate for discussions where everyone was able to contribute, without the risk of ending up in a defensive position. The structure and selected cases were therefore not directly linked to participating individual employees or companies.

The chosen research design can provide increased understanding through the selection of participants with varying knowledge, experiences and insights into different parts of the planning and construction process. The selection of participants with different professional profiles and roles, and connections to different parts of the process, was of importance to encourage various competing views and possible explanations to emerge. The chosen research design and materials in the form of notes, recordings and documentation throughout the process helped to increase the reliability and richness of data supporting validation, with the amount of data and possibilities to assess competing explanations (Maxwell, 2009; Yin, 2011, p. 85).

Findings

In this section, the results are presented in three sub-sections:

1. Critical choices and aspects
   Identified choices and aspects linked to the process are presented along a timeline. Additionally, it is also shown how informal decisions in the transition between phases can have an impact on the final result.
2. Conflicting visions and goals
   This sub-section highlights some of the most important conflicting visions, goals and interests that were identified by the participants. Such conflicts were found between departments and between public and private actors.
3. Critical resources – Needs for support and tools
   The last sub-section highlights the participants' views of what kind of support and tools they might need to improve the urban development process towards a more UD-related planning and building.

RQ1 is answered by the first and second sub-section, and RQ2 by the third sub-section.

Critical choices and aspects

"Critical choices and aspects" should be understood as choices, conditions and actions during the process that have a clear impact on the result in terms of UD, accessibility and usability for all users; and how design choices, decisions and actions can result in environments that either include all users or exclude some users.

Among the findings, critical choices and aspects that might lead to unequal buildings and spaces, through their exclusive design, were identified. According to the interviewees, discussions on issues essential to secure UD and accessibility were postponed in the process, often until it was too late to deal with them. Lack of time, a high tempo in the processes, and difficulties to maintain a holistic approach throughout the process were pointed out as some of the reasons for this and can be added to findings in previous research (Frandsen et al., 2012; Kirkeby, 2015).

Participants in workshops and the interviewees were asked to identify the critical stages when design choices were made that led to the results shown in photos from the case study. The results from the workshops were confirmed by the interviews, which also gave a deeper understanding of the underlying causes. The participants had clear answers on design choices that had emerged in the latter part of the process, while patterns that could be traced to earlier phases elicited more discussions. In the analysis of answers from workshops and interviews, it was clear that the earlier phases, especially the planning and projecting phase, were critical, where most decisions and design choices took place that could result in either an inclusive or exclusive design. One of the interviewees stated that UD and accessibility had to be integrated at the latest in the pre-projecting stage. If not, they risked being lost (Interview 5). Excluding design choices in the latter phases were mainly attributed to mistakes arising from carelessness or lack of knowledge.

Critical aspects, divided per planning and building phase

Early phase	Planning phase	Building permission	Construction, completion & control

Impeding

Urban development trends in focus, densification and high exploitation	Many actors involved with competing interests	Special solutions for some users	Unequal conditions are created
Lack of assessment based on human diversity	Unbalance between green and social sustainability		Construction mistakes are made
	Architectural competitions based on unclear visions		Too late to demand changes
			Expert opinions as control

