Prototypes: Beyond the traditional research-led design practice

Investigating the purpose of prototypes in the emerging design-led research practice

"Making creates knowledge, builds environments and transforms lives."

- Timothy Ingold. (Ingold, 2013)

Introduction

Historically, prototypes have served as a medium to externalise conceptual ideas (Lim, Stolterman & Tenenberg 2008) and have primarily focused on communicating the 'purpose', the 'look' and 'feel' and the 'implementation' of products (Houde & Hill 1997, also cited in Wensveen and Matthews 2014). They have been used as tools to refine design directions (Camburn et. al 2017) and drive product specifications (Schrage 1996). However, recent studies view prototypes as a medium of observation, reflection, interpretation, discussion and expression (Sanders and Stappers 2014). DiSalvo (2014) further analyses the process of critical making to visualise possible futures, highlighting the importance of prototyping in the emerging design-led research practice.

Through this essay I seek to scrutinise the purpose of prototypes in the field of design. First, I aim to study the role of prototypes in traditional research-led practice, followed by understanding its application in the emerging design-led practice and lastly reflect on the prototypes and prototyping approach practiced during the Macro UX Unit.

Distinction between Research-Led and Design-Led

It is important to highlight the difference between the two distinct practices of design and research to further understand the role of prototypes. According to Sanders (2008) the traditional research-led perspective uses research methods such as user journey and focus groups (Gasparini, A., 2015), to make sense of the design opportunity. In this scenario, a list of requirements are established before the process of prototyping begins (Lim, Stolterman & Tenenberg 2008). However, the design-led practice uses design methods such as probes, toolkits and prototypes, to gather information about the design opportunity (Sanders and Stappers 2014). Furthermore, the knowledge of requirements are acquired in a stepwise fashion through continuous trial and construction of multiple prototypes (Wensveen and Matthews 2014).
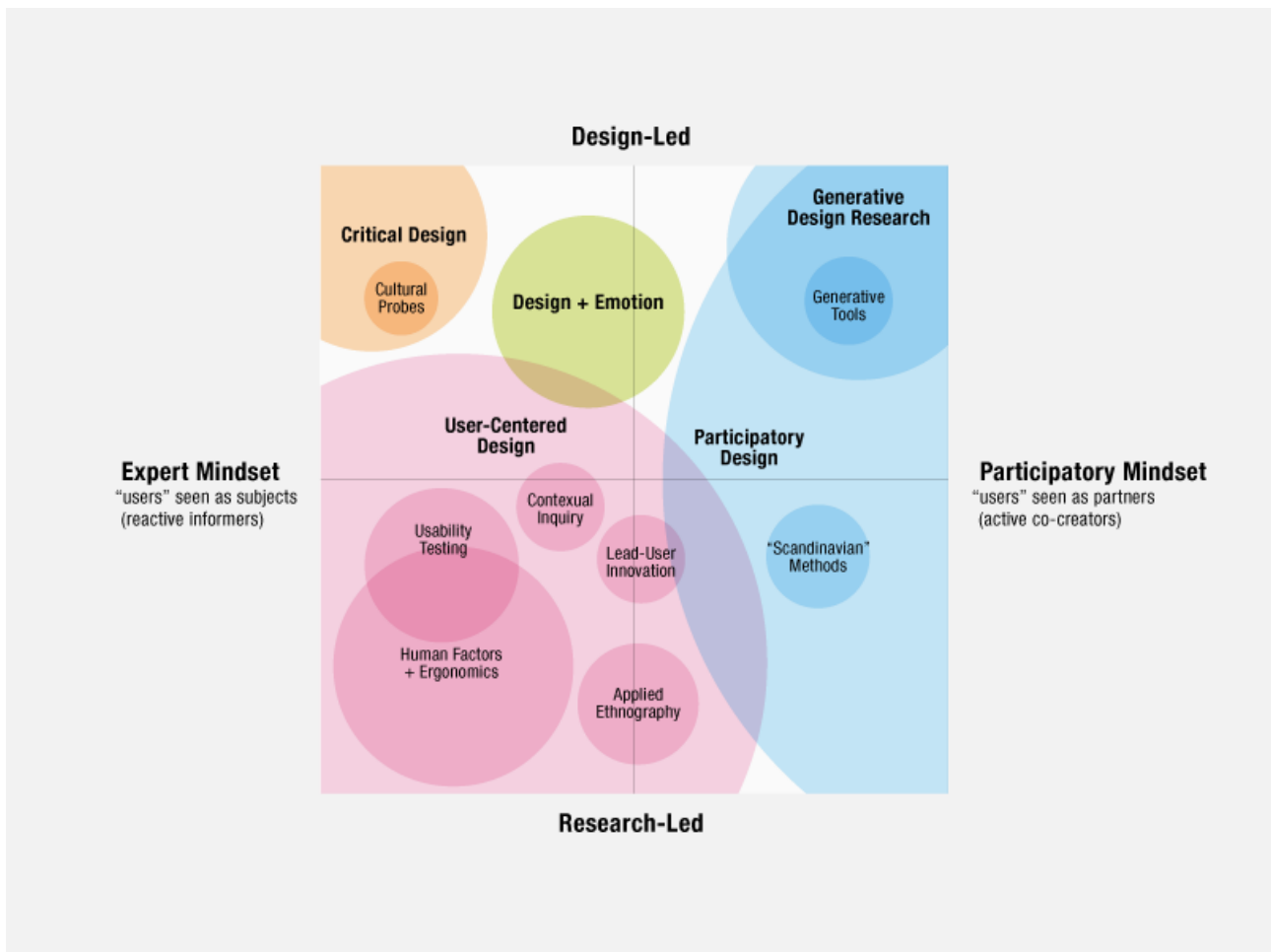
Fig. 1: Map of design research-research types (Sanders 2008)

