

Lessons from Living In A Prototype

Audrey Desjardins

Simon Fraser University, Surrey, British Columbia, Canada

adesjard@sfu.ca



Position paper submitted to the CHI 2016 workshop 'Object Outcomes: Attending to Objects as Outcomes of Design Research'.

INTRODUCTION

In this position paper, I present a two-year long autobiographical design project: the conversion of a Mercedes Sprinter van into a winterized camper van [6]. Over the past two years, I have reconfigured, together with my partner, the space in a cargo van to welcome activities like cooking, eating, sleeping and entertaining during our biking and skiing trips. This project allowed me to investigate the complexities and nuances of a case where people engage in a process of making, transforming and adapting a space they live in. This project relates to previous research investigating how people live with design artifacts (digital or not) in everyday settings and how they creatively appropriate, remake, or modify them through ongoing practices. It extends and builds on previous research focused on everyday reconfigurations of spaces and adaptations of everyday artifacts (e.g. [5,14,16,18,20]) as well as research on do-it-yourself (DIY) practices of design and making (e.g. [2,9,12,15,19]). As a human-computer interaction (HCI) research project, it opens a radically different and productive context for revisiting concepts that are currently at the center of HCI research: ubiquitous computing [1], smart homes [8], and the Internet of Things (IoT) [3]. While some research is starting to explore the role of end-user development and DIY processes and practices in smart homes and the IoT for the home (e.g. [11,17,21]), the van conversion project offers a

rich example of how the processes of designing, making and living are interrelated and co-evolve.

In the context of this workshop, this project can help articulate new questions regarding how we might investigate and start to understand objects as outcomes of design research. To foreground, in this position paper I offer four themes the van conversion project can explore. Firstly, the van conversion project refers to a space (including a collection of interrelated objects) as opposed to a single object. Secondly, this project was developed as an autobiographical design project; hence it was not designed specifically to inquire a set of HCI research questions. Thirdly, since the van is not mainly a technological artifact, it seems like there is a need to translate the design knowledge embedded in this 'analog' object to matters of interaction and computation. Finally, much of the design knowledge embedded in this artifact has been disseminated to a Do-it-yourself (DIY) audience through five online tutorials, suggesting a new way to communicate design knowledge.

THE VAN CONVERSION

We bought a Sprinter van in October 2013 with the intention of converting it into a camper van for camping and ski trips. The van was new with nothing else in it other than the driver and passenger seats. The walls were not finished; they were the bare metal sheets. The back of the van represented a space of approximately 6 feet wide by 10 feet long by 6 feet tall. The complete van conversion was planned over five years with different stages such as insulating the walls and floor, adding a complete kitchen unit, electricity, water, solar panels, etc. Each stage includes

breaks that allow us to live in the van and go skiing, mountain biking, or camping; however small changes, additions, and repairs are ongoing, even while traveling with the van. To date, the van has been through four major building stages: insulating the walls, creating a back platform for storage, finishing the walls with cedar tongue-and-groove panels, and building a unit that serves as benches and a table that converts to a bed.

The design and build of this project was never intended to serve as research in HCI. However, this project offers a rare opportunity to take an in-depth look at how people live with (and in) the things they make. It allowed me to extract many of the sensibilities and nuances of the intertwined processes of making and living, and to identify qualities of the relationship that exists between the maker and the thing that is made. As the project moved forward, it became clear that it was revealing and illustrating issues and matters of concern that were relevant to HCI research. Hence, I used an autobiographical design approach [10] to articulate and present those insights.

THE VAN AS AN OUTCOME OF DESIGN RESEARCH

I have discussed the findings of the autobiographical design investigation in [6], with a focus on the relationship between the maker/users (my partner and I) and the reconfigured space (the van). Here, I present four themes that can help us deepen our investigation surrounding objects as outcomes of design research.

