

Creating Intimate Places for Close by Heart but Physically Apart People Through Remote Embodiments

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ABSTRACT

Our bodies play a significant role in maintaining and nourishing intimacy. For people who are close by heart but physically apart, the bodies are geographically separated, so intimacy is experienced remotely without shared physicality of the bodies. This paper presents the design experiment that is grounded within the author's remote intimacy experiences and her sense-making attempts as a daughter and a designer. The design experiment focuses on exploring intimate places that are created in remote settings, specifically exploring the place that is created by making (something new and fragile) together and wearing the creation in daily life from a distance.

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Introduction

Intimacy refers to a close emotional connection or bond between people, for example between romantic partners, family members, and friends. It involves feelings of trust, affection, and familiarity, and often involves sharing personal thoughts and experiences. In this way, "intimacy relies on communication and a sense of closeness" (Battarbee, 2004, p. 175). Furthermore, Lynn Jamieson, professor of families and relationships at the University of Edinburgh, explains intimacy as "the quality of close connection between people and the process of building this quality. Although there may be no universal definition, intimate relationships are a type of personal relationships that are subjectively experienced and may also be socially recognized as close." (Jamieson, 2011, p. 1). In this paper, I define intimacy as a deep sense of closeness between people and I explore how this closeness is experienced and understood from a distance. I further present the design experiment that is grounded in my personal struggles and curiosities towards the intimacy that I maintain with my parents in remote settings. My own remote intimacy experiences began in the summer of 2017 when I moved from Istanbul, Turkey to Tallinn, Estonia, and are ongoing during the writing of this paper.

Places can be defined as physical and mental areas, and the concept of a place can be subjective, depending on individual perspectives and experiences. And in some ways, being remote from our loved ones allows us to be in multiple "places".

When thinking about remote settings and distances, I am interested in how the sense of closeness is understood and felt from a distance. Specifically, I am exploring the place that is created by making (something new and fragile) together and wearing the creation (Figure 1) in daily life from a distance. In this paper, I turn to my own body for the first time in my design research, having as an end goal to design for others (who experience intimacy from a distance). I describe how the process contributes to existing knowledge design research by the exemplification of working with first and second-person perspectives in the design research. In my context, this allowed for the creation of a method of making and wearing bio-rings as a tool to create intimate places in remote settings. I illustrate how this process is informed by autobiographical design (Desjardins & Ball, 2018; Neustaedter & Sengers, 2012), and the design methodology of "moving and making strange" (Loke & Roberston, 2013). I further discuss how, in different ways, this experiment allowed me and my father to turn unknown places into intimate ones. Following, I present my reflections and underline my new embodied understanding of remote intimacy through making and wearing bio-rings.

Designing with and for the body

The design experiment presented in this paper is situated in the context of embodied design (Wilde et al., 2017) which sees the body as the locus of a design process and is part of my doctoral research



Figure 1. On the left and in the middle: My bio-rings and leftover bioplastic materials two months after the experiment. On the right: My father's bio-ring I found the ring during a family visit, seven months after the experiment. Photo by the author, 2023.

study. This ongoing research study is an inquiry into extending the sense of intimacy for people who are close by heart but physically apart. For these people, intimacy is experienced remotely without shared physicality of the bodies. Yet from a phenomenological point of view, our bodies can be considered as a medium for emotional perception. They charge our self-experience through their resonance, even though we may not always be fully aware of it (Fuchs & Koch, 2014). Emotions may arise from the circular interaction between affective qualities or affordances in the environment and the subject's bodily resonance, for example through expressive movements (Fuchs & Koch, 2014). Therefore, when designing for far-away bodies in remote intimacies, I turned to my own relationship with my father to gain an embodied understanding of remote intimacy.

I began by gathering the personal experiences of five participants from a cultural probe study (Gaver et al., 1999) to open up the design research space. The participants were people who were experiencing remote intimacy due to being relocated for their studies. This study focused on the meaning of touch, presence, and emotional connection in remote intimacies, as well as the transmission and perception of hand gestures and overall body language in remote communication settings (Oktay, 2022). Following this cultural probe study, I collaborated with a dancer to look for opportunities in the body (Oktay et al., 2023). The collaboration supported the translation of second-person person felt experiences into design mood boards and ideas (Demir et al., 2023). This process underlined that close-to-body experiences should manifest the following characteristics: ambiguity, requiring care, and tangibility. In different ways, these

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characteristics supported the creation of new perceptions and close-to-body engagements for the participants. Thus, I learned that, when designing for remote intimacies, I should create an ambiguous experience that allows tangible interactions and requires care and close attention.

