

Building empathy

Opportunities for introducing future users' perspectives in architectural design

Valerie Van der Linden

Department of Architecture
KU Leuven
Leuven, Belgium
valerie.vanderlinden@kuleuven.be

Hua Dong

College of Design and Innovation
Tongji University
Shanghai, China
donghua@tongji.edu.cn

Ann Heylighen

Department of Architecture
KU Leuven
Leuven, Belgium
ann.heylighen@kuleuven.be

Abstract—Empathising with future users is considered crucial in design but also challenging. Often designers have no direct access to the perspectives of those they are designing for. To involve future users' diverse perspectives in the design process, different design disciplines have developed a gamut of techniques, which are largely unknown in architectural design. It is hypothesised that certain techniques have value for architecture as well, but need tailoring to architectural practice. The aim of this paper is to outline opportunities for introducing future users' perspectives in architectural design. Preliminary results of an empirical study of architectural practice in Flanders (Belgium) indicate that architectural design is a specialist-oriented discipline, characterised by a particular subject, client relationship, firm size and project scale. Based on these characteristics and insights from an exploratory literature study on techniques used in other design disciplines, we identify opportunities in the areas of design briefing, framing, ideation and development. We suggest providing more engaging design briefs, mapping building visits, diversifying design scenarios, and using artefacts to enhance dialogue with clients and partners. This is expected to facilitate attention for diverse people's spatial experience in architectural design.

Keywords—architectural design; briefing; design tools; empathy; human-centred design; spatial experience

I. INTRODUCTION

Empathising with future users is considered a crucial competence of designers and a basis for innovation, as illustrated by human-centred [1], inclusive [2] or empathic [3] design approaches. Yet, designing for others can be challenging, especially when future users' needs, wishes and experiences differ considerably from those of designers [4]. Examples of such challenging design tasks in architecture include, e.g., designing a school for children with autism, a crematorium, housing for people with dementia, a cancer care facility, a religious building. As architects (and other designers) rarely have direct access to the perspectives of those they are designing for, they often rely on their own experiences [5], [6], which holds the risk of leading to unfounded assumptions [7].

Communicating users' perspectives to designers is not self-evident [8]–[10]. Designers have their own “designerly ways of knowing” [11]. Information should allow them to build a “creative understanding” [12], i.e., an understanding that suits

their creative process by providing in-depth design-relevant insights. To this end, several techniques have been developed that allow involving the perspectives of diverse users in the design process, e.g., personas, customer journeys, prototype tests, cf. [13]–[15]. Yet, unlike other design disciplines, architectural practice is largely unfamiliar with those techniques.

This exploratory paper starts from the hypothesis that certain techniques have great value for architecture, but that they need tailoring to architectural practice. The aim of this paper is to outline opportunities for introducing future users' perspectives in architectural design, based on the particularities of architectural design and inspired by the potential of techniques used in other design disciplines. As outlined in section II, this paper builds on insights from an ethnographic study (for methodology, see [16]) and exploratory interviews (reported in [17]) in architectural practice in Flanders, Belgium. Section III presents particular characteristics of architectural design, based on preliminary results of those empirical studies. In section IV, these characteristics are combined with insights from an exploratory literature study of techniques used in other design disciplines, resulting in the identification of opportunities in four areas. The formats with most potential for architectural design will be subject of further research.

II. METHODS

The following sections build on insights into architectural practice in Flanders that are based on preliminary results of an ongoing ethnographic study and exploratory interviews. The ethnographic study explores how users' spatial experience is attended to in present-day architectural design practice [16]. To this end, observations, interviews and document analysis were conducted in three renowned architecture firms. This resulted in approximately 400 hours of observation and 15 interviews. In a previous exploratory phase, 20 in-depth interviews were conducted with different stakeholders (architects, clients and governmental agencies) to gain insight into the relation between architectural practice and inclusive design, including questions on sources and tools to involve diverse users' perspectives in architectural design [17]. In section IV, the characteristics are combined with insights from an exploratory literature study of techniques used in other design disciplines.

