Experiencing Distance: Wearable Engagements with Remote Relationships

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ABSTRACT

Living dislocated from family, friends or partners can result in negative emotions and a lack of physical, bodily closeness. We focus on materialising the negative consequences associated with living far apart in a textile form, and manifest those in two pairs of wearable artefacts: first, WARMTH, which simulates the bodily distance between remote people through a decrease in felt temperature, and second, BREATH, which embodies the bodily absence of a remote other through a decline in mechanical movement of textiles. The wearables are 'discussion artefacts' that enable conversation about, reflection on and exchange of personal, negative, vulnerable and challenging emotions connected to living far apart. The stance taken in this pictorial emphasises the necessity to focus not only on overcoming and bridging the distance between remote people through interactive artefacts; but also, to consider and manifest melancholic and possibly negative personal experiences.

Authors Keywords

Wearables; remoteness; critical making; body.

CSS Concepts

- Human-centered computing~Interaction design

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TEI '21, February 14–17, 2021, Salzburg, Austria
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ACM ISBN 978-1-4503-8213-7/21/02.
<https://doi.org/10.1145/3430524.3446071>

INTRODUCTION

Families, friends and partners increasingly live in a distance, for example, due to work requirements, political circumstances, or life choices. There are various attempts to bridge, overcome and mediate the distance between people by making them feel close, connected and remembered of each other, for example, through (digital) games, e.g., [7, 23], connected artefacts, e.g., [6, 31, 32], remote (tangible) interfaces, e.g., [24, 29], wearables, e.g., [13, 21], and connected accessories, e.g., [36]. Our work focuses on the negative experiences associated with being physically apart from each other (c.f., [9, 10]), such as having no option for exchanging physical touch or hugs, missing out on the development of remote family members, not being part of each other's daily life and, possibly, experiencing negative emotions, such as loneliness, missing another person, feeling left-behind and detached. Our engagement with the topic emerged from a study¹ where we encountered such melancholic connotations through interviews with people that experience them due to their family members living in a distance. Their personal insights created the ground for exploring the space of negative experiences of living in a distance.

The interviewees often described the lack of bodily interactions and physical closeness to their loved ones. Our intention was to materialise such personal experiences in a wearable form, which concurrently makes them experienceable on the body. We present two pairs of wearable artefacts, each consisting of two connected items. One of the pairs embodies the lack of bodily presence of the dislocated person through the reduction of movement in textiles, it is called BREATH (A-B). The other embodies the lack of physical, bodily interaction between people that live far apart through a decrease in temperature, it is called WARMTH (C).

We contribute with WARMTH and BREATH material manifestations in the form of wearables of melancholic, negative, sad emotions that people might experience. We define those as 'discussion artefacts' that invite for an exchange, reflection, open conversation and interaction with vulnerabilities, fears, emotions that are usually not openly addressed.

In the following we describe the theoretical grounding of our work, to then present the wearable artefacts, the process of making and impressions of wearing them in depth. Finally, we will discuss envisioned uses of the wearables and point to future iterations.

THEORETICAL ORIGINS

This work sits at the intersection of remoteness, body, wearables and Critical Making. We contextualise these notions in the following and describe their influence on the work presented in this pictorial.

Bodily remoteness was explored through, for example, enabling a remote dining experience [35], hand-holding over distance [11] or sensing remote bodily presence through interactive light sculptures [31, 32]. Existing interactive objects, clothes or accessories often aim to bring people, living in a distance, closer to each other. They focus on a positive over-coming through transferring, for example, hug or heart beat [13, 21]. The wearable solutions mostly involve two connected twin objects or interfaces that resemble a feeling of presence of the person in a distance [e.g., 4, 30, 36]. On the contrary, we manifest the absence of the other person and augment the seemingly negative consequences by creating pairs of wearables that decrease in movement or heat based on proximity to each other. We critically reflect on whether the aim of designing solutions for dislocation is the preferred course of action, and if overcoming dislocation is addressing the lived reality of people that live far apart. We interrogate existing physical and emotional distance between people, not aiming to impose a 'positive connectedness', if it does not necessarily reflect the reality. People that are physically not in the same place cannot see each other face to face, feel, smell, taste, or touch the dislocated other, which can result in negative, melancholic emotions and experiences - and those experiences do not have to be a terminus for design, they can be the inception.

¹ The study was part of the research project *re:tangent - remote tangible engagements*
<https://hci.sbg.ac.at/retangent>

Wearables and textiles as a material have been explored, for example, to enable “wearable social messaging” in-between T-shirts [17], to allow for a “communication between humans and their environment” for an enhanced “empathy beyond the anthropocentric” [1, p. 627], as a mediator for exchanging remote touch [30], for example, between family members [28], and even record and broadcast touch for emotional therapy [5]. Wearables have been used to translate gestures and movements into sound [34], to enable self-expression through changing patterns on textiles [15,19], to communicate through surface changing fabrics [12,16], to enhance the awareness of the users’ posture through haptic feedback [20], and to support users in reflections on their emotional state [38]. We understand wearables as a material for manifesting, representing and depicting negative emotions connected to living in a distance. To create WARMTH and BREATH, we combined textile manipulation techniques and dress-making with computational elements to create mechanical movement and temperature changes. The wearables are discussion artefacts that enable the bodily interaction (e.g. wearing), discussion, (critical) reflection and enhanced understanding of experiences of being far apart from family members, friends or loved ones.