Embodied making and wearing

As an attempt to create ambiguous, tangible closeto-body experiences that require care, I designed a close-to-body experience that manifests intimacy through the process of making and wearing a ring. I worked with a ring because by definition it is a physical object worn on the human fingers, so it is close-to-body and tangible. Additionally, rings are personal yet also visible objects, reminding themselves of their wearers and others throughout the day. To create rings, I have readapted the recipe from ALGANYL (Bell et al., 2022) and aimed to create an experience that opens an emotional space and is effortless to close. The compostable nature of the bio-ring allowed me to fulfill that aim. To highlight the complexity and fragility of remote intimacy, the ring was meant as a non-lasting object and it was designed to dissolve when exposed to humidity for example water, sweat, etc. Before the design exploration, I investigated the material properties of the bio-based materials and experimented with various ways to transform them into a form of a ring at home. After several attempts, I arrived at a final recipe and technique for making bio-rings (Figure 2).

"Making" and "wearing" processes were designed as embodied activities that used the methodology of "moving and making strange" (Loke & Robertson,



Figure 2. My bio-based material experiments before starting the design experiment. Photo by the author, 2022.

2013). By engaging with unhabitual materials and movements, I aimed to open up new ways of understanding and sensing intimacy in distance. "Making" relied on a specific recipe and the process required close care. "Wearing" required care by the ring's delicate, non-lasting nature, and in reflection, it disrupted the everyday flow of life with its' unhabitual felt sensation. Lastly, both "making" and "wearing" were meant to be ambiguous experiences to evoke imagination and meaning-making (Gaver et al., 2003). The rhythm of both processes opened up new ways to be more aware of "neglected" tactile senses, as vision is often overpowering them (Falin & Oksanen, 2021). They were connected to subtle nuances in information in the tactile response of how the material reacts to the being in contact with the skin (e.g. measuring the finger size with dough, see "Phase 1: Making bio-rings"). Additionally, the material's shape-changing process happened on the finger and it informed the nature and the characteristics of the ring through tactile senses.

Methodology

Designing with and for bodily concepts involves uniqueness and subjectivity. Therefore, many designers have been creating close-to-body design experiences that are informed by the first-person perspective in design processes. For example, after her first-person exploration, Wilde (2021) invites participants to imagine and later perform healthier relationships with their gut microbiome. Moreover, a designer's self-explorations of neglected body parts inform the design of *Breathing Wings* (Tsaknaki, 2021); or a designer's engagement with her breastfeeding experiences takes form in knitting bras, fiddling necklaces, and site-writing around breastfeeding (Helms, 2021). Additionally, Beuthel (2022) investigates herself in her research process by designing *Armor of a Researcher* that manifests the concepts of "being a researcher" and "doing a research." These projects illustrate how autobiographical insights and first-person felt experiences can inform the design process.

The design experiment that is presented in this paper takes inspiration from these previous works while adapting the design methodology of "moving and making strange", "an approach to movement-based interaction design that recognizes the central role of the body and movement in lived cognition" (Loke & Robertson, 2013, p. 7). This methodology suggests that designers should immerse themselves in unusual bodily experiences to gain insights when designing with and for the body. This approach is not solely focused on solving problems but rather aims to inform the process of designing close-to-body experiences while supporting access to new understandings of bodily concepts. In this design experiment, I aim to disrupt habitual perceptions and ways of thinking to open up new spaces for design. With my father, we

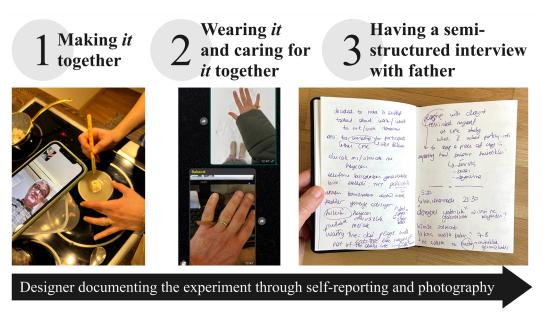


Figure 3. Image illustrating the design experiment. Photo by the author, 2023.

"move and make strange" by engaging with unhabitual materials (e.g. Agar and glycerin) and also by wearing an unhabitual ring that was designed to be fragile and non-lasting.