Supporting

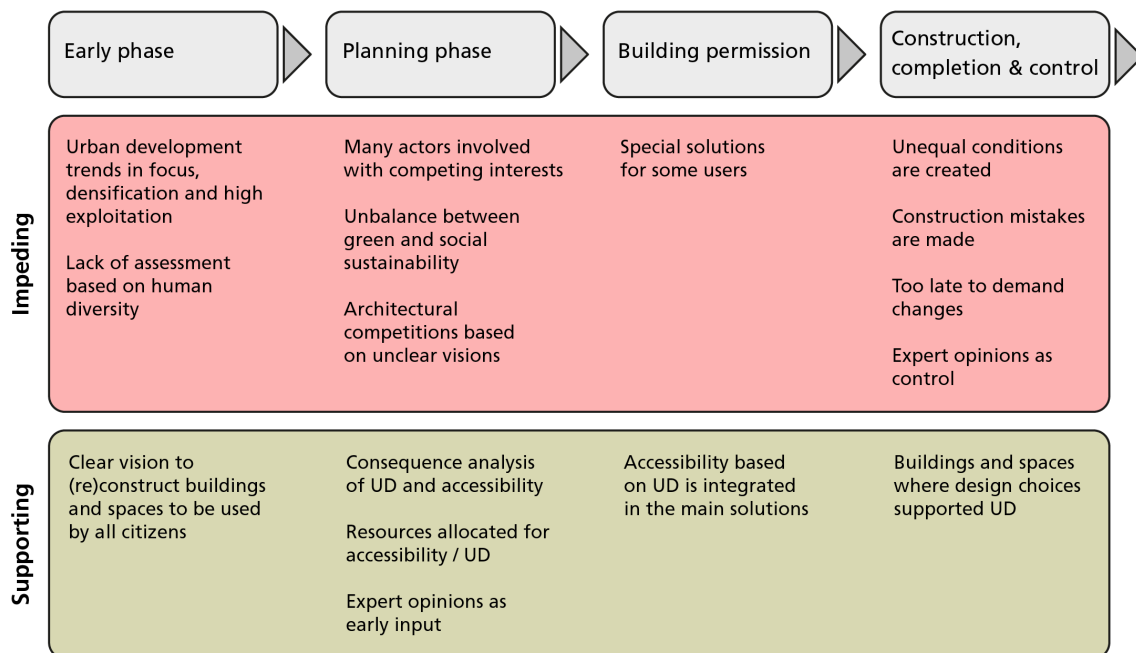|			
Clear vision to (re)construct buildings and spaces to be used by all citizens	Consequence analysis of UD and accessibility	Accessibility based on UD is integrated in the main solutions	Buildings and spaces where design choices supported UD
	Resources allocated for accessibility / UD		
	Expert opinions as early input		

Figure 2. Critical stages and aspects during the process

The stages presented in the timeline in Figure 2 correspond to the four identified phases of the city development process. The timeline is divided into choices and aspects that impede or support UD, respectively. The presentation of findings below begins with impeding

choices and factors, going from early to later phases, followed by supporting choices and aspects.

Densification and expectations of high exploitation appeared among aspects impeding UD perspectives in the early phase. From a human diversity perspective, the lack of assessment of such contemporary urban development trends was highlighted. When planning for a densified city, there is a risk of losing the vital quality of space and solutions to overcome topographic challenges. Space is often an essential quality for design solutions to overcome level differences, combine stairs with ramps or lifts and create accessible entrances.

In the planning phase, the design choice to prioritise closed blocks with shops in the basement of the apartment buildings caused new challenges to accessibility and usability. The difficulties of placing closed blocks on hilly terrain created a greater need for compensatory measures to ensure accessibility for all users compared to a more flexible view of the location of buildings. On flat terrain, the different requirements of ceiling heights for shops and housing in the building legislation were cited as one reason behind new level differences, creating unequal conditions for the residents' opportunities to move around in the area.

Another factor that contributed to creating these new barriers concerned the visions of car-free streets and a clear division between the residents' private sphere and street life. Despite high ambitions of sustainability, the social aspects are lagging.

Competing interests among the many actors involved had adverse effects on planning and building with human diversity in focus, i.e. in areas of safety and security, visibility, inflexibility of transport modes and mobility. Unclear goals and demands in architectural competitions and public procurement can impede UD, not least in the way priorities are shown. What is not expressed can be judged as it is not asked for.

In the building permission phase, the acceptance (based on building regulations) of special solutions for some users can result in stigmatisation of users. It is clear that, when reaching this phase, the possibilities to apply UD are severely limited.

In the construction phase, mistakes are often unintended due to the pressure of time frames, economy and insufficient knowledge. At this stage, it is too late to change mistakes from the planning phase, and expert controls are limited and rarely lead to action.

Among the UD-supporting aspects, it is of vital importance to have a clear vision and goals for planning and building for *all* citizens in the early stage. Achieving this objective requires knowledge, resources and methods to bridge the different phases and the diversity of interests among actors. Projects with fewer actors involved and a conscious focus, including resource allocation for accessibility and UD, resulted in design choices supporting UD in the buildings and spaces.

When accessibility, as required by building regulations, is based on UD integrated into the main design solutions, there is a reduced risk of making mistakes in the building permission and construction phases.

It was also clear that critical aspects emerged in the transitions between the specified phases. Several risk factors were identified in handovers between phases, departments and actors. Some challenges were said to be a lack of a mutual overall picture and goal for each project, and a lack of coordination and shortcomings in the handover between phases. It was stated that the holistic approach was at risk of being lost at an early stage, partly due to conflicts of interests between departments, and between the city and private actors in the transition from the first visionary phase to the detailed planning phase.

The need to adopt a more holistic approach along the process was also mentioned, along with ensuring that visions survive through the whole process, that conflicts of interest are resolved, and that human diversity and universal design are set as high priorities.

