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Difference

Sketching, Visualising and Challenging Universal Design in Sweden

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Guest Editorial:

Difference – Sketching, Visualising and challenging Universal Design in Sweden

Per-Olof Hedvall and Stina Ericsson

Everyone is differently different.

Throughout the years, a range of authors of varying prominence have tried to get this message to stick. In 2016, Todd Rose debunked the myth about the average human being. Margaret Mead highlighted human difference by saying "Always remember that you are absolutely unique. Just like everyone else." Edward Steinfeld has described the circumstances of human activities as "a condition of difference that we all share". However, the dominant worldview with an imagined "normal" person and others deviating from that norm seems remarkably stubborn to dissolve, transform, or move beyond.

Universal Design starts and ends in difference. It is a response aimed at "changing attitudes throughout society, emphasizing democracy, equity, and citizenship. Universal design denotes a process more than a definite result" (Mace, 1985, cited in Iwarsson and Ståhl, 2003). By adopting variance as a key ethical characteristic of and focus point in design processes, Universal Design has the potential to show the way towards societal development targeting the entire humanity. In Universal Design, there is only one population, and in that population, there is a host of variations. People vary between each other and throughout life. Universal Design is an effort to acknowledge, recognise and cherish human differences by meeting variation with

variation. In the words of Audre Lorde, "Difference must be not merely tolerated, but seen as a fund of necessary polarities between which our creativity can spark like a dialectic".

This edition of Design for All, India has the title "Difference – Sketching, Visualising and Challenging Universal Design in Sweden". Human difference can be conceptualised in the form of labels attached to people, such as 'people with disabilities' or 'people without disabilities' . Such categorisations can be investigated with regards to how they are used to separate people and to assign values to them, and how such processes function to create inequality and stigma. Any UD approach that has all people as the target group will need to deal with categorisations of people in some way. For instance, design approaches based on inclusion identify and gradually add more and more groups of people. In contrast with this, approaches based on what we call 'nonclusion' challenge this way of taking the categorisation of people for granted. Instead, nonclusive design resists categorisations of bodies and roles and avoids presupposed limits regarding whom the design is meant for. Nonclusion is relevant for Graphic design, Physical products and environments, Text and image, and Information and communication technology. In brief, a nonclusive take on human difference means a critical approach to the categorisation of people, by considering e.g., functions and situational factors, to see how human variation can be best met by variation in the designed environment, without a need for discriminating and stigmatising categorisation (Chapters 1 & 2).

The implementation of the UN Convention on the Rights of Persons with Disabilities in Sweden highlights UD as a guiding principle for the understanding, implementation, and co-creation of national disability policies. The understanding of UD in Sweden is multifaceted: an

ethical principle for the inclusion of diversity, a vision of an inclusive society, and a unifying of policy perspectives. When contextualized locally, UD practice will exhibit diverse expressions. Collaboration between municipalities and local disability organisations is well established but continue to challenge and create tensions regarding expectations, roles and interpretation of disability experience: as information to facilitate processes or part of negotiations to influence outcomes (Chapter 3).

While the objectives of health and medical care in Sweden is given by the Government as equitable, gender-equal and accessible, these objectives are not always reached in practice. As a specific example, negative health outcomes can be seen for certain groups of women born outside of Sweden when it comes to pelvic floor injuries after birth. A new design approach to such differences between groups of women can be sketched using UD. Such an approach can fruitfully make use of co-design, which, in turn, is based on empathising, engagement, and empowerment (Chapter 4).

Teaching UD to design students crucially involves challenging student's views on and experiences of human difference. Based on teachers' involvement in three UD courses at two different Swedish universities, three learning goal themes can be identified as central to such an endeavour. The first is Understanding, whereby students acquire a theoretical foundation regarding norms, diversity and design. The second theme is Creating, meaning that students implement and apply their theoretical knowledge through practical prototyping, e.g., together with a range of expert users. The third and final theme is Reflection, whereby students' continuous reflection is used as a pedagogical tool for learning (Chapter 5).

To plan, design and build with diversity in mind is a complex process. While goals such as inclusion, participation and social sustainability may be present in the vision for a future product, service or environment, studies show that the initial vision isn't always realized in the end result. There are still far too many products, services and environments that are hard to access or use for parts of the population. Visualising human difference is a challenge. Simple, lightweight, tools – "low hanging fruits" – such as personas, context cards, checklists and guidelines are readily available. We developed two such tools: a deck of cards and 3D models (vehicles, devices and humans), intended to serve as thought support by visualising human diversity (Chapter 6).

Current trends in architecture challenge and can be challenged by social sustainability and universal design. "Social staircases" is one such example, a particular type of architectural element in common space, that serves as multifunctional spaces beyond mere transportation, aiming at social interaction. Through empirical examples, we highlight the multifunctional nature of social staircases and conclude by introducing the notion of existential sustainability as a way to discuss limitations of practiced social sustainability and universal design. This approach takes a diverse range of human experiences into consideration in design of social space. We argue that a balanced approach, which takes into account individual and existential concerns alongside systemic and societal considerations is crucial for realizing the democratic potential inherent in spaces like the social staircase (Chapter 7).

We would like to thank all the authors in this edition of Design for All, India and Dr Sunil Bhatia for his kind invitation to contribute as Guest Editors.

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From Inclusive to Nonclusive Design – A Shift in Categorisation

Per-Olof Hedvall and Stina Ericsson

Abstract

The background to this article is an interest in what categorisations such as 'persons with or without disability' create in terms of inequality and stigma, and how categorisations can support the implementation of Universal Design (UD). The article aims to show how a shift in categorisation can lead to a shift in the conceptualisation of UD, from "inclusive" to "nonclusive" design, i.e., to design processes that refrain from categorising people, bodies and roles. Our analysis is based on a range of photographs, images, and extracts from policy documents related to inclusion and exclusion collected in five recent research projects. Current ways to categorise will reiterate and perpetuate the current power structures, if not changed. In the article, we show what a shift from inclusive design to nonclusive design might look like in four types of artefacts: graphic design, physical products and environments, texts, and information and communication technology (ICT). Such a shift in categorisation will make it possible to meet variation with variation, and to ensure that the next product, program, or environment does not divide people into predefined boxes based on, e.g., their bodily configurations. However, working with nonclusive design will demand having just as rich an image of human variation and how to support it as ever before. In conclusion, we argue that Nonclusive Design *is*

Universal Design, completing the progress from barrier-free to inclusive to nonclusive design(ing).

Keywords:*Universal Design, Inclusive Design, Nonclusive Design, Accessibility, Norms, Categorisation*

Introduction

You cannot reach equality by focusing on inequality.

Still, a lot of research purporting to contribute to the understanding and realisation of equality actually deals with inequality. The same pattern can be seen concerning accessibility and the more negative inaccessibility. By contrast, Universal Design (UD) (Mace, 1985; Steinfeld & Maisel, 2012) has the potential to nurture development that remains on the positive side of this division.

UD has grown into a global phenomenon during the last 40 years. Early UD focused on barriers, aiming for barrier-free environments. Current UD instead strives for inclusive design, targeting all people (Kose, 2021; Steinfeld & Maisel, 2012). It is based on "inclusion" (Ahmed, 2012; Hedvall et al., 2022a) as a foundational concept. However, while UD has always had all people as the intended target group, in practice it is still largely understood to be about disabled people (Erdtman, 2024; Ericsson et al., 2020).

What supports human activity is not necessarily the opposite of what disrupts it. Soon researchers and practitioners realised that if someone only looks for barriers and how to prevent them, one misses a great deal of what supports activity. Living a full life presupposes barrier-free environments as a means but it is not an end in itself. This confusion of means and ends led to a deficit view of dis/ability,

focusing on the disruptive, negative side of action and with disabled people as the primary target group.

How one chooses to formulate texts is not innocent and current policy documents are ripe with deficit thinking. A good example is the United Nations Agenda 2030 (United Nations, 2015). Why is, for instance, Global Development Goal number 10 phrased as "Reduce inequality within and among countries"? What if SDG10 instead was phrased as "Enhance equality within and among countries"? The design space (Westerlund, 2009) shifts, shrinks and expands depending on the phrasing of goals and potential, and what design proposals can be reached shifts accordingly.

This article hinges on another such shift in formulation—or in this case: a shift in categorisation.

Aim

We are interested in what categorisations such as 'persons with or without disability' create in terms of inequality and stigma, and how categorisations can support UD-based development. This article aims to show how a shift in categorisation can lead to a shift in the conceptualisation of UD. Such a shift is far from neutral and the article also aims to explore some of its ramifications in terms of a shift from inclusive design to nonclusive design (Hedvall et al., 2022a). The analysis is based on a range of photographs, images, and extracts from policy documents related to inclusion and exclusion collected in five recent research projects.

Theory

The article engages three theoretical concepts in discussing inclusion and exclusion: Universal Design, Categorisation, and Nonclusion.

Universal Design

Universal Design (UD) is a concept with a rich history and prominent positions in current conventions and policy around the globe. UD is still tightly connected to disability—despite its origins focusing on creating a society for all. However, we argue that the concept also has untapped potential in terms of what kind of change it can bring about regarding how *difference* is understood and dealt with in society (Hedvall et al., 2022a).

The first time Ron Mace used the term 'Universal Design' publicly was in a now widely cited issue of the interior design magazine Designers West (Mace, 1985). Mace described UD as a design approach aiming to move beyond special, expensive and ugly solutions for limited groups to instead designing for 'everyone'. He saw disabled people as a source of knowledge needed to design for all – not a particular group in need of separate solutions. Mace characterised UD as design that is 'usable by all people'. Intentionally directing focus to mainstream solutions, Mace imagined UD tacitly providing access and even disappearing into its surroundings. However, this also brought about a tension between utilising disability knowledge in the design of products and environments and marketing these products without mentioning disability at all (Williamson, 2019).

Enhanced accessibility is one outcome of successful UD. But what is often forgotten, or at least tends to recede when discussing UD, is its early focus on societal development. In 1985, Ron Mace put this as:

> ***"Universal design is ultimately about changing attitudes throughout society, emphasizing democracy, equity, and citizenship. Universal design denotes a process more than a definite result." (Mace 1985, cited in Iwarsson, 2009).***

This understanding of UD as primarily a process concern has repeatedly been highlighted over the years by Steinfeld and colleagues (Maisel et al., 2017; Maisel & Steinfeld, 2022; Steinfeld & Maisel, 2012; Steinfeld & Tauke, 2002).

Categorisation

Categorisation has taken an increasingly prominent position in our studies on UD in recent years (Ericsson, 2023; Ericsson et al., 2020; Hedvall et al., 2022a; Hedvall et al., 2022b). We use the term 'categorisations' rather than 'categories' to emphasise the active processes (Hornscheidt, 2009), that are involved when someone, for instance, decides to put a number of pictograms of different persons in a row on a toilet door.

Categorisations are often done invisibly or tacitly. However, they involve power structures as they value certain perspectives and silence others and are always done to someone and by someone. Thus, they give advantages to some and disadvantages to others (Bowker & Star, 1999). To categorise someone is always a choice, and multiple categorisations are always possible, including no categorization (Ericsson et al., 2020). We regard intersectional thinking, where power structures are seen as overlapping, interacting and mutually constituting (Hamraie, 2017), as key for developing categorisation strategies that support UD.

The connection between inclusion and categorisation is important to note. Inclusion presupposes an inside and a corresponding outside. This division is created and upheld by categorisations. Categorisations can be quite sticky and it is easy to get stuck to a category. As Ahmed puts it: "we can be constrained even by the categories we love" (2012, p. 4).

Nonclusion

"Inclusion" is both an act and a state (Merriam-Webster, 2024). It is a global phenomenon underpinning both policy and research. The growth of inclusion has largely occurred uncriticised. Social inclusion has become a self-evident, taken-for-granted good, a 'truth' (Dunne, 2009). Spandler notes,

> ***"the notion of social inclusion is difficult to critique because, like other concepts in the Government's 'modernisation' agenda (such as 'choice', 'user involvement' and 'recovery'), it is presented as self-evidently desirable and unquestionable" (2007, p. 3).***

But inclusion also carries potent power perspectives and presumed shared norms (Canagarajah, 2022), where someone is positioned as the one to determine what it means to be included and who to include in "the included". An example of this is when people rely on additive strategies (Hedvall et al., 2022b) for inclusive signage, where pictograms are added in a row on a toilet door. This strategy has the drawback that it is based on pinpointing and including groups of people. No matter how many pictograms one puts in a row, there will still be some people that fall on the outside.

Inclusion is something of a paradox, where genuine efforts to tackle social inequality at the same time become another reification of power structures and marginalisation. This leads to power being redone rather than undone (Ahmed, 2012; Hedvall & Ericsson, in prep.). The growth of strategies other than additive ones can be seen as a sign of unease and discomfort experienced when including people, bodies, and roles. While well-intended, this strategy is doomed to always

carry delimitations and demarcations and, thus, to always be exclusive (Hedvall et al., 2022b).

In 2022, we introduced the term "Nonclusion" (Hedvall et al., 2022a) to open up space for an exploration of new ways to categorise that do not presuppose an inside and a corresponding outside. We defined "Nonclusive design" as:

> ***"design that resists categorisations of bodies/roles and that does not come with predefined or presupposed limits in terms of whom it is meant for" (Hedvall et al., 2022a, p. 85)***

While inclusion relies on prevailing, traditional ways to categorise, nonclusion is based on new, emergent categorization patterns that do not categorise bodies, persons, or roles at all.

Methodology

The study is based on material comprising photos and extracts from policy documents collected in recent years as part of our research on categorisation and UD. Participants submitted some images as part of citizen science studies (Riesch & Potter, 2014) on inclusion and exclusion, and we took some images ourselves as part of observational studies. The underlying analysis has had a hermeneutic (Sengers & Gaver, 2006) character and included both formal analysis sessions using NVivo and informal activities such as discussions of denotations, connotations and categorisations present in the photographs (Ledin & Machin, 2018) at project meetings, seminars and presentations. This has continuously advanced our understanding of what the photographs express, and over time, allowed us to identify and mature in our interpretation of patterns in the material.

A Shift from Inclusive Design to Nonclusive Design

Next, we move on to show what a shift from inclusive design to nonclusive design might look like in four types of artefacts: graphic design, physical products and environments, texts, and information and communication technology (ICT).

Graphic Design

Depicting UD seems to be an ambivalent phenomenon, where on the one hand the intended target group is 'everyone', but on the other hand, many features associated with UD still are labelled with the access symbol and understood to be for persons with disability.

In an analysis of signs on toilet doors, we identified and outlined three patterns for inclusive signage (Figure 1):

1) ***Addition, where inclusive signage is accomplished by adding more pictograms of different persons,***
2) ***Combination, where inclusive signage is accomplished by composite pictograms,***
3) ***Nonclusion, where nonclusive signage is accomplished by not depicting persons, bodies, or roles at all.***

(Hedvall et al., 2022b)

Figure 1. Three signs displaying three different ways to achieve inclusive signage: by addition, inclusion, or nonclusion (Hedvall et al., 2022b).

One salient difference between the three patterns is how gender is dealt with. Additive strategies categorise separate genders. While combinatory strategies, such as the one used on the composite all-gender pictogram, also categorise gender, it is done by combining genders instead of keeping them separate. In this case, the composite pictogram categorises the notion of 'gender' rather than specific genders such as 'woman', 'non-binary', etc. This contrasts markedly with nonclusive strategies, which do not categorise gender at all. In Figure 1, nonclusion is achieved by shifting from person to function with a sign showing a water closet with an armrest.

Physical Products and Environments

The affordance (Gibson, 1986; Norman, 2002) of physical products and environments influences who can go where, do what and contribute to what.

Figure 2. Two photos. The environment to the left separates people and is built on norm and deviation. To the right a bench that offers a variety of guests a variety of ways to sit.

Above are two photos (Figure 2). To the left is a photo of an entrance with a small step and a large ramp dictating peoples' movement when approaching the door. The environment separates an imagined "normal" person and those deviating from that norm will have to use the ramp.

To the right is a photo of a bench that offers a variety of ways to sit, with and without an armrest, with a pram or a wheelchair, etc. The bench is an example of a product that does not categorise people. Instead, it meets human variation with seating variation.

Text

When it comes to text and categorisation, inclusive design involves identifying and labelling groups of people. Two examples are the following:

1) **"People with disability have the opportunity to reach educational goals on the same terms as others." (City of Gothenburg, Program för full delaktighet för personer med funktionsnedsättning 2021–2026. Translated from Swedish to English by the authors.)**
2) **"Infrastructure can, through its design, contribute to a more cohesive society where the rights to accessibility for all are safeguarded. A large diversity of travellers with different preconditions and needs, e.g., children, young people, older people, girls, boys, women, and men raise high demands on an accessible society [...] so that all can use it. This means e.g., that the transportation system has to be accessible for people with disability." (Government bill 2016/17:21 Infrastructure for the future: Innovative solutions to strengthen competitiveness and sustainable development. Translated from Swedish to English by the authors, see also Ericsson et al. 2020 for an extended analysis)**

In the first example, two opposing groups are identified. One group is labelled *people with disability* and the other group is labelled *others*. These categorisations, in the context of the sentence in which they

occur, convey that the two groups are clearly separate and that the individuals within each separate group are homogenous in relation to (not) reaching educational goals. This is how categorisations work, ignoring differences within groups and exaggerating differences between groups (Leason, 2024). The two groups in the first example are also labelled very differently: one group is labelled according to an assumed impaired function or ability, whereas the other group – *others* – is assigned no characteristics at all, which works as a privileged position here. Additionally, the comparison between the two groups that the sentence contains, makes *others* the norm for *people with disability.*

A nonclusive version of example 1 might be:

> **1') Everyone has the opportunity to reach educational goals, irrespective of abilities.**

This version resists categorisations of people and does not rely on norms and non-norms.

In the second example, *all* in the first sentence is categorised into smaller groups in the subsequent sentences: *children*, *young people*, *older people*, *girls*, *boys*, *women*, *men*, and *people with disability*. This is an additive strategy and has the disadvantages of pinpointing specific groups. A nonclusive version need not use categorisations of people at all, and instead of making assumptions about people's *preconditions and needs* may focus on what the infrastructure itself can provide:

> **2') Infrastructure for travelling can be designed to contribute to a more cohesive society. Such infrastructure is designed with respect to supporting the entire population to travel from door to door,**

minding, e.g., different seasons, security, comfort, and travel patterns.

This version directs attention away from the individual traveller towards the entire travel chain and all situations occurring there.

Information and Communication Technology

The field of Information and Communication Technology (ICT) does not get anywhere near the credit it deserves for its nonclusive potential.

People working with developing ICT have never been particularly obsessed with user groups. Rather than focusing on *who* is allowed/intended to use a website or a piece of software, much more has been invested in *how* to support people in using ICT. This has had many positive effects, such as the growth of User Experience (UX) and is clearly in line with nonclusion.

Currently, the field of ICT is piloting and paving the way and serving accessibility initiatives on a European level. Today, EN 301549 European standard for digital accessibility, has become part of the legislation in several European countries. Next to follow is the implementation of Mandate 587, which requires that economic actors (manufacturers, distributors, importers, etc.) of certain products and services meet minimum accessibility requirements by June 28, 2025.

Figure 3. Icons for access/accessibility options in Windows XP, Windows 95, Windows 7, Windows 10, and Windows 11.

The icons for access and activity-supporting functionality in Figure 3 are from Windows XP, 95, 7, 10, and 11. When Windows XP launched in 2001, there was a wheelchair sign depicting accessibility options, which can be seen as an inclusive approach. Over the years, the wheelchair symbol has been made more abstract, depicting functionality. There was a significant shift in icons between Windows 10 and Windows 11, where the later got an icon depicting a generalised person instead of something reminiscent of a wheelchair, like the previous versions had.

Figure 4. Icons for access/accessibility options in the current versions of Andriod, iOS, and Mac OS.

The current versions of Android, iOS, and MacOS, also have an icon with a generalised human person to mark the corresponding functionality for access/accessibility (Figure 4). What started as functionality for disabled persons is today depicted as being for everyone. But, the functionality is still categorised by a human person. Guided by nonclusion, the next step in this evolution could be to shift the categorisation – and thus, the narrative – to deal with activity-supporting options instead, this way refraining from categorising the functionality in terms of people, bodies, and roles.

Concluding discussion

Nonclusion is intended to be used in all stages of design. One limitation of this article is that the examples are only of finished artefacts, and not from design processes. But, we do hope that the

descriptions of the underlying theories and the examples we bring forward leave a scent in the air of a possible future design less obsessed with categorising people, bodies and roles.

A reasonable objection to nonclusion is that it will disguise rather than promote diversity, creating just another loophole and escape route for manufacturers and other actors trying to underserve the societies they are part of and dependent on for their business. Working with nonclusive design will demand having just as rich an image of human variation and how to support it as ever before. However, understanding and recognising diversity does not presuppose relying on the current ways to categorise when designing. On the contrary, maintaining the present categorisation will reiterate and perpetuate the currently dominating power structures, that are based on inside-outside logic.

Where to start the transition towards nonclusive design? We suggest starting by applying the pattern "From person to function" described above. Such a shift in categorisation when designing is an example of what will make it possible to meet variation with variation, and to ensure that your next product, program, or environment does not divide people into predefined boxes crafted based on, e.g., their bodily configurations.

In conclusion, Nonclusive Design *is* Universal Design. It lingers on the horizon as a possible 3rd generation of UD, completing the progress from barrier-free to inclusive to nonclusive design(ing). All three generations each have their merits and are still valuable and relevant parts of UD. The factors and strategies they together encompass offer a more complete image of how to work based on UD to realise a society for all.

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Situation, Non-Categorisation, and Variation: Conveying Nonclusion Through Text and Image

Stina Ericsson and Per-Olof Hedvall

Abstract

Nonclusion is aligned with Universal Design and involves a critical approach to the categorisation of people. Specifically, nonclusion resists categorisations of bodies/roles and does not come with predefined or presupposed limits in terms of who something is meant for. While UD and nonclusion generally target Design and Architecture, this article explores how nonclusion can be conveyed through text and image in communication. The aim is to identify how the textual and visual presentation itself can make use of nonclusion, irrespective of the content that is to be conveyed. The material used is a video clip produced by the Swedish Agency for Participation. The video clip contains simple animation, subtitles, and a voice-over. The analysis identifies three components of nonclusion as relevant for the communication of nonclusion through text and image: 1) *Situation* encourages focus to be placed on contextual factors rather than individuals and their properties, 2) *Non-Categorisation* encourages a critical approach to categorisations of people, questioning unnecessary, routine, or harmful categorisations, and 3) *Variation* encourages the recognition of human variation, and the necessity of meeting human variation by variation in the designed and built environment. These three nonclusion components are of relevance to

policy development in areas such as Social Sustainability, Disability Rights, Gender Equality, and Age-Friendly Cities and Communities.

Keywords: ***Universal Design, Linguistics, Multimodal Analysis, Categorisation, Governmental Agency information***

Introduction and Aim

Nonclusive design is a concept aligned with Universal Design (UD), intended to highlight human variation. We define Nonclusive design as "design that resists categorisations of bodies/roles and that does not come with predefined or presupposed limits in terms of who it is meant for" (Hedvall et al., 2022, p. 91). Hedvall et al. (2022) outline ongoing shifts towards Nonclusive design, and these are further explored by Hedvall and Ericsson (in this volume) in terms of how a shift in categorisation can lead to a shift in conceptualisation.

While UD and Nonclusion generally target Design and Architecture, this article explores how Nonclusion can be conveyed through text and image in communication. The aim is to identify *how the textual and visual presentation itself can make use of Nonclusion*, irrespective of the content that is to be conveyed. As an example, a text or an image may contain a situation where an individual is met by discriminating design, contrary to UD. However, actors and situations can still be *presented* in nonclusive ways. In the article, this is explored in a video clip produced by the Swedish Agency for Participation. Extracts from the video clip are used to identify three components of Nonclusion of specific relevance for texts and images, here called Situation, Non-Categorisation, and Variation. Of these, Non-Categorisation and Variation are among the patterns explored by

Hedvall et al. (2022), whereas Situation is a new component identified in the present article.