Design Experiment Process

The design experiment started with me choosing whom to invite to such an experiment. I considered both my parents because both of them are medical doctors and have been struggling to understand my doctoral project even though they were very curious. However, I decided to invite my father, as his character is quite different from mine. For example, both my mom and I enjoy creative processes, she is interested in painting and interior design. On the other hand, my father enjoys more logical processes than creative ones. He spends most of his free time playing bridge—a strategic card game that relies mostly on analytical thinking-, and often participates in local tournaments. I believed that such a difference in our characteristics would provide a challenging push for me to make this experiment as effective as possible, thus, the process could spawn surprising outcomes. After deciding to invite my father, I called and asked him to understand if he would be willing to participate in such an experiment with me. Happily, he agreed, and I created a document for him to be informed about the process and sent him a package with the tools and ingredients (glycerin, agar, food coloring, and a silicone petri dish) to Istanbul, Turkey. Once he received the package, he seemed eager to start the experiment, and so was I.

Phase 1: Making bio-rings

The ring-making process began with a video call (Figure 4). Together with my father, we gathered our tools and prepared our kitchens at our homes. This was a step-by-step session and overall took about 1.5 hours during which we both had other family members around us, casually participating in our making process. First, we measured the size of our fingers by using a dough made with flour and water. We then placed this piece in the middle of the silicone petri dish. Next, together, we mixed 1 teaspoon of glycerin, 2 teaspoons of agar, and 12 teaspoons of water in a small pot. I was planning to add red food coloring to the mixture to make the ring colorful, but to my father's wish, we did not add food coloring and reserved the mixture's natural color. We boiled this mixture in a hot pot while stirring. We then immediately poured the mixture onto the silicone petri dish and left it to dry. Within 10 minutes the mixture cured into a soft gel. After we had this soft gel, we removed the dough from the middle. This resulted in a ring-shaped gel that was relatively big. We cut it to make it smaller but not so much, because from my previous experiments (Figure 2), I knew that the ring would solidify and decrease in size in half. As the next step, we used the leftovers and re-cooked the scraps to create another ring, our goal was to have a backup ring in case the first one would not solidify the way we expected. We then proceed to wait for the solidification process. The ring usually solidifies over 24-72 hours; depending on the airflow, temperature, and humidity in the room. The experiment happened in January. During this month, in Tallinn, Estonia the living environments have low humidity due to heating. However, in Istanbul, Turkey the humidity was higher. My ring was ready after 48 hours but my father's ring was ready around 72 hours.

During the phase of "making bio-rings," I elicited first-person felt experiences through photography and self-reporting. In this section, I will use my autobiographical vignettes to illustrate the process.

I look inside, I feel curious, will it work or not? The keywords that describe my feelings are excitement, impatience, and curiosity. I understand that we are going on a journey together



Figure 4. Making the ring together via a video call. Photo by the author, 2023.

and I am excited about this unknown...We are making the ring, we start to talk about what to eat and cook tomorrow. Our casual conversation feels natural. My mom joins our discussion from the living room. We start to talk about our days...We are waiting for the ring to dry before cutting, we have 10 minutes to kill. Dad leaves the phone on the table and plays with the cats. I feel at home, I am in the room as if I am sitting on the couch. - Author

In reflection, I came to the realization that when making the ring, instead of looking at each other, my father and I were looking in a shared direction. Looking in a shared direction fostered our everyday intimacy and supported the creation of an intimate place. Intimate places can vary greatly in size and form, ranging from a small corner of a room to an entire apartment. They can also be physical or virtual, depending on the context. In our case, it was the making of the ring in our homes and in a shared video call. We were creating and sharing an intimate place and being together. After the ring was ready to be left to dry, I elicited my father's second person felt experiences and I asked him to describe his feelings and his experience with a few keywords. The keywords he chose to share with me were: "joy, success, solidarity". In my opinion, the keywords are lost in translation, especially with solidarity. This word is in Turkish "dayanışma". In this context, solidarity refers to the act of coming together to support one another to show unity and to work towards a common goal. Dayanışma could be described as the intersection of solidarity, interdependence, and support. It is often used to describe the relationship between people or communities who share a common interest or concern, and who work together to achieve a common purpose. Solidarity can take many forms, such as financial support, mutual assistance, or emotional support. In our case, we were working together towards a common goal to make a bio-ring. However, I felt that this was more than that for my father. I realized that the unhabitual material engagements were indeed strange for him. The ingredients, the recipe, and the making were



Figure 5. I am in the elevator, and my father took a photo a few hours earlier when feeding his cats: First exchange of photos between daughter and father. Photo by the author, 2023.