Critical Reflections: We deliberately do not design solutions, improvements or bridging artefacts for people living in a distance. A critical attitude is the base and driver for our wearable manifestations, as our intention was to question and reflect on existing approaches of always designing solutions. We engaged in a “critical making” [25] approach, which connects “critical thinking, typically understood as conceptually and linguistically based, and physical making” (p. 253). The created artefacts invite for bodily engagement with remoteness and connected negative emotions - and by making them wearable, they enable others to interact with and possibly better understand personal experiences through their bodies. Similarly, Beuthel and Wilde [3] present a wearable artefact that resembles the bodily experience of migraine and makes it wearable to others. Ozaki [22] created the “Menstruation Machine”, which simulates menstruation and thus enables anyone to experience its bodily impacts (c.f., [2]). WARMTH and BREATH are not intended to be “displayed and to speak for themselves” [25]. Instead, they are considered “a means to an end, and achieve value through the act of shared construction, joint conversation, and reflection” [25, p. 253]. We understand them as a critical perspective on designing for remote social interactions. Instead of fixing any personal experiences, we aim to manifest their existence through materials in the physical world.

CREATING WARMTH AND BREATH

The undertaken process draws on sketching (D-F), textile craft (H-I), fashion design (J-K), explorations with electronics (L). The research-through-design [39] process was driven by the attempt to generate knowledge through incorporating and addressing the body actively. Similar to Tomico and Wilde [33], we were ideating, prototyping and reflecting on and through the body (p. 1181). The body of others, and of ourselves were used throughout making to constantly experience how the wearable artefacts and their behaviour feel on the skin and to assure the wearability.

The designerly explorations involved, among other aspects, material considerations (G-L), which can be reflected upon their relation to what Wiberg coined as the materiality of interaction [37]. Inquiring from such a perspective puts material decisions into the center of attention, which are not only driven by practical and functional questions, but by “artistic and craft-based approaches to design” [37, p. 1204]. We were guided by materials, listening to what they “have to say” [18], engaging in a “conversation with the materials” [26]. The outcome are two pairs of artefacts that appear fragile, delicate, and to be handled with care; metaphorically representing the fragility of remote relationships. To manifest physical distance between people, we decided to create pairs of wearables that can sense each others proximity and react to the distance between them. WARMTH and BREATH are not intended to be conventional clothes, nor sell-able products, but rather to generate new knowledge based on the insights gained from interviewees. In the following, we present BREATH and WARMTH in detail and describe reflections that arose through the body-centric explorations.

BREATH

People that live far apart from each other are unable to 'get a sense of the other person', such as an impression of their well-being, their body and outside appearance. They cannot feel physical closeness, breath, smell, and bodily movements. BREATH (M-P) is a wearable manifestation of that lack of sensing the other person's body.

The wearable artefacts were made of textiles that were manipulated through heat. The light, semi-transparent fabrics, placed in the front of the wearables, are different in colour, shape and appearance. One is covered with white textiles that is pleated in various ways (M), and the other with light brown material that was shaped into a bubble-like surface (N).

(Q)

(R)

Through servo motors, which are attached on the back, the light textiles are able to move. The movement (indicated as arrows in Q-R) should remind of human breath, and is therefore visible in the chest and stomach area (Q-R).

The two artefacts are connected to each other through Wi-Fi. They are able to detect their proximity: one creates a hotspot, the other connects to it. They contain an RFID sensor and RFID tags placed on the chest that enable them to sense if the wearers of the artefacts hug (RFID sensor and tag touch = maximal movement). Each artefact incorporates two servo motors, which create the breathe-like movements through pulling threads that are stitched throughout the front of the wearable.

When the pair of BREATH is co-located, the textiles move, but when the two artefacts are physically dislocated, the movement decreases, gradually, the material appears to lose life, until it fully fades and the movement stops. The wearables can sense each others presence, and especially each others absence. The decrease of movement depicts the experiences of being far apart and not being able to sense the others persons 'aliveness'.

WARMTH

Not being able to meet in person does simultaneously mean not being able to feel the other. The lack of bodily touch was often discussed with our interviewees as one major aspect that can not be replaced through a phone call, letter or video chat. WARMTH (S-U) manifests the deprivation of closeness, lack of bodily touch and missing of interactions with a distant other person through decreasing and disappearing heat.

The artefacts of WARMTH are varying in appearance. One (S) is a collar, which consists of large cushions that are draped around the neck of the wearer. The other is a half vest (T), which is tied around the torso. It consists of a quilted fabric piece (U), worn on one shoulder.