The article begins with an outline of the role of language in creating equitable and sustainable societies, followed by a description of the material and method used in the article. The main body of the article then consists of an analysis of the Nonclusion components Situation, Non-Categorisation, and Variation.

Equity Through Language

Research on language use has identified how discrimination and power asymmetries are created and maintained through linguistic means (Fairclough, 2015; Grue, 2015). Conversely, research has also identified attempts at non-discrimination, equality, and equity through language, notably with feminist and anti-sexist linguistic practices at the fore (Abbou, 2023; Wojahn, 2015). For instance, under headings such as *inclusive language*, *écriture inclusive* ('inclusive writing'), and *gender-fair language*, studies have identified such practices as:

- **the use of gender-neutral nouns and pronouns ("anyone", "everyone", "someone", "they", "them", "a"/ "that person", "one", etc.) instead of the generic use of "he", "him", or "Man" ,or instead of gendering words like "she", "he", "woman", "man" (Koutchadé & Adanvoessi, 2016; Vinu, 2019);**
- **the combination of grammatically feminine and masculine forms into one word, e.g., French "la. lechercheur.e" (from "la chercheure" ('the researcher', female) and "le chercheur" ('the researcher', male)) (Burnett & Pozniak, 2021; Elmiger, 2021);**

- **alphabetic ordering of words instead of male-first ordering, e.g., Spanish job titles as "Jefa/Jefe" ('boss', -a denoting female, -e denoting male) rather than "Jefe/Jefa" (Medel, 2022);**
- **"you" instead of gendered language (Lind Palicki & Svensson, 2023; Philippopoulos, 2023);**
- **singular "they" in English and the neologistic pronoun "hen" in Swedish, both functioning as e.g., an indefinite pronoun when a specific person's gender is unknown, and as a universal gender-neutral pronoun (Saguy & Williams, 2021; Vergoossen et al., 2020).**

This brief and far from conclusive list shows that strategies used involve both, on the one hand, making gender explicit and rendering the feminine on a par with the masculine, and on the other hand, not using gendered words and expressions at all. Indeed, recommendations highlight the importance of determining whether gendering is relevant in any given setting (Milles, 2012). All of these linguistic practices involve interventions into norms and power structures.

Other language issues in relation to non-discrimination and equity concern which terms to use to refer to groups of people and whether these can be changed through language planning (Vogel, 2019), and if people-first (e.g., *people with disabilities*) or identity-first (e.g., *disabled people*) language is to be used (Dunn & Andrews, 2015). This research shows conflicting views regarding terminology and challenges involved in attempts to change the terminology.

Taking a broader view, linguistic equity is an aspect of, and perhaps even a prerequisite for, a globally sustainable society. For instance,

writing from a multilingualism perspective, Fettes (2023) critiques the UN's Sustainable Development Goals (United Nations, 2015) and their 'language blindness' (Fettes, 2023, p. 22). Fettes writes that "The implication is that the choice of language for various social domains really doesn't matter very much; development is development in whatever language it takes place. But this stance is clearly aligned with an outdated development paradigm – one deeply implicated in creating and perpetuating the problems that the SDGs are intended to solve." (Fettes, 2023, p. 22). Instead, Fettes argues in favour of a much more radical language agenda, focusing on "language solutions for a sustainable world". This is precisely what the present article hopes to contribute to, by investigating Nonclusion in text and image.

Material and Method

The material that we analyse in this paper is the video clip *Universellut formning – så fungerar det* ('Universal Design – This is How It Works'), published by the Swedish Agency for Participation on YouTube in 2018. It is 3 minutes and 44 seconds long. The Agency's description of the video clip on YouTube is as follows (our translation): "The video clip describes what Universal Design is, using animation. It gives different examples from everyday life where Universal Design can be applied."

The video clip begins by examples of people going about their everyday life, starting with three examples of things that do not work well. Next, UD is introduced and explained. The video clip ends by returning to the problematic events at the beginning of the film, now showing how well they work when UD is applied.

We have chosen this video clip because it is not only *about* UD but also an example *of* UD, that is, of how UD is applied in communication. This article analyses how that is achieved.

Methodologically, we have started from the Nonclusion components identified by Hedvall et al. (2022), and we have attempted to identify them in the video clip, by taking note of what both the text (in the form of identical voice-overs and subtitles) and the images (a simple animation) do. Through this process we have identified those Nonclusion components which are of relevance to communication through text and image, and left out those which are more specifically relevant to the designed and built environment (see Hedvall and Ericsson in this volume).

We have translated all texts into English from Swedish.

Developing Situation as a Component of Nonclusion

Models of the relationship between people and their environments and situational contexts have shown how people's actions are the outcome of intricate interdependences between people and their surroundings (Hedvall, 2009; Imrie, 2015; Lid, 2013). Such lines of thought are behind Situation, which is described in this section and proposed as an additional Nonclusion component.

Leason's (2024) work on the concept of 'extreme users' in inclusive and user-centred design in Oral Health is also of importance to Situation. Leason states that "the value in diverging from individual trait-based categorisation and instead identifying individuals or groups based on specific situations, patterns of use, or behaviours was recognised as constructive" (Leason, 2024, p. 51). That is, in

certain settings it may be better to focus on situational factors rather than people and their characteristics.

The video clip *Universellut formning – så fungerar det* ('Universal Design – This is How It Works') starts with three examples of things that do not work well. The first is shown here as Example 1.

Text (voice-over and subtitles)		Images
1	Imagine that you're on your way to work.	Togetherwithline 1: 
2	You have an important meeting where you're going to give a presentation.	
3	You're a little tense and nervous.	
4	The meeting starts at nine o'clock.	Togetherwithline 5: 
5	But when you're going to buy a bus ticket there's a problem.	
6	Because the text is small and the instructions are unclear.	
7	It's hard to understand what you're supposed to do.	

Example 1. Bus ticket.

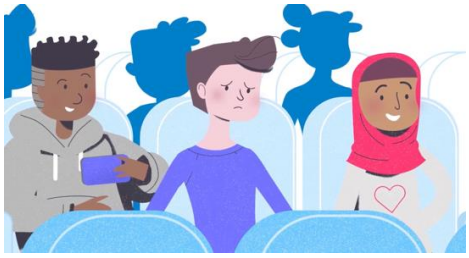
In Example 1, the images show a frowning person looking at their watch, moving straight ahead (to the right in the video clip) and stopping by a ticket machine. The text starts by setting the scene: what the person, i.e., *you*, are doing (*on your way to work*, *to give a presentation* at *an important meeting*), and how you are feeling (*a little tense and nervous*). Then, line 5 states that *when you're going to buy a bus ticket there's a problem*. Lines 6 and 7 continue by

explaining the problem: *the text is small and the instructions are unclear* and *It's hard to understand what you're supposed to do*.

The difficulty of buying a bus ticket is here placed not in the individual but in the environment: the problem is caused by the text being (too) small and the instructions being unclear. The problem is presumably also exacerbated by the stressfulness outlined initially. This way of portraying what is going on is an example of what we propose as the Situation component of Nonclusion. Rather than locating an issue within the individual, Situation encourages focus to be placed on constraints given by the built and designed environment and various contextual factors.

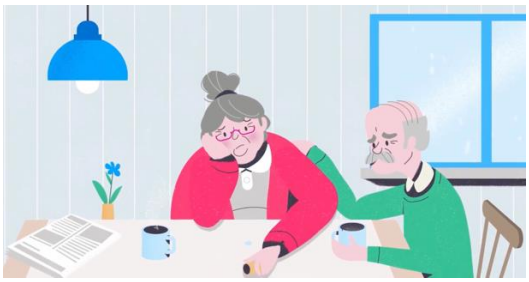
A constructed alternative to line 6 may further help explain *Situation*: a formulation such as Because *you have poor eyesight and cognitive difficulties with understanding instructions* is not an example of Situation and Nonclusion, as it ignores situational factors and locates shortcomings of the environment within the individual.

In Example 2, Lines 1–3 set the scene, thereby giving contextual factors such as where you are (*in school*, *in the assembly hall)*, what day it is *(the first day of term*), how you're feeling *(excited*), and the activity that's taking place (*the headmaster welcomes everyone* and *gives information*). The problem being illustrated is given in lines 4–5 as *but no microphone is being used*. *So, you can't hear what is being said*. Again, this is an example of Situation by locating the issue in the environment, that is, the fact that no microphone is used. By way of contrast, a variant of line 4 that does not use Situation, and is thereby not nonclusive, could be formulated as *but you're hard of hearing*.

Text (voice-over and subtitles)		Images
1	Imagine that you're in school and it's the first day of term.	Together with line 1: 
2	You're excited and look forward to the new term.	
3	The headmaster welcomes everyone in the assembly hall and gives information about the new year.	Together with line 4: 
4	But no microphone is being used.	
5	So, you can't hear what is being said.	

Example 2. Welcome.

In Example 3, line 1 gives contextual information regarding what has happened (*your medicine has run out*) and what needs to be done (*you need to see your GP to get a new prescription*). The problem being illustrated here is given by line 2 as *It's slippery outside and your GP is a few kilometers away*. This is an example of Situation as it places the issue in the environment, here in the form of weather conditions and the distant location of the GP. A contrastive formulation, which does not rely on Nonclusion, could be the following alternative to line 2: *You have trouble walking*.

Text (voice-over and subtitles)		Images
1	Or, imagine that your medicine has run out and you need to see your GP to get a new prescription.	Together with line 2: 
2	It's slippery outside and your GP is a few kilometers away.	

3	You simply don't know what to do.	

Example 3. Medicine.

Summing up, the Situation component of Nonclusion encourages focus to be placed on contextual factors rather than individuals and their properties. By focusing on contextual factors, it becomes evident how the environment constrains or enables people's actions and participation.

Non-Categorisation as a Component of Nonclusion

Categorisation[1], such as dividing people into different groups ("women" and "men", or "normal" and "abnormal"), is an active process (Hornscheidt, 2009), made by someone to someone in a particular setting. Categorisation is carried out by semiotic means (Kress, 2010), such as through language, design, or architecture. It has the effect of " stabiliz[ing] the social world in particular ways" and as such "has far-reaching consequences" by providing "the legitimation of present and future actions, processes, judgements and valuations" (Kress, 2010, p. 122). Consequently, recommendations regarding equity through language highlight the importance of only using categorisation when relevant (Lind Palicki & Svensson, 2023; Milles, 2012). The Nonclusion component Non-Categorisation concerns one specific aspect of this (without proposing that categorisation be avoided altogether).

In the video clip *Universellut formning – så fungerar det* ('Universal Design – This is How It Works'), one way in which non-categorisation

[1]Some authors use the term classification. Categorisation and classification are treated as synonymous in this article.

is achieved is through the use of the pronoun *you*. This is seen in the text in Examples 1–3 above, as highlighted in Example 4.

a) *Imagine that you're on your way to work*, etc. (from Example 1)
b) *Imagine that you're in school and it's the first day of term*, etc. (from Example 2)
c) *Or, imagine that your medicine has run out and you need to see your GP to get a new prescription*, etc. (from Example 3)

Example 4. You.

This use of *you* is an example of Non-Categorisation. It is the same strategy as the use of *you* in avoiding gendered language (Lind Palicki & Svensson, 2023; Philippopoulos, 2023). It can be contrasted with various ways of categorising: a) *a woman/a black-haired woman with glasses is on her way to work*, b) *a teenager/a male pupil is in school*, c) *a woman's/an elderly woman's medicine*, etc. Note, however, that the images in the video clip categorise in a way that the text does not: we can infer categorisations of the people in the images in Examples 1–3 according to gender, age, etc. This illustrates how categorisation is unavoidable in images such as these, in a way that it is not in text. Perhaps the combination of the text and image in the video clip can be interpreted as categorisation being seen as both relevant and not relevant, or that the overall intention is to show human variation (see further the Variation component of Nonclusion below).

Another illustration of Non-Categorisation in the video clip is given by the bus ticket example. As can be seen in Example 1, the troublesome situation of buying a bus ticket in lines 1–7 is accompanied by images showing the upper body of *you*. This upper body view enables facial expressions and arm movements, illustrating the events in lines 1–7. Following this, the screen view zooms out to show the whole person,

while the voice-over and subtitles state that after many attempts you finally get your ticket. Next, the events in Example 5 occur.

Text (voice-over and subtitles)		Images
1	But then you still can't get on the bus.	

Example 5. The bus.

The fact that *you* use a wheelchair is relevant in relation to *you* not getting on the bus in Example 5, but irrelevant in relation to the same person buying a bus ticket in Example 1. The video clip conveys this by zooming in (Example 1) and out (Example 5).

Summing up, the Non-Categorisation component of Nonclusion encourages a critical approach to categorisations of people, questioning unnecessary, routine, or harmful categorisations.

Variation as a Component of Nonclusion

In contrast with the idea of people being categorisable as either belonging to a norm or deviating from it, which is a social construction (Davis, 2017), Rose (2015) reveals how the average human body does not exist. Similarly, critical approaches to norms such as compulsory able-bodiedness and heteronormativity (L.Hornscheidt, 2015; McRuer, 2017) have shown how seemingly natural ideas of people as either "normal" or "abnormal" are in fact constructed and function as ways of maintaining power asymmetries between people. The

Variation component of Nonclusion is about this, and resists norm/deviation ways of thinking by instead recognising and valuing human variation.

Following upon the three cases in the video clip of things that do not work well, the video continues as depicted in Example 6.

Text (voice-over and subtitles)		Images
1	We're all different, with different needs, conditions and abilities.	
2	Society must therefore be designed so that everyone can be included[2] and be enabled to participate.	
3	Universal Design is about taking people's different needs and conditions into account.	

Example 6. Universal Design.

[2] ***See Hedvall and Ericsson (in this volume) for a critique of 'inclusion'.***

In Example 6, human variation is conveyed in line 1 through *We're all different, with different needs, conditions and abilities*. Human variation is also conveyed visually (see all three images in Example 6), through people of different ages, hair colour, skin colour, carrying suitcases, walking prams, using a cane or a walker or a guide dog, etc. Rather than conveying that some people conform to a norm, for which the environment is built and designed, while other people do not, the images instead convey that all people vary in relation to each other. This human variation is met by certain variation in the environment as depicted in the images: a level ground, a ramp, and a set of steps.

Summing up, the Variation component of Nonclusion encourages the recognition of human variation, and the necessity of meeting human variation by variation in the designed and built environment, and highlights the importance of conveying this variation through text and image. Variation involves both temporary and more permanent variation, in both people and the environment, and opens up for new ways of being in the world and interacting with each other.

Conclusion

Nonclusion highlights human variation and resists unnecessary categorisations of bodies and roles, thereby creating new possibilities for how people relate to each other and to the environment. Using a video clip about Universal Design this article has identified three ways in which Nonclusion can be conveyed through text and image. These are Situation, Non-Categorisation, and Variation, of which Situation is proposed as a new Nonclusion component in this article, adding to our previous work (Hedvall et al., 2022). The three components can be briefly explained as follows:

- **Situation encourages focus to be placed on contextual factors rather than individuals and their properties.**
- **Non-Categorisation encourages a critical approach to categorisations of people, questioning unnecessary, routine, or harmful categorisations.**
- **Variation encourages the recognition of human variation, and the necessity of meeting human variation by variation in the designed and built environment, and highlights the importance of conveying this variation through text and image.**

All three components are of importance to anyone communicating about people in relation to the built and designed environment. Specifically, policy development in areas such as Social Sustainability, Disability Rights, Gender Equality, and Age-Friendly Cities and Communities will benefit from incorporating these nonclusive components.

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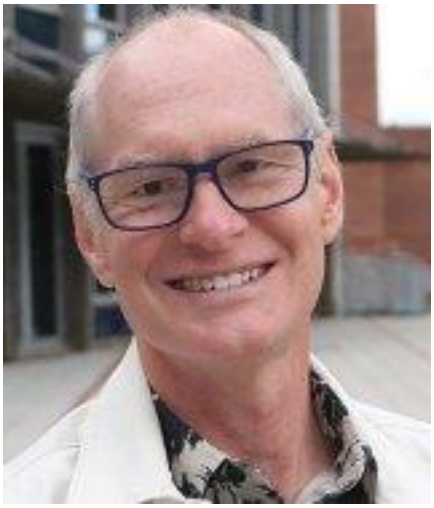
Material

The video clip *Universellut formning – så fungerar det* (‘Universal Design – This is How It Works’) published by the Swedish Agency for Participation, <Accessed on April 3, 2024>.

Emil Erdtman



PhD in Rehabilitation Engineering and Design, Affiliated with Lund University.Emil Erdtman does research on the growth of Universal Design in Sweden. His particular interest is how co-creation and collaboration takes place in policy and design processes. He defended his doctoral thesis at the Department of Design Sciences at Lund University in March 2024. The dissertation explores with qualitative methods the understanding and practice of UD in three urban development projects with participation from disability organisations. Erdtman has earlier worked in many areas within the Swedish disability movement. After the doctoral exam, he got involved in a research project about conditions for migrants with disabilities in the Swedish labour market. He combines this with doing a historical survey about assistive technology. Erdtman has worked with human rights and journalism in Latin America. He has an art studio in Stockholm and is a leader in blind fencing.

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Co-creating urban development – local Swedish projects guided by Universal design

Emil Erdtman

Abstract

This chapter summarizes my doctoral thesis about Universal Design (UD) in Sweden, contributing knowledge about the understanding, implementation, and co-creation of UD. The implementation of the UN Convention on the Rights of Persons with Disabilities in Sweden made UD a guiding principle, necessitating research about the practical side of UD. Using qualitative research methods, interviews and group discussions were conducted and participant observation was made in three urban development projects.

The understanding of UD was multifaceted: an ethical principle for inclusion of diversity, a vision of an inclusive society, and a unifying of policy perspectives. Participants emphasized flexibility, predictability, and personalized support. UD was linked to accessibility and thus became part of a rationalistic planning model with accessibility as a separate and target group-oriented interest with a focus on regulatory compliance. I conceptualized accessibility as place: planning and control in the present - and UD as space: future possibilities for innovation.

When contextualized locally, UD practice will exhibit diverse expressions. Collaboration between municipalities and local disability organizations was formal and established. Different conditions and expectations created tensions about roles and interpretation of

disability experience: as information to facilitate processes or part of negotiations to influence outcomes. However, there were conditions for co-creation.

Keywords: ***Universal Design, Accessibility, Urban development, Participation, Co-creation***

Introduction

This chapter aims to yield an extended summary of my doctoral thesis from 2024. Its English name is "Universal design in practice – understanding, implementation and co-creation" (Erdtman, 2024). It is a compilation of four articles in scientific journals (two published and two under review) and contributes to knowledge about user-oriented everyday perspectives on the realisation of Universal Design (UD) in Swedish urban development. The thesis contributes to the research discipline of Rehabilitation engineering and design, as it is performed at Certec, the Department of Design Sciences at Lund University. It connects to the wide research about UD in many disciplines, such as design, architecture, law, pedagogy, geography, ethics, and information and communication technology.

My background depiction of UD traced this value-based design for all people and situations to the 1980s when disability activists and architects in the USA criticised the accessibility discourse for focusing too much on regulations and group separation (Steinfeld & Maisel, 2012). Others trace UD to the normalisation movement in the Nordic countries (D'Souza, 2004). With the adoption of UD in the Convention on the Rights of Persons with Disabilities (CRPD) (United Nations, 2006) the concept has evolved into policy. UD is defined in Article 2 and Article 4 urges ratifying states to apply UD in research and development, besides standards and guidelines. Authorities – like

municipalities – shall actively involve persons with disabilities, through their representative organisations, in decisions concerning issues related to their lives (Article 4:3).

According to decisions from the Swedish Parliament and Government, UD shall be applied as a guiding principle for the disability policy. It is also found in policies for standardisation, procurement, and designed living environments (Erdtman, Rassnus-Gröhn , & Hedvall, 2021). UD is more and more applied in local projects but little is known about the local practice. That was a rationale for my research, as were questions about the involvement of disability experience through collaboration with local disability organisations. I regard participation and collaboration as neutral while co-creation denotes the quality of creative and innovative collaboration by a diverse participation. The research questions were:

- **How is UD understood, especially in relation to accessibility?**
- **How are urban development projects , guided by UD, implemented?**
- **What conditions for co-creation are there in the collaboration between municipalities and local disability organisations?**

Method

The articles of the thesis are based on qualitative methods, inspired by ethnography. In total, 55 persons with different social backgrounds and approaches to UD participated in interviews and group discussions. Some interviews were done as go-alongs in city centres and some group discussions as creative workshops designed together with local collaborators. Approximately 100 additional people were involved in participant observation at regular meetings and change-oriented collaborations. Participant – digital

and direct – observation was made at disability councils, and internal municipal meetings regarding procurement requirements, purchasing, and planning. Fieldwork was done in three Swedish municipalities where three urban development projects were studied, not as compared cases but as different sites of one common setting (Hammersley & Atkinson, 2007).

The studied projects were guided by UD through procurement requirements, collaboration municipality-university, or committed officials. The projects concerned the re-design of a square, a street, and a new library adjacent to a suburban square under re-design. The policy goal of all projects was revitalization of the city life. The cities were mid-sized in the Swedish context, meaning inhabitants between 50,000 and 200,000. Two of the three municipalities collaborated with umbrellas of local disability organisations. All three had municipal disability councils which are municipally controlled advisory boards stemming from a democracy reform in the 1970s.

I participated in the local processes with co-authors, officials, and local disability organizations, arranging reflective workshops in two municipalities. In the third, two workshop days were arranged within a collaboration municipality-university concerning equality. In the thesis, I reflect upon my participation in the processes, as a lecturer, workshop leader, and counsellor. Researchers always affect the environment they study and I tried to contribute positively to the local development. Another dialogue with the field was three Member check-interviews conducted during the analysis phase to confirm and discuss some upcoming interpretations.

Transcribed recordings were together with field notes from participant observation and public documents analysed with qualitative content analysis (Graneheim & Lundman, 2004). The

analysis yielded themes that provide an overall picture of how participants talk about and perceive UD, and what experiences they have with its realisation.

Results

The thesis explores the aspects of understanding, implementation, and co-creation concerning UD. Conversations and observations yielded a picture of a multifaceted understanding. Erdtman, Rassnus-Gröhn, & Hedvall (2021) examine individual understanding of UD by eight persons who were professionally engaged with UD. For them, UD was an enriching but unclear concept. They described UD as 1) a guiding ethical principle that provides direction, challenge, inspiration, and provocation in design processes, 2) a vision and pursuit of an inclusive society for all, and 3) a unifying of policy perspectives – an alternative to fragmentation and "silos" of separated administrations.

When it comes to practice, the participants emphasised flexibility, predictability, and personalised support as parts of UD. Erdtman, Rassmus-Gröhn, & Hedvall (2022) examine based on two digital group sessions the understanding and experiences of UD projects related to education, working life, and housing. 14 persons from such projects conveyed experiences of UD as adapting environments and services flexibly to individual conditions and situations without separate solutions and categorization into impairment groups. They used UD tactically as one of several, partly interchangeable, terms for the inclusion of human diversity. Influencing and initiating critical discussions were more important than battles about words.

Collaboration for urban design at local level

The two articles under review deal with the implementation of UD in urban development. The everyday experience of UD practice shows diversity. UD inspired new methods but changing municipal practice takes time. A design concept like UD – with aspects of inspiration and provocation – does not immediately dislodge routines of planning, negotiation, and rational management. The focus on regulatory details was far from the overarching vision of UD. Further, UD was associated with a dominant and narrow view of accessibility as a separate and target group-oriented interest with a focus on regulatory compliance of measurable rules. Accessibility was seen as compliance with rules for certain physical objects that affect limited groups. It was a negotiable interest among others, conveying risks of neglecting needs outside this frame.

Collaboration with disability organisations occurred separate from other dialogues e.g., with elderly or youth. UD was only connected to impairment despite intersectional ambitions. Further, different expectations on organisations' capacity, and opportunities for influence, conveyed misunderstandings and sometimes disappointment, resignation, and, mistrust. Tensions existed due to professional/experiential divide in expertise. Different views on participation and its relation to disability experience created tensions about roles and interpretations of user perspectives. Officials regarded users' disability experience as valuable for understanding the principles behind accessibility rules but also as information that facilitates processes. They experienced ambiguity about the legitimacy of participants, as did the employees at disability organisations. They doubted about the conditions for influencing the

process, regarding members as representatives for associations for specific impairments with a position of negotiation.