Figure 6. I am on my way to work, and my father is at his work desk: Exchange of photos between daughter and father. Photo by the author, 2023.



Figure 7. I am at home, and my father is also: Exchange of photos between daughter and father. Photo by the author, 2023.

strange. He was perhaps feeling joy and success; because even though it was strange, it all worked out at the end. But also, as daughter and father, we were going on a journey together.

Phase 2: Wearing the rings in our everyday life

In the second phase, I continued employing "moving and making strange" through a sensitizing activity: living with the ring, an unfamiliar piece, for a day. The ring was unfamiliar due to its materiality. First of all, it was delicate and meant to be not-lasting. Secondly, it was changing its durability when exposed to humidity, and sudden changes in temperature. Depending on the environment and the exposure to the humidity, sometimes it was tighter on the finger. When wearing the ring in my daily life, I elicited first-person felt experiences through photography and self-reporting. I took photos when I felt that the ring had an impact on my day. After my father wore his ring in his everyday life, I interviewed him. This allowed for a second-person perspective on the felt experience. In what folds, to illustrate the highlights of our day living with our rings, I will use my autobiographical vignettes and my father's quotes that I accessed through the interview.

Wearing my shoes, I noticed the ring. It made me smile even though the ring was too tight and a bit disturbing. When leaving the apartment, in the elevator, I took a photo of it and sent it to my dad. He then replied with a photo he had taken earlier that morning when wearing the ring for the first time. This made me feel very grateful because he took a photo without me asking for it. - Author

Woke up first thing in the morning and checked the ring. Wore it immediately and fed the cats. It was around 5 am. I took mental notes of my emotions. Because you asked me to focus on my emotions when wearing this ring. I told myself how loyal I am to my daughter and this experiment. Then I realized that I was curious, I was curious to know what would happen during the day with this ring. Lastly, I realized that I was a bit worried, I was worried that the ring was not durable enough and that it would break. But then I checked, and the ring was in good shape. So, after feeding the cats, I went back to sleep and slept with it for another 2 hours. If I had a feeling that the ring was not durable enough, I would not have done this. - Author's father

At work, I have a meeting with a person I never met before. He meets me in my office, I proceed to shake his hand. I feel awkward that someone else touched my ring. It feels like an intimate extension of my body that should not be public. - Author

At work, I wash my hands frequently because I have a lot of patients visiting me. The first time I was washing my hands at home, I felt hesitant to do it. But I realized that the ring was doing fine. In fact, with water, it became more comfortable. I was expecting that my patients or my coworkers would ask what this ring was, but surprisingly no one asked. The color is subtle and it even looks like a medical device. So, I guess that's why. If they would have asked, I had my answer ready: This ring is my daughter's experiment. - Author's father

I visit a shop; the cashier looks at my ring. I do not feel uncomfortable anymore. I am even proud of it...I am now at home, lying on the bed and I notice my ring. It looks nice, so I take a photo of it but my hand looks very dry. So, I do not want to send it to my dad. A few seconds later I received a message from him. He sends a photo of his hand holding a glass with the caption: "Your whiskey" (me, my spouse, and my mom; we gifted my dad a bottle of whiskey for his birthday). I feel so joyful! My ring made me think about him and I received a text from him almost at the same time. - Author

Sometimes I forgot the ring. When I saw it, I thought to myself: My daughter is also wearing it. I felt happy. - Author's father

Reflections

As mentioned earlier, in this design experiment, I turned to my own relationship, having as an end goal to design for others. It was the first time I used the first-person perspective in my research. When planning this design experiment, I focused on "testing" it before exposing it to other pairs. Thus, I expected that I would gain insights solely into the methodological aspects of the experiment. It turned out to be more than that and I gained new and embodied perceptions about the intimacy that I share with my father. I arrived at those new perceptions by revisiting the elicitation materials such as interview notes, photographs, and self-reports. I looked into what emerged and aimed for patterns and emerging categories with affinity mapping (Lucero, 2015) as an attempt to "stumble upon data." As Brinkmann describes: "If we allow ourselves to be sensitive to the strangeness of the world, there are numerous things to stumble upon: In conversations, media, books, advertising, consumer objects, architecture, and everyday episodes and situations" (Brinkmann, 2014, p. 724).