This work received support from the European Research Council under the European Community's Seventh Framework Programme (FP7/2007-2013)/ERC grant agreement n° 335002, Flanders Innovation & Entrepreneurship, and the Research Foundation – Flanders (FWO).

III. PARTICULARITIES OF ARCHITECTURAL DESIGN

Different design disciplines (e.g., product, service, interaction, architectural design) show similarities as well as differences [18]. As architectural practice lacks some aspects crucial to other disciplines (see below), informing architects poses a particular challenge. Based on preliminary findings of these empirical studies, we identify characteristics of architectural design that influence how attention for future users is embedded in architects' design process.

First of all, architectural design deals with the organisation of space as its particular subject. Spatial experience is central to architects' interest and regarded as their domain of expertise. However, spatial experience is difficult to communicate, especially for laypeople. Intuitively, architects seem to rely on their own spatial experience as a main reference during design.

Regarding information sources, architects are highly dependent on information provided by the client. However, clients are often inexperienced (commissioning a building only once), which can lead to difficulties in selecting information and communicating it in a design-friendly way. In the context of design competitions, contact with clients is moreover limited. Typically, design briefs are technical documents. Consulting (future) users other than the client is uncommon and sometimes even deemed irrelevant. Consulting scientific or market research is rare.

The small size of most architecture firms in Belgium leads to a particular way of working. In-house researchers or consultants are exceptional. External consultancy is limited by tight budgets. Architects rather apply informal methods such as visiting reference projects. As mentioned, their main reference is their own spatial experience (e.g., during those visits), which is a form of implicit knowledge. Moreover, architects' knowledge is very much person-bound, as it is often gained through previous projects, and thus difficult to share.

Finally, in terms of design media, architects rarely make full-size mock-ups, because of their projects' large scale. We observed that floor plans are the dominant design medium in meetings, despite clients' problems with reading them and despite architects' broader spectrum of media (e.g., models, schemes) when designing.

These characteristics suggest that the position of users' perspectives is more problematic in architectural design than in other design disciplines. This may explain why architectural design is still predominantly oriented towards architects (as specialists) and less familiar with user involvement than, e.g., product design [19].

IV. OPPORTUNITIES

This section identifies opportunities for introducing future users' perspectives in architectural design, by linking potential formats to the particularities observed in architectural practice. The opportunities are illustrated with some exceptional examples of architects' attempts to connect with future users' perspectives that were encountered in architectural practice. The opportunities are situated in four overlapping areas of the design process: design briefing, framing, ideation and development. We suggest providing more engaging design

briefs, mapping building visits, diversifying design scenarios, and using artefacts to enhance dialogue with clients/partners.

A. Engaging design briefs

Architects who participated in our study often highlighted their need to understand the stories underlying people's experiences and needs. However, a traditional design brief is little engaging and offers architects little insight into the daily life of whom they are designing for. This is problematic in the case of a design competition, as initially little other information is available.

Research on design documentaries [20] demonstrates that reportages about 'a day in the life' of future users can supplement the design brief, offering a concrete narrative designers can relate to. Such reportages can be documented through film, text and/or photography. These formats, often inspired by fiction, are more intuitive than the technical documents that characterise briefing in architectural practice.

If design documentaries are to be applied in architectural design, attention should be paid to the inclusion of design-relevant information, i.e., information on architectural or spatial elements. A particular quality of reportages is that they can contain rich information with ethnographic qualities. This allows architects to discover other people's experiences as well as their relation with the built environment. As information is presented on the same level of abstraction, architects can transfer this to their design context – analogue to the use of case studies [21].

One examples observed in architectural practice that illustrates this potential is a booklet about a facility for people with a mental impairment "through the eyes of the residents", which was created in the context of an open tender and much appreciated by architects. Another example is a documentary film about people living with dementia (Figure 1), which was not made in context of a design brief, but did impress architects involved in the design of a dementia care facility.

