Otherware needs Otherness: Understanding and Designing Artificial Counterparts

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ABSTRACT

Most approaches in Human-Computer Interaction follow the ideal of embodied interaction. However, more and more technologies evolve, such as chatbots, smart voice interfaces, and domestic or social robots, that imply a fundamentally different relationship between human and technology. This "otherware" presents itself either incidentally or by design as computational counterpart rather than as embodied extension of the Self. The predominant strategy to design form and interaction with otherware is to mimic humans or animals (i.e., naïve anthropomorphism or zoomorphism). While this strategy has some advantages, we call for exploring an alternative, namely to cultivate the otherness of computational counterparts rather than to mimic existing lifeforms. The workshop will bring together computer scientists, psychologists, designers and artists to speculate on alternative models of interacting with otherware and appropriate forms of otherness. It lays the foundation for a more nuanced perspective on how to design the interaction with computational counterparts besides embodied interaction.

CCS CONCEPTS

• **B7; Human-centered computing** → Human computer interaction (HCI); HCI theory, concepts and models.

NordiCHI '20, October 25–29, 2020, Tallinn, Estonia

ACM ISBN 978-1-4503-7579-5/20/10.
https://doi.org/10.1145/3419249.3420079

KEYWORDS

Computational counterparts, Quasi-other, Alterity relation

ACM Reference Format:
Matthias Laschke, Robin Neuhaus, Judith Dörrenbächer, Marc Hassenzahl, Volker Wulf, Astrid Rosenthal-von der Pütten, Jan Borchers, and Susanne Boll. 2020. Otherware needs Otherness: Understanding and Designing Artificial Counterparts. In *Proceedings of the 11th Nordic Conference on Human-Computer Interaction: Shaping Experiences, Shaping Society (NordiCHI '20), October 25–29, 2020, Tallinn, Estonia.* ACM, New York, NY, USA, 4 pages. https://doi.org/10.1145/3419249.3420079

1 OTHERWARE NEEDS OTHERNESS

Most approaches to designing interaction in Human-Computer Interaction (HCI), such as "Direct Manipulation" [14], "Embodied Interaction" [3], "Tangible Computing" [7], "Soma-Based Design" [5] or "Human-Computer Integration" [11] follow similar ideals. They focus on people, understand technology as a form of extension of minds and bodies, and tend to design technology to literally "disappear" in use. In Don Ihde's [6] terms: HCI aims for people to have an "embodiment relationship" with technology.

At the same time, self-learning, self-reliant and proactive computational artifacts are on the rise. Technology such as AI-powered conversational interfaces, smart voice interfaces (e.g., Alexa, Siri), robotic vacuum cleaners or even social robots will continue to evolve and will inevitably shape individual experiences and society. In contrast to the ideal of embodiment relations in HCI, these artifacts are in a dialog with their users and do not necessarily extend them. They are, either by incident or by design, perceived as counterparts and imply an "alterity relation" [6]. It seems simply impossible to experience an anthropomorphic robot, such as Softbank's Pepper, as an extension of one's Self rather than as a self-reliant counterpart.