Conflicting visions and goals

The interviewees identified conflicting visions and goals that risked negatively affecting the result from a UD perspective. A significant proportion of these could be traced to the city itself, while clear competing goals between private and public interests were also evident. Some areas where conflicting visions and goals arose were in departments' different views of desirable design choices, unbalances between green and socially sustainable development, and in urban design trends. This sub-section is about:

1. Conflicts between quantity and quality in urban development and how the ideal of a densified city is challenging necessary conditions for accessibility and UD-related solutions.
2. Conflicts of interests and ideals between city departments.
3. An unbalance between green and socially sustainable development.
4. Urban design trends that challenge design choices supporting UD.

Participants outlined the *conflicts between quantity and quality* in the urban development processes. Leading politicians in the city set high volume requirements on housing construction, which coincides with interests among private actors but can reduce the space for action when it comes to design choices. One of the interviewees described the difficulties in influencing the quality of what is being built: *"There is no focus on who will live in the new homes, only how many new citizens the city will get."* (Interview 1)

Figure 3. One of the discussed cases, where the conditions to create an outdoor environment accessible and usable by all residents is strongly limited by the choice of land and the requirement of high exploitation.

Participants expressed concerns about new challenges from a UD perspective that will arise from building on land with significant height differences and a smaller area per inhabitant, and the risk of excluding effects. The level of exploitation drives a lack of

space that makes it difficult to compensate for the level differences. A UD perspective is not yet included in assessments regarding which land is buildable or not.

Conflicts of interest and ideals between city departments were highlighted as examples leading to shortcomings in creating public spaces for all. The trend of creating "shared spaces" was discussed in connection with a photo from a newly built hub for public transport.

In front of the terminal, a bicycle lane crosses a pedestrian zone with no warning signs or contrasts. The possible design choices had been discussed intensively during the process. The two involved departments had two completely different views on traffic safety in this kind of environment, which led the building department to try to sidestep the policies of the traffic department: *"We are thinking **safety**, while they are thinking **security**. We do what we can to get around their policies here."* (Interview 2)

Ambitions to improve safety in the city were also identified as an area of conflict when it comes to other design choices supporting UD. Outdoor elevators have been classed as unsafe areas by one department. In this hilly city, this policy has produced excluding outdoor areas, and the reluctance to build outdoor elevators has not, so far, led other departments to reach a consensus on solutions that can be accessible and usable by all.

Figure 4. In front of the public transport terminal, a bicycle lane crosses the pedestrian area, with no warning signs or differences in materials, colours or contrast. The two departments involved have different views on such solutions.

In some examples, design mistakes could be traced to an *unbalance between green and socially sustainable development.* This phenomenon was further explained by an interviewee who referred to a routine procedure demanded by the Department for Climate and Water as a protection against flooding: *"This demand has been integrated into detailed development plans for years, but no one has thought about the accessibility challenges it creates."* (Interview 5) This raises questions about combining climate actions with goals such as UD, accessibility and usability.

Finally, *contemporary urban design trends that challenge UD-supportive design choices* were highlighted in workshops and interviews as potential conflict areas causing excluding

environments. One of them was the trend of including stairs in the planning of outdoor public places, also where the terrain was originally not hilly. In combination with the policy to avoid the installation of outdoor elevators, this creates excluding public environments. Other potentially excluding trends were the policies to build closed blocks and place the buildings' facades on the property boundary. These principles are perceived as urban environmental qualities but can create barriers and reduce possibilities for an inclusive design.

Figure 5. The standard requirement to create a level difference between the entrance level and the street level is an underlying factor, resulting in a special solution, separating people at the entrance. Still, there is a clear possibility to create an equal solution by bridging the level difference with a ramp inside the store.

Critical resources – Needs for support and tools

During the workshops and interviews, several suggestions were highlighted as possible areas of development to reach a more inclusive and UD-inspired urban development. The participants were also asked to define their possibility of influencing important design choices in the presented cases; and what tools and support are needed to foster more inclusive planning and building.

The need for support and tools varied in the different phases, but in general, some of the common areas were:

1. Developing knowledge and skills, such as how to care for human diversity in planning and building, put UD into practice, understand the consequences of different choices and measures, gain more knowledge about building legislation on accessibility, and raise awareness of the consequences, from a human diversity perspective, of different decisions and choices made during the process.

