

Empathy Enabled by Critical Design – A New Tool in the Universal Design Toolbox

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Abstract. The next generation of designers, architects, engineers, etc. have a rough road ahead. Due to their strong role in shaping our future, they must face issues relating to inclusion, equality, and diversity, ensuring that the ‘Elder Boom’ generation have safe, useful, and independent housing, workplaces are planned and constructed in such a way that they are usable by the broader population, and social justice and equality are in focus when designing public buildings and spaces so as to eliminate prejudice and discrimination.

This implies that the built environment as we know it must be improved. Thus, those responsible for addressing upcoming challenges, i.e. future universal design thinkers, must be adequately equipped with various methodological tools and valuable experience of interdisciplinary work. Both aspects are essential to preparing them for real-life problems and projects, regardless of complexity.

What happens if architecture, interior architecture, engineering, and product design students spend a week together investigating the built environment from a critical design point of view? Can this upside-down way of thinking provide them with alternative starting points for the problem-solving process, and help them to identify and understand people’s needs differently?

This paper describes a critical design method and presents the results of and lessons learned from conducting a one-week workshop based on this method. The outcomes of the workshop (critical design examples) were created to illuminate the built environment and so provide the students with first-hand experience of what can happen if the “dark side” of design thinking is ignored.

Keywords. Critical Design, Universal Design, design methods, educational practices, workshops, empathy, wellbeing

1. Introduction

1.1. Universal Design

Universal Design (UD), Inclusive Design (ID), and Design for All (DfA) are approaches to design that can result in products, services, environments, and systems that are easy for all to use. Each originated separately and is used in different parts of the world; UD in America and Japan [1][2], ID in the UK [3], and DfA in the Scandinavian countries and most of Europe [3][4]. All have a similar purpose; ensuring that products, environments, etc. are, in the words of Mace [5], “usable by all people, to the greatest

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extent possible, without the need for adaptation or specialized design”. Thus, it can be said that the UD process “enables and empowers a diverse population by improving human performance, health and wellness, and social participation” [3].

The ‘universal design thinkers’ of tomorrow [6] – be they designers, architects, engineers, or other professionals – must have experience of dealing with the challenges that UD and so on attempt to solve in a way that complies with the seven principles of Mace, et al. [7], eight goals of Steinfeld & Maisel [3], and other similar approaches, which require practice and training in order to understand the personal experiences and private context of the ‘other’ [8]. However, this is an enormous task for young designers who often use an ‘I methodology’ (i.e. “a design practice in which designers consider themselves to be representative of users”; [9][10]), simply because they may lack personal experience, knowledge and understanding, confidence, and even interest in designing for those who are different from themselves [11]. According to Batterbee [12], the willingness and ability of designers to engage in empathic experiences is key to practice being deliberate, and so this paper explores whether and how critical design (CD) can trigger such engagement and compassion – despite its starting point in “the ‘dark side’ of design thinking” – and thus contribute to alleviate the difficulties of UD for students.

1.2. Empathy Enabled by CD: UD Turned Upside Down

“Early one morning in 1979, Pattie Moore did a peculiar thing. A young designer living in New York, she woke up, got out of bed, and started to make herself frail. She strapped herself into a body brace that made her shoulders hunch forward. She hid her auburn locks under a white wig and painted her eyelashes gray. She plugged up her ears so she couldn’t hear. And she put on horn-rimmed glasses that blurred her vision. Transformed into a woman more than three times her actual age, Pattie headed into the world, a wooden cane guiding her path. Leaving her Gramercy Park walk-up, Pattie stepped out into a land that was unlike any she had ever experienced. Pattie had made herself old, and now even her own neighborhood looked strange to her” [13].

Fulton Suri [8] defines empathy as “our intuitive ability to identify with other people’s inner states based upon observation of their outward expressions, their behavior”. This is to say that one feels with someone, rather than for someone. The German philosopher Edith Stein argues that the act of empathising cannot be taught and must instead be facilitated [14]. There exist many tools and techniques for promoting empathy and so enabling students to learn more deeply about the people they are designing for (and preferably with). Kouprie and Sleeswijk Visser divide these techniques into three main classes: “techniques for direct contact between designers and users (research), techniques for communicating findings of user studies to design teams (communication) and techniques for evoking the designer’s own experiences in a domain relevant to the user (ideation)” [15].