A space (and many objects)

This workshop proposes to look at objects as design research outcomes. The van is not a single object; it is a combination of a space, furniture, and artifacts. This project can allow us to think beyond the object and to reflect on the interrelations created between the object, other objects and the contexts they might be used in. Moreover, each designed object within the van can attain different levels of refinement, between roughly sketched ideas to polished details. For example, the walls were finished with precision, while a kitchen unit was bought and simply installed as a sketch for what a future kitchen could be. By ‘living in a prototype’, I saw the productive tensions between the sketched and the polished. I wonder how the quality and the level of finish of this project can be evaluated.

Autobiographical design

Autobiographical design is defined as “design research drawing on extensive, genuine usage by those creating or building the system” [10:514], and the design must respond to the genuine needs or desires of the researcher/maker. Hence, by definition, autobiographical design does not start with a set of research questions aiming at producing new interaction design and HCI knowledge [13]. While some research through design projects set in advance research questions to explore, the van project’s research questions were articulated post hoc. Are there differences in how we understand objects as design research outcomes based on the motivation for their creation? The van conversion

project can support an exploration of the opportunities of formulating research questions after the design process.

A non-technological artifact to inform HCI research

An important characteristic of the artifacts of design research is that they hold material knowledge [4,7]. The van conversion project is mainly a non-technological one, however, in [6], I argue that, and describe how, it can hold important lessons and insights for the how researchers might think about smart homes, ubiquitous computing and the Internet of Things. Here, I wonder how much articulation of my experience with the conversion process is necessary to be externalized in order to gain those insights for HCI. What are the conversion processes necessary to translate insights from a material (or analog) project to valuable insights for a computation-oriented discipline?

DIY tutorials as a way to disseminate knowledge

In research through design, we often discuss how new interaction design knowledge can be produced for researchers and practitioners [4,7]. In the case of this autobiographical design project, design knowledge was produced for another audience: for the DIY online community. Before the van conversion project became a research project, I documented the making process with the intention to contribute back to the DIY community online. For each build, I created tutorials on the online platform www.instructables.com and added timelapse videos of each day of work on the van. Over the months, the Instructables platform has archived all the readers’ comments and questions, as well as my answers.

When I started to look at the van conversion as a design research project, I realized the value and the opportunities of having such documentation from an autobiographical design project. In this workshop, I am curious about what other types of alternative design research dissemination strategies might exist.

THE QUESTIONS I WANT TO ADDRESS

Based on the four points presented above, I am curious to dive into more depth in the following questions:

- What is the nature of the differences between looking at a space rather than an object as an outcome of design research?
- What are the particularities of autobiographical design vs designing and living with a prototype for research purposes?
- How much of the non-verbal knowledge do we have to externalize for the research to make a strong contribution to interaction design and HCI research?
- How does material knowledge about non-digital things transfer to material knowledge in computational things?
- What role can DIY tutorials play in disseminating object outcomes?