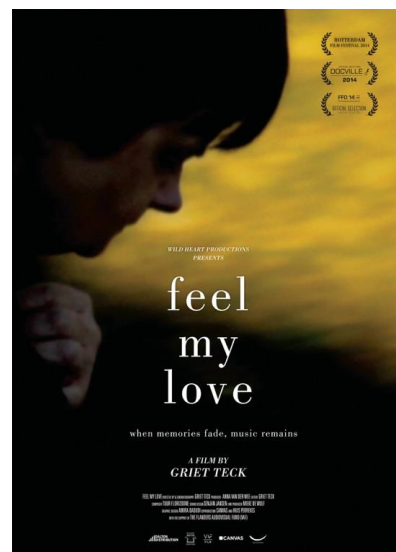


Fig. 1. Documentary film by Griet Teck on life in a house for people with dementia © Wild Heart Productions, Huis Perrekes vzw, Canvas - Belgium 2014

B. Building visit maps

At the start of a design project, architects try to build a frame of reference and gain an understanding of the project's context. To this end they typically visit the client's current building (if available) and/or reference projects (usually recent buildings with a similar programme). As mentioned, architects tend to gain an embodied understanding of the building(s). Besides being documented in photographs, visits are usually not analysed, nor are the resulting insights shared.

Given architects' affinity with graphical analysis and synthesis, great potential seems to lie in documenting those building visits and recording experiential aspects that can lead the design. Apart from architects' own experience, also that of other people can be mapped. This mapping can be based on the informal interviews architects sometimes conduct or in collaboration with researchers or the client, whom architects usually turn to for expert information about target groups. Mapping can take different forms; techniques such as a customer experience journey can serve as inspiration.

For example, Figure 2 shows a stress map of a cancer patient's hospital visit, combining spatial and experiential aspects. It represents the peaks in a patient's stress level during a hospital visit in relation to the time course and location. These locations are illustrated with photographs and the patient's route is mapped on the building's lay-out. This kind of map allows architects to determine opportunities for interventions while obtaining a holistic understanding of people's experience.

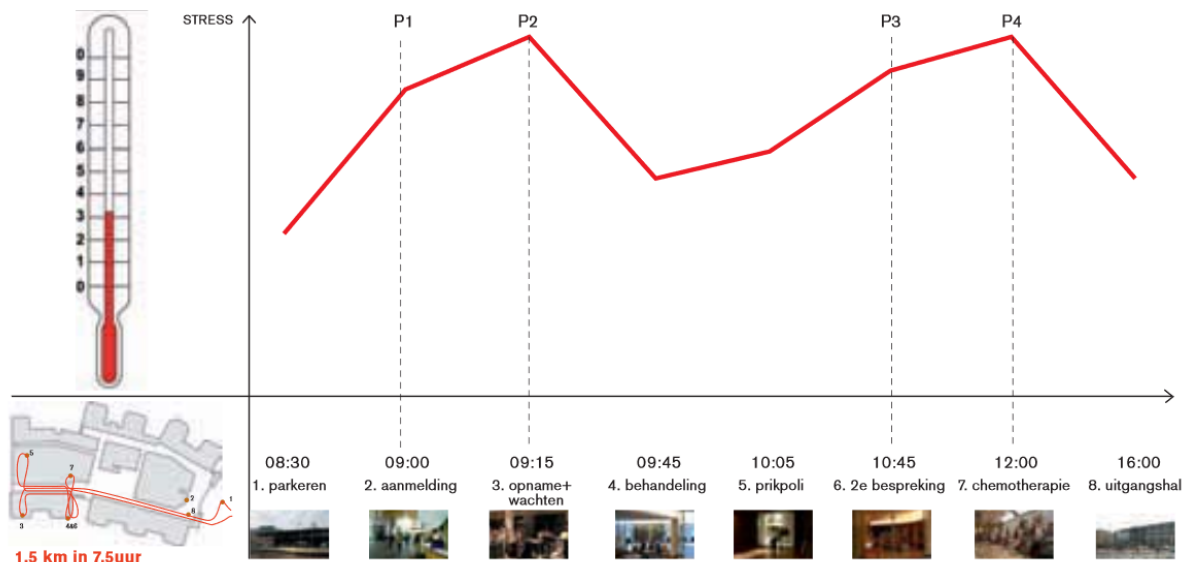


Fig. 2. This map of a cancer patient's hospital visit shows stress peaks during registration (P1), intake + waiting (P2), second consultation (P3) and chemotherapy (P4) © Kopvol – Architecture & Psychology [25]