The analysis yielded two participation styles, develops from two of the rungs at Arnstein's (1969) ladder of participation.

- **Consultation: The municipal organization is demanded to quickly move forward and wants to facilitate the process by getting ready-made proposals confirmed.**
- **Partnership: Employees of disability organizations collaborated with officials as partners in the administration of and recruitment for workshops and wanted to influence how places should be and asked for constant feedback.**

The Consultation model was challenged by forms of Partnership where participants from disability organisations in temporary working groups were called experts. The ambition was a creative process of collaboration between equals but the dominant scheme of formal and established collaboration hindered a development of co-creation. However, despite this inertia and oppositional roles in other endeavours – such as monitoring the CRPD – I found conditions for co-creation. I return to this topic under Discussion.

Discussion

I used pragmatism as a guiding theoretical framework, dissolving dichotomies such as theory-practice, policy-implementation, problem-solving, and goal-means (Simon, 1996). This elicits the mutual development of policy and practice, as opposed to phases of policy and implementation. Without creating a new dichotomy, the concepts of accessibility and UD were clarified in a model drawing on the dynamics of place and space in design literature, e.g., Lefebvre

(2011). Accessibility is place-bound and rule-oriented, indicating planning and control of compliance for existing places. To not lose sight of aspects of creativity, UD then stands for a future-oriented, creative, and visionary space of opportunities for change. My model is based on the participants' understanding and relates to earlier conceptualizations, especially Hedvall, Ståhl, & Iwarsson (2022), who include usability in a way my participants did not.

I recognize the need for clear and sometimes measurable accessibility rules but as applied to all people. Compliance is not the goal but a baseline for usable innovation. UD goes beyond the rules, yielding a higher ambition. As an ethical principle and vision for innovation by co-creation UD is an ideal never reached or completely fulfilled. However, without principles, rules remain minimum obligations. Further, rules must be anchored and applied in local contexts and situations, otherwise the next step in practice will not be taken.

Disability as a resource among other experiences

Pragmatism's view of locally developed situated knowledge elicited the contextualization of UD based on local needs and conditions. Understanding and practice differ from place to place but that also develops the concept's relevance.

UD in practice is a question of collaboration where different human experiences are integrated in creative processes. Besides knowledge about rules and professional skills, disability experience yields specific knowledge. The ambiguity toward personal stories due to issues with legitimacy and representativity increases the risks of ignoring important experiences. Another tendency in the studied processes was to reduce everyday experiences to one-dimensional explanations based on just impairment. That may hide a more general

user perspective where participants are social beings in the revitalization of urban life – the official aim of the projects. Experiences of urban design are not bound to specific impairments and are better reflected by integrating disability with other aspects. Rather than categorising user stories according to impairments, one should see these experiences as different uses, contexts, and aspects of everyday life.

Disability remained a driving force for UD and an important testing tool for new design. However, the unifying aspect of UD challenges conventional intersectionality, where categories are crossed but still retained. Hence, an intersectional collaboration between different groups and perspectives must be developed, and more people and situations included in each process.

Universal design as co-creation

In policy processes, the role of civil society is to criticise and oppose the authorities. However, design processes are creative and require another kind of collaboration, similar to what Lave & Wenger (1991) called communities of practice. I found Consultation and Partnership, and conditions for co-creation. Thus, it is elaborated here partly visionary but related to the literature: Zamenopoulos & Alexiou (2018) regard co-creation as framing and testing ideas and prototypes, separate from co-design. Lindberg & Nahnfeldt (2017) regard co-creation as shared and open processes of collaboration based on common exploration of problems and solutions.

Sanders & Stappers (2008) see co-creation as participatory design related to co-design which is collective creativity for identifying, planning, and realising change. They see the needs to bridge gaps between design and research and between professionals and

stakeholders, certainly in the fuzzy front end of processes. In Hong Kong, Seo (2022) regards co-creation as knowledge exchange between organisations and professions, revealing a more group-oriented thinking than Swedish, sometimes valuing individual opinions as more genuine than those from organisational representatives (Daram & Hellström, 2019).

In a survey by Voorberg , Bekkers, & Tummers (2015), most studies on co-creation and co-production deal with implementation within education and health, less with initiating projects. Research focuses on processes and influential factors more than outcomes, showing that co-creation has a symbolic function as a value in itself. Hence, we do not know if co-creation meets citizens' needs. However, Pateman (1970) saw gaining self-esteem as a sufficient outcome and Sandin (2022) finds knowledge about other actors in the society as valuable.

Figure 1 illustrates Consultation, Partnership, and Co-creation as three forms of collaboration.

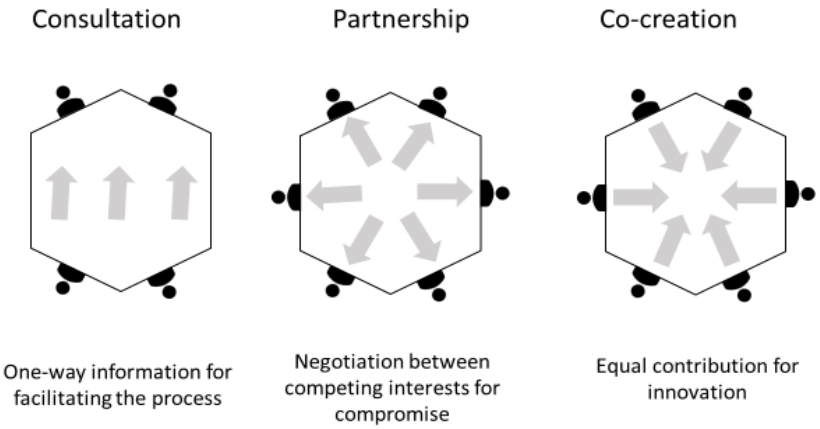

Figure 1: Forms of collaboration

The figure illustrates the following forms of collaboration: Consultation with one-way information for facilitating processes, Partnership with negotiation between competing interests for reaching compromises and Co-creation with equal contribution for innovation.

Co-creative ways of collaborating for accessible and usable urban spaces, suggests integrating experiences from a diversity of people and situations in cross-boundary processes, not in separate tracks. Contrary to negotiation, co-creation necessitates equal participation and responsibilities, not oppositional commenting on ready-made proposals or delivering experiences as information. Everyone contributes with suggestions in an equal way, as co-designers.

Mutual responsibility

Citizen participation is not always possible. Bottom-up influence is constrained by a lack of time, commitment, and resources (Carmona, 2010). However, social cohesion and community building might be promoted by involving citizens in the design of their surrounding urban environment. Bornemark (2016) describes current citizen dialogues are troublesome. Groups are involved as different target groups. The well-established disability organizations offered an advantage, yielding conditions for integrating disability experiences into urban development processes based on situational and co-creative working methods.

Responsibility for collaboration lies with both municipalities and disability organisations. Officials have a formal responsibility to plan according to measurable rules but also to interpret laws in relation to local circumstances. Their moral responsibility encompasses situational judgement concerning visions for opportunities and images of future places coordinated and mediated with users' experiences. Disability organisations may promote social innovation by offering invaluable experiences that challenge traditional perspectives. However, participants must be prepared and develop

basic professional knowledge, the ability to imagine future places, and skills of communication and interpreting images and models.

Co-creation requires a common knowledge core without dissolving roles of leader, user, etc. Collaboration benefits from different roles as well as different desires, and different ways of experiencing and handling the same environment. Even contradiction might be seen as a driving force for inclusive and flexible design. In dialogue, this means not getting stuck in fixed definitions but letting everyone present their understanding. Instructions should not be too detailed and goals tentative, so emerging interests can reveal new possibilities. Workshops may use surprise, disruptiveness, and provocation to promote a break from ingrained patterns and result in innovation. Thus, UD practice should be flexible and iterative with possibilities of improvement along the way.

The disability organisations emphasised urgent accessibility needs but also noticed a lack of long-term learning within the municipal organization. If projects are treated as linear and separate there is a risk of inhibiting the flow of knowledge and of implementing UD in singular symbolic places, like squares.

Conclusion and suggestions for further research

My thesis reveals a breadth of the view of UD, expanding the Swedish official line of a guiding principle for the inclusion of diversity to also encompass a future-oriented vision of a society beyond special solutions and target group thinking, and a unification of policy perspectives. Limiting accessibility to an interest for just people with impairments risks omitting invisible needs outside these categories and restricts the room for manoeuvre and dynamic view of disability experience. Long-term and sustainable knowledge

development and disability experiences should be integrated into knowledge production of current and future processes. Co-creation in some processes requires clarity regarding roles. Officials should be clear about conditions, purposes, resources, and expected roles. Creative design processes require the training of imagination, visualization, and communicating images of future places.

In order not to lose sight of aspects of creativity and co-creation, UD should serve for creative processes, inspiring innovation beyond group interests, regulatory compliance, and human categorization. Otherwise, UD risks become part of a rationalistic and result-oriented planning model. UD, as a collaborative process, transcends conventional categorizations, fostering continuous improvement. Anchored in local contexts, it enriches urban development by integrating diverse user experiences. Beyond mere compliance, UD points to a forward-looking space of possibilities, by navigating through dilemmas and resistance toward sustainable, inclusive, and co-creative processes.

The result demonstrates the importance of reflection regarding the limiting consequences of human categorizations and the need for local adaptation, accepting differences in interpretations, resources, and conditions for practice. UD must continuously be contextualised, understood, and developed differently depending on the locality. The multifaceted understanding of UD can be enriching but also confusing and risks hiding the radical claim of inclusion for all people and situations.

There is a need for further research about categorization and diversity, e.g., how junctions of policies are handled at the local level, e.g., in procurement processes, and how intersectional work can develop without losing important specialist knowledge. Regarding the

future, different ways of living in cities and other forms of organising civil society should be addressed, including the potential for social innovation from this sector. Research about ongoing UD processes and how they can be supported contributes to and bridges research fields of urban design, architecture, and policy studies. Disability studies can benefit from the positive aspects of benefitting differences and how disability experiences are integrated into creative processes.

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I'm a PhD student, passionate about making healthcare more inclusive. My journey blends my academic approach with real-world design challenges, collaborating with Lund University, Mid Sweden University, and Sundsvall's Hospital on a project. Together, we're working closely with women dealing with pelvic floor injuries, co-creating solutions that prioritize their needs and autonomy.

My professional journey is diverse, ranging from being a senior lecturer on an artistical basis at Mid Sweden University to running my own company. My focus is on using design to drive positive change.

In essence, my work is about studying the grey area between design and healthcare, considering inclusion every step of the way. I'm committed to empowering those who need it most through collaboration, creativity, and a down-to-earth approach.

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Åsa Wikberg Nilsson is a Chaired Professor in Design at Luleå University of Technology and a devoted advocate for using design as a transformative tool in both research and education. With robust academic and practice background in design, I use design to address complex social and environmental challenges in various contexts and areas.

My research focus spans all design areas of visual communication, physical products, interactions and services to places and systems, simply because of the need to integrate all these design orders in the exploratory design process. I have a strong belief in the power of design, the crucial need to work on inclusion, and design-for-change to achieve a sustainable social transformation.

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Universal Design and Equitable Healthcare for Women – an overview of current literature and prospects

Semra Sahin Haglund and Åsa Wikberg Nilsson

Abstract

This paper presents an overview of the literature on universal design for equitable healthcare. The central inquiry in the current paper is a critical design-for-all challenge: how might universal design contribute to providing equitable healthcare for women suffering from pelvic floor injuries during birth? This study delves into some of the explicit and implicit needs of this deprioritized minority patient group and what the literature states in terms of how design might contribute to fostering patient engagement in their healthcare journey from pregnancy to after-birth care. The findings from the literature overview offer an understanding of the domain, elucidating some core concepts, and delineating existing and divergent scholarly perspectives. By exploring the intersection of universal design and healthcare, this paper contributes to the advancement of the design of equitable healthcare solutions for women.

Keywords: ***Equity, universal design, co-design, design in healthcare, prototyping, literature overview***

Introduction

This paper outlines an overview of current literature as part of an ongoing PhD project with a focus on applying universal design principles in relation to equitable healthcare with a particular focus on women suffering from pelvic floor (PF) injuries after giving birth in Sweden. 'Equitable' is a concept used in this paper to cover both equal and impartial healthcare.

Generally, in healthcare there is a great deal of focus on the woman during pregnancy, but afterwards, the focus is mainly on the newborn child and there is less general knowledge about PF injuries that some women suffer from. If you on top of that come from another country and don't know the Swedish language, or from a culture with taboos about talking about these issues, the situation quickly gets complicated. The establishment of equitable healthcare can for this reason be seen as a societal challenge in which universal design could be one approach to find new ways forward.

The government of Sweden describes the objectives of health and medical care as being equitable, gender-equal and accessible (Swedish Government Office, 2014). However, more and more signals point toward unequal distributions of newly acquired wealth, with specific population groups being left behind. These disadvantaged groups present negative health outcomes at a stagnant high level, far more (23 percent) level 3 and 4 PF injuries depending on which country the women are born in (*Öppna Jämförelser Jämlik vård*, 2016). Social Determinants of Health (SDOH) is a concept that excludes medical care and defines the circumstances surrounding individuals from birth to aging, encompassing their upbringing, employment, environment, and broader societal influences shaping

their everyday life (Johnson & Wendland, 2022; Umstead et al., 2023). Thus, it has become clear that general economic development is not enough to improve health for all, but that policymakers and healthcare planners also need to consider the health of disadvantaged groups to ensure equitable healthcare. A driving force in the current PhD project is to let disadvantaged groups be part of the development process to increase equity and quality of care in its context.

The overall objective of this paper is to explore studies in design research used in healthcare primarily in maternal healthcare and PF injuries caused during birth. The review involves an exploration of relevant literature from various sources to provide a broad overview. The aim is to provide an overview of current literature about universal design and healthcare and provide some outlooks for future research possibilities about equitable healthcare for women's experiences of pelvic floor care. In this paper, we strive to answer the overall research question of what characterizes design practices in healthcare, with a special focus on equitable healthcare and concerning the lived experiences of women after giving birth.

Method

The core methodology of this paper is an overview of the literature, adhering to the approach established by Milton and Rogers (2013). This began with articulating the central research inquiry: in what ways can universal design contribute to equitable healthcare for women with birth injuries? The search for relevant literature spanned several databases, including Scopus, PubMed, Cinahl, and Web of Science, ensuring a wide-ranging collection of pertinent research. In addition to database searchers, an exploration of foundational texts in design, universal design and co-design concerning healthcare,

equality and inclusion was conducted to enrich the context of the field's principles and applications. This dual-faceted approach allowed for the inclusion of seminal work in design literature but also the incorporation of emerging trends and methodologies.

The analysis phase was implemented to dissect and synthesize the collected literature, identifying commonalities and disparities among studies, pivotal debates, trends, and methodological applications that have influenced the trajectory of design within healthcare. The gathered articles were categorized into six thematic areas: equity in healthcare, qualitative studies involving patients with PF injuries, co-design principles, universal design frameworks, service design, and other design frameworks, principles or methodologies that were considered relevant for this particular context. This categorization gave an understanding of the landscape of design-oriented healthcare research.

Further enriching the literature overview were some early interviews with patients with PF injuries. These interviews were semi-structured, allowing for a discussion in relation to the interview guide themes, aligning to the approach as presented by Clark et al. (2021). Some of the questions were about women's experiences of their PF injury and daily life struggles, their care journey before, during, and after injury, and their fears, wishes and dreams.

This additional layer of data collection was important in establishing an overview of the field, ensuring the historical underpinnings and contemporary shifts in design philosophy analyzed in relation to equitable healthcare practices.

Findings

This section outlines some of the current knowledge of what it means to be living with PF injuries, and what universal design and equitable healthcare means.

Pelvic floor injuries, universal design, equitable healthcare

Giving birth is a profound life event that often brings both physical and emotional changes. While the arrival of a new child is often celebrated, the impact of childbirth on a woman's body is traditionally less discussed but is a critically important issue. There are several specific types of injuries related to childbirth. The focus in this paper, however, is on PF disorders that tear the PF muscles and tissues, specifically grade three and four.

To provide some examples, the symptoms followed by PF injury can be urine, gas and spoil leakage problems. While some studies show that those problems may lead to long-term psychological problems and low quality of life (Espuña Pons & Puig Clota, 2008; Priddis et al., 2014) other studies state "varied results" depending on the individual (Elmir et al., 2010; Huber et al., 2022) and other studies claim little or no change in quality of life (Palm et al., 2013). The Swedish Government, for example, reports PF care as an area that needs to be prioritized and developed (Swedish Government Office, 2019), further considering the effects it causes on a woman's life such as social isolation and work and family-related problems. WHO defines health equity as health differences that are unnecessary and unavoidable (Whitehead, 1992). For this reason, a relevant question for further research is how universal design principles might help identify characteristics and patients' needs of PF care from patients' perspective.

Equitable healthcare

Using universal design to reduce inequities in health can be approached in many ways. One approach may be to strive for universal coverage of healthcare enhancements especially focusing on the most vulnerable groups. Secondly, targeted interventions can be applied directly to a marginalized population. Universal coverage of healthcare is a prerequisite for an equitable health system. Nevertheless, policies need to be modeled to proactively promote health for the disadvantaged with a clear understanding of the mechanisms causing inequity to override the structural drivers of inequity and ensure equal opportunity. Thus, universal implementations like free healthcare for all and the uniform geographical distribution of health facilities may need to be supported by targeted improvements. Such improvements should focus on special needs to overcome obstacles in delivering equitable care. Besides affirmative action, need-based support assessments are essential in these efforts.

Health literacy is a concept of an individual's understanding, drive, and abilities to obtain, appraise, evaluate, and utilize health-related information for making health decisions for their wellbeing (Meldgaard et al., 2022). How can a patient's PF health literacy be a vital factor motivating them to seek help? There is also the concept of organizational health literacy which is defined as how organizations provide health information and resources in line with individuals' health literacy capabilities (Meldgaard et al., 2022). This can be exemplified by how transparent and individually adapted the PF care information provided the women's clinic in Sundsvall is. Patients' and organizational health literacy are important measures in providing an equitable healthcare practice. Another related concept is 'Shared

decision making' where caregivers and patients decide together on the treatment options while aligning with the patient's goals, preferences, and values (Waddell et al., 2023). This concept differs from an informed consent concept where the flow of information is provided from clinician to patient making patients passive recipient of the care. This can be related to Arnstein (1969), who describes citizen participation on a ladder that ranges from manipulation to full citizen control of the process and its results. In the current research study, the participants are involved as active participants in the creation of possible design suggestions using the co-design method for the PF care within the women's clinic in Sundsvall's Hospital.

Equitable design

There has been a development of several different, targeted human-centric approaches. Universal design, for example, can be seen as a strategic approach aimed at making environments, products, and services accessible to all people regardless of age, disability, or other factors (Mace, 1998), and as such holds significant implications for improving women's healthcare. By incorporating universal design principles, healthcare providers, women and designers can collaborate so that medical facilities, products, and healthcare services are inclusive, addressing the diverse needs of women throughout pregnancy, birth and afterbirth. The importance of universal design, human dignity, and human rights in the case of healthcare and the current PhD project can, for example, contribute to ensuring that women have equal access to medical care, enhance communication in healthcare settings, and accommodate women with products or healthcare applications that are accessible regardless of language skills, body sizes, abilities, technical or medical proficiency or cognitive ability. The application of universal design in women's

healthcare not only has the possibility of enhancing accessibility but also promotes dignity, autonomy, and privacy, fundamental aspects of patient-centered care. Studies done by the World Health Organization highlight the necessity of accessible healthcare environments to reduce inequalities and improve health outcomes for women globally (World Health Organization & United Nations Population Fund, 2007).

Gold standard care

There are also other approaches that do not originate in the field of design, such as *Gold Standard care.* Personalized care, team-oriented treatment and evidence-based diagnostics are highlighted as essential pillars for improved care after perineal tears (SBU, 2021). Research supporting multi-disciplinary collaborative specialist clinics that provide both physiological and psychological care in a perineal clinic setting suggests providing a smooth patient journey (Priddis et al., 2014). A pressing question here is how gold standard care can be described from a universal design perspective. Including a minority group of patient's experiences of care and their latent needs using co-design and including them in the development process of care may lead to the development of *Gold standard care* description for PF injuries.

Design Research Approaches

The design research approach in the current project draws inspiration mainly from universal design, co-design and health service design. Design research processes often span several years to allow for multiple iterations. They typically start with a design ethnography phase, followed by an ideation phase involving workshops for brainstorming and sketching. This is followed by developing

prototypes, which are evaluated in user test activities. This spiral runs several times to allow for continued learning as well as the maturing of the prototypes.

In tackling complex design challenges, a design can adopt a versatile and context-sensitive approach, one that allows for the application of diverse methodologies to fully understand and address intricate issues – what Rittel and Webber (1973) would term "wicked problems". Experiences of symptoms such as leakage just after giving birth, pelvic floor injury health literacy to access need for professional help, and becoming a parent are some of the aspects of this complex, wicked problem. These are issues so multifaceted that they demand an exploration through various methodological lenses to unravel their complexity. While observations in the healthcare context, semi-structured interviews and several, iterative co-design workshops primarily with patients and healthcare staff are some of the planned activities, the project is open to changing its methods considering the human factor within the ethical framework. One does not rely solely on a universal design framework, instead, the approach is eclectic, borrowing and adapting techniques that suit the unique context of the problem at hand. Pragmatism recognizes the presence of consistent structural patterns influenced by the unpredictable nature of human behavior (Feilzer, 2010). Women's narratives may show something new during the study that may need to be looked at through a new theory or a method. This author states that this abductive approach through its creative nature, leaves space for surprising events.

Nelson and Stolterman's (2014) discourse on *The Design Way* highlights this necessity, emphasizing the development of design competence as a distinct mindset – a way of thinking that is both analytical and empathetic, ideal for navigating complex scenarios.

Universal design principles are instrumental not only in the backdrop of such a mindset but also in the methodology itself, ensuring inclusivity and accessibility at every step of the design process. Explaining universal design principles within this context means recognizing their role in guiding decisions that extend beyond physical accessibility, encompassing a broader spectrum of user experiences and interactions. This holistic approach ensures as many potential users as possible are considered in the creation of a solution, some are also seen as partners in the design process, thereby contributing to a more equitable and comprehensive understanding of the design space.

At its core*, universal design* is a concept that aims to create products, environments, services, and systems that are accessible to all individuals, regardless of their abilities, without the need for adaption or specialized design (Hedvall et al., 2022). In this view, universal design principles are meant to emphasize flexibility, simplicity, and intuitive use. *Inclusive design,* similar to universal design, is another approach that aims to go beyond the principles of universal design to address the specific needs and preferences of marginalized or underrepresented groups, including people with disabilities, people from diverse cultural backgrounds, and those with low literacy or language skills (Clarkson & Coleman, 2015). Inclusive design involves engaging with and gathering input from these communities throughout the design process to create suggestions that are based on their needs and preferences.

***Co-design* is an approach that involves the active participation of users, relevant actors, and designers in the design process. Co-design aims to create products, services, and environments that are tailored to the needs and preferences of end-users, and that address their**

specific challenges and needs (Sanders & Stappers, 2008). According to Sanders and Stappers, co-design involves three key principles: empathize, engage, and empower. *Empathize* involves developing an understanding of the users' needs, goals and motivations through observations, interviews, and other qualitative research methods. *Engage* means involving users and other relevant actors in the design process through workshops or other sessions and participatory activities. *Empower* involves giving users ownership in and through the design process and ensuring that their input and feedback are valued and acted upon (Sanders & Stappers, 2008).

Co-design can have several benefits for designers, design researchers and users. For designers, co-design can lead to greater creativity, innovation, and problem-understanding, as well as increased empathy and understanding of users' needs and preferences. For design researchers, the process involves a deeper understanding of users' needs, preferences, experiences, fears and anxieties, visions and dreams. For users, co-design can lead to greater satisfaction, user experiences, and effectiveness of products and services, as well as greater empowerment and a sense of ownership of the design process and its outcomes.