Practitioners generally often embrace the first classification, while the second is followed when direct contact with representative(s) of the target group is not possible; the approach that is closest to the critical method presented herein is the third. Walking in someone else’s shoes, so to speak, may reframe how students see the world. This can be achieved through role-playing techniques, such as ‘product handling’ and ‘bodystorming’ – wherein the designer takes the perspective of the user and acts out their

life [e.g. 15, 16]; ‘experience prototyping’, wherein the prototype is “designed to understand, explore or communicate what it might be like to engage with the product, space or system we are designing” [e.g. 15, 16]; and more straight-forward empathy exercises such as blindfolding, binding legs together, etc. in order to focus on understanding the user through first-hand experience.

But what happens if this design approach is turned upside down; can CD further help future designers, architects, etc. to ‘see’ through someone else's eyes?

2. Applying CD to Extreme Environments and UD

2.1. Workshop Series #1

The term ‘critical design’ was first used in Dunne’s *Hertzian Tales* from 1999 [17] and describes a design practice that is concerned with exploring possibilities through speculative design proposals that “challenge narrow assumptions, preconceptions and givens about the role products play in everyday life” [18]. According to Malpass [19], CD is an affective, rather than explanatory, practise because it “opens lines of inquiry as opposed to providing answers or solutions to questions or design problems”. Torkildsby [20] applied this way of thinking to ‘extreme environments’ such as ICUs and remand prisons to uncover certain ‘truths’ about what it means to be human in such environments, and to explore how certain objects may directly impinge upon these fundamental forms of being (i.e. ‘existentials’; [20][21]. This research resulted in, among other things, a three-step critical design method (CDM) and a series of eight workshops of between one and four days, involving a total of approximately 80 students. In short, the aim of the workshops was to “challenge the individual student’s way of thinking design” [20], encouraging them to reflect on the themes engendered in the various critical design examples (CDEs), i.e. the results of using the CDM during a design process, as well as the design process per se.

2.2. Workshop Series #2

Based on WS1 (Workshop Series #1), the CDM was further developed and applied to UD settings [6][22]. Over the course of one and a half years, three workshops were conducted and approximately 35 participants from the disciplines of design and occupational therapy were exposed to this way of thinking. Even though WS1 and WS2 shared the same aim, the results were slightly different to those of WS1. Firstly, because the workshop structure was altered to fit the built environment (which was considered to be an ‘extreme environment’ simply because, for some, using products, systems, public buildings, parks, or transportation systems can be extreme in the sense that they are not necessarily adapted to the needs and constraints of the person in question). In addition, the workshops took place over the course of half a day, and more than half of the participants did not have a formal design background (while the CDM builds on traditional problem-solving processes). With that said, the outcome – the CDEs – was essentially the same, as the participants were provoked to think critically about who we design for, what we design, and – most importantly – why.

The connection between the CDM, CDEs, and empathy is not exactly clear – it may even appear to be contradictory. However, because this way of thinking about design involves examining, understanding, conceptualising – hence drawing on Bloom’s [23]

'analysis', 'synthesis', and 'evaluation', and, furthermore, shedding light on extreme environments, this paper argues that being able to empathise through CD is a good contribution to the field, as generating CDEs requires a great deal of empathy and understanding of the affected person(s) to begin with. Additionally, the results from the Workshop Series thus far reveals that taking it to the extreme and making clear what may happen if this aspect of design is ignored is an effective way of teaching and learning students about design – not as a substitute for traditional design methods, but as a complementary and alternative approach. To quote some of the workshop participants: “So we’re not supposed to be ‘nice’?!”, “Yesterday I felt sick. Today it’s just fun!”, “This is kind of bad and fun at the same time” [20], “This is like anti-universal design”, “What a great way to kickstart a project!” [22]. These statements illustrate the engagement that the participants revealed during the workshops.