C. Diversified design scenarios

Key to architects' expertise is their ability to envisage future experiences of a building. When generating design concepts, architects in our study were frequently observed imagining someone approaching, entering and moving through the building. This intuitive way of designing has its equivalent in the technique of scenarios, short stories describing a potential action. Sometimes this imagined action is even elaborated into a complete walk-through or scenography, e.g., in the context of exhibitions or cultural buildings, as illustrated by the example in Figure 3. This kind of representation shows similarities with storyboards, a narrative technique to depict the sequence of an activity.

However, the imagined person undertaking this walk is usually an abstract personage. As mentioned, architects' main point of reference is their own experience. Their imagined experience is limited in the sense that the personages featuring in this scenography often show little diversity. There is potential to diversify architects' scenarios by, e.g., developing personas [22], [23], a technique that is well-known in product design and human-computer interaction, but largely unknown in architectural design (for an exception, see [24]).

Personas are fictional (research-based) user types, representing a small set of potential users with their motivations and potential actions (scenarios), which allow designers to test the space they are designing at different stages. If architectural aspects such as the use and experience of space can be included, the technique may support architects in imagining whom could use their design and how, and which qualities it could offer them. As personas and scenarios are project-specific, they can be developed in consultation with the client.

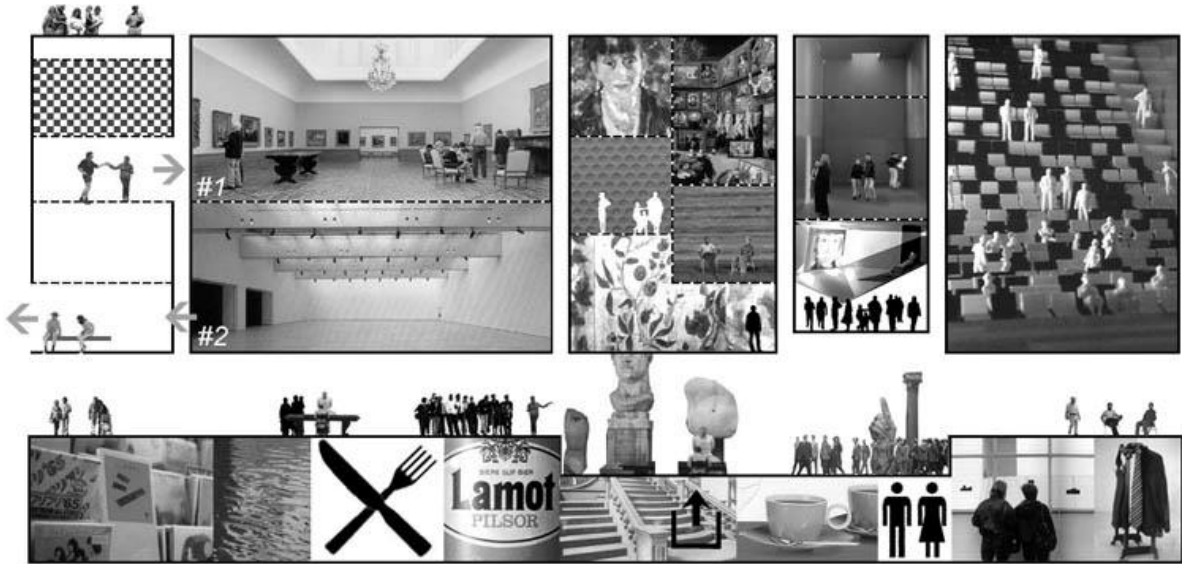


Fig. 3. Conceptual section of a congress centre, illustrating the different elements of the programme © 51N4E

D. Artefacts in dialogue

To study the qualities of space during the design process, architects use different representation techniques, e.g., schemes, sections, renderings, models. In design meetings with clients observed in our study, this range of design media was not fully exploited. Dialogue with the client seems hampered by the dominant use of floor plans, which can be difficult to read for non-designers.