Also, service healthcare design is a people-centered design approach that focuses on the design of services that meet the needs and expectations of patients, care providers and other relevant actors (Patrício et al., 2019). By using health service design methods, healthcare providers can gain a better understanding of patient's needs and preferences and develop services that are more responsive to these needs. Moreover, Vink and others (2021) emphasize the importance of how simple service design suggestions that neglect to encompass the entire system often fail and remain unused despite

proving beneficial for patients. PF care is a complex care and it is important to understand the underlying structures such as health guidelines, recommendations from health agencies and the practice of care. This can lead to improved patient satisfaction, greater patient engagement, and ultimately, better health and more inclusive outcomes.

Discussion

In this exploration of universal design for equitable PF care the aim has been to shed some light on the need for inclusive healthcare solutions that cater to women's journey of PF care. This paper, through its literature overview, illuminates some of the complexities of delivering equitable healthcare and the role that design – particularly universal design and co-design – can play in this endeavor. It reveals how traditional healthcare models often marginalize women with PF injuries, attributing to the stigmatization and under-prioritization of their care. Through universal design principles, in this study we propose a shift towards more inclusive healthcare approaches and environments that acknowledge and address the diversity of patient needs. Those deprioritized, minority group patients that have special needs from healthcare may as well be an inspiration in the development of care which may lead to solutions that are better for the majority.

By focusing on equity, the research aligns with global health directives that advocate for healthcare systems that eliminate unnecessary and avoidable health disparities. It leverages design as a strategic tool to foster patient engagement, ensuring that healthcare services are not only accessible but also resonate with the lived experience of women dealing with PF injuries. The study's

emphasis on co-design and patient involvement marks a departure from conventional healthcare paradigms, positioning patients not just as beneficiaries but as active participants in the design of their care.

The study is, however, limited to being a first literature overview and needs to be expanded to also be able to showcase good examples and practices of co-design methodologies in this context and hopefully also some universal design principles in this respect. The ethics surrounding this study are intertwined with its core objectives of promoting equitable healthcare and ensuring that design processes are inclusive, respectful, and sensitive to the needs of all women, particularly those with PF injuries. Ethical considerations in this research are manifold, reflecting the complexity of engaging vulnerable populations in healthcare design and research.

Future studies need to ensure informed consent, deal with language barriers, and cultural and other challenges in addressing stigmatizing issues. The ethical responsibility is therefore to ensure the participants' dignity and privacy throughout the research process, and that their experiences are represented with accuracy and sensitivity.

The transdisciplinary nature of the overall PhD study, bridging design and healthcare, introduces ethical considerations related to professional practices and collaboration. It necessitates mutual respect and understanding among disciplines, acknowledging the value of diverse perspectives while navigating the ethical implications of integrating design into healthcare solutions. The design approach might also challenge traditional power dynamics in healthcare. For these reasons, the PhD project has been ethically vetted and approved by the Swedish Ethical Review Authority.

The research done so far does, nevertheless, bridge the gap between design and healthcare by highlighting the potential of design to address the "wicked problems" within healthcare systems. A multidisciplinary approach is used, which here transcends the aesthetic and functional aspects of design and proposes services and solutions that uphold human dignity and rights. The exploration of universal design in healthcare systems alongside co-design methodologies underpin our vision for healthcare that is equitable, empathetic, and patient-centered.

Conclusions

This paper has outlined some of the arguments from research for the integration of universal design principles in healthcare to enhance accessibility and equity, in the current case with a focus on PF care for women postpartum. It critically assesses the existing literature, identifying a gap in the provision of care that respects the diversity and complexity of patient needs. Compared to women with lower or no tears during birth, patient groups with higher grades of PF injuries have more symptoms and therefore higher healthcare needs. At the same time, they can be an inspiration for creativity leading to suggestions that may be useful for a bigger patient group. Studying such a patient group may help identify the possible problems experienced with the PF health journey and provide alternative *Gold standard care* recommendations that may help other women going through the journey of pregnancy and giving birth. The application of design-for-all principles offers a transformative pathway toward healthcare that not only acknowledges but actively addresses the disparities in care experienced by women with PF injuries.

The paper's findings show the necessity of reimagining healthcare through the lens of design, where patient engagement, co-design, and empathy are foundational elements. It sets a precedent for future research and practice, calling for a collaborative, multidisciplinary approach to healthcare design that centers on the well-being and dignity of all patients. By utilizing universal design and co-design, the PhD project contributes to a growing body of knowledge that seeks to democratize healthcare, ensuring it is accessible, equitable, and responsive to the needs of diverse patient populations.

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Teaching Universal Design – Key content and course design

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Abstract

There is not much written about how to teach universal design (UD) in design educations. This article aims to present the didactic experiences from teaching three courses in universal design at Mid Sweden University and Lund University: the courses Design for freedom, Universal Design Theory and Universal design of digital accessibility. By comparing and contrasting our experiences in a qualitative content analysis we end up with a model with three overall learning goal themes: to understand, create and reflect. The main insights in this article are these common three themes that constitute the key content and the base in the course design in courses teaching universal design. The structure in the courses is similar, but the content is implemented in slightly different ways. For example, achieving understanding and the practical exercises are different in the different courses. The theoretical basis lays the foundations for the students to create practical prototypes and further a possibility to reflect upon what they have done iteratively in the design process.

Keywords: ***Universal Design, Accessibility, Teaching, Didactics, Design for learning***

Introduction

There is much written about what Universal Design is, but significantly less about how to teach the subject (Hernandez-Torrano et al., 2020). Furthermore, design is one of the least explored areas

of education (Björklund Boistrup & Selander, 2022). More than 20 years ago, Christophersen (2002) described the interest in how UD is being taught in various places. In this article, we describe how we teach UD in three courses at Mid Sweden University and Lund University in Sweden. As part of this, we outline the design and key components of the courses. We also discuss our experiences from teaching UD, focusing on three learning goal themes: to understand, create and reflect.

At both universities we have a student-centered learning and teaching approach so that every student is given good conditions to complete the education on equal terms. An openness in how to communicate in teaching and an inclusive and positive atmosphere where different opinions and cultures are accepted, has shown that the commitment of the students increases (Dewey, 2015). This in turn enables students to advance in the learning process. It is important to create an inclusive context for the students, where everyone's value is clear. In this way, the students are appreciated for their experience where everyone can develop on the same terms in their learning.

Learning to "think like" a designer and have a design-oriented perspective is about finding new angles of incidence and getting tools to understand how different problems can be described and framed (Selander, 2022). The overall approach to design knowledge at the two universities originates in the concept Designer as Author, a constructive critical approach to the artistic work. A critical discourse has also become a starting point for a theoretical and pedagogical approach to universal design (Christophersen, 2002). The didactic prerequisites are that it is required that the designer is both creative and critically reflective to identify problems in society and solve real problems in society through design (Noble & Bestley, 2016).

According to Sandhu (in Christophersen, 2002) designers can bring about far greater change in society through universal design know-how than politics or legislation. The principles of universal design offer designers a way to better integrate features that meet the needs of as many users as possible. According to Christophersen (2002), designers have managed to achieve a certain amount of tradition when it comes to the universal design concept. This universal design tradition wants to make people rethink their way of life, but above all see how people are affected by norms in design (Bardzell & Bardzell, 2013).

Learning about UD is essential for the students and their future professional practice. Both at Mid Sweden University and Lund University, UD is a mandatory feature for our design students and a common key component in courses.

Aim and Research Questions

The aim of this article is to share and reflect about teaching Universal Design in higher education. The research questions are:

- **How is theoretical content regarding UD taught in three courses?**
- **How is UD applied practically in the courses?**

This article seeks to contribute new insights, from a Swedish context, regarding how we teach Universal Design at Mid Sweden University and Lund University. These insights are hopefully of use to teachers of UD world-wide.

Teaching Universal design

To give an insight into how universal design is being taught in three courses, we discuss and compare the different key components and

learning objectives. Figure 1 below shows the content and arrangement of three courses at Mid Sweden and Lund Universities. In the first example, Design for freedom, the students get a progression in design methodology, universal design, design for all and ergonomics. The second example is an introductory course in UD called Universal Design Theory. The purpose of the course is to create a foundation for a second, larger, course, Universal Design Project. These two courses, i.e., Universal Design Theory and Universal Design, are part of the curriculum for the second year of the industrial design program at Lund University. The third example is the course Universal design of digital accessibility where anyone that has the pre-requisites for university studies can apply. The course had its premiere in 2020 (but started in a different form in 2004) and runs both spring and autumn semesters.

	ECTS	Students	Teaching	Type	Focus on understanding	Focus on prototyping
Universal design of digital accessibility Mid Sweden University	15	50	E-learning, stand alone	Stand alone		
Universal Design Theory Lund University	2	30	Campus, programme	First course, project course to follow		
Design for freedom Mid Sweden University	4,5	24	Campus, programme, year 3	Last course in a series of universal design, methods and ergonomics		

Figure 1. Three examples of courses including universal design. The last two columns, i.e., focus on understanding and focus on prototyping, show where the focus on content is in the courses.

Figure 2 below explains what the process looks like in the various courses. It can be seen that there are some common components and learning goal themes in all three course examples. The following three components are used in education when teaching universal design:

1) **The theoretical basis (to understand),**
2) **practical prototypes (to create) and**
3) **thinking about what has been done (to reflect).**

The learning objectives linked to all three components in the figure are examined in the courses to see whether the students have met the various learning objectives or not.

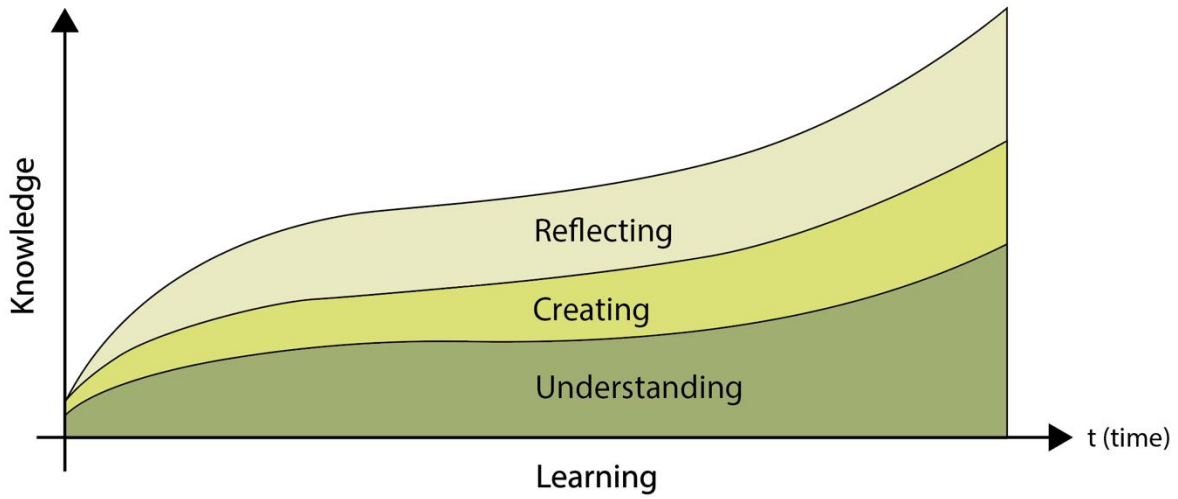

Figure 2. Model of students' learning in example courses that teach universal design.

Understanding – insights about norms, diversity and design

The common view on knowledge and pedagogy in the courses is to combine several pedagogical approaches. Our hope is to provide multiple ways to engage with the material and in the learning activities, and also multiple ways to show one's competencies and progression. This loosely follows the three principles of Universal Design for Learning (UDL) which is a framework to improve and optimize teaching and learning for all people. When developing courses, we draw on constructive alignment (Biggs, 1996; Biggs &

Tang, 2011) as a general framework. This means that we see it as important that all parts of a course are connected. The primary approach guiding the teaching is that of a constructivist perspective. Lev Vygotsky has been a key inspiration influencing teaching, regarding learning as an active process, where students actively construct their own meaning and learning which in turn increases learning. It also means that learning is a joint process.

The course structure and core components of the three example courses are similar but teachers' favorite exercises differ. The theoretical mindset is understanding, empathy, reflections and the importance of reaching understanding through, for example, expert users who are professional persons that help out with usability testing. The expert users are strict demanders and professionals in their role (Lorentzen & Hedvall, 2018). The foundations for the courses usually start with understanding which in turn is about theory and empathy. What we bring from UD into everything that we do is the notion of "flexibility", which can be seen in the examples. This way of thinking and combining different approaches inspire the way we lead as well, how we provide materials, et cetera. Combining several modes and modalities is one such example, for instance not only relying on text but also on bringing in photos and illustrations as much as possible.

The Industrial design program at Mid Sweden University focuses on product design and therefore on physical products. In the first example, the course Design for freedom, students need to understand that user involvement needs to be integrated early in the design process. To include as many users as possible in their design, and become aware of who is not included, in the end means increased freedom for more users in society. The idea for the course is to give

the students both theoretical and practical knowledge in design for all and norm creative design processes which involves testing new design solutions, or using new methods. Part one of the course content starts with theoretical perspectives where the students get an introduction lecture to gain an understanding of diversity on different levels. The methods used are user testing, creating physical prototypes, form studies, semiotics and ergonomics.

The second example course, Universal Design Theory, consists of three initial assignments followed by a series of guest lectures. The students start with photo exercises where they go out and take photographs of products and environments in their own lives that they consider to be inclusive or exclusive. They are also given the seven principles of UD as a guide for what to look for. When they come back to class, they each bring 14 examples (i.e., interpretations) of what could be inclusive or exclusive. During a full day, they all talk about their 14 examples. In a class of 30 students this means 420 examples during one day. We only discuss a few of the examples, the main pedagogical idea is for the students to see a large number of examples. After about 100 examples, patterns start to appear. This is an example of an exercise inspired by a phenomenological approach. In a parallel assignment, the students try to do their morning routines with just one hand or blind-folded. This is a way to "make the familiar strange". As part of this exercise, they also go to the supermarket or join a student activity using a wheelchair or trying a white cane together with simulation glasses.

The third and last example, the course Universal design of digital accessibility, has a focus on doing but starts with understanding the basics but then quickly moves into applying the knowledge. In some parts of the course we are a bit high on the learning goal scale in

Bloom´s taxonomy for being a basic course (Bloom & Krathwohl (1956). This is in line with Dewey (2005), arguing that knowledge is relative and must be used to become meaningful. In other words, without practice the theory becomes incomprehensible and without theory the student does not get a deeper understanding of the practical aspects.

The course is based on content, presentation and technique. All three are necessary, since if one of them is missing the content is not accessible or cannot be understood. To be able to have a more human approach we are teaching the principles of Universal Design and other user-centered design methods like Innovationsguiden ('The Innovation Guide') which is a method and toolkit developed by the Swedish Regions and Local Governments. As we also want to do right from the start, we use the standard SS-EN 17161:2019 ("Design for All - Accessibility following a Design for All approach in products, goods and services - Extending the range of users") as a foundation.

The course starts with an introduction to universal design, accessibility and usability. In the course context, accessibility also includes usability. There is a focus on empathy and learning about different types of disabilities. We try to involve people with high demands on design solutions. For example, how can we design an app to make it possible for a person with rheumatism to handle the app in the smartphone? How can the content work and be understandable for people with dyslexia or Swedish as second language and so on. We don't try to cover every aspect of disabilities, but instead we teach how to involve the needs of the users and to get the information or skills needed for the design solutions.

Finally, after this first phase of the course – understanding – the students have gained knowledge and insights including empathy, norms and human diversity to better understand the users when they move on to the next phase in the design process to create solutions.

Creating – how to apply universal design

In the second phase, create, the students learn how to implement and apply what they have learned about UD in the first phase understand. The practical parts in the courses include creative exercises alternating theory and practice to improve learning from practice, where creativity contributes to innovation. The aim is innovation, based on theories of pedagogical research, for example learning by doing Dewey, 2008 and experiential learning Kolb, 1986. Part two of the course Design for freedom is the design project where the students work together with expert users to challenge and question today's products (see figure 3). In this part the students get an introduction lecture about the design process in the field of design for all. The guidelines for the project are that the product should be handheld and should preferably have a typical standard within its context.

In order to create innovations that are of a standard level, the students formulate a challenge linked to understanding what the real need is. For example, the purpose of a shaver is to trim beards or trim body hair. Students themselves choose a product and they are encouraged to choose a product that can be sorted in a typical normative category, e.g. hair trimmer. Once the challenge is formulated, the students start immediately with a workshop together with our expert users who are invited. They are represented as "users with high demands" which for this project means that they have

disabilities in their hands and have high demands on ergonomics. Very often they use different grips and maybe use products in completely different ways. Students often have preconceived opinions and quickly get a picture of what a product should look like, how it should be used and in what context it should work. The commercial aspect also means that financial profit is rewarded, as products that are created are also expected to be sold for profit. Students often realize how difficult it is to go from theory to practice and that universal design is extremely difficult, as the expert users have different perceptions of what is good or less good, and as one millimeter more or less material can be decisive for whether something is ergonomic or not. However, students also learn that it is important to test your ideas early, with different people, and that innovation can be created if you are open to it and that knowledge and curiosity play a big role.

Figure 3. Design solutions created in the course Design for all.

In groups of 4–5 students per expert user, they shape and create different ideas together. The students work quickly with test models linked to their challenges. They use clay, straws and metal wire and other leftover materials are used to quickly build and test models together with the expert users. The observations of grip, body movement and functions together with the students' ideas start to form an idea with new functions. During short sessions, they test different grips, angles and concepts to meet the set challenge. After the test the students analyze their observations, models and ideas and iterate their findings for the next test where they have three ideas to test and shape. These concepts are tested again with the testers providing new feedback on the models. For the third and final test, the students work iteratively to refine the models. They connect coloring and form that challenge or neutralize the identification related to different norms, such as gender, ethnicity, etc. The result they get to share is an oral presentation that shows the design process, with parts from observations, compilations and a design proposal in clay that is colored in the way the student wishes.

How create is being taught can also be seen in the course Universal design of digital accessibility. There is a focus on doing, and it is the text that the students create that we focus on. The second part of this course consists of writing, with a focus on both Plain Language and Easy to Read content. In Plain Language the sentences are shorter, the text is divided into more paragraphs, and abbreviations and extra long or unusual words are avoided. This gives the students a foundation but they need a great deal more practice to master writing. The third part of the course is about accessible documents (presentation and technique). Here, content, presentation and technique come together for the first time. The students put content,

text and images together in a nice presentation (layout, structure, typography, colors et cetera) and use the proper technique to turn it into an accessible document.

The fourth part is to develop and test digital prototypes. That is the part where we spend most of the time. In the last step, the student's personal project is about widening or deepening their knowledge. The students learn the software needed to build prototypes in a day or two. The rest of the time is spent on learning how to test and how to involve real people.

By doing many tests and involving many users in the process students get people who are tired, have a hangover, stressed, have a cold et cetera, which is an advantage. The students test with few persons at a time, to be able to do many iterations. The students have to make sure that the prototype works and is understood before they do any coding. The aim for the prototype is not to make it fully functional, just good enough for testing and demonstration. It is important to try new things when it is not going as you have expected (Schön 1987). We believe that this way will give us a better product in a shorter amount of time.

In conclusion, in this phase it is the responsibility of the students to include the most demanding users in the design process. By including as many users as possible there could also be economical and environmental profits but, most of all, it could lead to innovation for a diversity of people.

Reflecting – a method for learning

The last phase in the courses consists of reflections. Reflections can be used as a pedagogical tool for learning (Bie, 2014; Schön, 1987)

and according to Boud (2000) this is also a way to raise the quality in order to achieve continuous quality improvements. Evaluation methodology is also central in the teaching of Universal Design (Christophersen, 2002).

In the example courses we use evaluation and reflection as tools for continuous improvement in how learning is stimulated in the progression and how we get continuous student reflections in the courses. The three course examples all follow a similar cycle with different steps which include students' reflective observations with analyses and drawing conclusions from an experience with an aim to take the learning into new stage. This is in line with models by Gibbs and Kolb, describing a process from a description of the experience to conclusions and an action plan of what to do next at the end of the cycle (Gibbs, 1988; Kolb, 1984).

The students write self-reflections which are integrated throughout all three courses and take place continuously in the process with the purpose to stimulate learning. They reflect with the focus on why, together with the tasks that they hand in. This is in line with researchers who claim that progression over time with systematic support in a framework for reflection is important in the learning process (Kolb 1984, Gibbs 1988, Schön 1987). Based on students' self-reflections, we see that they believe that design for all and universal design are very important for inclusion. What we hear is that the students' first thoughts were that design for all is easy. However, when they are in the process of working together with expert users with decreased hand functions, they get frustrated about not finding one shape that fits all. They find out that there is not one design solution when creating innovation. This is one component in how learning is stimulated in the progression. We can see what the student

has done, it is the "why" that is more interesting and that shows if the student has understood. Co-creation has been difficult with the digital prototypes. We have been able to reach two tests and iterations in one day but it's difficult to keep that momentum. It's not as direct as working in clay with a physical handle. We can involve users in many other ways as well, from traditional interviews and observations to card creation and sorting.

One example of how to use student reflections in courses is in the first example course, Design for freedom, where the students write an informal text reflecting on the content in different articles within the area of norm critical and norm creative design. At the end of the first week students gather at a seminar to discuss and reflect on the articles. Then the students go off to find examples of one normatively good and one normatively bad product. We then discuss their findings together. Next, the students get a couple of articles within the area to read. Meanwhile, they write a text individually with reflections on the articles. The last day of the week we gather for a seminar where the students first discuss in groups and finally summarize for everyone.

Another example is in the course Universal Design Theory, where the last step in the course is to write about one page describing what they have done, their experiences, and ideas for improvements. After that, the class meet in small groups to discuss their experiences and thoughts after doing the assignment. This is a great opportunity to, for instance, discuss other people's gaze, a sense of belonging or not belonging, or the shift in perspectives trying to reach something from a wheelchair at the supermarket. This is an example of an exercise inspired by constructivism. The course always ends with 20-30 minutes of live evaluation. During one of these sessions, a student brought up a need to discuss their experiences more in depth. The

next year we added such a discussion slot, which has proven very valuable both as a chance for a debriefing session and as a learning opportunity, hearing about and discussing each other's experiences in small groups in order to increase the understanding.

The purpose of this last phase of reflection is to evaluate design solutions, but it is also a great method and an opportunity for the students to reflect upon their own learning and insights in the design process.

Concluding discussion

In summary, the aim of this paper was to contribute and give insights into how we teach universal design regarding what characterizes the course design and key components. It is the holistic perspective of how we teach that is interesting even though all three courses have similar content, layout and progression, but there are some differences in the course phases.

The courses in this article have in common how learning is stimulated in the progression. As teachers, we have an active student perspective. We start off by laying a theoretical ground before moving on with the practical parts. The students begin at a lower level by learning and understanding, and then the knowledge increases. The understanding is important initially but will also recur several times in different ways and at different places in the courses. The process and level of knowledge takes a different amount of time for each student and student group. Understanding is also created in the process with co-creation in different ways at different phases with expert users and guest lecturers who give their perspective on universal design. The students implement in creative environments

what they have learned including the users in the process. Furthermore, the iterative process of knowledge is increased by using constant student reflections in the progression. Reflection is about creating an awareness of one's own practice linked to theoretical frameworks and being able to describe it. The learning objectives are also connected to this.

By exploring the practice, we hope to spread the understanding and practical examples for further development in more learning environment and hope to get feedback from readers about what they can take with them to their own teaching regardless of where in the world it takes place.

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Universal design: Visualising diversity, two low hanging fruits

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Abstract

To plan, design and build with diversity in mind is a complex process. While goals such as inclusion, participation and social sustainability may be present in the vision for a future product, service or environment, studies show that the initial vision isn't always realized in the end result. There are still far too many products, services and environments that are hard to access or use for parts of the population. In this text we focus on comparatively simple, lightweight, tools – "low hanging fruits". Such tools are already available, there are personas, context cards, but also checklists and guidelines. Inspired by the existing work, we have developed one deck of cards, intended to serve as thought support by visualizing population diversity. In order to obtain a similar effect in digital environments (egin digital twins and other 3D environments used in planning and development) we have also developed 3D models (vehicles, devices and humans) that can be put in the digital environment, and serve as a reminder to the users of the digital environment of population diversity.

