How to Design for Everyday Designers? Learning by Redesigning a Child Oncology Ward

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Abstract: Research that aims to support human-centred architectural design increasingly recognizes people as everyday designers. What remains unclear, however, is how architects can design in ways that support everyday design. We addressed this question in a one-week course in architectural engineering. The course started from a real-world design brief – the redesign of a child oncology ward – and combined design exercises with lectures, discussions with various experts, observational exercises in a school, and watching together a TV-documentary to gain insight into the design of care environments and children's everyday practices. As data we use individual and group student work and as themes for analysis we select lessons learned and design interventions suggested by the students in relation to the question we started from. As implications we emphasize attention for people's involvement in practices as strategy in designing for everyday designers, integrating possibilities for user-feedback as part of design proposals in architectural education, and TV-documentaries as possible source of information in designing for sensitive and hard-to-enter contexts like hospital wards.

1 Introduction

A central understanding in human-centred design is that use cannot be predicted, and that people's interactions with the human-made world may differ from what was intended during the design process (Van der Bijl-Brouwer & Dorst 2017). Design research that aims to address the distance between design and use predominantly has two starting points: either how design impacts on people; or what people do with and in it (cf. Pink et al. 2020).

Studies in the field of architectural design focussing on the second starting point examine interactions between the built environment and its users and show how people consciously or accidentally redesign it through (everyday) practices (e.g. Sharif 2020). People are considered 'everyday designers' (Wakkary & Maestri

2008). In relation to architectural design practice, very few studies (if any), address the question how architects can design in ways that support people as everyday designers.

This gap in research can be linked to a more general issue in architectural design, namely that design-use complexities – i.e., issues of agency and control – are rarely made explicit in design processes (Stam et al. 2020). Architects through design influence social life, but these outcomes can never be designed directly – they are deeply contingent (Redström 2008). Gaining insight into how design-use complexities figure during design processes and how architects deal with them is thus important. This contingency and its complexities related to design processes in architecture is particularly foregrounded in relation to children's interactions with the human made world (Jelić et al. 2020). More than most adults, children seemingly care less about designed intentions and spaces/objects offer them possibilities for action that cannot be anticipated – the world of children appears to be less or undetermined (cf. Noens & Ramaekers 2014). In contemporary discourse surrounding spaces for children, however, there seems to be a split between everyday life and care environments (Tutenel et al. 2022). In design (research), children in care environments tend to be considered as passive, acted on by these environments (more control, less agency), while children outside of care contexts are considered as active, able to act with the environment (more agency, less control) (cf. Adams 2017).

In view of these observations, we divide the question of how to design for everyday designers into three research questions: (RQ1) if we recognize that the design process continues after a design leaves the drawing board or when a building has been constructed, what does this mean for architects when designing?; (RQ2) how can architects design in ways that support children as everyday designers?; (RQ3) how does the idea of children as everyday designers question or reinforce current discourses of and practices surrounding children in architectural design?

The study reported on here addresses these questions in the context of a one-week course in architectural engineering, which set of to rethink indeterminacy in design through exploring children's everyday practices.

The course was organized as part of a broader research project on how experiences of children affected by cancer may inform the design of cancer care environments (Tutenel 2021). With the redesign of a child oncology ward as overall approach, the course combined concepts and lessons learned from the research project with design experiments in a series of seminars and hands-on design (and) research sessions.

2 Methodology
2.1 Course Set-Up

The course was organized in March 2022 in the framework of an international academic network – the Athens Network. The eight attending students – Benedetta Ballabio (IT), Daniele Florenzano (IT), Anna Nektaria Georgiou (GR), Theoni Gkesiou (GR), Nour Naim (LEBN), Jan Pospíšilík (CZ), Stavroula Tziourtzia (GR),

and Vasco Pinto (PT) – were in their master program in Engineering sciences: Architecture. The authors of this chapter were the course organizers; an anthropologist, an architect and design tutor, and a design researcher all working in the field of inclusive architectural design.

As overall approach to address the research question we worked by way of case study around the redesign of a child oncology ward in Belgium (Fig. 1). The design brief was explored through materials (architectural drawings and pictures taken by research participants) gathered in earlier research by a master student (De Boeck, 2019). Now that the building has been inhabited for a few years, it turns out to constrain some people to participate in practices, e.g. a lack of or misuse of an informal meeting space.