Interaction seems stimulated in situations where design media are used that are easy to read and manipulate, like models or schemes with movable components. These function as “boundary objects” [26], which allow involving lay people in the design process. As such they can mediate attention for users in a designerly and even collaborative way [27].

We mentioned earlier that full-scale testing is rare in architectural design, while omnipresent in other design disciplines. However, we also encountered some examples of mock-ups, especially in care projects (Figure 4). They offer the opportunity to test, e.g., innovative care concepts with different stakeholders [19], [28]. This facilitates collaboration with partners (from different backgrounds) and allows obtaining feedback from future users.

V. DISCUSSION & CONCLUSIONS

As this paper reports research-in-progress, which needs more in-depth analysis, the opportunities outlined are based on preliminary insights. As regards the particularities of architectural practice, current insights are limited since the analysis of the ethnographic study is still ongoing. As regards the potential of techniques used in other design disciplines, we aim to complement the exploratory literature review with case studies to understand how the techniques are used in the design process.

Preliminary findings indicate that the position of users’ perspectives is more problematic in architectural design than in other design disciplines. Key to supporting architects in building empathy is making spatial experiences more explicit – and subsequently more diverse. This directs our focus towards engaging architects’ creative abilities (envisaging, mapping and expressing spatial experience through different design media) and exploiting the potential of their relationship with the client.

We identified opportunities to facilitate attention for diverse people’s spatial experience in different areas of the design process. We suggest ways to promote empathy in the design process that goes beyond attention for users during the early briefing phase. Introducing future users’ perspectives throughout the entire design process (e.g., in the areas of framing, ideation and development) is expected to lead to an integrated, reinforced and hence more sustainable attention for future users.



Fig. 4. Mock-up of a resident room in a care home © osar architects

Based on this first exploration, we suggest providing more engaging design briefs, mapping building visits, diversifying design scenarios and using artefacts to enhance dialogue. The formats with most potential will be subject of further research. They are expected to inspire researchers and clients to communicate user information to architects, as well as to be directly applicable by architects. This can be an opportunity for architectural design, like product design, to adopt an approach based on users' perspectives as a basis for innovation.

ACKNOWLEDGMENT

The authors would like to thank the participants in the studies we referred to for sharing their time and insights. This research received funding from the European Research Council under the European Community's Seventh Framework Programme (FP7/2007-2013)/ERC grant agreement n° 335002, Flanders Innovation & Entrepreneurship, and the Research Foundation – Flanders (FWO), of which the first author is a PhD fellow.