Purpose of prototypes in the research-led practice

The process of prototyping in a research-led practice primarily views prototypes as objects to evaluate the success or failure of a design objective. The user-centered approach uses techniques such as usability testing to identify if the prototypes meet the previously identified design requirements, consequently viewing users as subjects to test their solutions (Buchenau and Suri 2000). A similar pattern was observed in the discipline of software engineering, where engineers ranked 'refinement' as the primary objective of creating prototypes (Camburn et al. 2017) with a strong focus around the fidelity of the prototype (Rudd, Stern & Isensee 1996). Moreover, the HCI community further extends the role of prototypes by using them as tools to 'manifest' an idea which stems from the designers imagination (Lim, Stolterman & Tenenberg 2008).
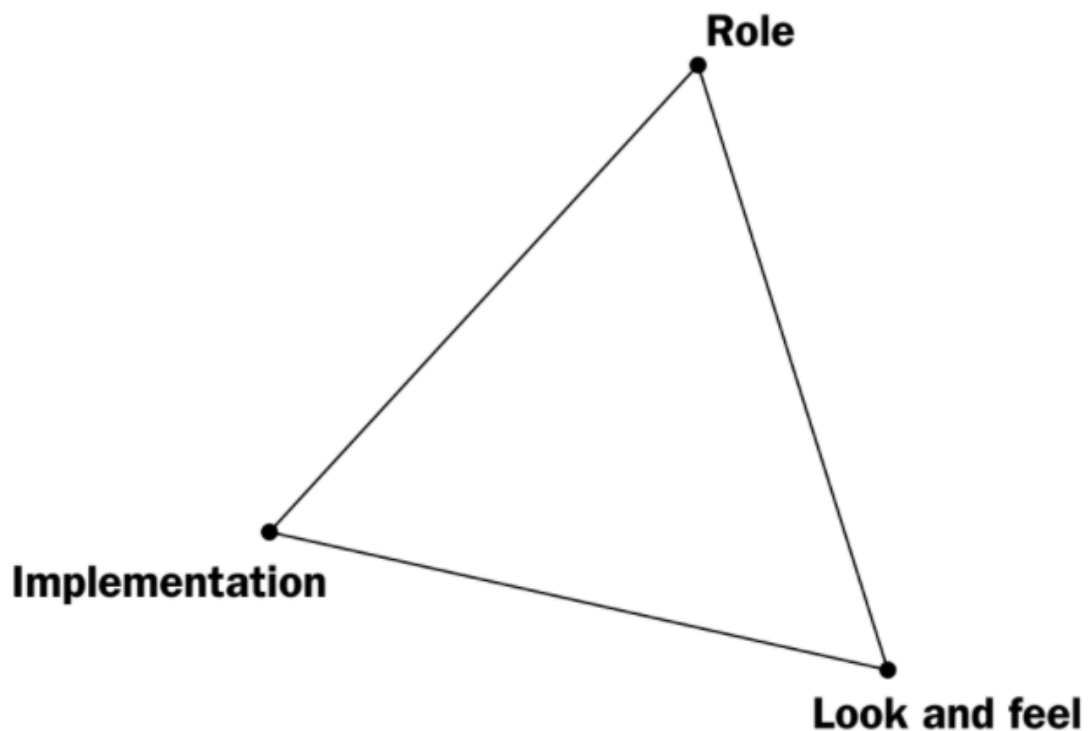
Fig. 2: A model of what prototypes prototype. (Houde and Hill 1997)

