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Design against Normality

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Abstract

Against the background of the cultural construction of normality, the social exclusion of human beings and the design of innovative products, in this paper we criticize the position that proposes majority-oriented design conclusions to be the guiding principle in usability-focused design approaches. In turn we discuss the value of including "out-of-norm"-users in the design- and design research-process.

Keywords: Design Research; Normality; Diversity; User; deaf-blind; Interaction; Disability.

Design is deeply entangled into our everyday life, and therefore always connected to the social sphere. Therefore, we might think of design as being related to social change. How can design enable this change? Manzini (2010) states that change must come from what is configured as 'normal'. One of the most interesting challenges of academic discourse as well as design practice is about re-configuring 'normality'. As Tom Fisher (2010) points out: "Design is able to engage with that reconfiguration". Therefore, Design can promote different concepts of what used to be 'normal' or criticize the coherence of stereotypes in our society – e.g. when we think about advertisement. The concept of normality is often based on a majority principle – what most of the people do or like is considered to be "normal". At the same time, the concept contains a set of implicit norms and beliefs about how we *should* behave. However

this normative impetus is not a result of a societal discourse but rather a form of excluding those who do not fit into the concept. According to Zirden (2003, p.29), today systemic "normality" basically guarantees the functioning of western societies. This system is oriented towards proportion, relation of quantity, average peaks and percentage. The coordinates of normality, here to be regarded as criteria for evaluation of human beings, are reflected in school grades, the evaluation of work or health, and many more. Today's normalizing society indeed appears to be more flexible in setting its limits of tolerance. However, various scientific, technical and economic resources are being expended in order to earlier locate and eliminate potential anomalies (Zirden, 2003).

This relation becomes clearer, for instance, by taking a closer look at current uses of the term "usability". Its definition has expanded to include "all interactions that take place between human beings and the designed world they live in" (Bremner, 2008, p.425). Bremner (2008, p.425) describes how everything from industrial products to screen interfaces to services and experiences can be discussed in terms of usability nowadays: "Regardless of the different forms these interactions might take, it is clear that designers have been increasingly required in almost every professional design practice to continually consider (and reconsider) user perspectives, needs, desires, expectations, behaviors, and aptitudes throughout the entire design process". However, a too-strict focus on usability may place the designer in a dilemma that is strongly linked to constructs of "problems" and "normality", especially if we keep in mind the broad diversity of potential use-cases, - contexts and users. We think that in many cases usability engineering puts forward the idea of the "right" user-behaviour and therefore re-stabilizes the concept of normality. Different abilities, special needs towards the usage of a system or unintended appropriations are not included into the framework of usability testing. Hence, design has the chance to search for different forms of including people into the development process, like in participatory design. This opens up the space for including concepts of diversity rather than normality.

The aim of our research is to produce new knowledge on the interdependence of three elements: the cultural construction of normality, the social inclusion/exclusion of human beings, and the design of (in this case technology-related) prototypes/products.

Background

Perhaps the most striking feature of human beings is their diversity (Heidkamp, et al., 2010, p.8). Much of the diversity in the human species results from the cultures each human group has created and passed on from one generation to the next (Spradley, 1980). If researchers are to understand this diversity, they must begin by carefully describing it. Spradley defines three fundamental aspects of human experience as the core issues of studying a culture: cultural behavior, cultural knowledge and cultural artifacts (Appel, 1973). Our research aims

to gain an understanding of all levels, but the primary focus is on behaviour and artifacts. In our context, this is closely linked to participatory approaches in design research. Design and design research involves people in all stages of the process – in most cases potential “end users” (Ehn and Kyng, 1987; Ehn, 2001, 2009; Sanders 2000, 2002). Such research includes a variety of approaches, ranging from user research, cultural enquiries, usability studies to participatory design or Living Labs. There is a great potential in including people from diverse (e.g. cultural, demographic, social, ability - or genderrelated) backgrounds in the process of technological innovation processes: to reflect our society’s variety can help us to develop new and alternative concepts that go far beyond the stereotypical image of the standard user (Joost, 2011).