2. Coordination to reach common goals, a holistic view along the process, and the contextualisation of detailed development plans within the surrounding areas.
3. Cooperation for improving the handovers between departments and between actors, and shaping routines and documentation to this end; as well as the need to create procedures for feedback on experiences, and to find better ways of engaging in dialogue with civil society.
4. Developing tools, strategies and practices such as social consequence assessments and follow-up procedures. Emphasis was also placed on the need to combine environmental and socially sustainable development, and promote social consequence assessment as a tool in the planning process.
5. Clear requirements in public procurement and contracts with developers.
6. Analyses from a UD perspective in the different phases might counteract the postponement of important design choices along the process. Such continuous analyses might also create possibilities to "hit the brake" earlier in the process. Today, this function is placed at the end of the process when it is too late to demand changes (see Figure 2).
7. Clear demands at an early stage, such as demands from politicians, and better use of land allocation as a tool. *"With stronger demands from our politicians – that the city must be built for all – it should be easier for us to assert requirements towards the industry."* (Interview 3)

Accessibility and usability were mentioned as examples of issues that occurred late in the process and were reduced to the building legislation's pronounced minimum requirements (Ryhl, 2014). Participants suggested that a stronger focus on UD might raise important questions from a human diversity perspective earlier in the process, resulting in changed attitudes and a broader picture of the user.

In retrospect, it can be observed that the limited representation in the workshops, from a human diversity perspective, indicates a need for a more active and in-depth dialogue with a broad range of citizens and civil society.

Concluding discussion

Visions in the early stages to create a city for all citizens are not consequently followed up in each stage of the process. The study has outlined a pattern of critical aspects and choices that contribute to the exclusion of users in the built environment; and what conditions would support UD implementation throughout the process.

The findings show a great need for in-depth efforts in the entire planning and building process in terms of improved working methods and procedures and greater knowledge and awareness (Kirkeby, 2015; Heylighen, Van Der Linden and Van Steenwinkel, 2017; Erdtman, Rassmus-Gröhn and Hedvall, 2021). The latter applies not least if the States' commitments to respect the obligations of the CRPD and to achieve the Sustainable Development Goals become possible (United Nations 2006, 2014, 2017). UD will not be accomplished through changes in legislation but rather through changed mindsets (Hedvall, 2022; Van der Linden, Dong and Heylighen, 2016). The participants have outlined what support they need to contribute to change. The findings demonstrate the possibility of using UD to bring about change by raising awareness among planners, architects and other actors involved to plan for human diversity instead of an average body (Imrie, 2003;

Hamraie, 2012; Jones, 2014), and of UD becoming a driver for inclusive architecture (Grangaard, 2018; Steinfeld and Tauke, 2002).

The findings also reveal the criticality of the planning phase, where many of the essential design choices are made. Many different actors are involved, and conflicting visions and goals in this phase can explain the existence of excluding environments in the built environment (Egard, 2022; Carvalho de Souza and de Oliveira Post, 2015; Plouin et al., 2021). Furthermore, the findings indicate that the implementation of UD can be a crucial tool and bridge between interests in the planning process, as contemporary planning discourses are at risk of being "disability-blind" when public actors do not step forward and defend public interests (Allmendinger, 2017). From the city's perspective, this is an urgent need, especially when taking the demographic change into account (Granbom et al., 2016).

A number of preconditions identified in the study would need further attention. In conclusion, we highlight measures to implement UD in the process and improve the realisation of policies and early visions to achieve a corresponding result in the completed built environment.

1. Set precise requirements in public procurement and contracts. Clear objectives that can be followed up and evaluated may minimise the risks of changes along the process, resulting in apparent mistakes from a UD point of view. Public procurement is a robust tool for the city but is still underutilised. For a major land and property owner such as the city, this great power can be wielded for the cause of creating a city for all. Private actors need a clear view of the city's expectations, as well as the conditions for creative solutions to ensure that the city is built for all users.

2. Reduce conflicting visions, goals and guidelines through stronger cooperation between the city's departments and adaptation of a common design policy, linked to statements such as *A city for all* (Frandsen et al., 2012). A UD approach in planning and building needs a common vision and commitment.

3. By implementing a UD approach in all phases, existing tools and procedures, considerations linked to human diversity will be present in moments of priority. It can be a supportive tool when special solutions for some users are about to be created due to established thought patterns (Figure 5) (Hedvall, 2022; Müller et al., 2021). A common long-term perspective and holistic thinking are needed.