Introduction

Today, Universal design is a global concept. A key part of designing universally, is that human diversity is explicitly considered throughout the design process. Through universal design, a wide range of people, including persons with disabilities, are able to

participate in society on an equal footing. The goal is to design environments, products and services, to work for as large a portion of the population as possible, without requiring special solutions or adaptations. For architecture, universal design strives to maximize the number of persons able to access an environment irrespective of ability, age or gender (Hamraie, 2013). The concept was initially defined by seven principles (Center for Universal Design, n.d.), but has evolved since then. In the UN Convention on the Rights of Persons with Disabilities, universal design was promoted as a way to ensure persons with disabilities could participate in society on equal terms. In Sweden, universal design was put forward as one of four cornerstones of the Swedish disability policy in 2017. The concept has also been discussed actively among architects, planners, politicians etc. in the Nordic countries (Bendixen & Benktzon, 2015). In Norway, the concept is implemented in the laws around the built environment, and also in laws concerning discrimination, with the goal of making society accessible for all (Lund & Bringa, 2016).

While the concept of universal design has been around for some time, we argue that there is still quite some work to be done on how to work with universal design in practice, throughout a planning and building process. In earlier studies, we have investigated what universal design means, how it is expressed (against a background of current practices and trends in city planning in Sweden), and what the critical factors are for how an inclusive built environment can be designed and realized, Figure 1 (Müller, 2023). We have also seen that visions for inclusion and universal design expressed early in the process, are not always reflected in the final product, the actual built environment (Müller et al., 2022). Although designing for human diversity is a complex task, one low-hanging fruit is to work with tools for

visualization. Existing such tools are personas (Schulz & Skeide Fuglerud, 2012), context cards (Magnusson et al., 2012), as well as existing checklists, standards and guidelines. Exercises fostering empathy (Lorentzen & Hedvall, 2018), simulations, eg of visual impairments, (Jones & Ometto, 2018) as well as virtual reality environments (van Leeuwen et al., 2018) are other tools that have been used.

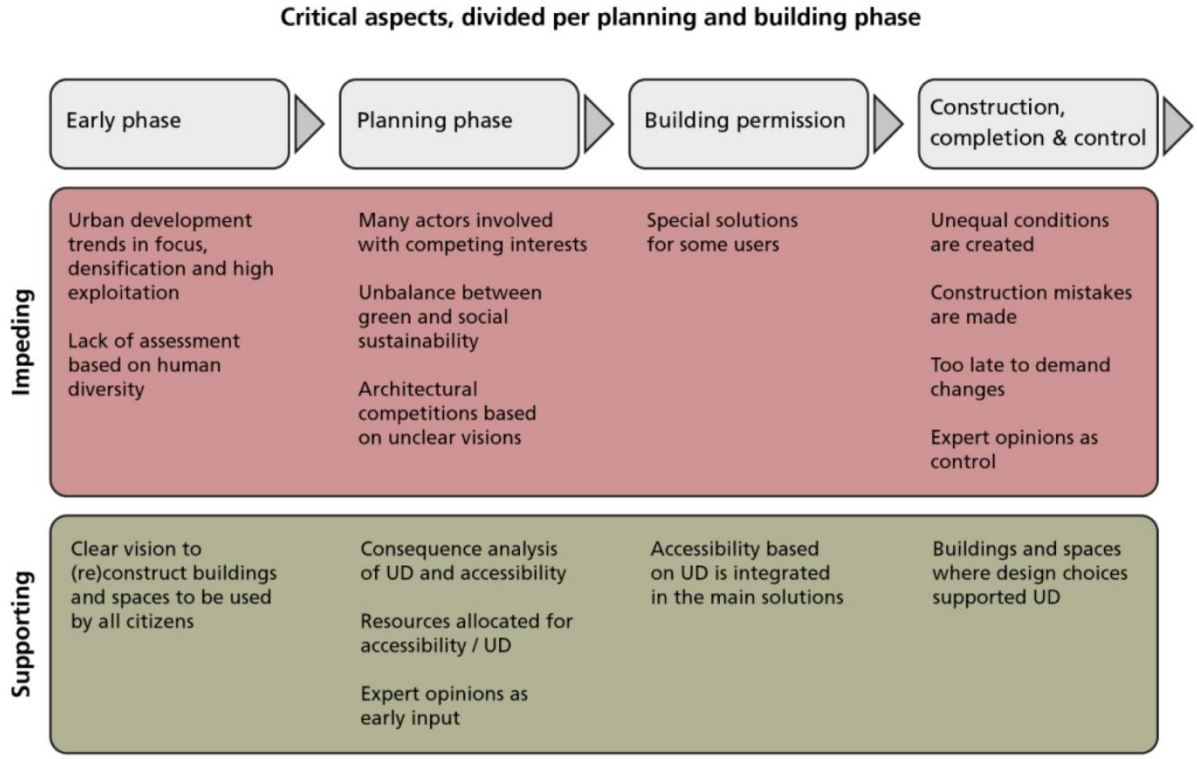

Figure 1. Critical aspects, supporting and impeding the implementation of a UD approach in the different phases of urban development (L. Müller).

As we had observed how visions for universal design had a tendency to disappear along the process (Müller et al., 2022), one area we decided to work on, was simple tools for illustrating population diversity, to serve as reminders of the human diversity in the population all along the process. In this paper we describe two such

tools, a deck of design cards, "variation cards", a variation of personas, inspired by the previously developed context cards (Magnusson et al., 2012), as well as a set of with models/avatars for VR environments.

Vision Cards - Design cards for imagining variation

Our previous experience of the context cards (Magnusson et al., 2012), had shown this type of card deck to be a flexible and useful visualization tool. We had the opportunity, in a project on including Universal design in public procurement, funded by the Swedish innovation agency VINNOVA, to run an online workshop together with 15 persons from local disability organizations (representing the deaf community as well as persons with visual, cognitive and mobility impairments), on what they considered as important in the built environment. The task discussed at the workshop was what factors were important in procurements of hotels & restaurants, but the results turned out to be applicable in a wider context, and we decided to use our results as a basis for developing a small deck of cards aimed at visualizing the human diversity when it comes to abilities.

The workshop materials were analysed and summarized, and complemented with information obtained after the workshop from an organization for persons with allergies. After some initial sketching, we decided on a design where each card focused on trying to give sense of *variation* rather than on individuals, representing a wider group of abilities, with four photos selected to obtain an illustrative range of different persons and abilities. The groups decided on were mobility, vision, cognition and perception, hearing, language and allergy. Each card should contain both general information and more concrete points to think about. There would be one introduction card

explaining universal design, but also one "joker" card aimed at reminding designers/users of the risk of using yourself as an implicit reference. Effort was put into making the cards easy to read, with appropriate contrasts and font sizes, and an accessible pdf was put online in order to make the material more accessible. The cards were designed in Swedish (Variationskort För UniversellUt formning | Certec, n.d.), translated in Figure 2, which shows the back and front of the vision and ability to move cards.

Figure 2 Front and back of the vision card (left) and the ability to move card (right).

These cards have not been formally evaluated, but have been disseminated at events and presentations, and have also been found useful in courses at Lund University. Recently they were used in a Swedish municipality as support when developing guidelines and support documents for the planning of new buildings/constructions. They were also, together with other materials, awarded an innovation price by the Procura+ European network for public procurement. The basic design of the card is flexible, and it would be easy to add more cards to get an even better visualization of human diversity.

Visualising Diversity - 3D models or avatars

Three-dimensional models and environments are commonly used when visualizing future buildings and cityscapes (Billger et al., 2017). As is pointed out in (Billger et al., 2017), a challenge is to avoid misrepresentation. One type of potential misrepresentation regards the population – who is visible, and who becomes invisible (Sandström et al., 2024)? In a current project, we noticed the lack of humandiversity in the digital 3D representations/models of humans (avatars), in in the development of a virtual 3D model, a so called digital twin, of Gothenburg city. The virtual environment we were shown, at a meeting with the developers demonstrated what could be done in the digital twin, was populated solely with young men in white T-shirts.

To amend this, a more diverse range of models/avatars has been developed. This includes persons of different ages and abilities, models of accessibility devices and tools (eg wheelchairs, canes, rollators, guide dogs) as well as specific vehicles (eg a van for transporting persons using wheelchairs, figure 3). Since we approach this from a perspective of universal design, where all people is the target group, we also include tools/devices such as prams, electric scooters, travel bags on wheels etc. These models/avatars will be made publicly available at the end of the project.

Figure 3. An image including both a specialised vehicle and tool/device models

Discussion

Who can at all be imagined as part of the city? In this text, we present two "lightweight" tools that are easy to apply for visualising diversity. Both tools are intended to be flexible, easy to use, as well as easy to extend. Creating 3D models that resemble the actual population of a city is an essential step towards fulfilling policies and ambitions about a society for all. Professionals at all levels working to fulfil the vibrant, rich city life need to have tools at hand that support their work with realising diversity. Avatars, cards and similar material serve a double function, where they act as trigger material as well as reminders, helping to keep diversity in mind throughout the development process.

While there have been a number of attempts in planning- and urban design projects to include a greater variety of people in visualisations, includingprojects where human diversity has been central to the

visualisations and communication of the project - three Swedish examples are (Jahnke, Magnus et al., 2019), (Jämt Jämlikt - För En Jämlik ByggdMiljö - Tengbom, n.d.), (Sandström, Ida, 2019) - such initiatives are often carried out as pilot projects with a limited timespan and often limited impact. While such projects are still important, the challenge of formalising processes, tools and materials in such a way as to make them part of mainstream urban planning, not just specific projects, remains. Simple tools, such as the ones presented in the current text, do not require extensive preparations or investments in order to be incorporated into regular planning processes.

***Figure** 4. Showing consequences. Since there isn't any ramp or elevator, the wheelchair users are stuck by the stair.*

Just as personas (Schulz & Skeide Fuglerud, 2012), the presented tools can serve as reminders, provide information and serve as thought support. Additionally, they can be used when assessing consequences. For the variation cards, this is again similar to how one would use *personas*, and takes the form of "how would our intended

design work for persons with diverse abilities". Using the developed models/avatars, it is also possible to be very concrete and both test and visualize consequences on a individual level – an example is provided in figure 4, where persons using wheelchairs get stuck on the stairs up to the park in the picture. A potential future application is to also add images or models/avatars to an augmented reality application, in order to make it possible to visualize diverse persons in real life environments.

As was identified by (Müller, 2023), there are inherent conflicts in the planning and building process. It is our hope, that easily used tools like ours, in particular the models/avatars in virtual environments, can be used to visualise consequences in such a way as to enable better resolution of such conflicts. Another problem identified in (Müller, 2023) isthat the absence of the human diversity perspective distorts the perception of the population. Our tools attemptto address this by making it easy to visualize a diverse population. In (Müller, Lilian, 2023), critical aspects in different planning and building phases are identified as is shown in Figure 1. Specifically, in the early phase, our tools mitigate the lack of assessment of human diversity and support a clear vision to (re)construct buildings and spaces to be used by all citizens. In the planning phase, they may mitigate unbalance between green and social sustainability, as well as help providing a clearer vision for architectural competitions and support consequence analysis. In the later stages of the process, they can – together with expert and user input as well as other tools – support the assessment of the project.

Given the lightweight nature of the presented tools, there are of course also weaknesses. Design cards as well as models will always involve some level of selection, and provide simplified information

that needs to be complemented by additional sources of information such as experts and stakeholders.

Conclusion

The present text introduces two lightweight visualization tools. The variation cards illustrate human diversity in the population, in a way that is easy to incorporate in activities like discussions, brainstorms, focus groups, workshops, etc. The presented models/avatars can be easily incorporated in different virtual environments used in the planning and building process. The presented tools can be used both as a support for the thoughts and inspiration, as well as for assessment and evaluation. We argue that such simple tools, which can easily be integrated in existing work processes, are important, and hope to see more such developments in the future. Having the right means is a prerequisite for doing a good job. However, the end is not about tools but about fulfilling people's fundamental rights.

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Designing for Existential Sustainability

The Intersection of Social Sustainability and Universal Design, explored through Social Staircases.

Ida Sandström, Gunnar Sandin.

Abstract

In this article we discuss the notions of social sustainability and universal design by reflecting on a particular type of architectural element in common space, namely the "social staircases" that serve as multifunctional spaces beyond mere transportation, aiming at social interaction. Through empirical examples, including a detailed analysis of a newly built housing project in Sweden, renowned for its sustainability efforts, we highlight the multifunctional nature of social staircases. We conclude by introducing the notion of existential sustainability–acknowledging individuals' and groups' relational striving to find reasonably good living conditions – as a way to discuss limitations of practiced social sustainability and universal design. Through "existential sustainability" we intend to find a way in which these two commonly mentioned domains can be recognized, still expanded. This approach takes a diverse range of human experiences into consideration in design of social space. We argue that such a balanced approach, which takes into account individual and existential concerns alongside systemic and societal considerations is crucial for realizing the democratic potential inherent in spaces like the social staircase.

Keywords: ***Existential Sustainability, Social Sustainability, Universal Design, Urban Design, Human Diversity, Sustainable Urban Development, Architecture & Planning.***

Staircases as social space

Staircases have often played a multifaceted role beyond the obvious functionality of taking you from one level to another. This is particularly true if we include various forms of bleacher-style seating, i.e. spaces that are shaped as stairs, but not primarily designed for walking or transportation, but for sitting down. Such designs are commonly found in sports arenas and theatres. Similar arrangements can be found in schools and learning environments, then often referred to as "learning stairs" not seldom promoted as multifunctional architectural elements that "serve as both circulation and presentation space [giving] students a place to gather and socialize" (Wilson & Winebrenner 2017). A well-known example is the Zachry learning stairs at Texas A&M University (figure 1).

Figure 1. Stairs for walking, sitting and studying, Zachry Texas A&M University, [Photo credits: Texas A&M Engineering]

In addition to such spatial arrangements there are also more conventional stairs that have been designed with extra width or platforms to encourage social interaction, adding use-value to its primary purpose of transportation. Apart from these construed or deliberated special designs there are also numerous examples of conventional staircases from around the world where a spontaneous social use has emerged with time, including monumental stairs such as the Spanish Steps in Rome, Italy and the Potemkin Stairs in Odessa, Ukraine, or large entrance staircases frequently used as places for resting, such as that of British Museum, London, GB. These are cases where (the fame of) the place as such has contributed to the habit of just spending time in the staircase, and to some extent inversely, namely that the habit of sitting in the stairs slowly turns the place into common public property for recreation (Figure 2).[3]There are also examples where stairs intended for transportation have been complemented with platforms for socializing, as seen in Brf Viva (figure 6 &7), a housing project that will be discussed later in this paper.

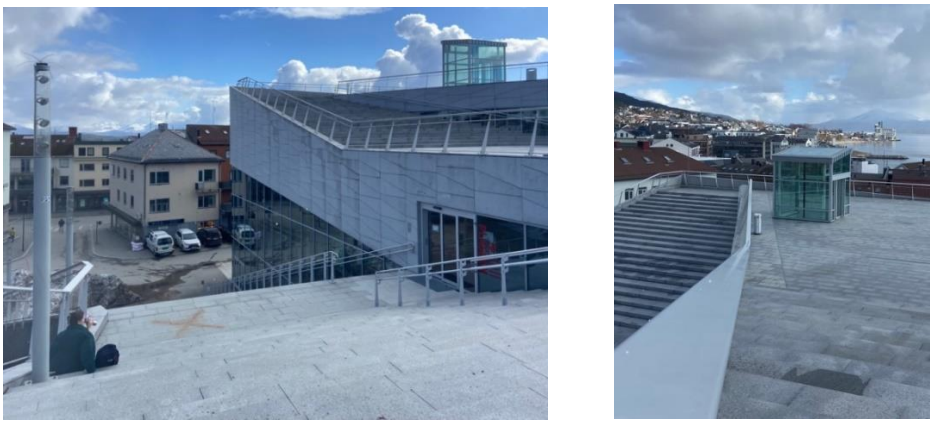

Figure 2. Staircase integrated with roof, offering rest and a view. "Plassen", Molde Cultural Centre, Norway. (Photo Gunnar Sandin).

[3]A recent (2012) outdoor example is the staircase of Plassen Cultural centre, Molde Norway. (3XN Architects).

In more architectural detail, the range of social stairs includes both the gallery-, stadium- or bleacher-style of stairs, but also the stairs that connect platforms or that provide specific activities when climbed, allowing temporary halts of various kind. The common denominator is that you are invited to spend time with others using the staircase as the place of active or more passive common interaction. Another common denominator is that in order to use them the capacity to climb them is a requirement.

It has been suggested that the social staircase is a trend that started with spaces for the urban populations in large cities, and has later spread to other, less urban, places: "*A coffee shop in Edgewater, New Jersey, population 12,044, has jumped on the trend — proof that even in suburbia, nothing suggests "cool" like stadium seating.*"(Dahl, 2018). The director of an influential interior-design firm suggests that social staircases are not just a cool-looking detail, but "*shows that a company is very open, that its culture is about social moments*" (Dahl, 2018).Statements like these articulate the contemporary wish and high belief in architectural elements providing space for meeting, gathering, and socializing, and that the social staircase has become an object that helps articulate and satisfy such wishes. A question arises as to what extent these designed staircases afford what they promise in terms of earning the attribute "social", and to what extent the ideas and promotion of such arrangements reaches beyond the visionary will to present attractive common space and reach a wide range of users. Through an examination of social staircases, our objective is to address the intricate relationship between social sustainability and universal design within the context of urban planning.

The potential and challenges of social staircases

The social staircase may encourage people to gather, to see and be seen, and perhaps even enter conversations – this is the democratic potential of such arrangements. However, while these spaces may promote social interaction, they also highlight critical issues related to accessibility, exclusion, and exposure. Despite their intention to facilitate social interaction, the "social stairs" are often lacking alternative means of access and choices of how to stay in them. What they are supposed to offer remains to a considerable extent impossible to use for instance for individuals who cannot climb stairs, or for those who do not enjoy exposure.

There are already attempts to look at, with user experiences obtained, cases where social stairs have been designed to be appreciated by more people. A seminal example is to be found in Vancouver, Canada.

Figure 3. Image from public stairs with steps and ramps intertwined, Robson Square, Vancouver. (Photo and copyright: Henry Lee, fotoeins).

The example of the Robson Square steps (figure 3), which opened already in 1983, highlights the sharing possibilities with sloping and diagonally running "crossways" that have no steps. The Robson Square steps is in this respect an attempt, although not perfect. It is accessible through both steps and ramps, but has been criticized for being unsafe, due to lack of railing. As noted by accessibility expertise it also has visibility challenges due to one color surface only, causing low contrast between steps, and between steps and ramp (Johnston 2019). The design of these types of ramped pathway solutions that exist at various places around the world, have on the whole met increasingly tougher demands as time passes. They have to consider both visibility, degree of sloping, and the possibilities for a visitor to hold on to railings, "as well as width" to afford movement for many. Additionally, there's the need to address wellbeing and psychological comfort. For some, a stage-like layout may not feel comfortable, as it lacks places to retreat from others' attention.

Turning to Sweden, the use of social staircases has grown increasingly popular in the last ten years, aligning with such trends in parts of Europe and in North America. With their growing popularity, there are companies offering expertise on social staircases. One of them[4] write at their homepage: "'Social stairs' or 'learning stairs' are an architectural element designed to encourage social interaction and engagement". In line with the statement of the company there are many recent examples of high-profile architectural projects centered on social staircases. Swedish examples include The Faculty of Medicine's new building in Lund, Forum Medicum (figure 4). It is a

[4]https://vivarailings.com/blog/social-stairs-learning-stairs-railing-systems (accessed 240319).

grand building hosting 4000 students and researchers, designed by the Danish architecture firm Henning Larsen Architects. The building opened in 2023. When entering the building, visitors, students, and employees are faced by a broad staircase centrally placed in the entrance hall. The staircase is the center piece of the building, and its design and generous measures invite users of the building to sit down and to socialize. A similar communicative use of staircases in the foyer can be found in many public- and semipublic buildings from the last decade throughout Sweden.[5]

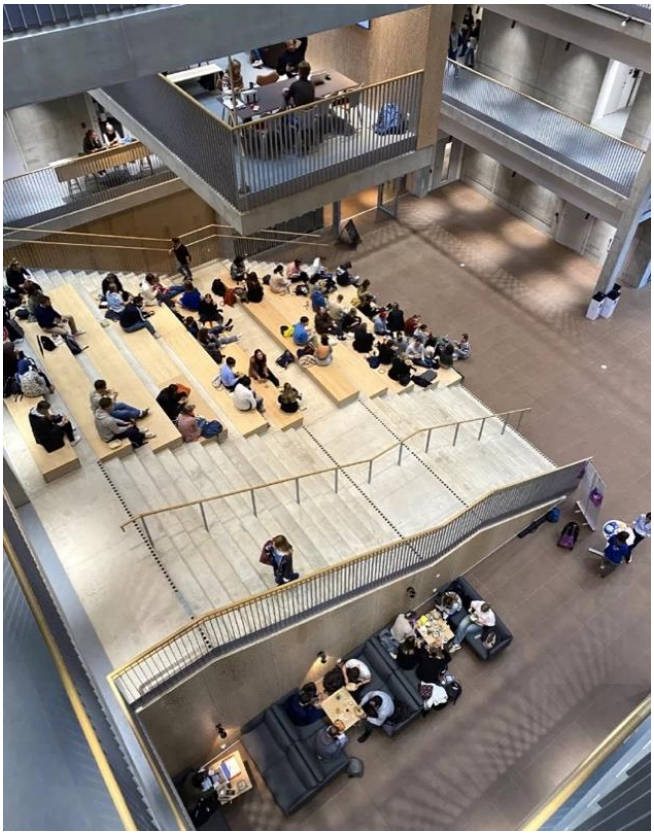

Figure 4: Forum Medicum, Lund university. Photo: Åsa Hansdotter.

[5]Other examples include Studio, in Malmö, by the Danish architects Schmidt Hammer Lassen; and Världskulturmuseet [The Museum of World Culture], Gothenburg, by the London-based architecture firm Brisac & Gonzalez.

It has been suggested that this kind of foyer, with a grand social staircase as the centerpiece, "plays into the notion of the open, tolerant and creative city where anything could happen" (Torisson, 2018). The stairs can be seen as a stage within this interpretation of the space, offering performative or extended narratological possibilities. This suggests a promotion of democratic values, as anyone is welcome to step onto the stage. However, the idea of everyone being welcome is, at a closer look, merely a mirage, a fact that we will come back to in this paper.

In the following section we will take a closer look at the social stairs and what they offer in *Brf Viva*, a housing project in Gothenburg, Sweden with a high sustainability profile.[6] Through that, we will also be able to reflect on the limitations in recent claims of social sustainability.

Attempts at Social Sustainable Design in a Housing Project

Brf Viva, Gothenburg

The word "Viva" means to live, and the prefix "Brf" stand for *Bostadsrättsförening*, the most common form of housing association in Sweden.[7] Brf Viva consists of six buildings with a total of 132 apartments. The buildings are six-story tall and create between them three sloping courtyards. The project was built on a site with a very demanding topology, a steeply sloping and rocky hillside. There are many similar plots in Gothenburg, sites usually left undeveloped due to technical limitations as regards building construction. The architect

[6]The project was awarded the prestigious Kasper Salin Prize in 2020.
[7]Brf is short for Bostadsrättsförening which is a cooperative condominium concept, a housing association where the owners of apartments share the costs of owning, maintaining and developing the building.

explains how they were initially supposed to build in a small park but decided to try to save it by building in a steep slope nearby instead (Gordan 2020). The developer, Riksbyggen, liked the idea of building on a site that had until now been considered un-buildable. The concept was named Positive Footprint Housing and high ambitions were set with the aim to become an international model for sustainable housing and urban development. This was to be achieved by a combination of technical and social innovation, and the support of sustainable lifestyles.

