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Common variables of a good problem: contributions of inclusive design in and beyond academia

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ABSTRACT

Design education today faces the complexity of social challenges. Young designers often tend to dive straight into creating abstract drawings and developing conceptual discourses without addressing the core purpose of the design. This lack of a clear purpose can demotivate designers. Drawing upon the author's experience and inclusive design examples, this paper delves into the pedagogical significance of formulating a "good problem". By examining common variables found in the manipulation of everyday objects, including interactions with individuals with disabilities during academic exercises, students have discovered a wellspring of inspiration. The paper advocates for the pivotal role of inclusive design within academia and its potential to fuel innovation in tackling societal challenges. Moreover, it highlights the wide-ranging impact of design solutions born from demanding circumstances, offering benefits to diverse groups of people. By bridging the realms of academia and real-world application, this study seeks to nurture critical reflection and contribute to the enhancement of inclusive design processes.

Keywords: Inclusion; Design process; Problem equation; Design teaching; Societal challenges

INTRODUCTION

Design education faces increased complexity due to social challenges, which serve as both a source of stimulation and a hurdle. Similar to half a century ago, the field of design cannot afford to ignore the problems it has contributed to and must actively contribute to their resolution (de Bont, 2021). In the 21st century, Meyer and Norman (2020) express concerns regarding the inadequate response of educational institutions to the prevailing context, a sentiment shared by Victor Papanek as far back as 1971 (Papanek, 1971). Paradigm shifts have been so significant that many long-standing assumptions in the field of Design can no longer be upheld (Redström, 2020). Therefore, at present, there is a timely need for an inclusive approach to design education, although it may also appear to be a challenging decision (Trigueiros, 2022). We have observed certain similarities and pedagogical advantages in methods employed in the university context of Inclusive Design, as identified by Herriot and Jensen (2013). Drawing from inclusive practices and methods discussed by the author, it is contended that these approaches can be both educational and motivating for students. In this text, our main focus will be on the observation phase that leads to the formulation of the

problem equation, specifically examining straightforward design briefs within the realm of product design graduation.

"WHAT IS THE PROBLEM?"

At the outset of a fresh project, it is a typical tendency for young designers to promptly engage in creating abstract drawings and formulating conceptual discussions. However, in the absence of a clear objective that serves as a foundation for comprehensive research and argumentation, they often grasp onto superficial aspects of objects without genuinely questioning them. Conversely, a sense of purposelessness can be disheartening and diminish motivation (Trigueiros & Burrows, 2007). The problem equation represents a pivotal moment in the design process as it aids in identifying and embracing the challenges and requirements right from the start. "What is the problem?" – we may ask.

Inclusive Design exercises often involve interacting and observing people. This direct interaction is a source of inspiration and helps in overcoming the initial hesitation commonly experienced by students. The objective of this approach, which involves engaging with the real world and real individuals, is to discover a purpose for the project, which we refer to as a 'good problem'. Most importantly, instead of creating a replica of themselves, students confront the preferences and perspectives of other individuals. At this stage, the target audience ceases to be an abstract concept and may have a specific name and a face.

This gives rise to a prevailing notion that each one of us possesses some degree of design acumen (Jones, 2014). In reality, ideas and solutions materialize through the act of observing specific situations and grappling with challenges encountered in task execution. Conversely, the empowering sense of being able to effect change and enhance the world can significantly motivate young students (Trigueiros & Burrows, 2007).

Ryan (2018) challenges Dieter Rahm's principles of Good Design, reimagining them as prerequisites for Better Design. This assertion underscores the multifaceted and situational nature of our connection with the material world, as well as the progression of our consumer expectations beyond the functional and pragmatic considerations of an initial equation. In addition to the aforementioned pedagogical impacts, a 'good problem' may introduce an innovative element to the existing equation, thereby presenting opportunities and advantages. The observation and involvement of people with disabilities often introduce variables that had not been previously considered in the design of existing solutions. Consequently, certain student's proposals stand out due to the (perceived) originality of their perspective, such as a product designed "to assist the visually impaired" or cater to individuals with disabilities. However, upon analyzing potential solutions, it becomes evident that those variables can be applied to other situations and users, thereby generating opportunities for innovation, encouraging the consideration of new iterations.