(V)

The two artefacts are Wi-Fi connected and are able to detect each others proximity. If co-located, the heat pads warm up and, if the wearables are physically dislocated, the heat pads gradually decrease in temperature. When wearing WARMTH while being co-located, it is warm and comforting, but when the two artefacts are dislocated, the heat decreases, the wearables cool down and the feeling of distance is emphasised.

(W)

The electronics are hidden on the backside of the wearables. The head pads (indicated in orange in V-W) are placed in areas where one would feel body warmth of another person during a hug. There is one heat pad sewn into the backside of the neck (V). Two heat pads are embedded into the fabric of the other wearable, one in the shoulder area, one on the back of the artefact (W).

(X)

(Y)

(Z)

(Aa)

(Bb)

(Cc)

REFLECTING THROUGH WEARING

The process undertaken to develop BREATH and WARMTH builds on direct involvement of bodies. We asked some of our colleagues to wear them, and also tried them on our own bodies (X-Cc). We did not introduce the behaviours of the artefacts in detail. This allowed us to gather intentional responses without shifting the attention already to our specific focus points. In the following, we will describe reflections made based on the experiences of others and our experiences of wearing the artefacts.

While making BREATH, we highly focused on the visibility of the movement of fabrics in the front of the artefacts. The interplay of motors, thread, pulling and tension is complex and not easily created. Interestingly, we realised through wearing the artefacts that the movement the motors created on the back was actually not a 'problem that needs to be fixed' - how we defined it at first - but rather fed into the experience. The motors did not only enable the movement of the light fabrics in the front, but also created movement in the whole vest, which was experienced by others and ourselves as if the whole wearable is breathing. When trying BREATH (X-Z) with two people at the same time, the visible changes in the front were firstly noticed by the opposing person, but were then also observed by the actual wearer. The experience became two-fold: first, the individual sensation on the own back of the motors, second, the shared experience of looking at each others' moving artefacts. For future implementations, we can build on the enhanced understanding of the complex interplay of moving fabrics and moving actuators that we gathered through the bodily interactions. The choices of materials, appearance, design, placement of motors, etc. could be re-evaluated and improved.

We also tried WARMTH (Aa-Cc) throughout the making process, and asked colleagues to wear them. Some people felt the changes in temperature intensively, others did not notice them at all. The experience of temperature can vary not only based on the personal body, but, for example, also based on clothes worn beneath the artefacts, or long hair interfering with the heat pads. For future iterations, we would explore different placements of heat pads within a wearable and test varying intensities and fading of the temperature.

DISCUSSION AND CONCLUSION

Our pictorial builds on the body as a medium for experiencing, wearing, interacting with materials, wearables and remoteness. An interest in the role of the human body in relation to interactive systems has been characterising the research discourse for a while, for instance, in form of embodied interaction [8], somaesthetic interaction design [14] and inbodied interaction [27]. The ways that design may take the body into account are still to be explored, but its relevance is clear: “The ways we understand others and the ways we react to events in our surroundings are inseparable from the physical reality of our moving bodies, our experiences, practices, learnings, habits, and culture.” [14, p. 30]. Manifesting personal experiences in wearable materials enables bodily interactions with emotions of others. The meaning of the wearable artefacts we presented is substantially linked to the moving bodies, a temporal sensation, and awareness of the close or distant other.

BREATH (Dd) and WARMTH are figurative, material representations of personal, negative experiences of living in a distance. They do not aim to solve, fix or overcome anything. We envision them to be tested and discussed by people that experience physical dislocation from loved ones, e.g., the interviewees that inspired our work in a workshop setting, and by others that aim to design for remoteness. BREATH and WARMTH are material manifestations of humans’ personal experiences. They point towards negative experiences, the fragility of personal relationships, vulnerabilities of loved ones. By giving these experiences a wearable, textile existence, they become experienceable. Surely, they will not overcome a physical distance, or make people feel physically closer, but they can invite for discussion of the remote relationships and for discussion of people designing for the remote interactions: which emotions do we design for? How can all sorts of individual experiences be addressed? We focus in this work on conveying negative experiences and aspects of living far apart, but not to make people feel more sad, lonely or detached, but rather to emphasise that these emotions exist and should get the same attention as positive, playful and joyful experiences, when designing for remoteness.

FUTURE WORK

As a continuation of the work presented in this pictorial, we will explore how to extend the interactivity of BREATH and WARMTH when they are dislocated from each other. Currently, the movement or heat simply stops; we aim to further understand how we can (critically) design for (enduring) absence and distance. For example, when being far a part for a longer time period, the wearables could emphasize that, reminding a wearer of the remoteness and of the impact the distance has on body and mind.

(Dd)

ACKNOWLEDGEMENT

We want to thank the participants for sharing their personal stories that informed BREATH and WARMTH, our colleagues for wearing the wearables and providing feedback, and the reviewers for their inspirational words. We gratefully acknowledge the financial support by the Austrian Science Fund (FWF):I 3580-N33.

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