REFERENCES

- [1] A. Beysen, M. De Lameillieure-Kharatichvili, R. Lenstra, and J. Oskamp, Eds., *Cecilia's Keuze: Ontwerpen met meerwaarde op basis van gebruikersinzichten. De kracht van Human Centred Design*. Leuven: LannooCampus, 2012.
- [2] P. J. Clarkson, R. Coleman, S. Keates, and C. Lebbon, Eds., *Inclusive Design: Design for the whole population*. London: Springer, 2003.
- [3] I. Koskinen, T. Mattelmäki, and K. Battarbee, Eds., *Empathic Design: User experience in product design*. Helsinki: IT Press, 2003.
- [4] N. Crilly, A. Maier, and P. J. Clarkson, "Representing artefacts as media: Modelling the relationship between designer intent and consumer experience," *Int. J. Des.*, vol. 2, no. 3, pp. 15–27, 2008.
- [5] D. Cuff, "The social art of design at the office and the academy," *J. Archit. Plan. Res.*, vol. 6, no. 3, pp. 186–203, 1989.
- [6] R. Imrie, "Architects' conceptions of the human body," *Environ. Plan. Soc. Space*, vol. 21, no. 1, pp. 47–65, 2003.
- [7] A. Cooper, *The Inmates Are Running the Asylum: Why high-tech products drive us crazy and how to restore the sanity*. Indianapolis, IN: Sams, 2004.
- [8] H. Dong, C. McGinley, F. Nickpour, and A. S. Cifter, "Designing for designers: Insights into the knowledge users of inclusive design," *Appl. Ergon.*, vol. 46, Part B, pp. 284–291, 2015.
- [9] J. Fulton Suri, "Communicating with designers: The role of empathy, evidence and inspiration," *Proc. Hum. Factors Ergon. Soc. Annu. Meet.*, vol. 44, no. 38, pp. 795–798, 2000.
- [10] F. Sleswijk Visser, "Bringing the everyday life of people into design," PhD Dissertation, TU Delft, Delft, 2009.
- [11] N. Cross, *Designerly Ways of Knowing*. London: Springer, 2006.
- [12] C. E. Postma, "Creating socionas: Building creative understanding of people's experiences in the early stages of new product development," PhD Dissertation, TU Delft, Delft, 2012.
- [13] H. Aldersey-Williams, J. Bound, and R. Coleman, Eds., *The Methods Lab: User research for design*. London: Design for Ageing Network, 1999.
- [14] IDEO, *IDEO Method Cards: 51 ways to inspire design*. San Francisco, CA: William Stout, 2003.
- [15] MediaLAB Amsterdam, *Design Methods - toolkit*. 2015.
- [16] V. Van der Linden, H. Dong, and A. Heylighen, "Capturing architects' designerly ways of knowing about users: Exploring an ethnographic research approach," in *Proceedings of DRS 2016, Design Research Society 50th Anniversary Conference*, Brighton, 2016.
- [17] V. Van der Linden, H. Dong, and A. Heylighen, "From accessibility to experience: Opportunities for inclusive design in architectural practice," *Nord. J. Archit. Res.*, in press.
- [18] W. Visser, "Design: One, but in different forms," *Des. Stud.*, vol. 30, no. 3, pp. 187–223, 2009.
- [19] E. B.-N. Sanders, "Exploring co-creation on a large scale: Designing for new healthcare environments," in *Designing for, with, and from user experience*, Delft, 2009, pp. 10–26.
- [20] B. Raijmakers, "Design documentaries: Using documentary film to inspire design," PhD Dissertation, Royal College of Art, London, 2007.
- [21] W. Visser, "Use of episodic knowledge and information in design problem solving," *Des. Stud.*, vol. 16, no. 2, pp. 171–187, 1995.
- [22] L. Nielsen, *Personas - User Focused Design*. London: Springer, 2013.
- [23] J. Pruitt and J. Grudin, "Personas: Practice and theory," in *Proceedings of the 2003 conference on Designing for user experience*, San Francisco, 2003.
- [24] V. Haines and V. Mitchell, "A persona-based approach to domestic energy retrofit," *Build. Res. Inf.*, vol. 42, no. 4, pp. 462–476, 2014.
- [25] T. C. Vollmer and G. Koppen, *Architectuur als tweede lichaam: De rol van architectuur bij de verzorging van kanker. Lay-out 11*. Rotterdam: Stimuleringsfonds voor Architectuur, 2010.
- [26] L. L. Bucciarelli, "Between thought and object in engineering design," *Des. Stud.*, vol. 23, no. 3, pp. 219–231, 2002.
- [27] B. Ewenstein and J. K. Whyte, "Visual representations as 'artefacts of knowing,'" *Build. Res. Inf.*, vol. 35, no. 1, pp. 81–89, 2007.
- [28] A. Kasali, N. J. Nersessian, and C. M. Zimring, "Making evidence visible: Using mock-ups in healthcare design," in *ARCC 2013 | The Visibility of Research*, Charlotte, 2013, pp. 128–135.