THE COMMON VARIABLES

We will discuss two academic exercises of Inclusive Design, focusing on simple tasks performed with the hands. The first one, of short duration, aimed to raise awareness of human diversity in the creation of everyday solutions. The second

exercise involved an investigation into the users and was dedicated to older people. Both exercises confront common variables related to hand mobility, finger mobility, or the lack thereof. We compared each of the student proposals with the approaches taken by professional designers in existing market products, in order to discuss similarities and motivations.

Dedeta [1] and Pintxos al dedo[2]

Dedeta was an idea of a young student, designed to overcome difficulties in writing for those who are missing one or more fingers required to hold a pen (Figure 1 a). The rigid body of a pen is removed, and its flexible ink cartridge is wrapped around any remaining finger or other suitable part. The writing tip, which serves its functional purpose, is positioned at the end. This arrangement of the functional component in relation to the hand enhances the coordination of writing movements. The proposal emerged directly from the problem at hand: "When certain fingers, particularly the thumb, are absent, how can a pen be gripped by hand?" After identifying the variable of hand/finger grip, the solution was derived by utilizing existing components of the pen, leading to the incorporation of a helical spring. This concept was visually conveyed through several drawings showcasing various hand configurations, along with the creation of a prototype.
The adaptability of the solution enables it to accommodate various finger and hand configurations. This feature demonstrates its inclusive potential, as it can be utilized and beneficial for writing tasks by individuals with or without hand disabilities. The simplicity of Dedeta makes it an effective solution. Its potential for broad applicability and wide-ranging impact categorizes it as a good problem. We can observe this same formulation in other products, both within the mainstream market and in specialized niches.

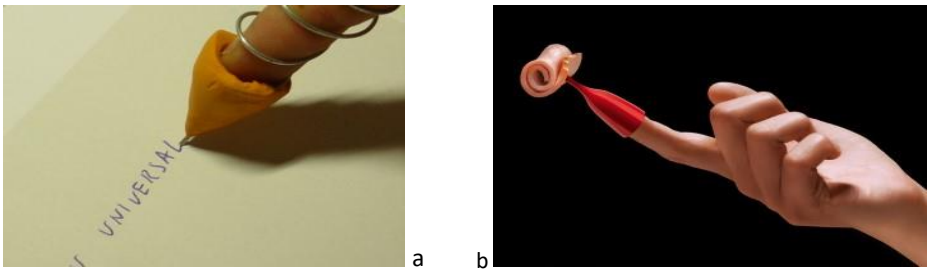

Figure 1 (a) "Dedeta"(M. Ribas) and (b)"Pintchos al dedo"(Photo R. Alonso)

To exemplify this line of thinking, we have an original and playful proposal called Pintxos al dedo by R. Alonso, which revolves around the concept of enjoying snacks with finger-held cutlery (Figure 1 b). According to the description provided by the author, it embraces the "pleasurable indulgence of eating with one's hands and sharing." Apart from its practical utility and straightforward usage, the

[1] The name ‘Dedeta’ results from the fusion of portuguese words: ‘finger’ and ‘pen’ and was given by the autor, M Ribas in 2002
[2] Designed by Rodrigo Alonso, received the Chilean Design Award in 2009

description highlights the symbolic aspects associated with the gestures and attitudes involved in this finger-focused dining experience.
In comparison to Dedeta which also involves dressing the fingers, Pintxos represents the opposite end of the practical needs' spectrum. It is worth noting that products designed for individuals with disabilities often tend to reside at the other end of the spectrum, lacking options and alternatives that address a broader range of needs and expectations placed on products (Jordan, 2002).