The case was approached from multiple angles: informing (I), researching (R), exchanging (E), designing (D). (Table 1)

Students were **informed** through lectures and seminars. The third author linked a focus on children's practices to inclusive design. Starting from the understanding that 'disabled is not something one is, but something one becomes' (Moser 2005) she pointed at how human-made environments can either hinder or support children in their practices and that designers can create or resolve problems by creating disabling or enabling environments. The first author lectured about his research on children's everyday practices in an oncology ward (Tutenel 2021). He explained how conceptualizing of children as everyday designers helped him to see these children not (only) as vulnerable but (also) as active constituents of the world (cf. Leeder-Mackley et al. 2015). Finally, the second author discussed with the students her approach to designing the *Padiglione Infanzia* by BarrioBalmaseda (Ariadna Barrio, Alba Balmaseda) and Esaú Acosta; an inclusive play space for children in Milan (Italy) that represents the idea of universal design, which favors autonomy, active use, and comfort.

Researching consisted of observational exercises. To become more attentive to children's everyday practices and their interactions with the environments they are situated in, students worked with school children for half a day through participant observation. Because we were not allowed to visit the hospital due to Covid-measurements, as second observation exercise we watched together a documentary. Designers and researchers already have been experimenting with documentary filmmaking to inform designers. These design documentaries *'aim to get access to the elusive, inconsistent fabric of everyday life and understand it on its own terms'* (Raijmakers et al. 2006 p. 237). We decided to use, instead, a TV-documentary '*Pilotenmaske*r' (de Jong 2017) about the daily life of children in an oncology ward which was not specifically produced with the aim to inform design.

Next to observing children's everyday practices, **interacting** with others was important. To get to know each other as (future) professional designers students presented themselves through a project they had designed themselves. Another form of exchange was through online interviewing, consulting and discussing with various experts – an interior architect, a paediatric oncologist, a head nurse, a design researcher, and two young cancer survivors.

The students worked as a group on re**designing** the child oncology ward. A first exercise we call 'speed designing' (cf. Zimmerman & Forlizzi 2017) – a term borrowed from romantic speed dating. This exercise was the starting point of the redesign. Throughout the week students were given time to work on the redesign. During design time the first two authors were present to reflect with the students on their design considerations.
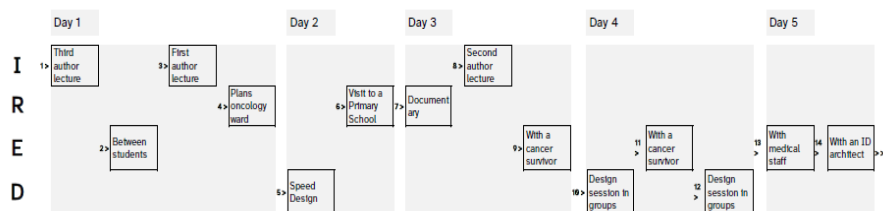
	Day 1		Day 2	Day 3	Day 4	Day 5
I	1> Third author lecture	3> First author lecture		8> Second author lecture		
R		4> Plans oncology ward	6> Visit to a Primary School	7> Document ary	11> With a cancer survivor	13> With medical staff	14> With an ID architect >>>
E	2> Between students			9> With a cancer survivor		
D			5> Speed Design		10> Design session in groups	12> Design session in groups

Table 1. Schematic overview of the course set-up

2.2 Material and Methods

We use as data for analysis in this chapter a video-recorded presentation in which the students jointly discussed online the course's trajectory and the design outcome with different experts, and the individual written assignments in which students reflect on what they have learned in relation to the aims of the course. This assignment (1000 words limit) was given as a take home exam and students had two weeks' time to hand it in.

Initially we had not intended to analyse the course, but the lessons learned from it in relation to the question(s) we started from motivated us to do so. Because of this we did not collect materials during the course's trajectory in a systematic way. However, to establish rigor in our analysis and presentation thereof in this chapter we limit ourselves to the above three types of materials – a recorded presentation, student design outcomes, and written student work.

As themes for the analysis we selected lessons learned and design interventions foregrounded by the students in relation to the question we started from. These were analysed compliant with aspects of QUAGOL (Dierckx de Casterlé et al. 2012), which is a method to guide qualitative data analysis originally based on a grounded theory approach. Characteristic for this method is its extensive pen and paper phase in order to develop a holistic understanding of the data gathered. For our analysis, the first and second author independently developed initial concept schemes based on re-viewing the presentation and re-reading the student papers. These schemes were iteratively refined. Each step along the way was discussed among the three authors until consensus was reached.