4. Provide opportunities for all involved staff for increased knowledge and awareness on how to put UD into practice, how to care for human diversity in planning and building, and to learn more about the consequences of different decisions and choices from a UD perspective (Heylighen, Van Der Linden and Van Steenwinkel, 2017; Zallio and Clarkson, 2021; Van der Linden, Dong and Heylighen, 2016).

5. Create and develop procedures for assessment, handovers between phases and departments, and handling feedback and experiences from one project to another. Improve follow-up and control in each phase. At the last stage of the project, it is too late to make changes.

6. Provide measures to "hit the brake" when confronted with a choice that will have negative/impeding consequences in terms of UD. Thorough pre-studies and analyses with UD and human diversity as important conditions will reduce the risks of situations where it is necessary to hit the brake.

7. Find well-functioning ways to engage in dialogue with civil society, co-creating the *city for all* together with citizens. Reaching out for the expertise and engagement of

persons with disabilities is a precondition to achieving accessibility and usability through UD together.

The planning and building process is complex, and projects are realised over long time frames. Many important changes in regulations and policies occur during the period from vision to a completed building/place and after. Critical aspects linked to operation and maintenance were not part of this study, but it is an important area to highlight in further research. For the future, it is also important to continue to identify patterns that support or impede UD in planning and building. Developing tools and support that can be used to maintain UD all along the process is essential to realise the vision of a city for all.

References

Allmendinger, P. (2017) *Planning Theory.* 3rd edition. Red Globe Press, London.

Bryman, A. (2018) *Samhällsvetenskapliga metoder* ["Social Research Methods"]. 3rd edition. Liber, Lund.

Carvalho de Souza, S. and de Oliveira Post, A.P.D. (2016) "Universal Design: an urgent need," *Procedia – Social and Behavioural Sciences*, 216, pp. 338-344.

Cars, G. and Hedström, R.T. (2006) *Nya villkor för den kommunala planeringen*,

p. 157-176, in Blücher, G. and Graninger, G. (eds) *Planering med nya förutsättningar. Ny lagstiftning, nya värderingar* ["Planning with New Conditions. New Legislation, New Values"]. Linköping University.

Creswell, J. (2003) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.* Sage, Thousand Oaks, CA.

Egard, H. (2022) "Accessible enough? Legitimising half-measures of accessibility in Swedish Urban Environments,' in Egard, H., Hansson, K., Wästerfors, D. (eds.) *Accessibility Denied: Understanding Inaccessibility and Everyday Resistance to Inclusion for Persons with Disabilities*, pp. 1-10. Routledge, Oxon and New York. https://doi.org/10.4324/9781003120452-1

Erdtman, E., Rassmus-Gröhn, K. and Hedvall, P-O. (2021) "Universal Design as Guiding, Striving and Unifying: A Qualitative Study about how Universal Design is Understood, Practised and Realised in Contemporary Sweden," *Scandinavian Journal of Disability Research*, 23(1)*, pp. 158-168

Frandsen, A-K., Kirkeby, I.M., Ryhl, C. and Pedersen, L.S. (2012) "Bygningsreglementets Tillgaengelighedsbestemmelser Set i Forhold til Byggeprocessen" ["Provisions on Accessibility in Relation to the Building Process, Danish Building Regulations"]. Danish Building Research Institute report, Copenhagen.

Granbom, M., Iwarsson, S., Kylberg M., Pettersson, C. and Slaug, B. (2016) "A public health perspective to environmental barriers and accessibility problems for senior citizens living in ordinary housing," *BMC Public Health,* 16:772. https://doi.org/10.1186/s12889-016-3369-2

Graneheim, U.H. and Lundman, B. (2004) "Qualitative content analysing in nursing research: concepts, procedures and measures to achieve trustworthiness," *Nurse Education Today, 2004* (24), pp. 105-112. https://doi.org/10.1016/j.nedt.2003.10.001

Grangaard, S. (2018) "A Status of Universal Design in Danish Architectural Policies," in Craddock, G., Doran, C., McNutt, L. and Rice, D. (eds.), *Transforming our World Through Design, Diversity and Education: Proceedings of Universal Design and Higher Education in Transformation Congress 2018*, pp. 696-705. IOS Press. *Studies in Health Technology and Informatics*, vol. 256. https://doi.org/10.3233/978-1-61499-923-2-696

Hamraie, A. (2012) "Universal Design Research as a New Materialist Practice," *Disability Studies Quarterly*, vol. 32 (No. 4). http://dx.doi.org/10.18061/dsq.v32i4.3246

