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### **exploring nonclusive design**

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*Published in:*  
Studies in Health Technology and Informatics

*DOI:*  
[10.3233/SHTI220824](https://doi.org/10.3233/SHTI220824)

2022

*Document Version:*  
Publisher's PDF, also known as Version of record

[Link to publication](#)

*Citation for published version (APA):*  
Hedvall, P.-O., Price, M., Keller, J., & Ericsson, S. (2022). Towards 3rd generation universal design: exploring nonclusive design. *Studies in Health Technology and Informatics*, 297, 85-92.  
<https://doi.org/10.3233/SHTI220824>

*Total number of authors:*  
4

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# Towards 3<sup>rd</sup> Generation Universal Design: Exploring Nonclusive Design

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**Abstract.** In this paper, we identify and describe early signs of a shift towards 3<sup>rd</sup> generation UD, of which “nonclusive design” is an essential part. The paper explores the significance of such a shift using examples of the built and designed environment and of signage. Nonclusive design means 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. We outline seven themes characterising the shift towards nonclusive design: 1) from included to undefined users, 2) from person to function, 3) from adaptism to variation, 4) from separation to convergence, 5) from reactive to proactive, 6) from unaware to aware, and 7) from explicit to tacit. Nonclusive design directs attention to context instead of the individual, focusing on possibilities, functions and facilities. It has a convergent character, highlighting variation and unity rather than separation. Nonclusive design presupposes awareness, knowledge and proactive development void of adaptism. It incorporates human variation without reiterating patterns of norm-deviation. We argue that the continued growth of UD demands, is part of, and contributes to a shift in culture, with nonclusive, intersectional thinking as a key future driver. In such a culture, 3<sup>rd</sup> generation UD can contribute as a common guiding mindset, as a source for innovation, as a way to listen for diversity in all its forms, and as a way to lead towards a sustainable society.

**Keywords.** *Universal Design, Intersectionality, Norms, Norm-Deviation, Diversity*

## 1. Introduction

This paper identifies early signs of an ongoing shift towards a 3<sup>rd</sup> generation Universal Design (UD) and argues that such a shift will need to move beyond patterns of norm-deviation to incorporate variation. The paper explores the significance of such a shift using examples of the built and designed environment and of signage and introduces the notion of “nonclusive design” as an essential character of 3<sup>rd</sup> generation UD.

From its early days, UD has always been concerned with processes and societal development. The understanding of UD as primarily a process concern can be traced back to Mace and the mid 80’s, and has repeatedly over the years been highlighted by Steinfeld and colleagues [1–3]. In 1985, Ron Mace put this as “Universal design is ultimately about changing attitudes throughout society, emphasizing democracy, equity,

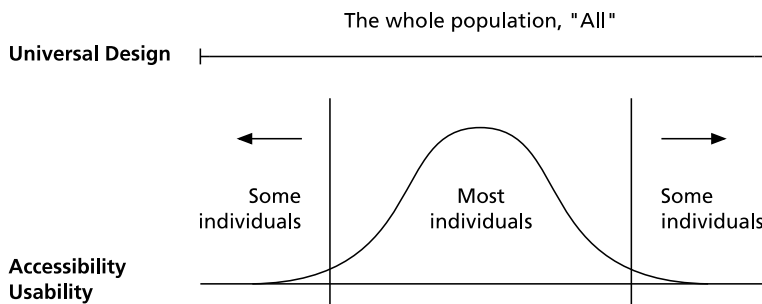
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and citizenship. Universal design denotes a process more than a definite result.” (Mace 1985, cited in [4]).

However, a lot of research has focused on UD as something primarily found in finished design solutions. One reason for this could be the definition of UD by Connell et al [5]: “The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.” This definition, and its accompanying seven principles of UD (ibid.) have led people to understand UD as specific characteristics found in finished design solutions, features that can be ticked off a checklist [6].