REFERENCES

1. Gregory D. Abowd. 2012. What Next, Ubicomp?: Celebrating an Intellectual Disappearing Act.

- Proceedings of the 2012 ACM Conference on Ubiquitous Computing*, ACM, 31–40. <http://doi.org/10.1145/2370216.2370222>
2. Binaebi Akah and Shaowen Bardzell. 2010. Empowering Products: Personal Identity Through the Act of Appropriation. *CHI '10 Extended Abstracts on Human Factors in Computing Systems*, ACM, 4021–4026. <http://doi.org/10.1145/1753846.1754096>
3. Luigi Atzori, Antonio Iera, and Giacomo Morabito. 2010. The Internet of Things: A survey. *Computer Networks* 54, 15: 2787–2805. <http://doi.org/10.1016/j.comnet.2010.05.010>
4. John Bowers. 2012. The Logic of Annotated Portfolios: Communicating the Value of “Research Through Design.” *Proceedings of the Designing Interactive Systems Conference*, ACM, 68–77. <http://doi.org/10.1145/2317956.2317968>
5. Andy Crabtree, Tom Rodden, Terry Hemmings, and Steve Benford. 2003. Finding a Place for UbiComp in the Home. In *UbiComp 2003: Ubiquitous Computing*, Anind K. Dey, Albrecht Schmidt and Joseph F. McCarthy (eds.). Springer Berlin Heidelberg, 208–226. Retrieved February 14, 2014 from http://link.springer.com.proxy.lib.sfu.ca/chapter/10.1007/978-3-540-39653-6_17
6. Audrey Desjardins and Ron Wakkary. 2016. Living in a Prototype: A Reconfigured Space. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM Press, 12 pages.
7. William Gaver. 2012. What should we expect from research through design? *Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems*, ACM, 937–946. <http://doi.org/10.1145/2208516.2208538>
8. Richard Harper (ed.). 2003. *Inside the smart home*. Springer, London ; New York.
9. Stacey Kuznetsov and Eric Paulos. 2010. Rise of the expert amateur: DIY projects, communities, and cultures. *Proceedings of the 6th Nordic Conference on Human-Computer Interaction: Extending Boundaries*, ACM, 295–304. <http://doi.org/10.1145/1868914.1868950>
10. Carman Neustaedter and Phoebe Sengers. 2012. Autobiographical Design in HCI Research: Designing and Learning Through Use-it-yourself. *Proceedings of the Designing Interactive Systems Conference*, ACM, 514–523. <http://doi.org/10.1145/2317956.2318034>
11. Dries De Roeck, Karin Slegers, Johan Criel, et al. 2012. I Would DiYSE for It!: A Manifesto for Do-it-yourself Internet-of-things Creation. *Proceedings of the 7th Nordic Conference on Human-Computer Interaction: Making Sense Through Design*, ACM, 170–179. <http://doi.org/10.1145/2399016.2399044>
12. Daniela Rosner and Jonathan Bean. 2009. Learning from IKEA hacking: i’m not one to decoupage a tabletop and call it a day. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM, 419–422. <http://doi.org/10.1145/1518701.1518768>
13. Erik Stolterman and Mikael Wiberg. 2010. Concept-Driven Interaction Design Research. *Human-Computer Interaction* 25, 2: 95–118. <http://doi.org/10.1080/07370020903586696>
14. Laurel Swan, Alex S. Taylor, and Richard Harper. 2008. Making Place for Clutter and Other Ideas of Home. *ACM Trans. Comput.-Hum. Interact.* 15, 2: 9:1–9:24. <http://doi.org/10.1145/1375761.1375764>
15. Joshua G. Tanenbaum, Amanda M. Williams, Audrey Desjardins, and Karen Tanenbaum. 2013. Democratizing technology: pleasure, utility and expressiveness in DIY and maker practice. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM, 2603–2612. <http://doi.org/10.1145/2470654.2481360>
16. Alex S. Taylor and Laurel Swan. 2005. Artful systems in the home. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM, 641–650. <http://doi.org/10.1145/1054972.1055060>
17. Daniel Tetteroo, Panos Markopoulos, Stefano Valtolina, Fabio Paternò, Volkmar Pipek, and Margaret Burnett. 2015. End-User Development in the Internet of Things Era. *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems*, ACM, 2405–2408. <http://doi.org/10.1145/2702613.2702643>
18. Peter Tolmie, James Pycok, Tim Diggins, Allan MacLean, and Alain Karsenty. 2002. Unremarkable computing. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM, 399–406. <http://doi.org/10.1145/503376.503448>
19. Austin L. Toombs, Shaowen Bardzell, and Jeffrey Bardzell. 2015. The Proper Care and Feeding of Hackerspaces: Care Ethics and Cultures of Making. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, ACM, 629–638. <http://doi.org/10.1145/2702123.2702522>
20. Ron Wakkary and Leah Maestri. 2007. The resourcefulness of everyday design. *Proceedings of the 6th ACM SIGCHI conference on Creativity & Cognition*, ACM, 163–172. <http://doi.org/10.1145/1254960.1254984>
21. Jong-bum Woo and Youn-kyung Lim. 2015. User Experience in Do-it-yourself-style Smart Homes. *Proceedings of the 2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing*, ACM, 779–790. <http://doi.org/10.1145/2750858.2806063>