Harper, D. (2002) "Talking about pictures: A case for photo elicitation," *Visual Studies*, vol. 17:1, pp. 13-26. https://doi.org/10.1080/14725860220137345

Hedvall, P-O. (2022) "Framväxten av Universell Utformning – en kulturomdaning," ["The emergence of Universal Design – a cultural transformation"] in Föreningen UUA (eds) *Kunskap för framgångsrik inkludering* ["Knowledge for successful inclusion"].
https://www.uua.se/media/s22byhrr/kunskap-fo-r-framga-ngsrik-inkludering-220119-6-sidor.pdf

Heylighen, A., Van der Linden, V. and Van Steenwinkel, I. (2017) "Ten questions concerning inclusive design of the built environment," *Building and Environment*, 2017 (114) pp. 507-517. https://dx.doi.org/10.1016/j.buildenv.2016.12.008

Imrie, R. (2003) "Architects' conceptions of the human body," *Environment and Planning D: Society and Space 2003*, vol. 21, pp. 47-65. DOI:10.1068/d271t

ISO/IEC Guide 71:2014 (2014) "Guide for addressing accessibility in standards."
Retrieved from https://www.iso.org/standard/57385.html

Jones, P. (2014) "Situating universal design architecture - designing with whom?" *Disability and Rehabilitation,* 2014, (36:16) pp. 1369-1374. https://doi.org/10.3109/09638288.2014.944274

Kirkeby, I-M. (2015) "Accessible knowledge – Knowledge on Accessibility," *Journal of Civil Engineering and Architecture* 9, pp. 534-546. https://doi.org/10.17265/1934-7359/2015.05.005

Maxwell, J. (2009) "Designing a qualitative study" in Bickman, L. and Rog, D.J. (eds) *The Sage Handbook of Applied Social Research Methods*. 2nd edition, pp. 214-253. Sage, Thousand Oaks, CA.

Müller, L., Ericsson, S., Wojahn, D. and Hedvall, P-O. (2021). "Young, Mobile and Highly Educated Cyclists: How Urban Planning and Policy Dis/able Users," *Scandinavian Journal of Disability Research,* 23 (1), pp. 124-135. https://doi.org/10.16993/sjdr.731

Plouin, M., Adema, W., Fron, P. and Roth P-M. (2021) "A crisis on the horizon: Ensuring affordable, accessible housing for people with disabilities," *OECD Social, Employment and Migration Working Papers*, no. 261. https://dx.doi.org/10.1787/306e6993-en

Ryhl, C. (2014) "The missing link in implementation of universal design: the barrier between legislative framework and architectural practise," in Caltenco, H.A., Larsson, A. and Hedvall, P-O., Rassmus-Gröhn, K. and Rydeman, B. (eds), *Assistive Technology Research Series,* vol. 35, IOS Press, pp. 433-434. Universal Design 2014: Three days of Creativity and Diversity. https://doi.org/10.3233/978-1-61499-403-9-433

Soini, K. and Pirinen, A. (2005) "Workshops – Collaborative Arena for Generative Research," in the *Proceedings of Designing Pleasurable Products and Interfaces*, Eindhoven, 24-27.10.2005.

Steinfeld, E. and Tauke, B. (2002) "Universal Designing" in Christophersen, J. (ed) *Universal Design – 17 ways of thinking and teaching*. Husbanken, Oslo. ISBN: 82-90122-05-5.

Swedish Parliament 2010, *Plan och Bygglagen, SFS 2010:900* ["Planning and Building Act"]. Retrieved from https://svenskforfattningssamling.se/sites/default/files/sfs/2021-07/SFS2021-788.pdf

United Nations (2006) Convention on the Rights of Persons with Disabilities. United Nations, New York.

United Nations (2014) Convention on the Rights of Persons with Disabilities, General Comment No. 2, Accessibility. United Nations, New York.

United Nations (2017) New Urban Agenda. United Nations, New York. ISBN: 978-92-1-132731-1

Van der Linden, V., Dong, H. and Heylighen, A. (2016) "From accessibility to experience: Opportunities for inclusive design in architectural practice," *Nordic Journal of Architectural Research* 2016:2, pp. 33-58.

Yin, R.K. (2011) *Kvalitativ forskning från start till mål* ["Qualitative Research from Start to Finish"]. Studentlitteratur, Lund.

Zallio, M. and Clarkson, P.J. (2021) "Inclusion, diversity, equity and accessibility in the built environment: A study of architectural practise," *Building and Environment,* 2021 (206). https://doi.org/10..1016/j.buildenv.2021.108352