In reflection, I understood that the ring was a living symbol of our loyalty and trust towards each other. The interaction between the ring and us was supported by the "livingness" of the ring. The ring changed its' form, thus the felt experience throughout the day. The changing form of the ring disrupted the everyday flow of life and supported new perspectives and meaning-making processes. For example, I gained new understandings of my father's social and professional role as a doctor. The ring reminded us of each other and supported the creation of an intimate place through trust and loyalty. We trusted each other and the process, as well as we felt loyal to each other and the process. Lastly, the ring supported the creation of a new communication channel. We engaged in various conversations throughout the day and felt closer. In my father's words, there was an "experimental closeness" between us.

Making the ring meant being together and going on a journey together. During this journey, we felt curious about what was coming next. The unknown was strange but exciting. In reflection, I also gained methodological insights into the experiment, such as the need for an informed pair and the customization of the rings. Engaging with unhabitual materials and movements pushed both me and my father outside of our comfort zones. We created an unknown place for ourselves. Because I took the lead, my father felt comfortable being in this unknown place. Through our trust and loyalty to this process, we turned this unknown place into an intimate one. Thus, I learned that when designing for others and inviting them to a similar design experiment, one of the people should be closely informed about the making of the ring and lead the other one during this process. This way, the making of the ring can foster solidarity through "moving



Figure 8. My research diary with notes from the interview with my father. Photo by the author, 2023.

and making strange". If not, the participants could be left in the unknown and feel lost. In addition, I realized that making the ring required customization. During the design experiment, despite my original plans of creating a colorful ring with the help of food coloring, my father suggested that we create rings with a subtle look. Hence, I understood that when inviting others to a similar experience, I should provide options to customize the ring with colors, textures, scents, etc. Consequently, I should continue the material explorations to explore the possibilities for customizing the rings.

Conclusion

The bio-rings in this experiment changed their shape, thus their felt experience throughout the day. In this way, they reminded themselves of their wearers during the day and disrupted the everyday flow of life with their fragile and strange nature. Designing for remote intimacy is to work with its' multifaceted, subjective, and embodied nature. Accessing first and second-person perspectives in my design research process allowed me to embrace subjectivity and expanded my embodied understanding of remote intimacy. I now understand and articulate it as a closeness between two people, including vulnerabilities. Intimate bodies share a felt closeness while experiencing and building this closeness together in solidarity. When bodies are far-away, intimacy becomes entangled with the everyday flow of life through the practices of care and trust at a distance. These practices foster a sense of togetherness without the shared physicality of bodies.

The described design experiment is not proposed as a solution but rather aims to inspire those who experience remote intimacy. I argue that as long as humans engage with unhabitual experiences about the things they take for granted, they will continue to understand them from new and perhaps deeper perspectives. With this light, the experimentation process continued, and I recruited three pairs (siblings and friends) who experience intimacy in remote settings in a similar design experiment (see Oktay, 2023). In this experiment, I used making and wearing bio-rings as a cultural probe to field-test the close-to-body experiences and to inspire the participants about potential intimate places that they can create by engaging in different making and wearing activities in the future. The bio-rings supported the creation of an intimate place between me and my father, in the following cultural probe

study, they also supported new understandings about intimacy at a distance for the participants. Their experience of "distance" altered slightly or changed completely by embarking on a journey while creating time and space to be together and carrying each other through a tangible object.

In conclusion, intimacy can be built and maintained in remote settings through communication and through engaging in activities that invite for spending focused and quality time together. This creates a place to be together, a place that fosters intimacy from a distance. In this way, the design experiment presented in this paper is one illustrative case of how to turn unknown places into intimate places in everyday life settings for people who are close by heart, but physically apart.

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References

Battarbee, K. (2004). Co-experience: understanding user experiences in interaction. Doctoral Dissertation, Aalto University. <u>https://aaltodoc.</u> aalto.fi/handle/123456789/11462.

Bell, F., Al Naimi, L., McQuaid, E., & Alistar, M. (2022). Designing with Alganyl. Sixteenth International Conference on Tangible, Embedded, and Embodied Interaction, 1–14. <u>https://doi.</u> org/10.1145/3490149.3501308

Beuthel, J. M. (2022). The armor of a researcher: A critical, material engagement with somatic experiences. *Diseña*, 20, Article.3. <u>https://doi.org/10.7764/disena.20.</u> <u>Article.3</u>.

