Craft-based Probes in HCI

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Several craft-based research approaches have emerged in Human-Computer Interaction (HCI). The field of HCI has taken a significant interest in craft-based inquiries that combine digital and physical materials. An interactive system designed to satisfy user requirements in human-computer interaction can be developed by addressing the problem of designing human-computer interactions with a craft approach. The field of HCI has taken a significant interest in craft-based inquiries that combine digital and physical materials. The challenge in the workshop was to think about a problem participants want to solve or an issue they would like to explore. They could also think about a technology they wanted to exploit. This was the motive for designing research trends in HCI. A problem or issue, a technology, and a context all came together to create each project. Participants with different professional backgrounds worked together to come up with a solution.

Keywords: Human Computer Interaction, Craft, Interaction design.

1 Introduction

Craft-based research approaches have emerged in Human-Computer Interaction (HCI). The key to contemporary craftsmanship is not craft as handicraft: it is craft as knowledge, which allows makers to take charge of technology. Craft faces digital challenges. As digital technology enters craft processes, abstract tools must be embraced as well. As Dormer writes, "craft as knowledge empowers a maker to take charge of technology, not as handcraft." [1].

Craft artefacts and design practice experience constitute one form of HCI design knowledge. It is acquired and validated implicitly by HCI artefacts and design practice experience, to solve the general HCI problem of design with the particular scope of humans interacting with computers to do something as desired, in the case the goal was to suggest future research trends for HCI.

In this paper, there is a brief introduction about craft and interaction design, then the study and research methods, and finally, some discussion and conclusions are presented.

2 Craft and Interaction Design

The knowledge of HCI design, both as craft artifacts and design practice experience, from a disciplinary perspective, implies that HCI is a field with a general problem, a limited scope, and that it conducts research in HCI [2,3,4].

Human-Computer Interaction (HCI) combines analog crafts and materials with digital technology. Aside from introducing novel methods for creating artifacts, they also offer alternative modes of inquiry and knowledge creation, but there is no framework for analyzing the knowledge that is created. Using concepts from craft theory and HCI, Raune created a framework for articulating and analyzing knowledge generation in crafts-based projects in HCI. Rather than focusing on knowledge processes alone, the framework encompassed the entire research process. In addition to the processes within the lab, such as articulation and experimentation of the research questions, it is also important to consider how the artifact interacts with the world outside the lab [5].

3 A Study

The presented study was carried on a workshop setting. The study describes an example of designers' relation with the outside world to get inspiration to think about future developments in technology.

A series of six workshops was conducted with associated communication activities. Workshop topics included community introductions, models of communication and creativity, models of human-production interaction, tools and methods for communication and creativity, and tools and methods for evaluating impact.

The main goal was gain motivation from previous visits to chosen places, to draw pictures and to extract themes from the pictures to inform future research calls.

Participants represent a greater diversity of personal backgrounds as well as a wider range of academic fields. Multimedia, arts, performance, literature, music, architecture, engineering, and other art disciplines were represented in these projects. A total of four groups of three people each, were formed. In some cases, participants were chosen based on their connections between them, and in others they split based on their position near each table. As a result, they developed project ideas based on the three factors set forth by workshop organizers. It included a good problem that could be solved in future research, a good issue that could be explored in future research, and a good technology or combination of technologies that could be explored in future research.

Instead of building an artefact, participants were asked to think and to materialize their design ideas.

A group of participants visited the British Library's exhibition "Front Page" and another went to the British Museum's exhibition "Michelangelo". The purpose of these visits was to provide inspiration for the participants' work throughout the day. After the visits, people met in the workshop to introduce themselves and provide an example of a good problem to be solved regarding an issue or technology to be explored in future research. Additionally, they shared what they found inspirational after visiting the "Front Page" and "Michelangelo" exhibitions in the morning.

The artwork produced should tell a technological story, reflect an appropriate concept relevant to HCI, and at the same time be an interactive 'artwork'. The artefacts/artworks produced should satisfy more than one of these criteria. The artefact/artwork should reflect the network's aims and objectives, engage artists, and be flexible and able to develop. Multiple projects were undertaken by the node members, reflecting their diverse interests. The challenger was required to select one technology, one context,

and one issue from a suggested list. Secondly, they should sketch how they will merge, followed by thinking about a technological solution.

4 Research Methods

Based on the nature of the field of inquiry and principles for conducting a qualitative, interpretative research study in a natural environment with an emphasis on design and dialogue (which is the nature of this study), a qualitative, interpretative research approach was selected. Qualitative, interpretive research has been selected for the following reasons [6]:

- Contacts with designers in the field are made to capture reality in interaction.
- Provides detailed descriptions and presents the information gathered mostly verbally in a detailed manner - it is edifying, informative and detailed. In other words, it focuses on communication, which is considered a selective process of meaning and production in contexts of social interaction
- There is a subjective component - its evaluation is based on the researcher's personal commitment.
- The interpretivist approach was focused on the reflection assessment of the reconstructed impressions of the designers' world.