In this paper we highlight a need to return to UD’s original concern with processes and societal development. This is also in line with the development of the field of design more broadly: the understanding of the term ‘design’ has matured during the past three decades from being about surface, form and finish to being seen as a force for transformation and solving complex social problems. As part of this development, its focus has shifted from “design as styling” to “design as process” [7,8]. A similar development regarding UD has also been articulated by others [1,3].



**Figure 1.** Illustration of two different thought models; norm and deviance on the bottom and diversity at the top (Adapted from [9]).

UD was originally conceptualised based on the idea that there is only one population. It was a reaction against and an intentional move beyond the notion that there is an imagined “normal” person, and then there are the ones deviating from those norms. However, UD has always been accompanied by the hedging statement “to the greatest extent possible” [5]. This has often been regarded as a compromise and a response to the claim that UD is a utopian concept. It might also be seen as a sign of influence from the terms ‘accessibility’ and ‘usability’, which are conceptualised as measurable concepts with predefined limits (Figure 1). The understanding of accessibility has been established over several decades and seems to easily rub off on how UD is understood and dealt with in practice. Accessibility is operationalised based on norm and deviation, which makes it suitable to be applied in standards and guidelines [9]. When treated as a laundry list of measurable features, UD takes on a similar character – despite its origins.

### 1.1. Purpose and research questions

For UD to succeed on a societal level, it presupposes a shift from thought patterns based on norm and deviation to thought models resting on variation as a core tenet. The purpose of this paper is to exemplify and critically discuss what a shift from norm-deviation to variation means when it comes to signage and the design of the built environment. We

illustrate and analyse this shift by means of photographs from our research. The research questions that we pose are:

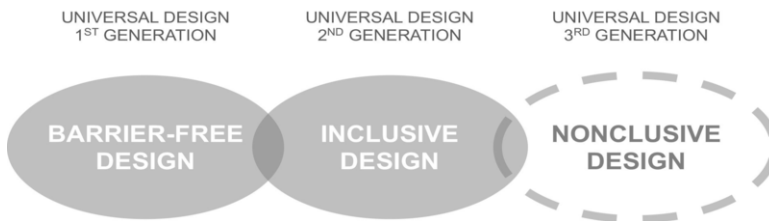
- RQ1. What characterises patterns of norm-deviation and variation in finished design solutions?
- RQ2. How can a shift towards a variation-based UD be understood?

## 2. Method

The paper is based on photographs from three major research projects on norms, categorisation and UD, in total about 300 photographs collected from 2018 and on [10,11]. Some of the photographs we have taken ourselves during observational studies and some have been contributed to us as part of a citizen science-based study. While the paper deals with UD as a process character, the photographs show end results. The reason for analysing finished solutions is that they show the kind of thinking that went into the design processes yielding the design. We also utilise the material below to illustrate and support our lines of argumentation. The underlying analysis has had a hermeneutic [12] character and consisted of both formal analysis sessions using NVivo and informal activities such as discussions at project meetings, seminars and presentations. This has continuously advanced our understanding of the material as a whole, what the photographs individually express, and over time allowed us to identify and mature in our interpretation of patterns in the material.

## 3. Findings

The growth of UD has so far progressed from “barrier-free design” to “inclusive design” (Figure 2), the currently predominant understanding of UD. Our study identifies some early signs hinting towards a 3rd generation UD on the horizon. There is potential for a shift in design (both practice and patterns) from inclusivity to a phenomenon we would like to call nonclusivity. Like inclusive design, nonclusive design deals with people, but it resists categorising people/roles and resists introducing predefined limits in terms of expected users. We see nonclusive design as including intersectional thinking, where power structures are seen as overlapping, interacting and mutually constituting [13].