Brinkmann, S. (2014). Doing without data. *Qualitative Inquiry*, 20(6), 720–725. <u>https://doi.</u> org/10.1177/1077800414530254.

Desjardins, A., & Ball, A. (2018). Revealing tensions in autobiographical design in HCI. In Proceedings of the 2018 Designing Interactive Systems Conference (pp. 753–764). Association for Computing Machinery. <u>https://doi.org/10.1145/3196709.3196781.</u>

Demir, A. D., Oktay, N. H., and Kuusk, K. (2023). Cultivating and eliciting felt experiences for design use: Physical manifestations of abstract bodily experiences. In Proceedings of the Design Research Society Special Interest Group: Experiential Knowledge (pp. 206–224). EKSIG. <u>https://</u> www.eksig2023.polimi.it/assets/ EKSIG-Proceedings.pdf

Falin, P., & Oksanen, P. (2021). Ceramic pebbles as sensory tools: exploring the quality of muteness in tactile experience. *Research in Arts and Education*, 2021(1), 218–240.<u>https://doi.org/10.54916/</u> rae.119325. Fuchs, T., & Koch, S. C. (2014). Embodied affectivity: on moving and being moved. *Frontiers* in Psychology, 5. <u>https://doi.org/10.3389/FPSYG.2014.00508</u>.

Gaver, W., Beaver, J., & Benford, S. (2003). Ambiguity as a resource for design. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 233-240). Association for Computing Machinery. <u>https://doi.org/10.1145/642611.642653</u>.

Gaver, W., Dunne, A. & Pacenti, E. (1999). Design: Cultural probes. *interactions* 6(1), 21–29. <u>https://doi.org/10.1145/291224.291235</u>.

Helms, K. (2021). Entangled reflections on designing with leaky breastfeeding bodies. In *Designing Interactive Systems Conference 2021*. Association for Computing Machinery. <u>https://doi.org/10.1145/3461778.3462048</u>.

Jamieson, L. (2011). Intimacy as a concept: Explaining social change in the context of globalisation or another form of ethnocentricism? *Sociological Research Online*, 16(4), 15.

Loke, L., & Robertson, T. (2013). Moving and making strange: An embodied approach to movementbased interaction design. *ACM Transactions on Computer-Human Interaction*, 20(1), 1-25 <u>https://doi. org/10.1145/2442106.2442113</u>.

Lucero, A. (2015). Using affinity diagrams to evaluate interactive prototypes. In Abascal, J., Barbosa, S., Fetter, M., Gross, T., Palanque, P., Winckler, M. (Eds.) *Human-Computer Interaction – INTERACT 2015* (p. 248). Springer. <u>https://doi.org/10.1007/978-3-319-22668-2_19</u>.

Neustaedter, C., & Sengers, P. (2012). Autobiographical design: what you can learn from designing for yourself. *Interactions* 19(6), 28–33. <u>https://doi.</u> org/10.1145/2377783.2377791.

Oktay, N. H. (2023). Dissolving distances: Designing close-to-body experiences for remote settings. *HUB – Journal of Research in Art, Design and Society*. <u>https://doi.</u> org/10.22501/hub.2272473.

- Oktay, N. H. (2022) Design placebos for the impossibility of empathy in videotelephony. In *Proceedings* of the Design Research Society, DRS2022. <u>https://doi.org/10.21606/</u> drs.2022.598.
- Oktay, N.H., Wilde, D., and Kuusk, K. (2023). Conversations with the body of the other: A three-step dialogical process. In *Proceedings* of the Nordic Design Research Society. NORDES 2023. <u>https://doi.</u> org/10.21606/nordes.2023.58.
- Tsaknaki, V. (2021). The breathing wings: An autobiographical soma design exploration of touch qualities through shape-change materials. In *Designing Interactive Systems Conference 2021* (pp. 1266–1279). Association for Computing Machinery. <u>https://doi. org/10.1145/3461778.3462054</u>.
- Wilde, D. (2022). Shitty foodbased world-making: Recasting human|microbiome relationships beyond shame and taboo. *Futures*. https://doi.org/10.1145/3494974.
- Wilde, D., Vallgårda, A., & Tomico, O. (2017). Embodied design ideation methods: Analysing the power of estrangement. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing* Systems (pp. 5158–5170). Association for Computing Machinery. <u>https://doi.org/10.1145/3025453.3025873.</u>