The main technique used in this study was observation, as its primary purpose is to provide an explanation. Observation primarily involves observing what individuals do, recording their statements, and sometimes asking them to clarify questions. The importance of obtaining this data cannot be overstated because it was not important what people wrote, what they intended to do, or what they stated they would do. The most important factor was what they did. The method of observation was used because it allows one to work extensively with people in their natural environment for an extended period.

5 Discussions and Conclusions

As shown in Table 1, there are three components that would be considered to draw the pictures that made up part of participants' concerns to arrive at the suggested research themes.

Table 1: Technologies, contexts, problems/issues.

Technologies	Contexts	Problems/Issues
Remote surveillance	Museum	Pets' management
Mobile phones	The beach	Energy consumption
Robots	Shopping center in the	Social exclusion
Reality TV	mountains	Mental wellbeing
…	7 years old dog mistreated	
	by owner	

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Participants were given fifteen minutes to represent the concepts in a drawing exercise (Figures 1 and 2).
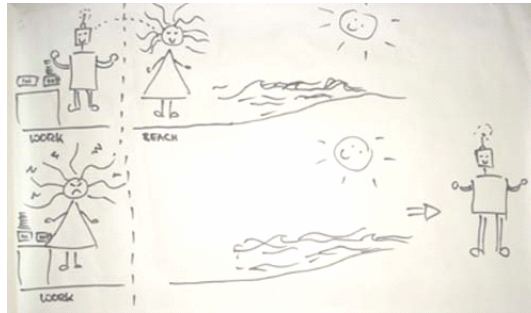

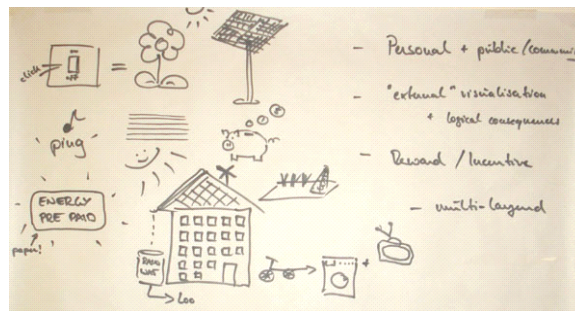*Figure 1: Technology - Robot; Context - Beach; Problem – Mental Well Being [7].*

Figure 2: Technology - Visualization; Context - Everyday; Problem – Energy Consumption [7].

At the end of the workshop, each team had to identify five areas where they thought research calls should be made at the intersection of Human Computer Interaction and the arts. Furthermore, the non-obvious and innovative projects from previous rounds provided a basis for further research.

As a result of the discussion, the following questions emerged: Can technology always be helpful? How does wireless technology look in the future?; Using tools, balance, harmony, and hands that touch can be achieved; Ancient and modern tools must be considered; Museums are great for bringing back memories; Location maps.

In designing and developing interactive systems, craft based HCI probes emphasize materials, tools, and methods. To explore how physicality can inform digital design, it bridges the gap between the physical and the digital. Additionally, it emphasizes the importance of understanding the context and users.

Acknowledgments

References

[1] Dormer, P. (Ed.). (1997). Craft and the Turing test for practical thinking. In The culture of craft (8th ed., pp. 137-157). Manchester, UK: Manchester University.

[2] Long, J., Cummaford, S., Stork, A. (2022). HCI Design Knowledge as Craft Artefacts and Design Practice Experience. In: HCI Design Knowledge. Synthesis Lectures on Human-Centered Informatics. Springer, Cham. https://doi.org/10.1007/978-3-031-79209-0_5

[3] Camara, F.G., & Calvary, G. (2015). Worth-Centered Design in Practice: Lessons from Experience and Research Agenda. IFIP TC13 International Conference on Human Computer Interaction.

[4] Kim, G. J. (2015). Human-Computer Interaction: Fundamentals and Practice. Boca Raton, FL: CRC Press (Taylor & Francis Group).

[5] Raune Raune Frankjaer, Peter Dalsgaard. Knowledge-creation Processes in Crafts-based HCI Research: Introducing a Sympoietic Framework. NordiCHI '20: Proceedings of the 11th Nordic Conference on Human-Computer Interaction: Shaping Experiences, Shaping SocietyOctober 2020Article No.: 49Pages 1–12https://doi.org/10.1145/3419249.3420114

[6] Sarantakos (2005), Social Research, Third Edition, Palgrave Macmillan: New York

[7] Lopes, A. (2009). Design as Dialogue: Encouraging and Facilitating Interdisciplinary Collaboration. VDM Verlag Dr. Muller.