3. Workshop Series #3

3.1. Background and Participants

The International Design Workshop Week [24] at the Faculty of Design Sciences at Antwerp University is a biannual event wherein practitioners from all over the world come to conduct interdisciplinary workshops on a common theme. The topic for 2018 was ‘Re-ACT by design’, and the participants (roughly 300 second-year MA students from the disciplines of architecture, interior architecture, engineering, product design, heritage studies, and urbanism and spatial planning) took part in 17 different workshops. Because the event is registered as a course, students must pass to receive their credits. The students were generally in their twenties, and both genders were represented. Moreover, as the university accepts international students, there were participants from different parts of the world. It should be noted that, even though many of the students had met prior to the event, some had not, and the students stated that they had never worked in these specific groups before.

3.2. Structure

Bringing the experiences of the previous workshops into the groundwork for WS3, the structure was naturally heavily inspired by WS1 and WS2. However, the development of ‘fictional settings’ (people and environments; [6][20][22]), planning of an exhibition, and post-workshop written reflections were added to further challenge the participants and enhance the workshops, as well as to fulfil the requirements of the workshop organisers. Lunch breaks took place between 1 and 2pm, and other plenum activities were agreed upon with the class. The order and scope of the activities were revised based on the needs and wishes of the students. Consent forms were signed and handed in before the end of the workshop – with participants able to withdraw their consent at any time – so that the data collected (photographs, sketches, quotations, etc.) would be available for use later. It should be noted that the tutor shifted between the active role of a teacher, providing guidance when needed, and passive position of an observer, absorbing as much information as possible [6][20][22].

Time	Activity	Step
MONDAY		
10:00-10:45	Welcome and introduction by the tutor, followed by brief student introductions and an overview of the workshop week	1
10:45-11:15	Introduction to UD; the seven principles of Mace, et al. [7] and eight goals of Steinfeld and Maisel [3], as well as a brief overview of the subject of the built environment	2
11:15-11:45	Presentation of fictional settings, along with examples to illustrate the techniques that were to be applied	3
11:45-18:00	Discussion and presentation of the first assignment, with the students being divided into groups of four, and beginning of the group work	4
TUESDAY		
10:00-11:20	Welcome and student presentation of the fictional settings followed by a plenum discussion	5
11:20-12:20	Introduction to CD and presentation of examples from WS1	6
12:20-18:00	Presentation of the final assignment and beginning of the group work	7
WEDNESDAY – THURSDAY		
10:00-18:00	Group work, including brief reviews and discussions in plenum whenever needed	8
FRIDAY		
10:00-18:00	Group work	9
18:00-22:00	Exhibition (opening and mingling)	10

Figure 1. Workshop structure: Monday – Friday

3.3. Procedure: Trends and Reflections

3.3.1 Fictional Settings

Following the completion of Step 4, the students were tasked with researching the challenges that people face in their daily lives pertaining to the built environment – a task in which they showed open-mindedness and maturity. The challenges that were touched upon included trouble conversing normally in crowded places, and individuals who feel stigmatised and avoid flying because of narrow and cramped airline seats. This exercise was followed by more deeply exploring these individuals' lives; considering who they are, why they experience problems, and what impact these have on their quality of life, such as objective and subjective wellbeing [e.g. 25], rather than simply physical or material wellbeing [e.g. 25, 26]. After discussion and supervision, each group focused on one design challenge for further development. Based on the chosen group of people – not customers, consumers, or users, but “real living, breathing people” as Norman simply puts it [27] – who deal with visual impairments, synaesthesia², phobias, and early-stage dementia, the students diligently created fictional settings to have a narrative to work from during Steps 7-10. The students generally used mind mapping as an ideation technique, discussing the different ideas until they agreed on a final concept, i.e. a fictional setting, which they felt represented the design challenge and chosen group.

² Synesthesia is “a condition in which someone experiences things through their senses in an unusual way, for example by experiencing a colour as a sound, or a number as a position in space” [28].

