

# Empathy Building through Co-design

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**Abstract.** As a user-designer face-to-face design approach, co-design needs the two sides standing at each other's perspectives for problem solving. In co-design, the key point is building empathy between designers and users. This paper went through the literature about "design empathy". A practical co-design workshop was organized which proved the effectiveness of design probes for empathy building. Other findings include the three modes of designers' participation in co-design.

**Keywords:** Design empathy, co-design, participatory design.

## 1 Introduction

Co-design, a user-involved approach for design innovation, integrates designers and design researchers with non-designers to create better experience [1]. In co-design, it is hoped that, designers' professional skills and users' specific knowledge would inspire each other and lead to an equal and effective dialogue, thus helping develop appropriate solutions to meet the user needs. However, it is often a challenge for designers and non-designers (normally with little design knowledge) to have a harmonious dialogue.

Empathy in co-design includes two aspects: creating a respectful dialogue and supporting empathic understanding with users [2]. In empathic design, designers and researchers continually develop and check their creative understanding of users' experiences in dialogues with users over time [3]. Empathic design is a relatively low-cost, low-risk way to identify potentially critical customer needs [4].

The term 'design empathy' has been in use since the late 1990s to describe the role of the designer/researcher [4-6]. Design empathy makes use not only of the emotions of the users, but also those of the designers [7]. One of the most frequently cited definitions of empathy comes from Fulton Suri [8] who defines empathy as "our intuitive ability to identify with other people's thoughts and feelings – their motivations, emotional and mental models, value, priorities, preferences, and inner conflicts". There are also other definitions or descriptions of design empathy, for example:

“Empathy in design is the ability to step into another person’s shoes, imagine how that person feels, would think and act, in order to use that understanding in designing.” [9].

“Empathy has been used as a defining characteristic of designer-user relationships when design is concerned with user experience.” [10]

“Empathy is the critical component that deepens the designer’s understanding of users who may be very different from the designer”. [11]

Postma et al. [3] quoted Wright and McCarthy [12]’s definition of creative understanding - the combination of a rich, cognitive and affective understanding, and the ability to translate this understanding into user-centered products and services - to explain that empathic design is a design research approach that is directed towards building creative understanding of users and their everyday lives for new product development (NPD).

Sleeswijk Visser [13] synthesized literature about empathy and explained it from three aspects. (1) Empathy is a kind of ability, which could be affected by designers’ willingness and the specific situation. (2) In the psychological literature, empathy has two components, i.e., affective and cognitive. For designers, “having an emotional response (affective) to another’s emotional state and being able to reflect on that by perspective-taking (cognitive) is a core mechanism of empathy.” (3) Empathizing is a process, including stepping in, walking around and stepping out phases.

In this paper, the authors implanted empathy into a co-design workshop. The purpose of introducing empathy was to emphasize the mutual understanding between the designer and the user.

## 2 Methods

In October 2013, a co-design workshop was conducted in Tongji University, Shanghai. It was the second one of a series of co-design workshops. Before the workshop, four users were recruited to collect data (through probes) for building empathic understanding when co-designing with designers. Two of them (U1 and U2) took part in the first co-design workshop in 2012, while the other two were new members (U3 and U4). User 1 is a retired chef with poliomyelitis. User 2 is a 74-year-old lady who used to be a university lecturer. Users 3 and 4 are two active ladies (aged between 25-30) with hearing loss. They communicate with the help of hearing aids. The two ladies are very good friends and are both interested in hip-hop dancing. Six professional designers participated in the co-design workshop. Three of them took part in the first workshop while the other three were new. All the designers and users were divided into three groups; each group with one or two users and two designers.

Several researchers make suggestion on the techniques and methods of empathic design. Leonard and Rayport [4] suggested watching consumers use products or services (i.e., observation) in their own environment as a basic technique for empathic

design. Some visual techniques for communication are described, for instance, photo diaries [2], context-mapping [14], and generative tools [15]. McDonagh and Thomas [16] conducted a series of empathic modeling activities (for instance, designers without physical disabilities using wheelchairs and/or restricting their mobility or handgrip dexterity) to enhance empathy with design students.

Fulton Suri [3] distinguished the empathic methods into three categories: “looking at what people really do [looking], asking people to participate [participating], trying things ourselves [trying].” Kouprie and Sleeswijk Visser [17] classified all the tools and techniques into three types: “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).”

“We learn about what other people think and feel through empathic interpretation of what they say and do.” [3] This study used design probes (a kind of static saying) and video ethnography (doing) to capture the users’ “behavior” and “thinking”. Visual data such as video clips, persona cards and photos were shot and classified by the users and researchers, together with textual data (e.g. quotes).

Barros & Duarte [18] surveyed many publications [19-21] and concluded that participatory design is one of the best ways when developing products to be used by people with disabilities. Finally, all the collected data from design probes and video ethnography were shared with the designers and users in the co-design workshop. The co-design topic of each group was determined according to the user’s personal life focus and personal interests. Concerning the “trying” [3] level of empathic design, a designer-user co-cooking session was added to the U1 group, whose co-design topic was around cooking and kitchen. The topic of U2 (a retired teacher) group was in relation to taking care of patients in hospital, as U2’s husband got cancer a year ago and her daily life now was taking care of her husband in hospital. U3 and U4 wished to design something that could express their positive living attitude towards hearing impairments.