A major focus in our research lies on the aspect of “sociability”. In this context, sociability refers to a desire of a person or group to interact or affiliate with others through the establishment of social relationships (Wekesa, 2010, p.116). In the light of a global and digital change, the requirements for sociability as well as its forms of appearance have obviously been changing. The ability (or task) of design to enforce sociability is inter alia discussed by Lengyel (2009), who describes design not as a technical or artistic event, but first of all as a sociocultural phenomenon.

Situation

Assuming that man-made constructions and technologies have influence upon the individual, it becomes comprehensible that technologies “enforce normalcy” (Davis, 2002). Therefore, they have an effect of “reproducing an ableist framework, rather than building in, creating and contributing to new modes of living which embrace difference and diversity” (Goggin, 2008, p.11). In this respect, Interaction Design can play a significant role in altering these frameworks and allowing for diversity. When shaping human interaction with technology, design has the potential to reflect on the “human, social and organizational contexts” (Matthews, Stienstra and Djajadiningrat, 2008, p.58) in which technology is situated.

The ongoing changes in Information and Communication Technology (ICT) have made “social interaction an increasingly important topic for interaction design and technology development” (Kurvinen, Koskinen and Battarbee, 2008, p.46). Investigations and outcomes are here often focused on majorities of (potential) users and usage, whereupon pertinent questions concerning a constructing moment of normality are often neglected.

It is crucial to take into account such sociological and ethical questions, so as “not to address [a] user group as ‘old’ – meaning unable to use ‘normal’ technology” (Joost and Chow, 2010, p.166).

Design & Disability

Against the background of a worldwide demographic change of increased life expectancy, we are facing an burgeoning number of individuals who are disabled or in need of care (Tervooren, 2002, p.1). Thus the phenomenon "disability" is going to become a "universal experience of our society" (Hermes, 2007). Societal definitions of disability will have to be reformulated, in order to avoid exclusion of growing parts of society. This will require analyzing societal norms, traditions and values that lead to certain perspectives on disability. Moreover, it is quite possible that certain classification criteria, nowadays related to "illness" or "anomaly", will be different in future.

In the context of so-called "disability", the controversial issue of the social meaning of "normality" becomes quite obvious. There are certain connotations that go with the topic "disability", and these are usually rather negative. The degree of negativity can range from (or be based on) lack of knowledge, ignorance, uneasiness, compassionateness, all of which occasionally flow into positive or negative ableism¹.

This does not necessarily refer to an intentionally oppressive and discriminatory process arising from the belief that people with disabilities are inferior to others, but it can include a certain kind of unintentional ableism. For instance: a key concept in disability rights is that treating everyone as if they are non-disabled is effectively discriminatory in itself – treating everyone as if they can access written material, premises with steps, and so on, excludes disabled people.

In previous and ongoing research on diversity-centered design we have already shown and discussed the complex correlation of design and disabilities (Bieling, 2010b). A special focus lies on the disclosure and discussion of normative implications of design in the context of socio-material assemblies (Galloway, 2005; Latour, 2001; Schillmeier, 2009). We propose a general change of perspective: what, if we understood disability not necessarily as a deficit, but as an expertise? (Bieling, 2010c; see also Heylighen, Devlieger and Strickfaden, 2009).

In our work we have shown that interesting aspects from disability contexts can be transferred to HCI e.g. aspects from deaf sign language can be implemented in gesture based interfaces. Additionally, car navigation systems could be optimized by acknowledging learnings from how blind people navigate. Based on such insights we have developed a series of prototypes for new interaction systems (Bieling, 2009).

¹ Disablism is a form of social prejudice against people with disabilities, also known as ableism, handicapism or disability discrimination. (For further reading: Campbell, 2008; Clear, 1999).

Case study “Mobile Lorm Glove”

In the following section we will discuss one of our most recent cases from this series. In a next step we will discuss insights and results from this participatory design research project with a team consisting of researchers and doctoral students from the Berlin University of the Arts (Design Research Lab) in collaboration with members of two deaf-blind Institutions: the Oberlinhaus Babelsberg and the ABSV (Allgemeiner Blindenund Sehbehindertenverein Berlin).