**Figure 2.** Overview of generations one to three of the development of UD.

Below we outline seven themes regarding what such a development of UD might entail:

- From included to undefined users

- From person to function
- From adaptism to variation
- From separation to convergence
- From reactive to proactive
- From unaware to aware
- From explicit to tacit

### 3.1. From included to undefined users



**Figure 3-4.** Two photographs of toilet doors portraying two different ways to convey that the toilets are for all people

Two photographs of toilet doors portraying two different ways to convey that the toilets are for all people. The door to the left has four pictograms depicting a person in a wheelchair, a man, a woman, and a mother changing diapers. The strategy is *inclusive*, including more and more pictograms of who the toilet is meant for. On the photographs to the right there are two doors, a narrower door to the left and a wider door to the right. These doors do not carry any signs of persons. Instead, there are patterns of dots and lines on them showing their different widths. The signage on the doors do not come with predefined or presupposed limits. In fact, the signs on the doors do not say anything about persons and their gender at all. The two photographs together show a shift from included to undefined intended users.

### 3.2. From person to function



**Figure 5-6.** Two photographs of toilet doors portraying different signs

Two photographs of toilet doors. On the door to the left there are three signs depicting a person in a wheelchair, a family (child, dad, mom), and a father changing diapers. On the door to the right there is a sign saying, “Toilet with wall grip” and a pictogram of a

toilet grip handle. The two photographs together show a shift in design practice from person to function, i.e., a shift from identifying which kinds of people are to use the facilities to showing what the facilities consist of.

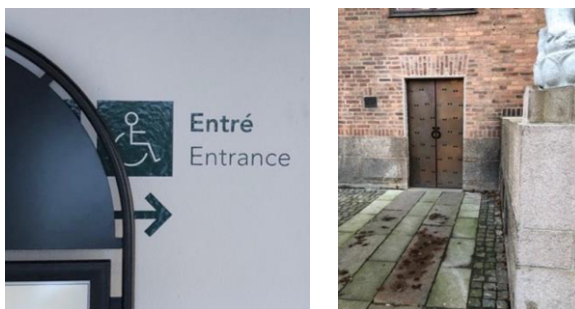
### 3.3. From adaptism to variation



**Figure 7-8.** Two photographs showing the different approaches to dealing with differences in level/height

Two photographs showing the different approaches to dealing with differences in level/height. To the left there is an entrance to a café. It is in a newly built environment. There is a slight difference in height between the doorway and the outside level, which is solved with a step and a ramp. The solution solves the mechanical problem of getting in, but it is also a solution to a problem that did not exist before the introduction of the step. There is plenty of space outside the door, and entrance could easily have been solved without a ramp. As it is, the main solution is solved with a (contrast-marked) step, and those who cannot use the step will have to take a rather long detour to reach the door. The solution as a whole is built on a traditional approach for realising accessibility by implementing a tacit norm position for the imagined “normal” person and solving the rest with separate solutions. The solution is an expression of what we would like to call “adaptism”, i.e., a form of ableism caused by the tendencies to rely on a “normal” solution and “adaptations” to solve other needs. In the photograph to the right, there is a set of stairs with an integrated flexstep solution. This solution opens up for variation, diversity and difference, a fundamental character of the human condition. The two photographs together show a shift in design practice from adaptism to variation.

### 3.4. From separation to convergence



**Figure 9-10.** Two photographs from entrances

Two photographs from entrances. To the left there is a sign saying “Entrance” and an arrow pointing to another door, separate from the main entrance. This solution creates a separation between different persons approaching the entrance. It treats persons with impairments as separate cases, to be dealt with as a separate issue. To the right there is a newly built main entrance to a several hundred years old building. The old main entrance, in the form of a staircase, is not used anymore. The two photographs together show a shift in design practice from separation to convergence.

### 3.5. From reactive to proactive



**Figure 11-12.** Two photographs showing dedicated parking spaces

Two photographs, where the left shows a “wheelchair parking space” in an auditorium that has been marked by orange taped rectangle on the floor. There is also a sign on the floor saying, “Reserved for wheelchair”. This parking space has been added temporarily, as a reactive measure since there is a conference in the disability field going on. On the photograph to the right, there is an embedded tactile path to follow for persons using a white cane. The solution is well integrated in the environment and was part of the design from the beginning. The two photographs together show a shift in design practice from reactive to proactive.