A collaboration was initiated between industry and academia, involving researchers from Architecture and Urban planning, as well as from the Department of Social Work and the Swedish University of Agricultural Sciences. Various departments of the City of Gothenburg and RISE, Research Institute of Sweden, were also involved. The aim of the project was "to develop Sweden's most innovative and sustainable housing project"[8] by combining energy-saving use of resources in the building process with requirements for sustainable mobility, ecosystem services, and social sustainability. The collaborating researchers had the possibility to make suggestions at the different stages of the project but were not part of the actual design process. Viva was initiated in response to environmental challenges, but as the project developed social sustainability became increasingly important. The questions of what could constitute actions and means of social sustainability in the project were repeatably put to the researchers (Gromark et. al 2021). Seeing to the finalised project, three social sustainability perspectives seem to have been particularly influential: affordability, flexibility, and community.

[8]https://www.sgbc.se/certifiering/vi-certifierar/stark-vilja-att-prova-innovativa-ideer-i-arets-miljobyggnad/ Sweden Green Building Council

Affordability (or perhaps better, *the lack of* affordability) was addressed through six one-bedroom apartments reserved for young people aged 18 to 30 and sold below market prices, but with rents covering the interest rates for the loans taken on by the housing association.[9]The model was developed together with Stockholm School of Economics. As regards flexibility, some apartments were designed as 2-4 room apartments to allow for a higher degree of flexibility than the conventional apartments with stable room distribution. Interior walls were made movable, allowing floor plans to be changed in response to changing needs of the household. Although both are interesting, it is the third strategy, the strive for *community*, that is most adequate to study for the purpose of this paper. Brf Viva is designed with more shared spaces than the average newly constructed housing block. In addition to the tripartite communal courtyard there are shared interior spaces including an orangery/gathering space and a greenhouse made for gardening and socializing. The developer expands on the project's social and existential ambitions when interviewed for the industry magazine *Arkitekten*: *"During the process, we talked a lot about how widespread loneliness is in our society. We wanted people to see each other, have the chance to exchange a few words, maybe on a stool facing south with the newspaper in front of their door".*

Community space: The Greenhouse as a social staircase.

The residents of Brf Viva share a greenhouse (figure 2).[10] The developer highlights the collective gardening in a press release by

[9]Housing associations use shared loans, the interests of which are distributed among members as monthly rents, to finance the apartments and maintenance of the building.

[10]https://www.riksbyggen.se/globalassets/1-riksbyggen/bostad/bostad/referensprojekt/brf-viva-referensprojekt/bofakta_brf_viva_web.pdf

giving voice to one of the inhabitants of Viva who is leading the gardening group. *"There is a great interest in gardening among the residents of Brf Viva, and we have formed a special gardening group /…/ Anyone can garden within the association. All that is required is to join the gardening group and be assigned a gardening plot."* She suggests that the gardening has contributed to residents getting to know each other and helped neighbours to socialize. (Riksbyggen, 2019). The program of the greenhouse includes gardening and social interaction. The greenhouse is described by the developer as a room "with space for cultivation, socializing, play, and various games" (Riksbyggen, 2019). The design of the green house can be described as a centrally located indoor staircase with terraces for growing on both sides (Figure 5). The staircase lacks handrailing and surface contrast, limiting who may actually use the greenhouse in the ways intended.

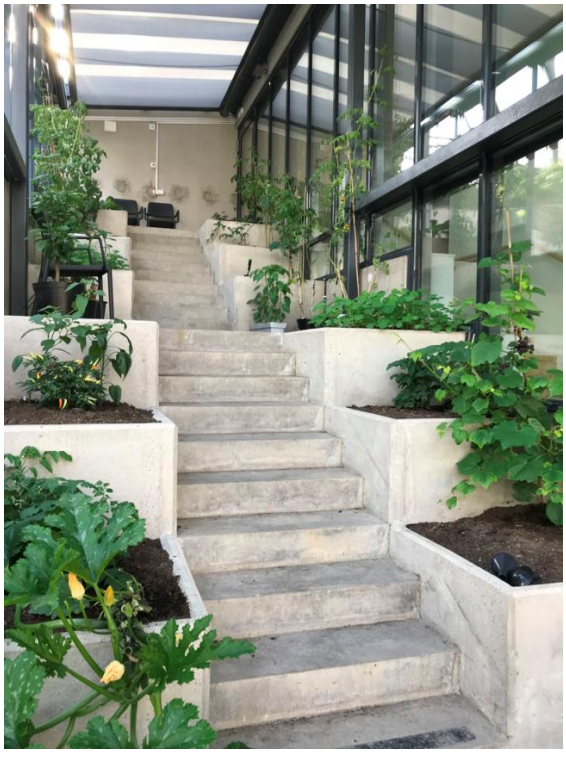

Figure 5. The communal greenhouse. (Photo: Lilian Müller)

Outdoor community spaces – a matter of stairs in an intriguing topology.

The framed landscaping of the three yards of Brf Viva is far removed from conventional yard designs with lawns and shared open spaces. These yards are instead characterized by their rough and inaccessible terrain adding to the overall challenges regarding accessibility (Müller et. al, 2022). Walkways consisting of stairs, paths and platforms have been constructed over the rocky terrain to lead residents between the buildings (figure 6 &7). Considering the interest in social sustainability, including extensive collaborations with research, the project is surprisingly poor in terms of social inclusion. Most of the outdoor staircases are composed of steel grids (figure 8), and sometimes the natural ground is integrated in the system of stairs (figure 9). Together this makes it difficult to use the stairs for anyone who is not a confident walker. Only one major platform can be accessed without using stairs.

Overall, it is easy to agree with the researchers involved in the Brf Viva project that it is characterised by an absence of universal design (Gromark et al 2021). Despite its focus on fostering community, its design consistently excludes individuals from participating in shared and common spaces, as we have seen, indoors as well as outdoors(Müller et. al, 2022). How come that designs of stairs, pathways and plateaus are not thought of in regard of a broader spectrum of abilities. How is it that a project deeply engaged with matters of social sustainability completely missed the mark on accessibility and issues related to human diversity?

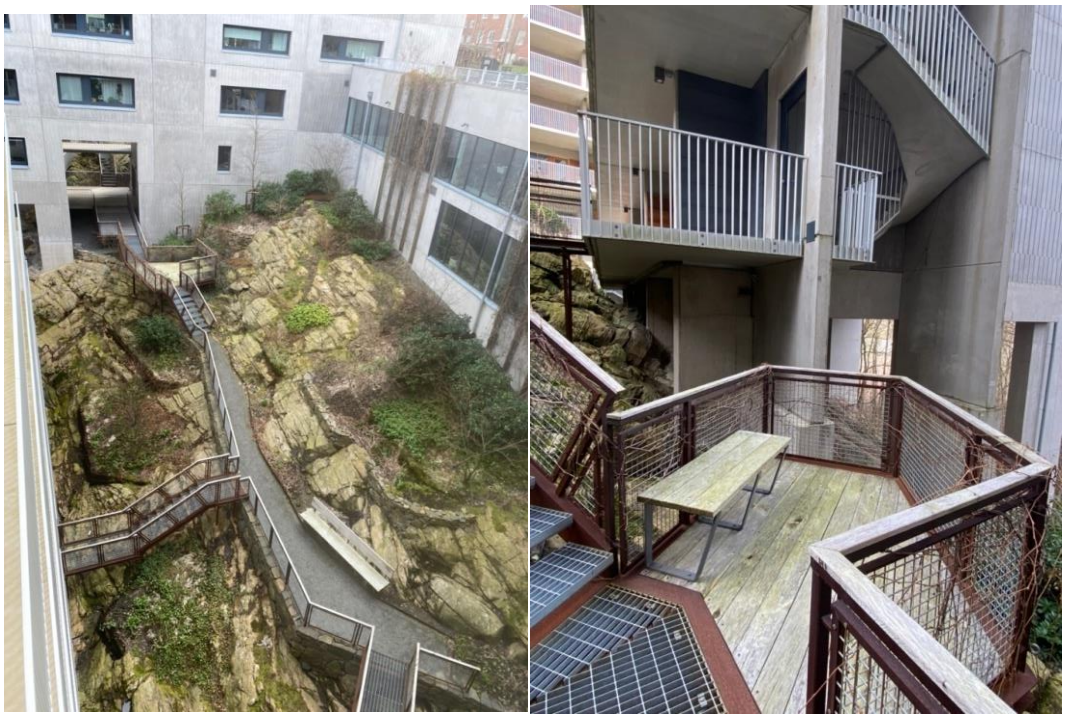

Figure 6 &7. The walkways in the yards consist of stairs, paths, and platforms with or without benches. (Photos: Ida Sandström)

Figure8. Staircases composed of steel grids. Figure 9. The natural ground is sometimes integrated in the system of stairs. (Photos: Ida Sandström)

Concluding discussion: the existential quest for integration of social sustainability and universal design

As observed in the case of *Brf Viva*, as well as in previous examples of social stairs aimed at both transport and social interaction, they frequently remain inaccessible to individuals unable to ascend stairs, due to for instance lack of horizontal ways to access plateaus, relevant railing, or sufficient coloring. Such oversight does not only limit access for some, but also has the unintended effect of reinforcing discriminatory attitudes. The presence of inaccessible staircases risks sending a message about who is valued and included in a particular space, a space which otherwise is given much place-formatting, even specific poetic attention. In general, such lines of community division becomes particularly problematic when social staircases are used in public buildings and in public spaces. The utilization of social staircases in public spaces carries the risk of unintentionally reinforcing discriminatory practices and attitudes in society at large. Hence, the democratic promise inherent in the social staircase remains unrealized so long as its access remains limited to certain individuals and bodies.

By using the social staircase as a lens, we shed light on the divide and unbalance between efforts in universal design and those in social sustainability. As we approach the end of this paper, we venture to speculate and look ahead by asking: *Can the limitations of social staircases forward a discussion on inclusive spatial design?* Despite the inherent challenges posed by spatial demands and social interaction, an integration of perspectives, knowledge and experiences from social sustainability on the one hand, and universal

design on the other, should be able to radically reform the design of the social staircase, as well as, in extension, of other urban and architectural infrastructures aiming at social well-being (Frichot et al 2017). We suggest that an integration of social sustainability and universal design would benefit from a broader, more existential, spectrum of thinking as regards shared urban spaces.

Discussions on universal design have often revolved around accessibility within the systemic realm, aiming to reform policies and regulations, after scrutinizing discriminatory flaws in built environment. Similarly, social sustainability tends to focus on systemic societal issues such as (coping with) segregation and health at the scale of groups and populations, when not simply postulating grand collective visions. Earlier attempts at combining Social Sustainability with Universal Design have formulated objectives like: "the connection between UD and sustainable development can be built up in a way that a design solution is not truly considered sustainable until it is accessible" (Vavik 2010, 305). The common systemic use of the term "social" tend to neglect the essence and particularities of lived experiences where existence is individually felt, this despite that social sustainability in earlier accounts have been seen as including also "the more basic needs of happiness, safety, freedom, dignity and affection" (Vavik 2010). Where, along the lines of development of the discourse and practice of social sustainability, one may ask, did such more existential views disappear? The relational and infrastructural forces that are able to support existential rights would in the same instance stand the chance to become the kind of designs and societies that avoid "unequal distribution of vulnerability" (Butler 2015, 210) as sensed amongst individuals or groups. This does not mean a design with

complete orientation towards individual's needs, but rather a consideration of the situational circumstance where an individual can act or not according to own choice (Ericsson, & Hedvall 2024). To enable integration of perspectives on human diversity and well-being, we therefore see a need to broaden the discourse to also include existential sustainability capturing basic human needs such as sense of belonging, purpose and meaningfulness in life.

Central to existential sustainability is acknowledging humans as relational individuals striving to find meaning in their lives. By examining how physical space and deep wellbeing intersect, existential sustainability reveals how our surroundings influence us and impact our sense of belonging in the world.[11]

Examining the case of Brf Viva, and the initially mentioned examples like the indoor staircases at the entrances of Forum Medicum in Lund, Sweden, and the Zachry stairs, Texas, USA, they are all intended to warmly receive visitors and offer social spaces for its daily users. Yet, it raises the question: to what extent do they invite people to make use of the staircases? What about those who cannot access the spaces? As already suggested, not everyone will find ease in the stage-like setting of a social staircase. A design that recognizes human diversity and considers the deeper psychological and existential aspects of human interaction would have to require less conformity from its users. When designing with existential sustainability in mind, a staircase would first of all ensure that everyone has equal access. This would not be enough however: for a

[11]"Existential Sustainability" is a recently emerging concept, explored for instance as the main theme of a conference 2022 at Lund University, followed by a doctoral course 2023-2024 in the Agenda 2030 graduate school program. https://projekt.ht.lu.se/existential-sustainability/phd-course/

space to be existentially sustainable it would have to offer more diverse opportunities for interaction with the physical space and other individuals. An existentially sustainable design would allow individuals to choose between visibility and seclusion as per their preference. Such design considerations would not only enhance accessibility but also promote well-being and foster a sense of belonging, integral to a broader notion of social sustainability.

In essence, by advocating for an integrated as well as expanded approach to social sustainability and universal design we aspire to acknowledge existential human concerns alongside more systemic and societal considerations. This requires a balanced approach addressing both systemic change and individual registers of well-being when designing shared and common spaces. To achieve this, we need a comprehensive understanding of individuals and the built situations that decide their existential movement of freedom, moving beyond simplistic labels like functional ability. Challenging such simplistic views of human nature, is a key to promote well-being, and make more prominent the social and democratic potential of public space, such as in the form of social staircases, as discussed in this paper.

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Letter from the Chairman's Desk

By Sunil Bhatia PhD

I was busy shopping and my childhood friend suddenly located me but I was unaware of his presence around me. He shouted close to my ear and I came under shock. I realized my friend had made this prank what we used to do in our childhood days. After our casual conversation, I took permission to leave him.

While coming out of the market I realized this sudden sound made me scared as life was in danger it made me alert. I came to normal as I found it was not a threat to me rather it was our childhood game. Why did I behave in such a way as my senses realized some threat was close to me? Is it survival instinct as our ancestors might have experienced sudden loud sounds close to them for action for safety and security? The shock and its role were exploited to the possible extent by our ancestors for killing the prey during hunting. As prey came under the influence of confusion of failing to sense of direction of attacks. They slipped into a defense strategy of curling their body to hide so as not to be noticed by others. The loud sounds from all directions generated confusion and the sudden loud beat of drums scared under shock by imagining threat was not controlled by attacking.

The role of shock has the strength to alter human behavior. It made me think about a fire brigade or ambulance making some unique sound it does not shock the people on the road but causes them to

clear roads for passing emergency services vehicles for saving life. My habit of walking after dinner mapped my mind to minute details of the road and familiarity with the path gave me another level of confidence on each step. Suddenly my leg fell into an unexpected hole in the road and my reflex actions tried to rescue me from unexpected shock of danger that might hurt. This unexpected change in the mapping of my mind resulted in shock. To meet such sudden situations that can shock the vehicle with high speed they designed a shock absorber that can absorb pressure to a certain limit and safeguard the life of the sitting persons in it.

Shock treatment is used when a doctor believes the patient has the capability but his mental block does not allow him to do so and a common case where he can stand on his feet but fear untoward makes him prefer to move on sitting in a wheelchair. The doctor designs such a situation by sending an unknown person who flashes a dragger in an attempt to kill and save his life he comes into action to run away. As the patient ran under shock, the doctor assured him was all acts were to treat your psychological treatment of mental block. The shock was guiding the patient to act for the safety of life. Shock is a clinical syndrome that occurs when blood pressure drops so low that cells and organs don't receive enough oxygen. Recently UNESCO has designed a low-cost suit for women dying with excessive bleeding after delivery of a child and medical facilities at long distances. The Non-pneumatic Anti-Shock Garment (NASG) first-aid device that limits persistent PPH, is a compression suit originally designed with technology from the United States National Aeronautics and Space Administration (NASA). At NASA, anti-gravity uniforms were developed to keep astronauts from blacking out during extreme acceleration by squeezing the arms and legs to push blood toward the head. This same

technology was used to develop NASG where external pressure is applied to a woman's lower body to drive blood upward. The NASG reduces blood flow to the uterus and treats hypovolemic shock. It can keep a woman with PPH alive for up to 48 hours. Without it, she may bleed out within 30 minutes. This buys critical time to transfer a patient to healthcare and provide treatment.

Similarly, the investigator gives shock treatment of such an incident that the criminal loved most by telling them something wrong happened to him. He physiologically broke under such shocking news and confessed what he did.

Our ancestors were wiser and knew any shock to an earthen pot might damage so they protected by all means not to come under any strike. Women preferred carrying the earthen pitcher over their heads or holding it by hand and placing it over their waist. Even they found heat has the character of shocking unbaked earthen pots so it is delicate to that level it should not come under the sudden shock of high heat and placed several items in the furnace for baking where the shock of heat should not damage while baking. In cooking, we add curd while preparing vegetables for gravy by adding spices in curd before adding vegetables on fire for cooking. It needs proper low heat and continuous stirring to avoid shock for curd and not to turn thick and separate milk lump but smooth consistent gravy. Animals are no exception; experience and undergo shock if find someone is killed from the herd. In butchery, animals are kept away and designed not to come under the shock of killing other animals. It is believed that shock in them releases some harmful hormones as they encounter such killing by others. The altering behavior of animals guides humans to kill in isolated places where other animals should not see those in line with killing. The plant also experienced shock and that is visible

in touch –not plant when someone reaches close to the leaves it squeezes for safety to avoid any kind of shock.

A vehicle accident can be fatal and most delicate and its damage can be greater than any part of the body's head. They prevented this by designing the Helmet with such material that is strong enough to meet the strike and designing part care for damage to the head with no or low damage with a Raindrop Prevention Mechanism and Shock Absorbing Liner. The latest vehicle can attain high speed compared to vehicles of the early 1950's so the amount of shock is very high to prevent the person sitting in it and the response time should be very low to protect the damage due to shock. Airbags are introduced that inflate with small shocks or sudden jerks for safety in no time . To absorb the shock they designed a bumper at the rear as well as at the back of the vehicle to lower the impact of shock for the safety of people sitting in it.

Personal mechanical weighing machines are available with shock-absorbing mechanisms.

An explosive has many basic characteristics. It is a chemical compound or mixture ignited by heat, shock, impact, friction, or a combination of these conditions. Bomb squad personnel are guided by physical observation of the types of techniques for defusing it. A general theory of explosives is that the detonation of the explosives charge causes a high-velocity shock wave and a tremendous release of gas. The shock wave cracks and crushes the rock near the explosives and creates thousands of cracks in the rock.

The fear of shock can cause damage to the assets and the shock intensity is day by day changing with the introduction of high speed. To meet such challenges people have designed various materials for

meeting such challenges. Shock-absorbing materials may also be called shock-absorbing polymers, viscoelastic polymers, viscous polymers, or simply polymers. There are many other shock-absorbent materials available like rubber, neoprene, silicone, etc. I remember an incident in the early 1960s where airplane staff on board never allowed women to wear pencil-heeled shoes because they feared fearing the material used in building planes did not have enough strength to meet such pointed pressure from women. Handheld mobile phones' chances of falling on the ground are very high to meet such challenges they designed a specific cover with such material that absorbs shock and generates high energy while striking with floor for protection of internal electronic parts from damage. Accidental fall of specs or such items from hand where a fall has a probability of damage because it generates shock waves after striking on ground and needs special care for meeting such challenges. First, use a material that can not be damaged under certain shocks after accidentally falling or wrap or cover with such material that can absorb the shock and defuse its sudden high-rise energy. Bulletproof shield or material works with the same principle. The entire packaging industry's basic rule is to transport the material from one place to another with care to meet all possible shocks that can damage the assets. They are wrapped with thermocole or plastic paper with blisters knowing roads are uneven and high-speed vehicles will make the probability of generating shock with any accident.

It is great honor for us that Per-Olof Hedvall, associate professor in Rehabilitation engineering and design at the Department of Design Sciences, Lund University, and Professor in Design at the Department of Natural Science, Design and Sustainable Development, Mid Sweden University accepted our invitation and he invited Prof Stina Ericsson

as Co-editor. It is really wonderful working with people with great passion and a perfectionist who never compromise their work ethics. I hope our readers will enjoy this special issue.

Lambert Academic publication for celebration of the 150th special issue by publishing a book by compiling editorials "Design For All, Drivers of Design" in two sets Drivers of Design Drivers of Design Volume-II was translated into eight different languages from ENGLISH to French, German, Italian, Russian, Dutch, and Portuguese. Kindly click the following link for the book. "Morebooks", one of the largest online bookstores. Here's the link to it:

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Enjoy reading, be happy, and work for the betterment of society.

With Regards

Dr. Sunil Bhatia

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Forthcoming Issues

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His areas of specialization are Textiles and Graphic Design with an emphasis on the utilization of the New Media Arts for Effective Communication and Social Transformation. His other areas of interest are in Indigenous Knowledge, gender, technology and media studies.

Dr. Vikiru has had over twenty five years teaching experience at University where he has also carried out research, published widely and gained managerial experience.

August 2024 Vol-19 No-8

Dr. Bijaya K. Shrestha ***received Doctoral in Urban Engineering from the University of Tokyo, Japan (1995-'98), Master in Urban Design from the University of Hong Kong, Hong Kong (1993-'95) and Bachelor in Architecture from the University of Roorkee (now Indian Institute of Technology), India (1983-'88). Dr. Shrestha has got working experiences of more than two decades. He had already served to the Department of Housing and Urban Development, Ministry of Housing and Physical Planning, Government of Nepal, United Nations Centre for Regional Development (UNCRD), Japan and various architectural schools in Nepal before taking the present job at Town Development Fund (TDF). He has initiated a new master program in Urban Design and Conservation at Khwopa Engineering College, Purbanchal University, where he served two years as Head of Post-graduate Department of Urban Design and Conservation.***

Dr. Shrestha is the recipient of numerous gold medals for his excellent academic performance and decorated by 'Calcutta Convention

National Award 2006' by Indian Society for Technical Education for his best paper at the 35th ISTE Annual convention and National Seminar on Disaster – Prediction, Prevention and Management. He is also member of numerous professional bodies and life member of various alumni associations. He has already contributed more than five dozen of papers, published in various forms: book chapter, international journals, conference proceedings, local magazines and journals including in local newspapers. Moreover, he has been invited in numerous international conferences for presentation of his research findings. Finally, his field of expertise includes sustainable urban development, disaster management, housing, local government capacity building and development control. He will focus on universal design concept on Nepal

September 2024 Vol-19 No-9

Steinar Valade-Amland.

He is market economist, and after more than 30 years of professional practice, I have accumulated extensive and valuable experience from a wide range of industries and manegerial roles within marketing and sales, communication, PR and advocacy - leading to the design industry as an account director and later CEO of one of Denmark's

leading brand design agencies, culminating in the role of spokesperson for the Danish design community, heading Danish Designers - parallel with holding numerous honorary positions.

My primary role today is helping organisations and management teams to establish the best possible baseline for business development and change processes - through stakeholder engagement and moderated processes, through organisational learning and co-creation. I'm rather agnostic when it comes to models and methods, but design thinking and processes inspired by design methodologies are part of my DNA after 30 years in and closely connected to the industry.

He ***authored numerous articles and book contributions, amongst others with 15 articles to the Bloomsbury Encyclopaedia of Design, out in 2015.***

His latest book, DESIGN: A BUSINESS CASE - Thinking, Leading, and Managing by Design written together with Brigitte Borja de Mozota, is now out in English, Hindi and Korean.

October 2024 Vol-19 No-10

Sharmistha Banerjee, PhD ***Assistant Professor, Department of Design & Associated Professor, Centre for Disaster Management and Research, Indian Institute of Technology Guwahati***

She is an Industrial Designer with extensive experience in collaborative innovation and sustainable product design. Presently, I hold the position of Assistant Professor in the Department of Design at the Indian Institute of Technology Guwahati. My doctoral research explored Design for Sustainability, specifically focusing on the development of scale-appropriate agricultural equipment. My academic journey began with a Bachelor's degree in Industrial Design from IIT Guwahati, followed by a Master's degree in Integrated Product Design from the Technical University of Delft, Netherlands, culminating in a PhD from IIT Guwahati.