Obviously, counterpart technologies, or what we call otherware, require a different approach to interaction design than embodied technologies. So far, the prevailing approach is to mimic humans or animals, both in form and in interaction (i.e., anthropomorphism, zoomorphism). This fixation on a rather naïve anthropomorphism comes with advantages (i.e., an intuitive interaction borrowed from human-human or human-animal interaction) but also many disadvantages, such as reinforcing inappropriate gender stereotypes [1], or influencing the manners of children in yet unknown ways [13]. Technology in the form of quasi-lifeforms that pretend to have motives and emotions can be deeply disturbing and "uncanny". In addition, naïve anthropomorphism might even be a barrier to unlock exciting potentials of otherware [2, 15]. Welge and colleagues [15], for example, argued that robots have social superpowers, such as endless patience, just because of their mechanistic nature. In this case, a quality most people find important in social interaction is actually hard to attain for humans but easy for computational counterparts. One might argue that otherware in general is a bad idea and should simply be replaced by embodied technologies. This is certainly true for voice interfaces, such as Alexa, where many interactions (e.g., switching on the light) could just be replaced by more traditional interactions. However, there are potential uses for technology that appears as a counterpart, yet shows different qualities compared to a human. Examples are motivational and persuasive application areas, such as virtual coaches [12], social robots to ease loneliness [4], music machines to stimulate creativity [8], therapeutic settings involving self-disclosure, or even the spiritual [10]. We argue that unlocking the powers of otherware requires a design approach different from naïve anthropomorphism or zoomorphism—an approach that keeps the alterity relation intact, yet clearly communicates the counterpart as different from humans or animals [9]. In other words, otherware needs to cultivate the otherness of machines in its design and interaction. Unique capabilities, such as endless willpower when trying to achieve a specific goal, or endless patience and interest leading boring conversations should be at the heart of future otherware designs.

The aim of the present workshop is to initiate a research and design network in which the HCI community can actively participate, contribute to and deepen research on otherware, especially from an interaction perspective. What are alternatives to naïve anthropomorphism and zoomorphism? How should computational counterparts look, behave, and communicate? What are beneficial application areas of otherware? As an interdisciplinary research community, HCI provides several perspectives on such a topic. Our objective is to attract participants with diverse backgrounds, ranging from computer science and psychology to designers and artists, to speculate on appropriate forms of otherness for otherware. We hope to lay the foundation for a more nuanced perspective, and to debate on how to design interactions with computational counterparts besides the ideal of embodied interaction.

2 WORKSHOP STRUCTURE

The workshop is divided into three parts. Pre-workshop, we will set up a website and distribute a call for position papers. Accepted attendees are asked to bring a poster illustrating their example, approach, and position for the workshop. In the workshop, we will first provide an overview of the workshop and its objectives. To further illustrate the topic, we will attract an invited speaker for a short inspirational keynote, preferably with an artistic background. Subsequently, we will start an open poster session with short presentations and a marketplace phase to encourage an open exchange of ideas and alignment. This will provide the opportunity for discussions within the group and to get to know each other better.

In the second part, we facilitate a more design-oriented approach to the topic by using a performative design method called 'techno-mimesis' [2]. 'Techno-mimesis' puts participants into the role of a fictitious or existing computational counterpart. With the help of props, the specific qualities of the potential 'otherness' of the computational counterparts can be acted out and explored further. Participants will be split into similarly sized groups to develop scenarios, where computational counterparts would be especially relevant, and be applied in an interesting and promising way. We will ask groups to come up with positive qualities (e.g., [15]), specific to computational counterparts, playing out in each scenario. Building on this, we will ask the groups to engage in role-play. The groups have to choose one specific scenario, based on the outcomes of the previous ideation phase. These role-play sessions offer the opportunity to quickly improvise detailed interactions that would arise in the selected scenario. Different participants will take on the roles of both the humans interacting with the computational counterpart, as well as the counterpart itself. Materials (e.g., cardboard) in order to improvise props necessary for the situations will be made available.

Finally, after a series of performances, the groups will present their "design" to all participants, as well as their learnings and outcomes. Here, we want to encourage discussion and exchange in the entire group after each presentation. Wrapping up, we will look at the results of the workshop and explore the possibilities of future joint work on this topic. We hope to define relevant questions for further research and look into opportunities for cooperation. With the consent of the participants, the role plays will be recorded and made available to all participants.

2.1 Scheduled Overview of Planned Activities

Alternative plan (COVID-19). Given the fact that due to the worldwide COVID-19 pandemic most conferences are not held physically, we will prepare an alternative plan to conduct the workshop virtually. With the help of video conferencing tools and features such as break-out rooms and collaborative online documents, discussions and exchanges of ideas can be enabled in smaller groups as well.