Related to research ethics we distinguish between research ethics applied to running the course, and research ethics in relation to studying it. Concerning the former, De Boeck (2019) obtained informed consent from the architecture firm, the hospital research ethics committee (ref. BC-4807), and the children who participated in her Master thesis research for the materials used to explore the design brief. For the school visit, we asked permission via the school principal, who informed the children, parents and teachers of our observational exercise. Compliant with GDPR

we agreed with the school to not take pictures, only sketching and note taking were allowed. Ethical issues also come into play when using a TV-documentary as research material, e.g. to use it for a different purpose than was intended by the makers. In our course, we used '*Pilotenmasker*' (de Jong 2017) to learn about everyday life in a child oncology ward which aligns with the purpose of the makers. Related to the analysis for this chapter we asked students' consent to use their assignment as data only after the evaluation and grading took place; and sent them a draft of the chapter before final submission. Consent for recording of the presentation to and discussion with the experts was asked before the discussion started.

3 Findings

In answering the question how to design for everyday designers, the students used the metaphor of a sponge to describe their design outcomes; like a sponge's infinite patterns and its ability to take many shapes, the design interventions aim at integrating open-endedness into the oncology ward to support children as everyday designers. First, we briefly discuss the students' design proposal, then we unravel their approach to better understand what can be learned in relation to our research questions (student quotes are in *Italic*).

3.1 The 'Sponge-Therapy' Design

The students agreed that **small things can be important**. Their redesign is made up of a series of micro-interventions (Fig. 1), which aim to create enabling moments for users and are easily adaptable to the existing environment (Fig. 2).
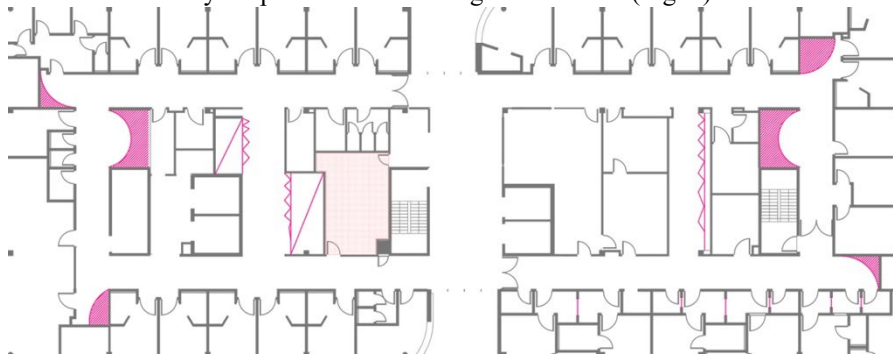

Fig. 1 Diagrammatic floor plan of the child oncology ward. The outer walls are omitted to respect non-disclosure. The students' micro-interventions are marked in pink. In response to the misuse of the informal meeting space (marked in light pink) the students proposed to specify its use through design while creating openness at other spaces in the ward. © Athens 2022 students
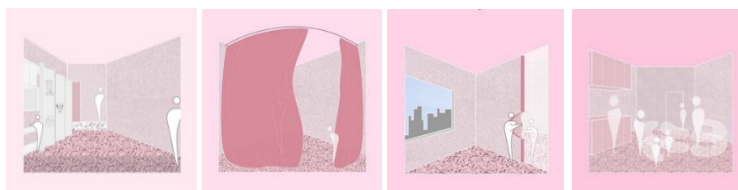
Fig. 2 From left to right: '(Un)folding boxes' consist of storage spaces of different heights allowing to store medical equipment on the upper parts, while children can benefit from lower cabinets for their toys, books or drawings. The exterior works as a skin where children can communicate with others or make drawings; 'Capsules of Intimacy' are small spaces that can be used as private capsules; 'Tactility portals' give the possibility to the children in isolation to interact with the children in the adjacent rooms; 'Mix and match' furnishes the parents' room / playroom with modular equipment that can be combined in different ways ensuring flexibility, transformation and personalization. © Athens 2022 students

Important aspects were **communication and familiarity** in and through design. '*A simple, friendly, and to a certain extent familiar environment seems to be the way to go.'* A concern of the students was **to improve everyday life** in hospital environments, being *'able to help them [children] find those happy moments during the challenge they are facing with the disease'.* Finally, the **replicability** of the proposal in other medical care environments seemed relevant to them.