I co-founded the Sustainability and Social Innovation Lab at the Department of Design, IIT Guwahati, which aims to redefine systems for sustainable human consumption and production. Our design interventions strive for a profound transformation of the consumption structure. The lab is an active participant in the Learning and Education Network in Sustainability (LeNS), a global consortium of over 150 universities dedicated to sustainability. A significant portion of our work focuses on sustainable product-service development projects within the agricultural sector.

ISSN: 2582-8304

New Books

https://www.morebooks.shop/shop-ui/shop/book-launch-offer/74414a1df61c3d2ea8bf46ae7e3c0cf31769f261

it is available on www.morebooks.de one of the largest online bookstores. Here's the link to it: https://www.morebooks.de/store/gb/book/design-for-all/isbn/978-613-9-83306-1

The Ultimate Resource for Aging in Place With Dignity and Grace!

Are you looking for housing options that are safer and more accommodating for independently aging in place? Do you want to enjoy comfort, accessibility, safety and peace of mind – despite your disabilities, limitations and health challenges? The help you need is available in the Universal Design Toolkit: Time-saving ideas, resources, solutions, and guidance for making homes accessible.

This is the ultimate resource for individuals and professionals who want to save time, money and energy when designing, building, remodeling or downsizing a home. The Universal Design Toolkit will help you take the steps to design homes for your clients or yourself while eliminating the costly trial and error challenges you'd inevitably encounter if faced with this learning curve on your own.

Rosemarie Rossetti, Ph.D., teamed with her husband Mark Leder in creating this unique Toolkit. They bring ten years of research, design and building expertise by serving as the general contractors for their home, the Universal Design Living Laboratory– which is the highest rated universal design home in North America.

Within the Toolkit's 200 richly illustrated pages, you'll find: Insights that distinguish *essential* products, services and resources from the *unnecessary*.

Proven, realistic tips for finding the right home.

Home features you need to look for. Nothing is assumed or left out.

Handy home checklists and assessments.

Interview questions to help you hire industry professionals with knowledge and experience. Photographs that provide a frame of reference to inspire, clarify and illuminate features andbenefits.

Valuable resources to save you time, money and energy.

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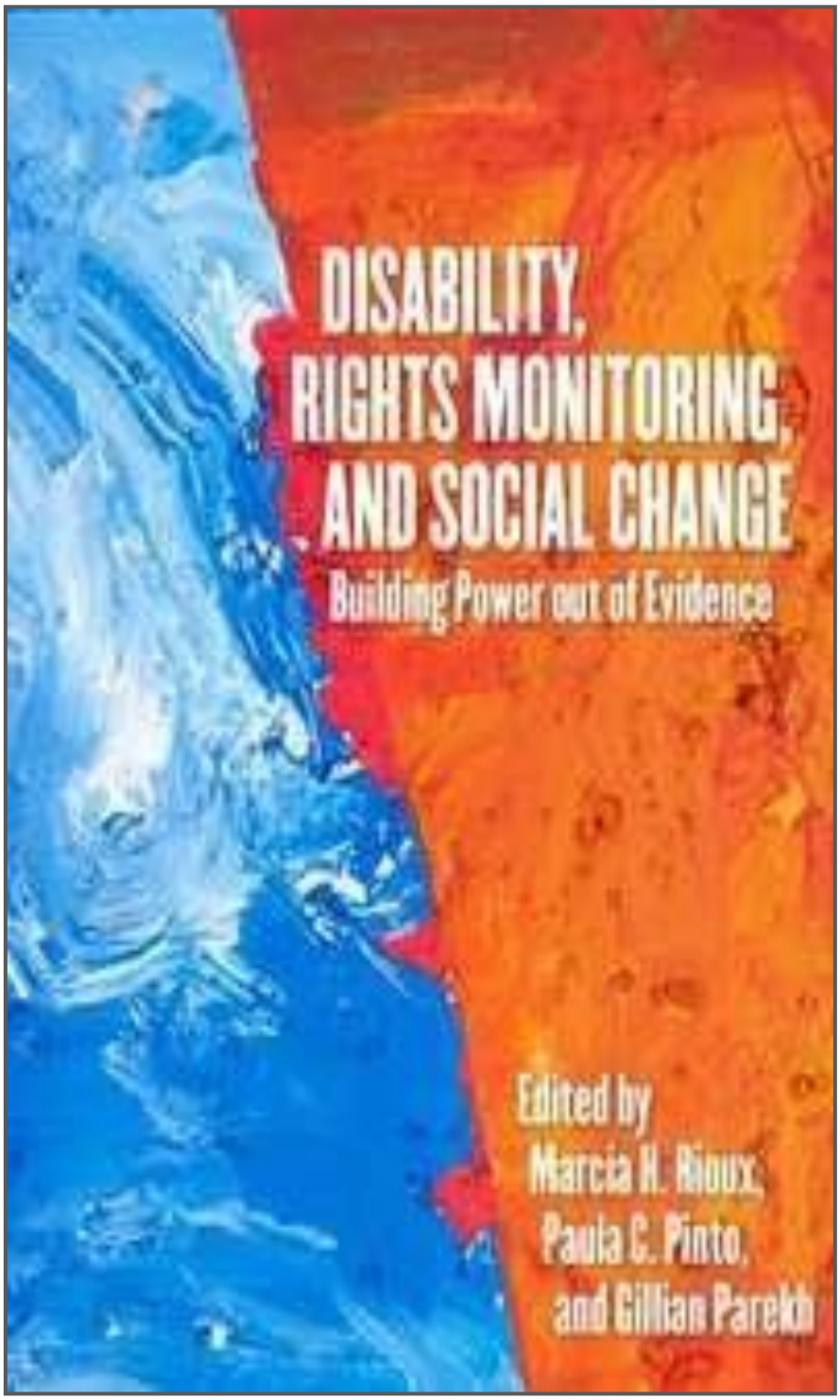
Space planning dimensions for access using assistive devices such as wheelchairs andwalkers.

And so much more!

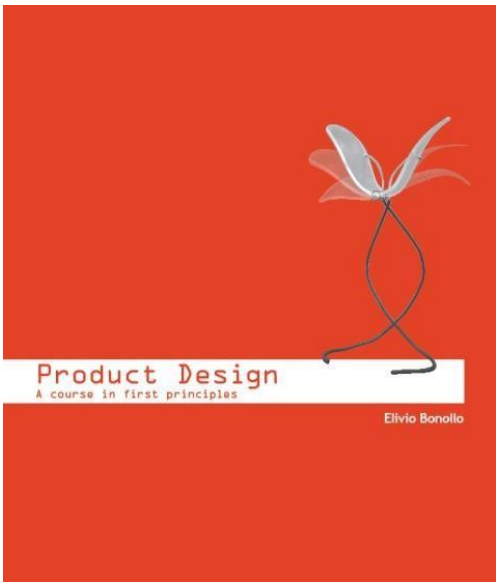
If you want useful, dependable advice and easy to implement ideas from respected experts who know the ropes, you'll love Rossetti and Leder's perspective. As a speaker, author and consultant who uses a wheelchair, Rossetti has helped hundreds of people design their ideal homes. Now her comprehensive Toolkit is available to help and support you! Get the Universal Design Toolkit now to start your project!

Disability, Rights Monitoring and Social Change:



New Update: ELIVIO BONOLLO (2015/16) PRODUCT DESIGN: A COURSE IN

FIRST PRINCIPLES



Available as a paperback (320 pages), in black and white and full colour versions (book reviewed in Design and Technology Education: An International Journal 17.3, and on amazon.com).
The 2018, eBook edition is available in mobi (Kindle) and ePub (iBook) file versions on the amazonand other worldwide networks; includingon the following websites:
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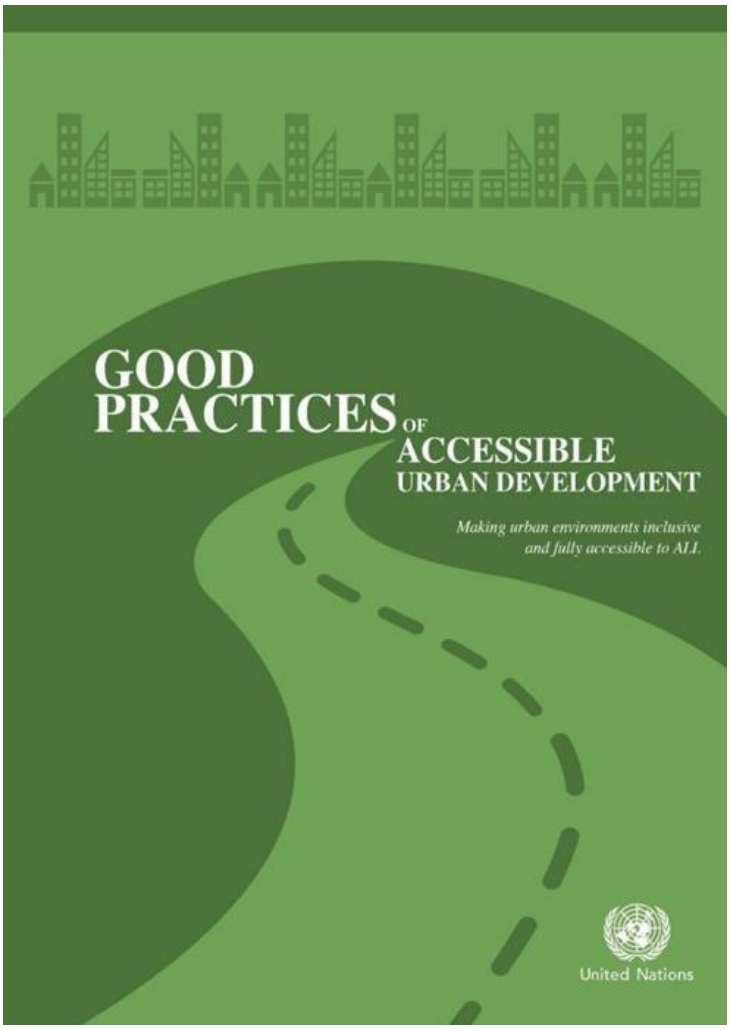
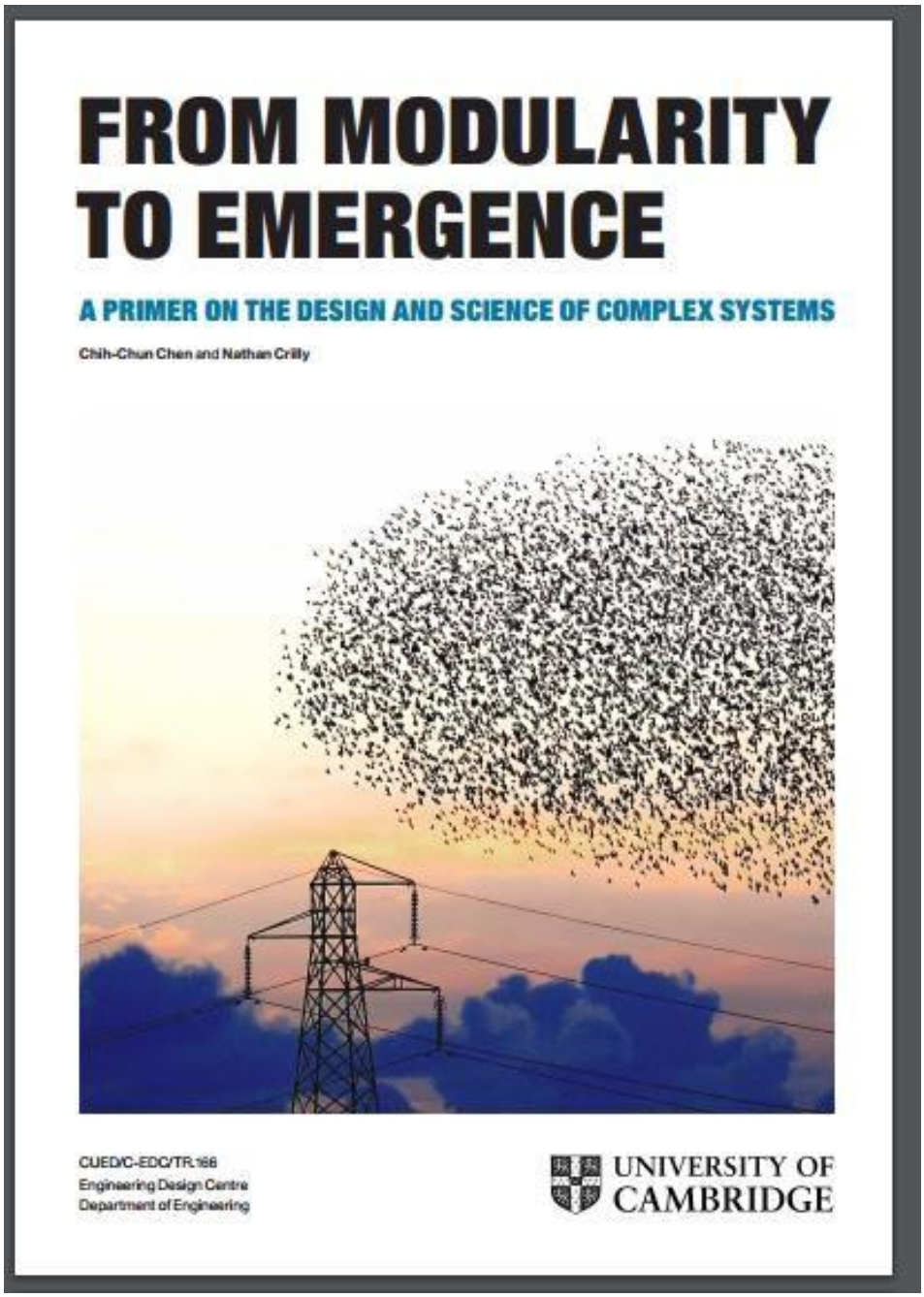


In light of the forthcoming United Nations Conference on Housing and Sustainable Urban Development (HABITAT III) and the imminent launch of the New Urban Agenda, DESA in collaboration with the Essl Foundation (Zero Project) and others have prepared a new publication entitled: "Good practices of accessible urban development".

The publication provides case studies of innovative practices and policies in housing and built environments, as well as transportation, public spaces and public services, including information and communication technology (ICT) based services.

The publication concludes with strategies and innovations for promoting accessible urban development. The advance unedited text is available at:http://www.un.org/disabilities/documents/desa/good_practices_urban_dev.pdf



Dr Chih-Chun Chen and Dr Nathan Crilly of the Cambridge University Engineering Design Centre Design Practice Group have released a free, downloadable book, _A Primer on the Design and Science of Complex Systems_.

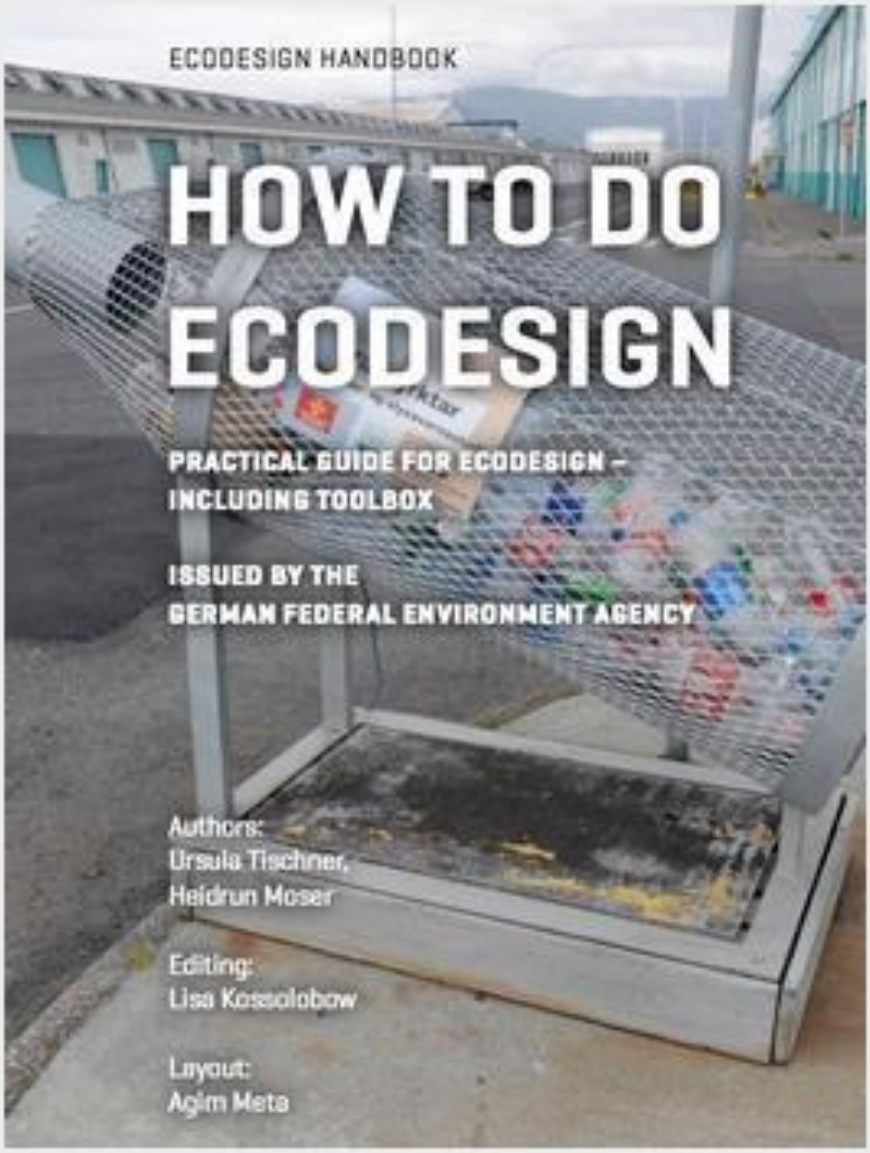
This project is funded by the UK Engineering and Physical Sciences Research Council (EP/K008196/1).

The book is available at URL: http://complexityprimer.eng.cam.ac.uk

ISSN: 2582-8304

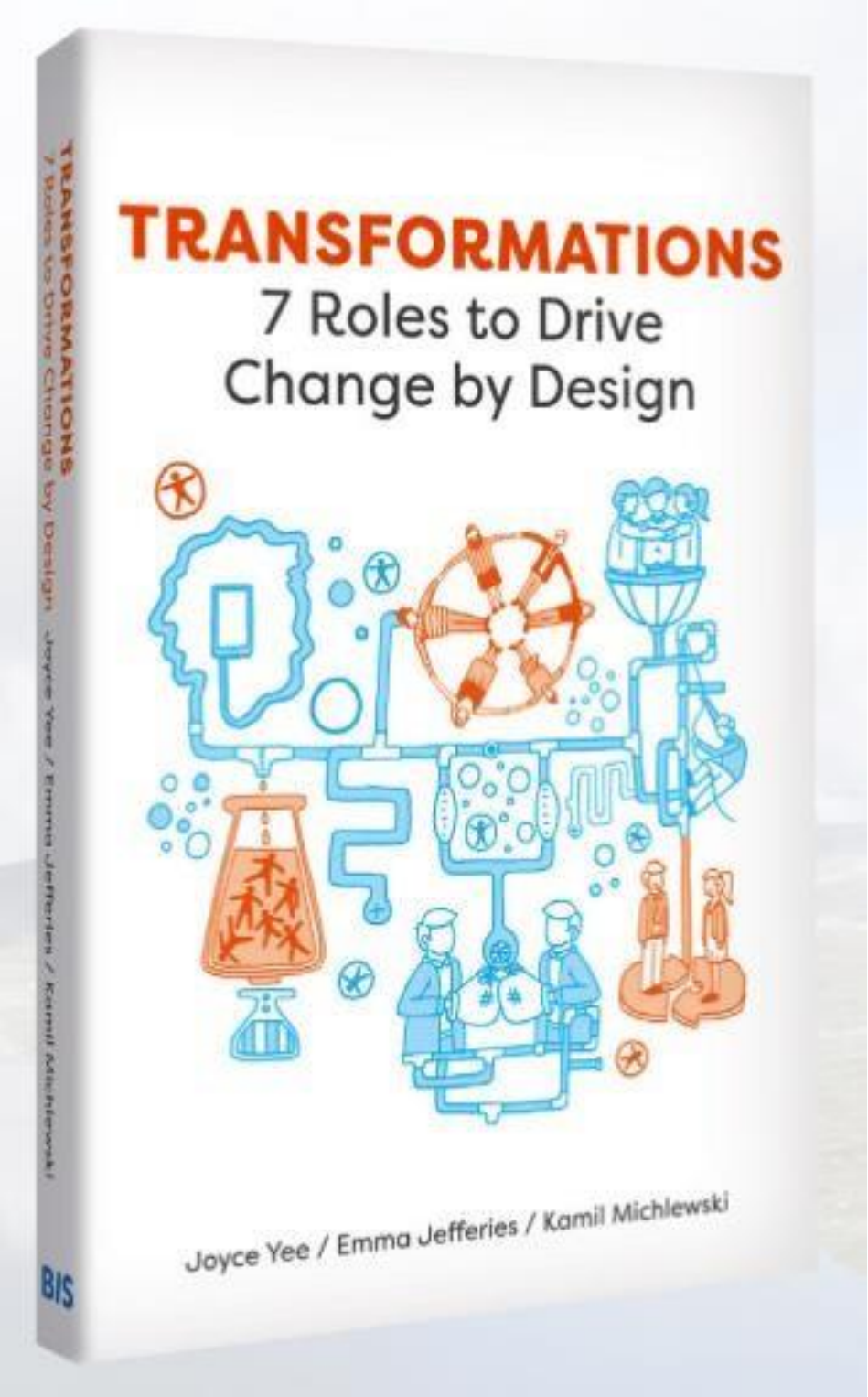
Changing Paradigms: Designing for a Sustainable Future

New iBook / ebook:
HOW TO DO ECODESIGN



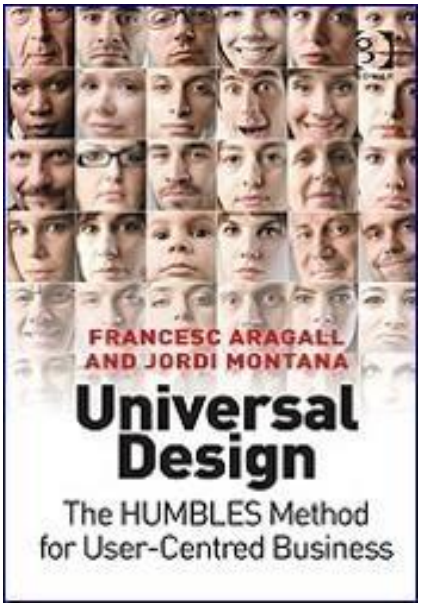
Practical Guide for Ecodesign – Including a Toolbox
Author: Ursula Tischner

ISSN: 2582-8304



ISSN: 2582-8304

Universal Design: The HUMBLES Method for User-Centred Business



"Universal Design: The HUMBLES Method for User-Centred Business", written by FrancescAragall and Jordi Montaña and published by Gower, provides an innovative method to support businesses wishing to increase the number of satisfied users and clients and enhance their reputation by adapting their products and services to the diversity of their actual and potential customers, taking into account their needs, wishes and expectations.

The HUMBLES method (© Aragall) consists of a progressive, seven-phase approach for implementing Design for All within a business. By incorporating the user's point of view, it enables companies to evaluate their business strategies in order to improve provide an improved, more customer-oriented experience, and there by gain a competitive advantage in the marketplace. As well as a comprehensive guide to the method, the book provides case studies of multinational business which have successfully incorporated Design for All into their working practices.