Role of prototypes in the design-led practice

The approach lays emphasis on 'research through design' and uses designerly ways to gain knowledge about the context and regards making as the key ingredient in the design process. Its through the process of prototyping a designer creates view of future experiences and ways of living (DiSalvo 2014). The design-led approach views 'users' as active participants in the process of making, they craft rather ambiguous objects (alongside designers) to collectively extend knowledge and provide means for conceptual exploration (Ratto 2011). The artefact gains meaning through the stories told and enacted by the participants (Sanders and Stappers 2014). The prototyping process is considered as the product of and the method of research (Wensveen and Matthews 2014). Sanders and Stappers (2014) labels this action of collective creation in iterative cycles between designers and non-designers as CoDesign. The goal of this method is to evoke focused discussion, make room for testing hypothesis, confront theories by making them tangible and change the world by allowing people to embody the future.
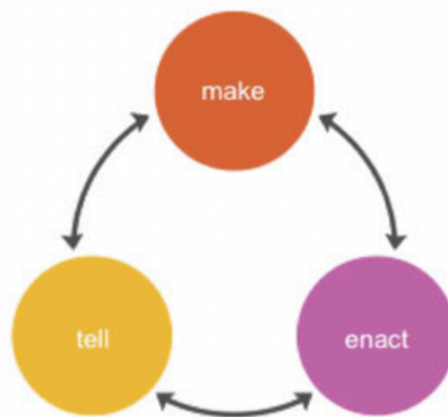
Fig. 3: Making, telling and enacting as complementary, connected activities. (Brandt, Binder and Sanders 2012, also cited in Sanders and Stapper 2014)

Discussion

During the Macro UX unit we applied principles of 'research through design' to explore ways of navigation for rodents around the city of London. We used prototypes as a medium to manifest various design directions based on our knowledge of rats in the London Underground (Fig. 4 - 6). The purpose of this exercise was to communicate the intention behind the design and give form to our conceptual ideas. The prototypes successfully sparked discussion amongst our classmates and tutors who provided us with feedback to further refine our direction.

Fig. 4: A partially constructed underground rat highway that rats can chew threw to create their own routes.

Fig. 5: Using graphics to educate the general audience and tackle the stigma around rats as pests.

Fig. 6: Covering the edges of the walls with black paint to camouflage the rats.

Inspired by the 'designing with' mindset (Ratto 2011, DiSalvo 2014, Sanders and Stappers 2014) we also built prototypes that were aimed at fostering co-creation with non-humans. While the idea seemed interesting it was hard for us to observe the activity in real-time (as rats are nocturnal). We placed our prototypes overnight at a nearby park to understand how would non-humans interact with it. The evidences from our activity pointed towards them eating through an edible wall, while the reason for interaction remains inconclusive, the activity highlighted the speculative nature of the prototype by sparking conversations about future ways of living with rodents.
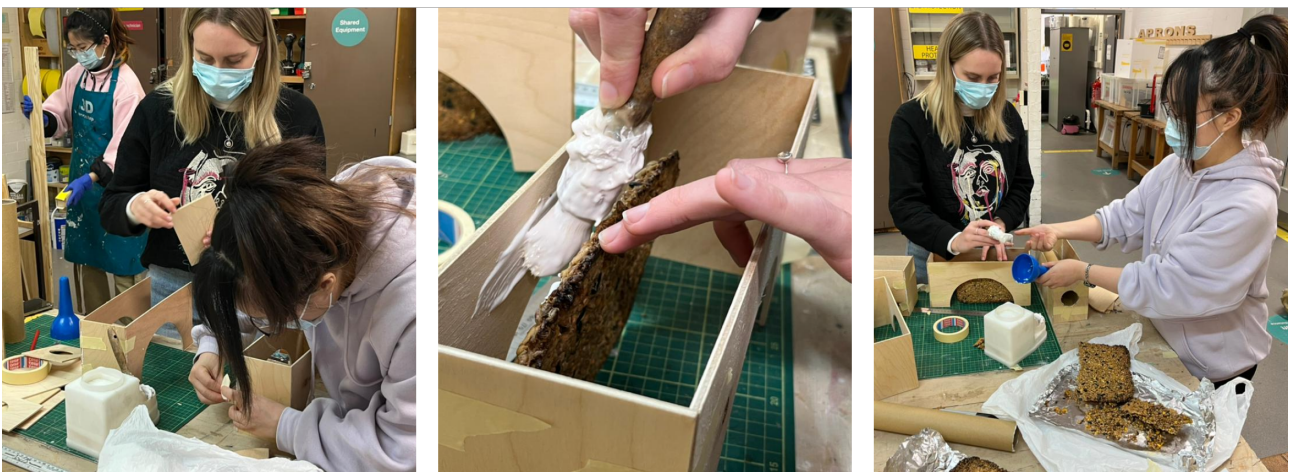

Fig. 7: Ava and Willow building a brick with edible sheet that rodents could eat through to create their own paths.

Fig. 8: Testing the prototype in the Imperial War Museum Park. The bite marks indicated interaction with the non-humans.

Conclusion

To summarise the process of prototyping in a research-led practice is aimed at exploring a design space by placing the privilege of making in the hands of the designer (Lim, Stolterman & Tenenberg 2008) as compared to the design-led practice where users are considered as active participants in the activity of making (Ratto 2011, Sanders and Stappers 2014, DiSalvo 2014). The essay highlights the versatility of a prototype in the design process and the use of two approaches as reinforcing activities to amplify the overall impact of the design outcome. I believe the emerging design approaches broadens our understanding of the process of making and the role of prototypes in the design process, simultaneously opening up opportunities to make sense of the future and explore future ways of living.

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