By undertaking this process, the students explored, defined, and portrayed everything from how a visually impaired person might be less likely to discover new areas of a city because they feel safer consistently taking the same route, to how smelling grass when the alarm clock rings in the morning could cause confusion for someone with synaesthesia – especially regarding recognition and orientation. Similarly; how being out in public may cause fear and phobias to such a degree that the affected person goes to great lengths to avoid leaving their apartment, or how a daily walk around the block for someone with onset dementia may, in the worst-case scenario, result in a missing-persons report. As the members of Group 4 stated during Step 5: “We pretty much put all people with dementia in one person”; “This is an easy way to get a good overview of something complex” – and this was one of the reasons for implementing this ‘emphatic technique’ [16] in the first place. As Grudin and Pruitt conclude based on their research of ‘personas’ in relation to software product development, “[p]ersonas are a medium for communication; a conduit for information about users and work settings derived from ethnographies, market research, usability studies, interviews, observations, and so on” [29]. By applying this to design, fictional personas can ‘put a face’ on otherwise abstract data about the potential target audience; according to a student from WS2, this “is sooo much more fun than trying to make sense of statistics”.

It should be noted that the tutor deliberately withheld information about Step 7 at this point in the workshops, allowing the students to think that the remaining week would focus on solving the identified design challenges in the traditional, ‘affirmative’ (i.e. conducting design that “reinforces how things are now” [30] and so conforms to current expectations) and ‘explanatory’ [19] senses. This was based on the “Aha!” moments of the previous workshops, which led to very fruitful discussions regarding CD and traditional problem-solving processes, and thus became a permanent part of the workshop structure.



Figure 2. The students’ fictional personas. From left to right: Bowie, a 29-year-old photographer who lives alone in an apartment in Antwerp; Anouk, a 30-year-old artist who lives in a small apartment in the centre of Antwerp; Patrick, a 38-year-old graphic designer who lives with three friends in a house; Fonske, a 67-year-old model builder who lives with his daughter and her family.

3.3.2 CD and CDEs

Following Step 5, in which the students created illustrations of the fictional personas and environments and these were presented along with the design challenge, CD was introduced as a method to be applied in their work. The concept’s historical background, frequently used terms, and contemporary practitioners, along with examples of CD in practise, were presented, as were CDEs made by participants during WS1 and WS2.

The students then commenced work. As with the fictional settings, the development of the CDEs was similar to that of previous workshops: develop ideas; discuss; accept the notion of designing something that “find[s] problems rather than solving them” (to quote a student); sketch; drink coffee or tea; discuss; decide on a concept to be developed

into at least one CDE; eat lunch; create one or more sketch models; try and fail until the CDE is realised; discuss; plan the exhibition; present the outcome [6, 20, 22]. As is discussed above, the tutor was available for guidance throughout the week; in addition, the participants and the tutor met every evening for a short ‘summing up’ of the day, as well as to make plans for the coming day. This was efficient in terms of ensuring that all the participants understood the concept, and so went some way to assuring the quality of the CDEs. Such strong collaboration between the students and the ‘teacher’ was made possible by the fact that there were only 12 students, which undoubtedly contributed to making the workshop week a success.

The students seemed to be happy about what they had experienced and achieved during the week: on Friday evening, one student said that “something I will always remember is people’s reactions when they realised the impact [on humans] of the various design objects”. Overall, it seems that the ‘dark way’ of design thinking evoked reflections, emotions, empathy, and inspiration among the students. They were asked to answer the following questions after the workshop, and return their answers to the tutor: 1) What did you learn during this week? and 2) What will you take from this way of working into your studies or work life? As regards the first question, the responses included:

During my studies, we always had to solve problems. This week, we had the possibility to find a problem and later throw it in people’s faces.

If you change even the smallest detail, it can make life so much easier for some people (and the opposite is true!).

It’s really useful to create a fictional scenario beforehand to lead you through the design.

It’s better for a designer to live the problem than to look at the problem from far away.

Killing your darlings – literally!

As regards to the second question:

When designing something, it’s a good idea to use this method first to really grasp the essence of the problem.

I think I’m going to produce more critical designs in the future. Sometimes they explain more than just taking normal approaches. Thinking outside the box is very interesting – it stimulates people’s minds.

From now on I will create a fictional setting before I start designing, and will also think about how people who deal with challenges of some sort could face my design.