In order to emphasize deaf-blind perspectives, we set out a participatory process (see DeCouvreur, Detand and Goossens, 2011; Ehn and Bradham, 2002), we worked with a sample of six deaf-blind participants (4 female and 2 male, age 60 – 74), three blind participants (who were capable of the tactile hand-alphabet Lorm, which will be described later) and two of their carers, who also served as our main interpreters. The integration of real users was important for our research approach, since from an emancipatory perspective, the participants can be regarded as experts of their daily life.

In our previous research on diversity-centered design we have discussed the complexity of participatory design in disability contexts, as well as its attempt to build on the use of local implicit knowledge (Bieling 2010, 2011; Bieling, Joost and Mueller, 2010).

Marginalized communities like deaf-blind people are excluded from several forms of communication and access to information. Deaf-blindness is a dual sensory-impairment with a combined loss of hearing and sight. The sensory condition of deaf-blind people varies depending on the reasons of their disability. It can be either congenital or caused by accidents or illness. It is difficult for deaf-blind people to connect with the outside world because of the lack of a common language.

Particularly people with deaf-blindness acquired late in life have the opportunity to use “Lorm” for communication with the outside world. Lorm, developed in the 19th century by deaf-blind inventor Hieronymus Lorm, is a tactile hand-touch alphabet, in which every character is assigned to a certain area of the hand. The “speaker” touches the palm of the “reader's” hand to sequentially draw the characters onto it by tracing lines and shapes. This requires both conversation partners to be familiar with Lorm, and physical contact is necessary. Those preconditions often lead the deaf-blind into social isolation and render them dependent on people relaying information around them.

In our project we developed the Mobile Lorm Glove (Gollner, Bieling and Joost, 2012): a mobile communication and translation device for the deaf-blind. The prototype, a hand glove made of stretchy fabric equipped with an input unit on the palm of the glove and an output unit on the back of the glove, translates “Lorm” into text and vice versa.



Figure 1. Input unit on the palm of the glove.

In the very beginning of the project we started with observations regarding communication and user behaviour followed by a participatory process concerning interaction design and usability of the prototype as well as materials used for it. As a result a functional prototype for user-tests was developed.

Textile pressure sensors located on the palm of the glove enable the deaf-blind user to “lorm” onto his or her own hand to compose text messages. A Bluetooth® connection transmits the data from the glove to the user’s handheld device. It is then forwarded to the receiver’s handheld device in the form of an SMS. If the wearer of the Mobile Lorm Glove receives a text message, the message will be forwarded via Bluetooth® from his or her handheld device to the glove. Initiated by small vibration motors located on the back of the glove, tactile feedback patterns allow the wearer to perceive incoming messages.



Figure 2. Output unit and control unit.

Lorm to text

The deaf-blind user wears the Mobile Lorm Glove on the left hand and uses the tips of the fingers of the right hand to lorm onto his or her own left hand to compose text messages. The

left hand is open with its fingers slightly spread. Each entered character is forwarded to the handheld of the user via a Bluetooth connection. When a sensor is touched, a vibrotactile feedback is generated by the corresponding vibrating motor on the back of the glove to confirm the input. To provide appropriate user comfort we avoided placing motors on the knuckles.

Text to Lorm

Once the wearer of the Mobile Lorm Glove receives a text message, it is forwarded to the glove from his or her handheld device via Bluetooth and translated into the Lorm alphabet. Initiated by the small vibrating motors, tactile feedback patterns allow the wearer to perceive the incoming messages.

To simulate the sensation of a continuous movement with discrete actuators, the human sensory phenomenon called the "funneling illusion" is applied. The user's tactile sensitivity and the speed of lorming vary. Therefore the maximal applied intensity and the speed of lorming can be adjusted individually to serve the user's needs.