At the co-design venue, besides the participants (designers and users), there was one facilitator and one recorder in each group. The facilitator controlled every group’s procedure while the recorder objectively recorded the detailed reactions in the dialogue. The whole process was video recorded. Stationary and basic model making materials (such as strings and small pieces of blocks) were prepared for brainstorming and prototyping.

### 3 Results and Discussion

The data collected via probes proved effective when co-designing. Users narrated their own stories to designers under the assistance of visual materials. Most designers were curious about the users’ experiences and then conversations began. When evoked, the users expressed more and designers got a deeper empathic understanding. Unlike the first co-design workshop in 2012 [22], this time, designers had more curiosities about the users’ narrations and the users had greater motivation to explain

their problems and express their ideas. The visual materials helped ideas to converge between the designers and the users. From the questionnaire, all the participants thought the designers were fully or almost fully standing at the users' perspectives when considering the situation. Designers listened patiently and sometimes were "surprised by various aspects that influence the user's experience [13]." This proved that designers empathized with the users. On the other side, from the follow-up discussion, the users learned useful design concepts and understood designers' ways of working. All the users thought that the designers had made great contribution to the final solution. This process has shown the three aspects of empathetic design [13]: i.e. (1) Empathy is a kind of ability. (2) Empathy has affective and cognitive components. (3) Empathizing includes stepping in, walking around and stepping out phases.

### 3.1 User Participation Modes

Concerning user participation in the co-design process, Yuan and Dong [23] summarized four user participation modes, i.e., active, semi-active, indirect and passive modes. In the active mode, users are able to propose problems and solutions or related ideas, which has much contribution to design outcomes. In the semi-active mode, users are aware of their intentions or problems, but can hardly propose any design solutions. In the indirect mode, users do not know what they need very clearly, but they are willing to talk, which may inspire designers. In the passive mode, users have little contribution to the design outcomes. They only give feedback when they see the design solution or concept.

In this co-design workshop, all the four users behaved naturally and were willing to express their ideas and thinking. No users were in a passive mode, which may not lead to successful design outcomes or collaborative design experience. U1 was in a semi-active mode, which meant he proposed his problems and was willing to answer the designers' questions, but with no initial design solutions. U2 was in an active mode. She not only collected all the problems she had when taking care of her husband, but also had professional knowledge to think the problems out. In the co-design workshop, it was a good chance for her to share her ideas with the designers and then form the final solutions together. U3 and U4 belong to the indirect mode, in which designers' strong mind determined the design directions. U3 and U4 actively participated in the discussion and offered key information on certain topics that inspired the designers. It proved that in active modes, users' contribution to design final outcomes could be greater. It was true in this co-design workshop. "The final design solution was proposed by the Granny [U2]. We just encouraged her to recall her memory!" explained one designer in Group U2. "I really appreciate the designers in our group. They gave me many good suggestions about how to arrange my kitchen to enlarge the working space," said U1.

### 3.2 Designers' Roles

Based on the observation of the three groups, the designers' roles can be classified into three: i.e., listening, controlling, and inspiring. In the "listening" mode, designers often keep quiet most of the time and listened to the users attentively, letting them

express their experiences and ideas. Normally, designers take notes down and express his/her own thinking after users' talking. This mode of designers matches the "active" mode of users very well. In the "controlling" mode, designers strongly lead the design direction and procedure. In this mode, users are easy to be inspired, and, sometimes, ignored as well. In the third mode "inspiring", designers also listen to users, but with appropriate intervention, e.g. inquiry, which gives opportunities for users to propose creative solutions by themselves. This mode of designers best suits open-minded and thoughtful users.

### 3.3 Interactions between Users and Designers

Based on the co-design workshop, U2 (in the "active" mode) and the designers in her group (one in the "inspiring" mode while the other in the "listening" mode) collaborated best: all had good experiences and the design outcomes were generated by the user under the designers' encouragement. Figure 1 shows the discussion scenario of the group. The "inspiring" designer carefully listened to the Granny's ideas and then explored deeply according to her experiences. The left male designer was in the "listening" mode while the person at the right corner was the facilitator.

The U1 group was the combination of a "semi-active" user and "listening" designers. Sometimes, they got stuck when no one was talking. This kind of design process



**Fig. 1.** The "active" user with "inspiring" and "listening" designers

was not smooth. The designers expected the users to talk much more than them. They wished to have more than one user.

The U3 & U4 group was a combination of “indirect” users and a “listening” designer and a “controlling” designer. They worked very well together. It was observed that the “listening” and “controlling” or “listening” and “inspiring” combinations tend to get more harmonious results.