### 3.6. From unaware to aware



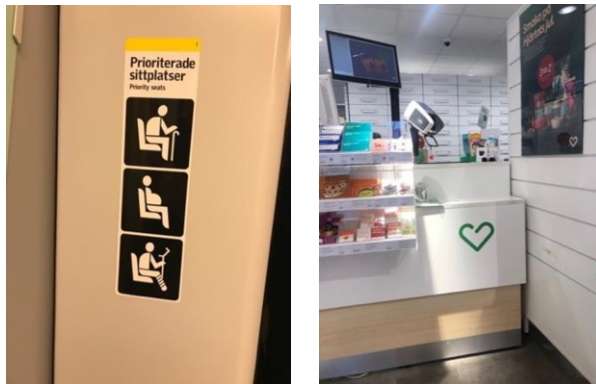
**Figure 13-14.** Two photographs from toilet doors

Two photographs from toilet doors. On the door to the left there are two signs: a person in a wheelchair where a rabbit head has been added to the person and a baby where an



alligator head has been added to the baby. This play with pictograms suggests some discomfort with the binary nature of the original signs, but the addition of animal heads neither disrupts the binary nor clarifies who is meant to use which toilet. On the right there is a sign saying “Toilets” and an ideographic all-gender pictogram. The sign deliberately moves beyond pinpointing separate genders. The two photographs together show a shift in design practice from unawareness to awareness.

### 3.7. From explicit to tacit



**Figure 15-16.** Two photographs showing prioritised seating places

Two photographs. To the left, there is a sign saying “Prioritised seating places” combined with three pictograms: a bent over person with a cane, a pregnant person, and a person with a leg injury and a crutch. The sign explicitly tells who is prioritised, and who is not. The photograph to the right shows the counter in a pharmacy store. What is not evident until one approaches the counter is that it can be raised and lowered electrically by the cashier according to the customer’s height. This functionality is tacitly embedded in the design, without categorising its users. It is there when needed by someone. Anyone. The two photographs together show a shift in design practice from explicit to tacit accommodation.

## 4. Concluding discussion

In this paper, we have identified and described some early signs of a 3<sup>rd</sup> generation UD, of which nonclusive design is an essential part. Nonclusive design means 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. We have outlined seven themes characterising the shift towards nonclusive design. The concept directs attention to context instead of the individual, focusing on possibilities, functions and facilities. It has a convergent character, highlighting variation and unity rather than separation. Nonclusive design presupposes awareness, knowledge and proactive development void of adaptism. It incorporates human variation without reiterating patterns of norm-deviation.

Despite the claim of UD being for everyone, which has been reiterated for almost 40 years, it is still understood primarily to be intended for disabled persons. The existing thought models have yet to achieve the intended shift towards all people. We argue that

nonclusive UD offers design patterns supporting a development where variation is the norm. Difference is a fundamental part of the human condition. For decades, the response to human difference have been one of norm-deviation, causing a range of separate solutions, i.e., “adaptations” for the one understood as deviating from the norm. Here, nonclusive design hints towards a move beyond adaptism as a response to variation. By resisting categorising people or explicitly defining specific users (one, all, some), it also offers a way out of the one-size-fits-all vs. one-size-fits-one debate.

Nonclusive design brings about solutions where people do not have to negotiate categorisations and predefined expected users. This replaces the current chatter of pictograms and other images of people with a silence that was not there before. A sweet silence that allows people to go about their day as they are. But it is also a potentially dangerous silence, if mistaken for a reduced need for knowledge. Just as before, a society for all can never be realised without a rich understanding of people and the swarm of differences and variations they constitute. We argue that the continued growth of UD demands, is part of, and contributes to a shift in culture, with nonclusive, intersectional thinking as a key future driver. In such a culture, 3<sup>rd</sup> generation UD can contribute as a common guiding mindset, as a source for innovation, as a way to listen for diversity in all its forms, and as a way to lead towards a sustainable society.

## Acknowledgements

This research was funded by VINNOVA, the Swedish Governmental Agency for Innovation Systems, grant numbers 2018-05232 and 2021-02810.

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