The Mobile Lorm Glove provides particularly two innovative ways of communication for deaf-blind people. It supports mobile communication over distance, e.g. text message, chat or e-mail, and it enables parallel one-to-many communication, which is especially helpful in school and other learning contexts.

Communication over Distance

When communicating with a deaf-blind person, physical contact is no longer the only way to do so. The wearer of the Mobile Lorm Glove can now compose text messages and send them to a receiver's handheld. The received message can either be directly read from the handheld or translated into Lorm alphabet using the Mobile Lorm Glove. It can also serve as an interface to compose e-mails or to chat with someone.

Simultaneous Translation

When communicating with a person without knowledge of Lorm, the wearer of the glove composes text messages as described earlier. The written message appears on the screen of his or her handheld and can be read by the other person or translated by any text-to-speech software. This also works vice versa.

Until now, when socializing, every deaf-blind person needs a personal translator. The newly developed device also enables parallel one-to-many communication, which can be especially helpful in school and other learning contexts.

Information and Entertainment

Deaf-blind people depend on information relayed to them by people around them. Using the Mobile Lorm Glove a broader range of information may be accessed. The interface can be used as a translator, for example with websites, e-books or audiobooks. With this newly developed technology and interaction, it will soon become possible to also “feel” information that was not accessible to deaf-blind persons before. The Mobile Lorm Glove functions as a simultaneous translator and makes communicating with others without knowledge of “Lorm” possible. As a result, it empowers deaf-blind people to engage with a wider social world and further enhances their independence.

Our next step will be a study which aim is to verify the functionality and effectiveness of (parts of) the system in different real-life situations, especially those of non-deaf-blind people.

Video 1. Mobile Lorm Glove - A communication device for deaf-blind people. Source: Claricebouvier, 2011. Available at: <<http://www.youtube.com/watch?v=FLfa9ni7X3I>>.

Results and Discussion

The case study shows: the resulted prototypes might not only serve specific needs of certain people (e.g. help deaf-blind people to communicate with others), but could also be helpful to a broader spectrum of people in certain situations in different life- and work contexts. We currently investigate on different areas of operation, where such kind of haptic interaction could be embedded into wearable technologies.

The challenge of the designer is not only to meet functional, aesthetic, economic etc. requisites, but also to be aware of influencing common definitions of disability and therefore substantiating and clarifying an enhanced and reflected understanding as well as the societal process of modifying general perspectives on disability.

The analysis and reflections on our approach provide important messages towards designing for and with people who have specialized needs. We shall highlight it with Strickfaden and Devlieger’s proposition: “The main message is to recognize the abilities, expertise and inherent performances, practices and actions of people” (Strickfaden and Devlieger, 2011, p.223).

Conclusion

The presented case shall underline the issue of design's ambivalent relationship to normality. In contrast to implicit concepts of normality we suggest not to focus on the "normal user" only but rather to include diverse user groups into development processes. This does not only serve an idea of inclusive design and accessibility but can rather be seen as a source of innovation, since new and alternative ways of interaction can be discovered and addressed. Therefore, design can both trigger societal change in terms of re-defining normality and at the same time inspire different approaches to innovative products and services.

In the long term, the process and the outcomes of the case demonstrate that changing the perspective and acknowledging disabled people's expertise, might not least help to make our world more accessible, for all of us. Solely the influence of design as practice (congruent to architecture, urban planning, politics, media, film industries etc) on the complex phenomenon of "disability" is binding for further investigation in terms of a cultural, artificially made and socially practiced exclusion. In an iterative and ongoing research process our collaboration with the mentioned institutions has already lead to inspiring new insights.

Our investigation highlights the importance of taking into account different perspectives – not least in a design process. Further work will be required to investigate a methodological suitability. Although this research takes place in the domain of disability related topics, the overall scheme has implications for a general view on diversity-centered design.

Finally our work contributes to a growing body of research that brings designers and researchers from different disciplines closer to understanding (not only) their "user" groups, but also to transferring knowledge to a broader range of potential appliance. It shows the limitations of many 'user-centered projects' by not focusing on standards and norms.

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Further Info

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