3 PARTICIPATION AND PROMOTION

Audience. We expect approximately 20 to 25 participants (excluding the organizers) from different backgrounds. In line with the concept of the workshop, we are looking to motivate researchers, artists, designers, and representatives of technology providers to participate. Interested participants are encouraged to submit a 1–4-page position paper or portfolio in advance. The submission format is left to the participants to ensure openness beyond the academic field.

Time	Part 1 (2,5h)	Time	Part 2 (3h)
09.00 - 09.30	Welcome and overview	13.00 - 13.30	Ideation
09.30 - 09.45	Round of self-introductions	13.30 - 14.30	Role-playing
09.45 - 10.15	Keynote	*14.30 - 14.45*	*Coffee break*
10.15 - 10.30	*Coffee break*	**Time**	**Part 3 (1h)**
10.30 - 11.30	Open poster session	14.45 - 16.00	Presentation of the role-plays
11.30 - 13.00	*Lunch break*	16.00 - 17.00	Wrapping up and future work
		17.00 - open	Fade out and time to chat

Selection of participants. We will set up a website for the workshop. It will contain the call for participation, resources and background, details of the objectives and aims of the workshop, intended outcomes and information about the organizers. A call for participation will be distributed through HCI-related mailing lists, as well as our own lists of potential participants and from related workshops (e.g., MuC 2020 workshop on Digital Companions). We will further reach out to potential technology providers (e.g., from our own international research collaborations) to draw interest beyond the academic.

Call for workshop participation (draft). This one-day workshop seeks to bring together a growing community of HCI scholars interested in designing interaction with computational counterparts (i.e., otherware), such as chatbots, social robots, or complex algorithms beyond naïve anthropomorphism and zoomorphism. We invite researchers, artists, designers, and technologists to submit a 1-4-page position paper, portfolios, films, artworks, pictorials or other creative pieces that describes their work and interest in cultivating the otherness of computational counterparts, as well as a brief personal bio. We encourage the ACM single-column Review Submission Format, but you are welcome to submit using any format.

4 SHORT BIOGRAPHY OF INSTRUCTORS

Matthias Laschke is postdoctoral researcher at the chair for 'Ubiquitous Design' at the University of Siegen. His research focuses on the design and aesthetic of non-human actors in the areas of behavior change and automotive. His work has been published in various international books and magazines such as the R&D Salon of the Museum of Modern Art, New York.
Robin Neuhaus is a doctoral student at the chair for 'Ubiquitous Design' at the University of Siegen. With a background in industrial design and HCI, his research focuses on the design of experiences and objects in the fields such as meaningful automation. Recently, he conducted studies on the interaction with voice assistants and performances with non-human actors.
Marc Hassenzahl is professor for 'Ubiquitous Design' at the Department of Business Computing at the University of Siegen. With a doctorate in psychology, he combines his background in empirical science with a passion for interaction design. He focuses on the theory and design of meaningful technology-mediated everyday experiences. Marc publishes at the intersection of psychology, design research, interaction and industrial design.
Volker Wulf holds the Chair of Information Systems and New Media at the University of Siegen. His research interests lie primarily in the area of IT system design in real-world contexts. This includes the development of innovative applications from the areas of cooperation systems, knowledge management and community support.
Astrid Rosenthal-von der Pütten is professor and director of the group Individual and Technology at the Department of Society, Technology, and Human Factors at RWTH Aachen University. Her research interests include social effects of artificial entities, human-robot interaction, linguistic alignment with robots and virtual agents, presence, and communication in social media.
Jan Borchers is professor of computer science and head of the Media Computing Group, an endowed Chair in the Computer Science Department at RWTH Aachen University. In his research, he explores the field of human-computer interaction, with a particular interest in new user interfaces for personal design and personal fabrication, augmented reality, wearable and tangible computing, interactive tables and surfaces, and interactive exhibits.
Susanne Boll is Professor of Media Informatics and Multimedia Systems in the Department of Computing Science at the University of Oldenburg. Her research interests lie in the field of multimedia and human computer interaction. Her current focus is on designing interaction technology that is shaped toward a respectful and beneficial cooperation of human and technology in an automated world.

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