In order to obtain **feedback** on the design proposal, it was complemented with a survey for the users of the child oncology ward and an Instagram account.

3.2 Unravelling the Students' Approach

3.2.1 Becoming Aware of the Relevance of Seeing Children Differently

Approaching the case from multiple angles changed the students ways of seeing children and questioned some of their conceptions of normality, inclusion, and familiarity.

Challenging normality was triggered by recognizing diversity among and different perspectives of children. In this reading, children are re-thought as having own ways of participating in everyday practices that cannot be standardised or generalised. This showed in how the students 'came to see' children: *'They [the children] did not seem to worry too much about the obstacles, they just tried to solve the issues straight away in a simple way.'* And, in how the students seemed to become more aware that children's perspectives are often narrowly defined (or forgotten) by adults: *'Many times adults focus on the playful side of children forgetting their very own personal perspective'.*

Another concept foregrounded by the students was **unfamiliarity**, which meant recognizing that professional designers often know little about the spaces they design, about who the client is or the users will be. *'As designers, our role is to envision and deliver projects that affect and are used by "Others", but "Others" can mean a lot of things'.*

3.2.2 Understanding Children as Everyday Designers

Observing children in different contexts allowed the students to identify or recognize particular practices. At different occasions students referred to **children as active agents**. The notion of everyday design seemed to amplify this idea. This lead to conceptualizing children as having a natural tendency towards exploration, imagination and creativity: *'Observing children interacting between one another and [with] their environment but also with [them]selves was a great way to experience their infinite creativity.'* From this perspective, children create possibilities of using spaces and objects, provide with different perceptions of the world and reveal unexpected patterns *'of adaptability and problem-solving'*.

Observing children's ways of interacting with the school or the hospital environment helped the students to recognize **different manifestations of children's everyday design practices** in how they make and shape spaces for themselves or reinvent settings. To this end, children appropriate certain spaces, even if the space is not intended for them. *'They [children] treated unconventional surfaces such as glass windows as their own canvas* or *the moving bed as their own Ferrari'*.

In their reflections on the TV-documentary, students recognized how **practices constitute the emotional experience of care environments** and the benefits of communication and contact to mitigate the feeling of vulnerability, loneliness when isolated, or the importance of being accompanied by familiar objects**.** *'I noticed that […] even when they use the medical equipment, children were more relaxed when they knew exactly what was happening, when they were aware of the procedure and informed by the doctors.'*

3.2.3 Designing an Oncology Ward for Children as Everyday Designers

Reflecting on the design process students emphasized the importance of **direct interaction** with various experts – new to them. The conversation with one of the cancer survivors helped students to better understand what isolation in a hospital environment entails, what matters to hospitalized children, and what makes them feel better. Another activity of relevance to the process was carefully (closely) **observing children's everyday practices in care and other environments**.

Next to interacting with and observing children, students found designing and researching together in **a network of people** (students, lecturers, experts, and children involved) and a transdisciplinary atmosphere important. This provided the *'opportunity to investigate design using so many different approaches'*.

In a structured and highly complex environment such as a children's oncology ward, the students foregrounded the **role of 'constraints** *as a booster for creative and design process'*.

Finally, in the design process, **feedback** from actual users was considered important to open up a horizon for future improvement. Students recognized that designing is a *'a vice versa procedure'* in which designers and users can mutually benefit.

3.2.4 Implications for Design Practice

Beyond this specific redesign the different angles seemed to stimulate reflection in the students about designers' responsibility more generally. The students' understanding of **responsibility** involved rethinking existing definitions and proposing solutions for specific use(rs). *'This project made me more empathetic, responsible, and aware of the impact we have on people's (especially aspiring young humans') everyday lives.'*

Next to these reflections, students described the need for a change in **attitude** towards the role of professional designers: '*The role of [an] architect will thus not be to strictly categorize the different areas of the hospital spaces as we have been used to, but rather to create opportunities for the interaction of different forms that can change over time. It will then be up to the children themselves to what extent they would wish to engage'*. On the one hand, a recognition that architects can contribute to create opportunities for interaction, on the other hand, the understanding that reality is ever changing, accepting that in the end the decision is the user's and that professional designers cannot meet or control everyone's needs. Related to these issues concerning agency and control students emphasized collaboration: for example, one student wrote that *'professional and everyday designers design together'* thereby situating design as an ongoing activity and process.