According to Sandro Rossell, President of FC Barcelona, who in company with other leading business professionals endorsed the publication, it is "required reading for those who wish to understand how universal design is the only way to connect a brand to the widest possible public, increasing client loyalty and enhancing company prestige". To purchase the book, visit either the Design for All Foundation website

Nina Foundation's latest E Book has been Published on following online platforms. Now you have more options to download and read
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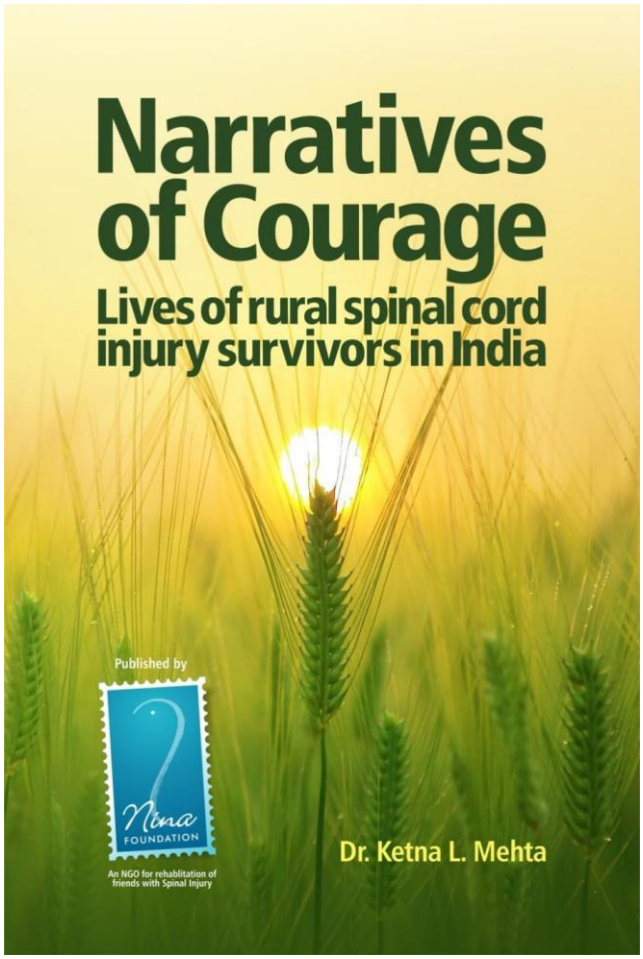

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NOW AVAILABLE
Case Studies in Applied Behavior Analysis for Individuals with Disabilities (Second Edition)
Keith Storey, Ph.D., BCBA-D
Linda Haymes, Ph.D., BCBA-D
This book responds to a critical need for highly qualified personnel who will become exemplary professionals because of their advanced knowledge, skills, and experiences in working with students and adults that have varying disabilities, including Autism Spectrum Disorders (ASD). Since Board Certification for behavior analysts was introduced, there has been an expansion of training programs in Applied Behavior Analysis to meet the demands from school districts, health insurers, and families. In spite of these developments, a case studies book has not been available that uses the Behavior Analyst Certification Board Task List, Fifth Edition (BACB) guidelines for educating individuals receiving their BCBA, or for those in the field such as teachers, and service providers. The goal of this book is to fill that need. In this newly revised second edition, eighteen case studies are provided—case studies with complete analysis, case studies with partial analysis, and case studies without analysis. The format, readability, and detailed description of instructional methodology makes this text a valued resource for instructors and behavior analysts responsible for improving the skills of people with disabilities.
Charles C Thomas, Publishing is proud to announce the release of this second edition.
For more information, or to order your copy, scan the QR code below!
$59.95 [paper] ISBN 978-0-398-09400-3
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Contents
Case Studies in Applied

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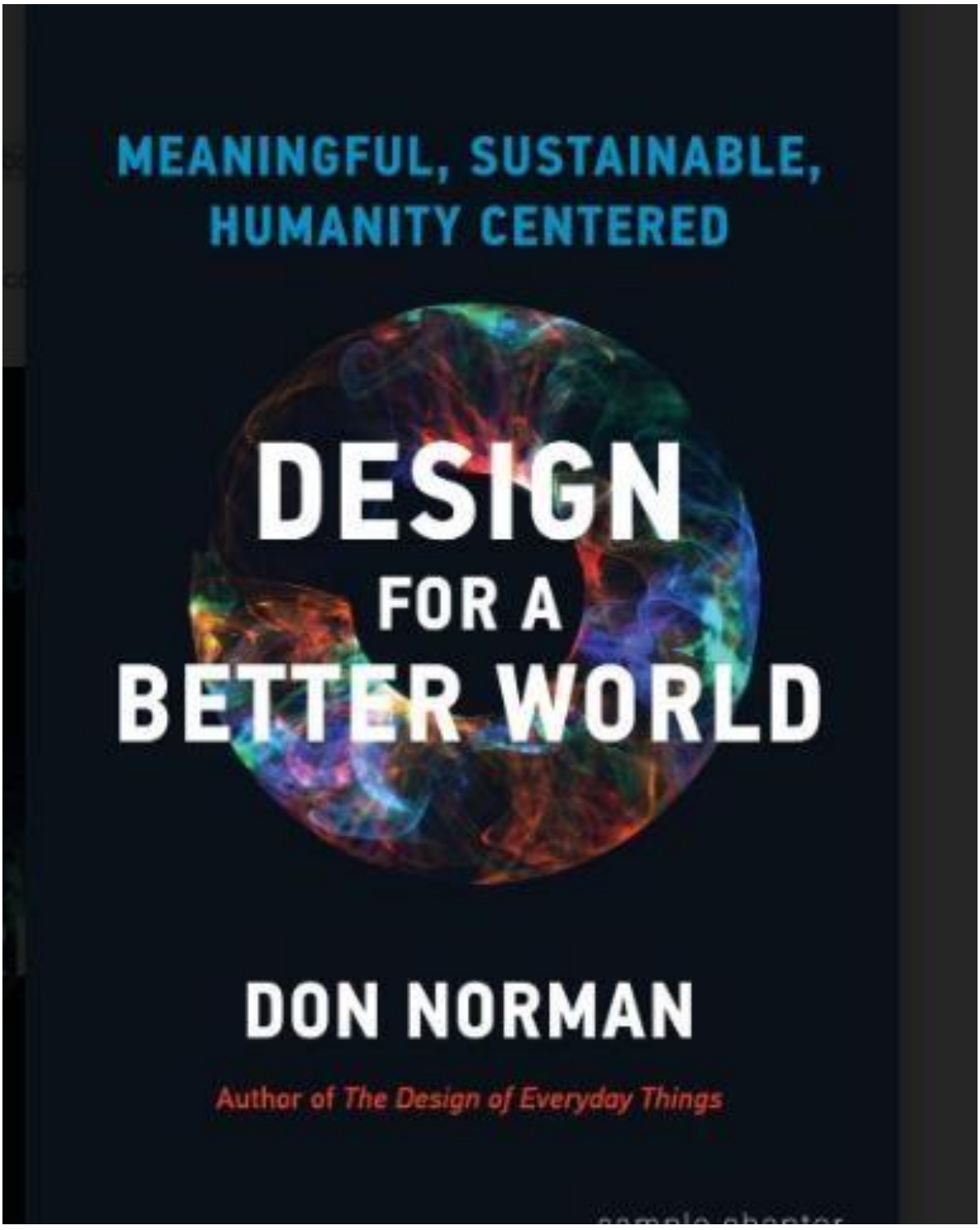

ISSN: 2582-8304

News

1

Beginning your organisation's digital accessibility journey

Use our guidance to improve disability inclusion with digital accessibility.

Introduction

The Legally Disabled? research found that the legal profession did not always appreciate the legal obligation under The Equality Act 2010 to provide reasonable adjustments.

Section 8 of the qualitative data findings suggested; if used appropriately and with a range of diverse end users in mind, information technology (IT), can be an enabler and improve accessibility and efficiency, potentially to the benefit of all.

Following this research, our reasonable adjustments guidance shared good practice recommendations, tips and examples from law firms and legal organisations that have successfully implemented reasonable adjustments.

The guidance served as a starting point and the intention was to expand on certain topics with further tips – digital accessibility was one of these topics.

When compiling the reasonable adjustments guidance, we heard that many technologies and digital processes in law firms and organisations presented barriers to accessibility for disabled users.

Feedback from law firms, organisations and disabled individuals highlighted common issues:

- **existing technologies are not accessible (i.e. not designed with the needs of different users with varying needs at the outset, which can then present barriers for disabled people)**
- **lack of compatibility of assistive technology with an organisation's existing technology, systems, and rules**

Accessibility requirements of disabled users are often not considered when technology is developed, procured, or upgraded.

This means that disabled people are disadvantaged because they cannot use their organisation's standard technology without adjustments being made to it, or they have compatibility issues when using it with their specific assistive technology.

At a time when the legal sector is increasingly being encouraged to explore the use of legal technologies to enhance legal practice, it is important that law firms and organisations are not creating barriers by failing to consider accessibility at a baseline level.

Instead, firms and organisations should use the opportunities that technologies bring to create a more accessible and inclusive profession for everyone.

We know that starting an organisational accessibility journey is not easy, and that there is a vast amount of information available which makes it difficult to know where to begin.

This guide aims to assist organisations at the beginning of their accessibility journey.

No matter how big or small your firm, in-house team, or organisation, you can make a positive change to improve disability inclusion as regards to the accessibility of technology.

Whatever firm or organisation you work in, if you're looking at purchasing a new technology solution, this guidance will still be applicable to you.

Note on terminology

This guide uses the terminology set out in our reasonable adjustments guidance, including, but not limited to, the meaning of disabled.

The term, technology or technologies, used throughout this guide includes, but is not limited to:

- **hardware**
- **software**
- **apps**
- **video conferencing tools**
- **audio equipment and solutions**
- **case management systems**
- **digital infrastructure**
- **online portals**
- **websites**

Assistive technologies means technologies that support disabled individuals and those with restricted mobility or other impairments to perform functions that might otherwise be difficult or impossible.

Read a detailed explanation of what assistive technology is on Scope's website.

The Law Society of Ireland's Technology Committee has also gathered a non-exhaustive list of software solutions available that are implemented in some law firms operating in Ireland.

Accessibility and digital accessibility are defined under: What is accessibility?

What is accessibility?

Definition of accessibility

There are various definitions of accessibility. The term can apply to physical and digital spaces, products, devices and services.

Broadly speaking, accessibility ensures that as many people as possible can access, use, and have the intended benefit of the product they are using. Accordingly, the product should encompass features that enable individuals to access it in a variety of ways.

For the purposes of this guide, we will be applying accessibility to digital technologies.

Accessible design and development seeks to ensure that a disabled person has direct access to use the technology or software unassisted

and indirect access to use the technology or software with assistive technologies.

Accessibility does not happen by accident and requires deliberate and planned consideration.

There are two interrelated methodologies that are commonly used to achieve accessibility.

Universal design

Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation, or specialist design.

The general aim is to improve the digital, physical and social environment and therefore reduce the need for 'special' provisions and assistive technologies.

Inclusive design

Inclusive design considers the full range of human diversity with respect to ability, language, culture, gender, age and other forms of human difference.

This means including and learning from people with a range of perspectives and understanding the specific barriers they face, so these can be mitigated.

Unlike universal design, inclusive design does not necessarily mean you are making one thing for all people. Instead, you are designing a diversity of ways for everyone to participate in an experience with a sense of belonging.

Many people are unable to participate in aspects of society, both physical and digital. Understanding why and how people are excluded gives us actionable steps to take towards inclusive design.

Google states that accessibility is a mindset, not a tick box to complete. "To effectively create for disabled people, recognize every single decision as an opportunity to build toward an accessible experience. Rather than thinking of accessibility as a checklist, approach it as a practice that is infused with mindfulness and empathy and can have a great impact on people's lives."

Where digital accessibility needs to be considered

There are many common systems, practices and processes in the legal profession where digital accessibility is important and should be considered:

- **document management systems**
- **time recording software**
- **billing processes and software**
- **document signature platforms**
- **document creation, drafting and review software**
- **presentation materials**
- **internet and intranets**
- **marketing materials**
- **digital and hybrid meetings and events**
- **customer/client relationship management (CRM) systems**
- **training platforms and content**
- **organisational policies**
- **data rooms**
- **recruitment software**
- **automated transaction systems**

Who should be involved with digital accessibility?

It is often assumed that only technology teams procure technologies for the business but in practise, it is purchased by:

- **HR**
- **business support and management**
- **recruitment**
- **diversity & inclusion**
- **learning & development**

It is important that each of these teams has an awareness of digital accessibility and incorporates it into procurement of new technologies.

Some organisations have an accessibility champion to promote digital accessibility best practice throughout the business.

They cannot work in isolation. Others need to have knowledge to ensure business continuity if the accessibility champion is not available.

They should also be:

- **linked in with senior leadership teams**
- **visible to the business**
- **involved with the project scoping process to ensure digital accessibility is considered from the outset**

If your organisation does not have an accessibility champion, consider providing training to the teams who are involved with developing or procuring technologies or innovating in artificial intelligence ('AI') advances.

There are various companies who can provided specific accessibility training.

Alternatively, your team could start by attending Microsoft's free Ability Summit or browsing HSBC's Accessibility Hub where you can learn from leading experts on how you can embed inclusive solutions to your organisation.

It is also important to engage with your disabled employees or network groups when procuring and developing technologies. Their feedback, experience, and suggestions should be catered for in the design stages.

If you do not have a network or a group of disabled people who you can liaise with, consider consulting with disabled persons organisations.

Some organisations require final sign off from senior leaders before any major purchases or process changes. Therefore, you could up-skill your senior leaders by informing them of the reasoning behind accessibility and its importance.

You could also add in a mandatory requirement that accessibility must be considered (provided with evidence) to gain final approval from the senior leaders.

New technologies - how to introduce inclusive design and accessibility

Project scope

When scoping out the design requirements of your required technology, ensure accessibility is included from the outset and the project team has the skillset to deliver on this.

Before engaging with suppliers, you might want to consider:

1. creating a list of all assistive technologies currently in use by disabled employees

This could include:

- **dictation**
- **magnification**
- **speech recognition**
- **mind mapping**
- **text to speech software**

This will aid discussions with the suppliers as you will be able to directly ask whether their product is compatible with use of the assistive technologies you have.

2. liaising with disabled individuals and employee network groups

This will help to understand whether they have had current or previous issues with technologies. It's important to learn from their lived experience to help shape future design requirements.

3. using diversity and inclusion (D&I) data collected

You can assess current numbers of disabled employees within your organisation to inform your design requirements.

Many people within your organisation may not have shared this information, so even if your data shows a small population of disabled staff, the actual number is likely to be higher.

Deciding what international standards are applicable and whether compliance with these is included in the project specification and contractual deliverables.

4. thinking about how existing systems will interact with the proposed technology

It is important that when the two products integrate, both are accessible and that the integration will not hinder overall accessibility.

5. considering upskilling your in-house developers

You could use an accessibility course designed for developers and coders.

Your team should have the technical know-how to mediate and rectify issues if they arise.

Procurement discussions with suppliers

There are international standards that list out accessibility requirements for technologies.

You can request that your suppliers comply with these standards and build these into your design requirements.

The two applicable standards are:

1. Web Content Accessibility Guidelines (WCAG)

The current WCAG guidelines explain how to design web content which is accessible for a wide range of disabled people.

The guidelines cover web-based systems and the WCAG website includes stepped guidance and examples of code to help you meet the standards.

2. International Organization for Standardization (ISO Standards) (ISO/IEC Guide 71:2014)

ISO is an international code of practice for creating accessible Information and communication technology (ICT) products and services.

It enables organisations to embed accessibility into their processes by providing guidance to standards developers on addressing accessibility requirements and recommendations in standards that focus, whether directly or indirectly, on systems (i.e. products, services and built environments) used by people.

If you are a UK public body, your websites and services must be accessible to disabled people. Within this, intranet and internal websites are covered by the accessibility regulations. You can learn more about understanding accessibility requirements for public sector bodies on the government website.

Although the duty is placed upon public bodies, it is important to remember that private organisations are required by the Equality Act 2010 to make reasonable adjustments for both disabled employees and service users.

If you are an international organisation, you will also need to review laws and best practice across jurisdictions.

Our reasonable adjustments guidance also recommended to ask your supplier whether there are any accessibility features that can be switched on within the supplier's technology. If there are, these could all be enabled as standard (to the extent that they are compatible with the organisation's systems).

To aid your initial discussions with suppliers, The Business Disability Forum (BDF) gives a summary of suggested questions in their Request for Proposal documents.

"Even when you find good assistive or non-assistive technology, your firm may not be willing to have that technology or to ensure compatibility with other systems, and then you still have a barrier"

Hannah Clifford, solicitor at Irwin Mitchell, Disabled Solicitors Network committee memberImplementation

A key stage in the project timeline is considering the implementation and roll out of the new technology.
Key considerations are listed below.

Support and educate

Ensure there is someone visible within the organisation to support and educate employees on the accessible solutions you have to offer. This could be your accessibility champion or IT training team.

If you decide to roll out training courses enabling current employees and new starters to learn how to use the new technology, arrange for

accessibility features to be switched on as standard practice, wherever possible and ensure any training draws attention to the accessibility features built into the technology.

Remember, this could assist someone who has not shared with you yet that they are disabled.

Communicate

Communicate with your employees about new technology, say it has been designed to be inclusive and built with accessibility in mind. This will help to raise awareness of D&I across the business and may build further trust with your disabled colleagues.

Make sure that any communications themselves are accessible. Browse The Business Disability Forum's Inclusive Communications toolkit to learn more.

Build in contingency

Plan to retain some old devices during implementation in case employees cannot access the new system.

Our feedback from members is that sometimes a new technology has made existing assistive technologies inoperable, meaning some disabled employees could not work until that issue was resolved.

Retaining old devices enables these employees to continue to work while any accessibility issues on new devices or systems are rectified.

Encourage feedback

Encourage feedback from your employees and disabled employee network groups to ensure they can access the technology and/or report any issues. Gaining feedback will enable you to go back to your supplier to rectify any issues.

Review of existing digital portfolio

In addition to considering accessibility when procuring or developing new technology, you could also undertake at least an annual review of your existing digital technology portfolio and explore its current functionality in terms of accessibility.

When reviewing, consider:

- **discussing whether accessibility was considered for technologies already purchased**
- **if employees have any feedback and suggested improvements**
- **giving your employees training on any accessibility features built into products. For example, Microsoft have various accessible features throughout their suite of products and give short videos on their website demonstrating their use**
- **reviewing all devices used by staff when considering accessibility of platforms. This includes personal computer, mobile and tablet devices.**

To start with you could conduct a self-assessment to gauge your organisations current level of accessibility and if it can deliver accessibility consistently.

There are free online tools available to support you with this. For example, the Business Disability Forums Accessibility Maturity Model.

Alternatively, you could instruct an external company to undertake an accessibility audit of your digital portfolio to review whether they conform with current legislation and that they are accessible to all users, including those with specific access needs.

"Technology is innovative and exciting and can be a powerful tool to create better inclusion for everyone. Importantly, it can shatter some of those barriers disabled people face."

Demi Rixon, vice chair of the Disabled Solicitors Network committeeCommon issues and barriers

We have heard some common issues and barriers relating to digital accessibility.

Example barriers are listed below with initial thoughts for some of them.

Scenario one

When trying to incorporate accessibility considerations, I often hear the '80/20' rule.

This means that if 80% (typically non-disabled people) can use the software then that trumps the needs of the remaining 20% (typically disabled people).

How can I convince leaders that this theory, which ignores the needs of the minority, is flawed?

There is a perception that the 20% will require further time and investment, ultimately leading decision makers to ignore their needs.

This theory does not consider human diversity or the need for inclusive design – nor many organisations professed support for equality, diversity and inclusion.

The broader and more accessible you can be with your product design, the more inclusive it will be. This means that it can meet the needs of underrepresented groups and attract a wider audience.

There are many everyday items that were designed to benefit the disabled community, but which are now widely used by everyone. Inventions include bendy straws, audio books and SMS. Such inventions highlight the importance of accessibility and user friendliness.

Scenario two

We do not have that many disabled people who work for us, how can I build accessibility in for disabilities that I am not yet aware of?

Although declaration rates for disability may be low within an organisation, there may be people who haven't yet shared with you that they are disabled.

Designing with accessibility in mind will benefit those employees and therefore a wider audience than you may intend.

As a minimum, ensuring your products are functionally accessible will help to future proof your organisation from a risk perspective and will also help to attract disabled talent in the future.

Scenario three

My software developer does not have an accessibility statement or cannot tell me if has any accessible features included within its design, what should I do?

If you've experienced this barrier and have an answer to it, we would love to hear from you.

Scenario four

We have tried implementing an assistive technology which is cloud based as a Workplace Adjustment.

However, our data and security teams will not allow us to purchase the technology due to data and confidentiality issues.

What can I do as an alternative?

If you've experienced this barrier and have an answer to it, we would love to hear from you.

We want to hear from you

If you have experienced barriers that have not been addressed above or want to share your workarounds, we would love to hear from you.

Please email: diversityteam@lawsociety.org.ukBest practice insights

Beginning your digital accessibility journey can be daunting, however it is important to recognise that you are not on your own.

We encourage firms and organisations to share their insights and best practice to help others and to encourage greater uptake of digital accessibility within workplaces.

We acknowledge the differences that exist between organisations; therefore, you may want to adjust what is recommended to accommodate it to your organisation.

(Source: The Law Society)

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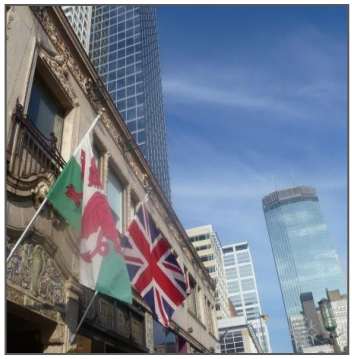
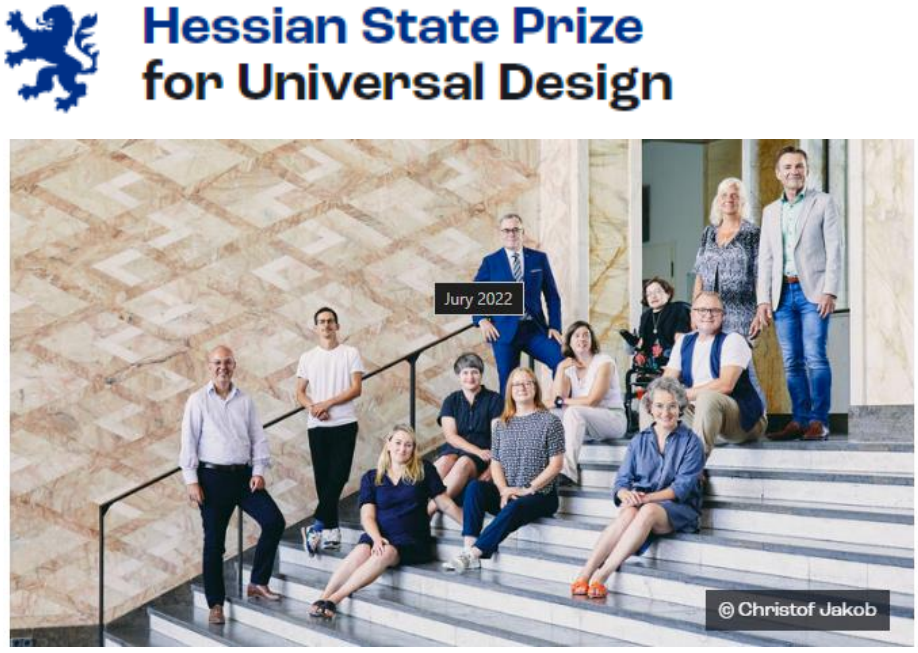


Programme and Events

ASLA 2023 Student Collaboration Award of Excellence. On the Edge: A Climate Adaptive Park fo the Battleship NC Memorial. Wilmington, North Carolina. Marguerite Kroening, Student ASLA; Stella Wang, Student ASLA; Faculty Advisors: Andrew Fox, FASLA; David Hill. North Carolina State University / Marguerite Kroening

ASLA is now accepting submissions for its 2024 Student Award Program.

Registration deadline: Friday, May 3, 2024
Submission deadline: Friday, May 24, 2024



The HSUD is advertised nationwide. You can register here until July 26, 2024.

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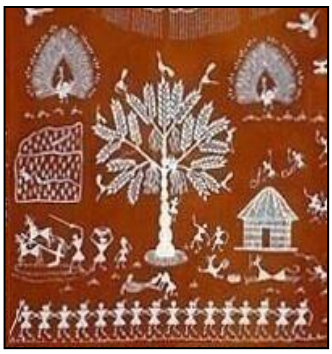

Job Openings

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