Makeup Kit and Degree

The Makeup Kit[3] emerged from a comprehensive academic project that encompassed the typical phases of a design endeavor (Figure 2 a). As an Inclusive Design work, it commenced with awareness-raising activities that involved simulations and firsthand testimonies. In this particular case, the student, observed the challenges faced by older women when applying makeup, particularly concerning the intricate details and reduced dimensions of the makeup components. Instead of individual and separate items, the student devised a compact Kit that consolidates various makeup elements within a roller. It can be held with one hand while utilizing a finger-dressed mascara brush or applying eyeshadow with another finger. This solution was deemed a good problem due to the significant role makeup plays in boosting the self-esteem of older women, irrespective of their abilities - an observation emphasized by the author in her initial research involving real users. The proposed solution encompasses multiple features that facilitate its use by individuals with limited motor skills, enabling them to accomplish intricate tasks with ease, even if they have reduced dexterity in their hands and/or fingers.

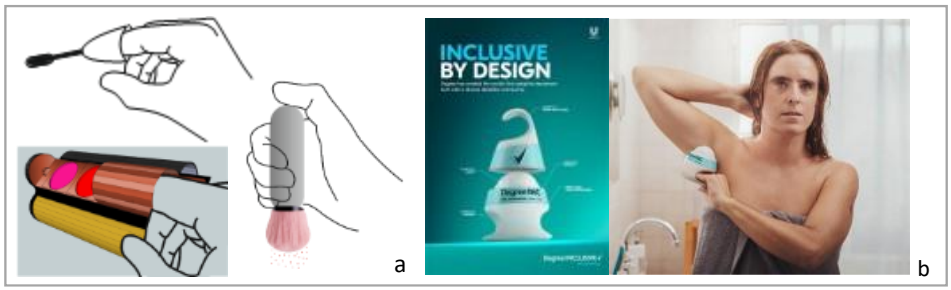

Figure 2 (a) Makeup Kit (L Bacelar) and (b)Degree, packaging design (www.theroereport.com)

We draw a parallel between this kit and Degree INC[4] (Figure 2 b), a packaging design for a roll-on deodorant specifically aimed at facilitating its use for individuals with upper limb limitations and visual impairments, "designed for and with a diverse community" (Maril, 2021). Alongside incorporating embossed information, this packaging design actively engages the hand to enhance the application of the product. Its hook-shaped lid facilitates easy opening, allowing it to be hung and used with just one hand. Additionally, the proposal encourages reuse by enabling the replenishment of the contents.

[3] Student: L. Bacelar, 2011.
[4] Source: www.theroereport.com

Discussion

The two initial projects identified a shared variable related to the challenges encountered when manipulating everyday objects, and they both arrived at similar solutions in formulating this equation: if one lacks or is unable to use other fingers to grasp and control the object, the finger itself becomes wrapped with the object. This equation can be generalized, wherein the object becomes an extension of the body or limb itself, akin to an "object to wear" imparting specific instrumental functionalities. By reducing the size and distance of the object/interface, it enhances control and introduces additional dimensions to the user experience.

Those examples share a common aspect in both the problem equation and the design solution: the method of securing the object by involving or wearing the fingers or hand. It is important to note that these examples are not presented as "universal" proposals, as that would be a fallacy, but rather as alternative formulations. They embody inclusive proposals because they provide choices for individuals with different disabilities. As Bispo astutely pointed out, the inability to choose from various product options and solutions is itself a central aspect of the stigmatizing stereotype that restricts individuals with disabilities not only to physical spaces but also confines them to a predetermined set of expectations and activities deemed suitable for them (Bispo, 2018).

CONCLUSION

These examples demonstrate different approaches to promoting inclusion through design. On one hand, we have proposals specifically targeting individuals with disabilities, which as it turns out, can be utilized by anyone. On the other hand, we recognize that many other products, based on the same concept of attaching themselves as an extension or augmentation of limbs, can address gaps in the availability of alternatives for individuals with amputations or limitations in finger movement. To achieve this, one simply needs to view the world through the same lens. Inclusion is fostered by increasing awareness and providing a range of alternatives to choose from. Moreover, it emphasizes the importance of incorporating awareness into the design process, creating products and solutions that cater to a more diverse range of potential users. This line of reasoning emerged from isolating the initial variable in the "problem equation" – not only as a pedagogical tool but also from a critical analysis perspective of the design of other products in the market.

We believe that just as we acknowledge the pedagogical value of immersing students in the real world, there would be potential for inclusion and innovation through the sharing of best practices from academia with companies and designers.

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