The 12 responses comply with the findings from WS1 and WS2 and suggest that, regardless of educational background and current methods of working, “you learn to look at things from another perspective or attitude” and in this way help “realise the different

needs of people in order to help and understand them” (to quote two students) by applying CD – which is a promising beginning for the next generation of universal design thinkers.



Figure 3. Students’ work. The processes began by generating ideas using words and simple sketches, which was followed by more detailed explorations of materials, forms, and functions (in this context, how critical the CDEs were).

3.4. Results

All the groups worked until the last possible minute and, when the curator opened the exhibition, the 17 rooms were instantly filled with peers, partners, relatives, teachers, researchers, and anyone else who had seen the advertisements for the exhibition. The students transformed the classroom into a gallery, and the four groups were each given a corner in which to display their CDEs. They took turns manning the exhibition and generally attempted to avoid explaining the CDEs, instead allowing the CDEs to, in the words of Dunne and Raby, “make up their own mind” [18], which is the mark of strong CD. Furthermore, exhibiting the CDEs facilitated “a way of knowing, exploring, projecting, and understanding the relationship between users, objects, and the system that they exist in”, in the words of Malpass [19], and ultimately invited the attendees to see things from the perspective of the ‘other’ [8]. This, in turn, increased the awareness – among both students and attendees – of what it means to be visually impaired, synaesthetic, phobic, and suffering from dementia in the built environment.

It should be noted that, after the exhibition had closed and the students had discussed their experiences of the evening, it emerged that one visitor had uttered disgust regarding CDE #1 (which explored visual impairment) because he felt that it was “onbeschaamd” (‘rude’), a group of students could not stop touching, smelling, and giggling about the various parts of CDE #2 (synaesthesia), a little girl began to cry when she entered CDE #3 (phobia), a woman in her sixties became genuinely furious when she could not put the puzzle of CDE #4 (dementia) together and was also frustrated by the hourglass, and an attendee tripped over while inside CDE #3.



Figure 4. Students' CDEs. From top left to bottom right: CDE #1, 'Can't you see?'; a white cane that was to be fastened to a visually impaired person using a handcuff. CDE #2, 'Can you taste the music?'; a confusingly set breakfast table on which nothing smelled, looked, sounded, or felt as it should have. CDE #3, 'Can you face it?'; an extremely narrow entrance with a sticky floor which was difficult to enter. CDE #4, 'Can you remember?'; a family photo puzzle that was impossible to solve as one piece was missing.

4. Conclusion and Considerations

This project exemplifies the potential of CD to provoke reflection, awareness, empathy, and action among the next generation of designers, architects, engineers, etc. in relation to the built environment. Incorporating this way of thinking into education programmes would provide students with insight into what might happen if they ignore this aspect of designing; in other words, empathy is enabled by CD. The participants felt that the workshop was a transformational learning experience, adding to their prior experiences and specific disciplinary knowledge, and so this paper argues that CD is a viable form of teaching and learning about UD. However, to make this method even more useful and powerful, additional workshops – preferably interdisciplinary – must be conducted to further perfect the workshop structure and, most importantly, ensure that more students approach the question of universal design in a more conscious, thoughtful way.

Through working in groups, the students were able to learn from one another – as well as from the 'teacher' – and so become stronger and more confident, both within their groups and during the design process. Thinking and working together in a cross-disciplinary manner will become increasingly essential as the pressing challenges of e.g. independent housing and accessible workplaces are more felt. Consequently, design that ensures equality, diversity, wellbeing, etc., must take place. Styron [31] argues that interdisciplinary work gives students "critical thinking skills that lead to discovery and

real-world problem solving”. This perfectly complements CD which, according to Jakobson [32], “engage designers in a different kind of thinking that delivers more conscious design products”, and, furthermore, focuses on “present[ing] social, cultural and ethical implications of design objects and practice” [33]. In this respect, CD as a method of sparking reflection, discussion, engagement, compassion, and ultimately innovation – even if this originates on the ‘dark side’ of design thinking – does not only conform to Simon’s broad definition of design, i.e. “deliberate action aimed at turning existing living conditions into preferred ones” [34], but it synergises perfectly with future universal design thinkers as well as their potential audience. Win-win.

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