### 3.4 Suggestions for Improvements

The designers proposed suggestions for improving the co-design workshop. As the user data were collected and roughly classified by the users and researchers before the co-design workshop, the designers had little time to digest the data. It was at the workshop venue that the designers firstly get all the data. “It’s better to let us know about our users before we came here and then we can prepare some material at home,” said one designer. In addition, there was also a gap about the understanding of the user data between the researchers and the facilitators. When the user data were shared with all the participants, it is important to classify the data in advance, and present them with a logical sequence.

## 4 Conclusions

Under the direction of literature, this study mainly applied the technique - design probes - for empathy building in co-design. The key findings of this study are:

- The design probe proves a good approach for empathic design. All the designers and users had a positive response to this kind of methods and both sides learned from each other.
- The visual data collected from design probes, which included the real user environment, indeed helped build an equal dialogue and encourages the designers’ empathic understanding with users.
- While there are four user participation modes (active, semi-active, indirect and passive) in co-design, three designer participation modes were also identified, i.e. listening, controlling and inspiring.
- The combinations of different modes of designers and users may lead to different co-design results and affect participant’s experiences. In this workshop, it was observed that when there was a ‘listening’ designer with a ‘controlling’ or ‘inspiring’ designer, the co-design process was smoother. This will need to be tested in further research.

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## References

1. Sander, E.B.-N., Stappers, P.J.: Co-creation and the New Landscapes of Design. *CoDesign: International Journal of CoCreation in Design and the Arts* 4(1), 5–18 (2008)

2. Mattelmäki, T.: Design Probes. Doctoral Thesis. University of Art and Design, Helsinki, Finland (2006)
3. Postma, C.E., Zwartkruis-Pelgrim, E., Du, J.: Challenges of Doing Empathic Design: Experiences from Industry. *International Journal of Design* 6(1), 59–70 (2012)
4. Leonard, D., Rayport, J.F.: Spark Innovation through empathetic Eesign. *Harvard Business Review* 75(6), 102–113 (1997)
5. Segal, L.D., Fulton Suri, J.: The Empathic Practitioner. Measurement and Interpretation of User Experience. In: *Proceedings of the 41st Annual Meeting of the Human Factors and Ergonomics Society*, pp. 451–457 (1997)
6. Koskinen, I., Battarbee, K., Mattelmäki, T.: Empathic Design. User Experience for Product Design. IT Press, Helsinki (2003)
7. Battarbee, K., Koskinen, I.: Co-experience: user experience as interaction. *CoDesign* 1(1), 5–18 (2005)
8. Fulton Suri, J.: Empathic design: Informed and inspired by other people's experience. In: Koskinen, I., Battarbee, K., Mattelmäki, T. (eds.) *Empathic Design*. IT Press, Finland (2003)
9. Mattelmäki, T.: Handouts of presentation at “user inspired design course”, Helsinki (2006)
10. Wright, P., McCarthy, J.: Empathy and Experience in HCI. In: *CHI 2008 Proceedings Dignity in Design* (2008)
11. McDonagh, D., Thomas, J.: Disability+relevant design: empathic design strategies supporting more effective new product design outcomes. *The Design Journal* 13(2), 180–198 (2010)
12. Wright, P., McCarthy, J.: The value of the novel in designing for experience. In: Pirhonen, A., Roast, C., Saariluoma, P., Isom, H. (eds.) *Future Interaction Design*, pp. 9–30. Springer, London (2005)
13. Sleswijk Visser, F.: Bringing the Everyday life of People into Design. Doctoral Thesis. Technical University of Delft, Delft, Netherland (2009)
14. Sleswijk Visser, F., Stappers, P.J., Van der Lugt, R., Sanders, E.B.-N.: Contextmapping: Experiences from Practice. *CoDesign: International Journal of Co Creation in Design and the Arts* 1(2), 1–30 (2005)
15. Stappers, P.J.: Generative Tools for Codesigning. In: Scrivener, S.A.R., Ball, et al. (eds.) *Collaborative Design*. Springer, UK (2000)
16. McDonagh, D., Thomas, J.: Rethinking design thinking: empathy supporting innovation. *Australasian Medical Journal* 3(8), 458–464 (2010)
17. Kouprie, M., Visser, F.S.: A framework for empathy in design: stepping into and out of the user's life. *Journal of Engineering Design* 20(5), 437–448 (2009)
18. Barros, A.C., Duarte, C.: Dear users.. empathy building methods for assistive product design. In: *Proceedings of 8th International Design and Emotion Conference*, London (2012)
19. Demirebilek, O., Demirkan, H.: Universal product design involving elderly users: a participatory design model. *Applied Ergonomics* 35, 361–370 (2004)
20. Dong, H., Clarkson, P.J., et al.: Critical user forums-an effective user research method for inclusive design. *The Design Journal* 8(2), 49–59 (2005)
21. Storni, C.: Multiple forms of appropriation in self-monitoring technology: reflections of the role of evaluation in future self-care. *International Journal of Human-Computer Interaction* 26(5), 537–561 (2010)
22. Dong, H., Yuan, S.: Learning from Co-designing. In: *Proceedings of 2nd International Conference for Design Education Researchers* (2013)
23. Yuan, S., Dong, H.: Co-design in China: Implications for Users, Designers and Researchers. Under Press (2014)