4 Discussion and Concluding Remarks

What does the students' redesign of a child oncology ward and their reflections on the course teach us about the research questions we started from? We learned that, first, to recognize that the design process continues is to see architects and everyday designers as designing *together*; it requires a change in attitude related to agency and control; and, shows the potential of everyday practices as a starting point in design (cf. RQ1); second, designing in a way that supports children as everyday designers starts with taking children seriously and designing spaces that allow indeterminacy into and not separate from the fabric of everyday life, be it in a hospital ward, a shop, or on a sidewalk (cf. RQ2). And third, understanding children as everyday designers helped the students to recognize (balance) children's vulnerable situation when being hospitalized while keeping an eye on how even in such precarious situations children shape spaces for themselves; understanding their responsibility as professional designers to support these children's agency (cf. RQ3).

How do these preliminary findings relate to previous research, and what are their implications? To start with, research that focusses on how architects deal with design-use complexities in practice shows that strategies related to developing *specificity* include gaining insight into perspectives of (possible) users, discussing scenario's with clients, etc. (Stam et al. 2020) For the students who participated in our course, a strategy to cope with architecture's contingency precisely was to pay close attention to how children are involved in everyday practices in order to create *openness* in their design proposal. And, in relation to understanding children as

everyday designers the students designed interventions that may support children as such not outside or at the margins (e.g. the playroom) but integrated into the oncology ward, as part of ongoing everyday practices.

Second, although not common in architectural education, the participating students integrated possibilities for feedback from people with relevant expertise as integral part of their design proposal. For them it was a logical next step in dealing with design's indeterminacy, complementing their proposal with a survey related to (possible) everyday uses and an Instagram account. The survey was the students' way to acknowledge that architects do not have (full) control over design outcomes and need feedback from a broad range of users to steer the proposal further in relevant directions; and that, in the end, it will be up the children/users to what extent they wish to engage with the outcome. As such, integrating possibilities for feedback like the students did, may be an important strategy for student-architects to deal with design-use complexities. Moreover, it may shed a different light on, for example, post-occupancy evaluations, understanding these as part of design processes and based on everyday uses (cf. Simonsen et al. 2022).

Finally, research suggests that professional designers are attracted to information presented with maximum use of graphics and limited text (Annemans et al. 2014). They prefer raw data in a format that is condensed to be design-relevant, allowing them to quickly pick up both overarching themes and discover depth relevant to a specific project (McGinley & Dong 2009). In our course we worked with an existing TV-documentary. Watching it together using everyday design as lens helped students to focus on interactions between children and the material care environment. Our findings suggest possibilities of using TV-documentaries as one possible source of information in sensitive and hard-to-enter contexts like hospital wards.

An important limitation of the study is that because we did not intend to study and write about the course the materials we could use for the analysis were limited – recorded and written work. Related to this, the reflections of the students were part of their evaluation, which means that the content of the reflection papers could be directed also by e.g. wanting to achieve good marks. Thirdly, students suggest the need for a change in attitude towards the role of professional designers. Studying this would require an analysis of their (design) work done after the course is finished, which we did not do. Finally, since the students' design proposal was not realized or lead to interventions in the oncology ward, we cannot say much about whether and how it will support children as everyday designers. The discussion with the experts, however, brought to the fore points of attention in the students' design proposal related to practicalities and materialization: not taking into account hygiene standards in an oncology ward, materials that can or cannot be used, extra maintenance work, etc.

We see three key areas for future research. The first follows from the circumstances that made the course: this was the first time we organized a course on children's everyday (design) practices that was both research-based and design-oriented, there were not many examples available that have followed this format we could take as a reference, the context of the international academic network challenged us to introduce students to a broad and unfamiliar topic in just five days, and the course had to adapt to the constraints of the COVID-19 pandemic, which is

why meetings with experts were carried out on-line, and the idea of using a TV-documentary arose. In light of these conditions a first area for future research would be a second iteration of the course, also because this would allow a more systematic gathering of materials. A second area is to further explore TV-documentaries as a way to inform design for sensitive contexts and develop an ethical framework that allows doing so. And finally, it would be interesting to extend the experiment to professional designers, working on real-world design projects.

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