The Breathing Wings: An Autobiographical Soma Design Exploration of Touch Qualities through Shape-Change Materials

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ABSTRACT
Engaging with new types of programmable and smart materials in interaction design requires that we develop a deeper understanding of the somatic experiences that such materials can evoke. This pictorial presents an autobiographical exploration grounded on soma design methods that led to the Breathing Wings wearable: Covering the area of the back, it offers a dynamic embracing experience created through soft shape-changing materials, inviting the wearer to re-experience neglected body parts, the shoulder blades, where it evokes different qualities of 'touch'. This work offers a detailed account of opening the space of designing with shape-change actuation through a somaesthetic approach to engaging with the body, materials and felt experiences. This rich design-led inquiry that placed the body in dialogue with materials and wearable, challenged the perception of the boundaries between body and wearable by shifting the agency from the human body to a co-living experience between the two.

Authors Keywords
Soma design; Autobiographical design; Shape-change materials; Touch; Wearables; Breathing; Non-human.

CSS Concepts
• Human-centered computing~Interaction Design

INTRODUCTION

Exploring material properties in relation to the body and investigating new experiential qualities for designing with smart materials is a prevalent research area in interaction design [3,18,22,27]. This is motivated by conceptualising design materials as inherently 'active' [8] and by arguing that design practices need to support dynamic material properties and experiences [24]. Diverse approaches to investigating boundaries and entanglements between matertials, body and technologies are grounded in articulations on how the experiences of materials in turn shape ways of doing design [9] and participate across social and cultural contexts [16], among others.

This pictorial builds on this related work and presents an autobiographical exploration grounded on soma design methods [13] that offers a detailed account of opening the space of designing with shape-changing materials, through a somaesthetic approach to engaging with the body, materials and felt experiences. The research process presented is focused on surfacing and working with 'touch' experiential qualities enabled through shape-change actuation applied on the area of the upper back and shoulder blades. This process resulted in the Breathing Wings wearable (front page).

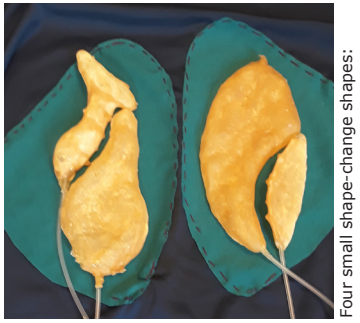
Breathing Wings is worn on the back and is wrapped around the front and back of the torso. It invites the wearer to pay attention to and reflect on the area of the upper back, where the shoulder blades are positioned. Through a dynamic embracing experience created through soft shape-changing technology, it allows the wearer to remember and re-experience neglected body parts, namely the shoulder blades, where it evokes qualities of 'touch'. It is made of textile and latex shape-changing elements actuated by air, which, through an electronic pump and a mobile application, can inflate and deflate at different rates and speeds. It extends from the neck to the lower waist, and it has pockets covering the left and right sides of the shoulder blades, where different shape-changing latex materials are inserted and stay in place, next to the wearer's skin.

This autobiographical exploration is part of an ongoing research-through-design project that deploys soma design methods, aiming to surface and trouble somatic and affective encounters with various material forms experienced haptically on the body, next to the skin. The design phase presented in this pictorial, spanning almost one year, was led by the author. Beyond the author's first-person experiences articulated here, the wearable has also been worn and experienced by others.

Soma design methods often draw on first-person experiences, especially when aiming to study the impact of sensing and actuating materials from a perspective that puts felt sensory experiences to the fore [14]. Similarly, in this process first-person autobiographical experiences [13,19] were used for guiding the design process and for opening up the design space in this context. There is a variety of soma-based design strategies for engaging with the soma (the mind and body as a whole), aiming to improve the designer's somaesthetic awareness and ultimately design rich experiences with technologies. The main strategies I engaged with were: a) sensitising activities to become attentive to the area of my back and shoulder blades, and (b) enstrangement methods [26] for de-familiarising and disrupting habitual experiences. These two soma design approaches allowed me to imagine – through my senses, movements and material encounters – three 'touch' qualities that evoke experiences of 'being embraced', 'being held' and 'being taken care of'. I further explored these qualities through shape-changing materials on my upper back and shoulder blades, as part of the gradual development and conceptualisation of the Breathing Wings wearable.

The contribution of this pictorial is twofold. On the one hand it offers an articulartion of how the space of designing with shape change actuation was opened, through an autobiographical somaesthetic approach to materials and felt somatic experiences. It shows a path that other researchers can follow when designing with the body, aiming to surface novel somatic experiences that smart materials can evoke in interaction. The second contribution is the presentation of the Breathing Wings wearable that examines the shared agency between wearer and wearable. The wearable, in combination with the shape change actuation, imposes its own alien rhythm of pneumatic inflating/deflating breathing. In this way it creates a strange sense of independent machinic agency that blurs boundaries between the human and the 'other' material body surrounding the wearer.

Reflecting on the design process and the experience the wearable evokes, two themes were identified: a) experiencing caring and creepy feelings of 'aliveness' and b) evoking affective engagements with the 'other' material body that 'breathes'. These surface aspects that challenged the boundaries between body and wearable by shifting the agency from the human body to a co-living experience between the two. On a brooader level, this pictorial aims to contribute to interaction design research that conceptually troubles boundaries of the body, as previously done in interaction design by e.g. [4,11], through a rich design-led inquiry that places the body in dialogue with materials and wearable.



Four small shape-change shapes: 'Being held' through touch

Two big shape-change shapes: 'Feeling embraced' and 'being taken care of' through touch

BACKGROUND AND INSPIRATION

The Breathing Wings builds on previous research in interaction design and draws inspiration from artistic projects, focused on investigating material encounters with the body and various forms of technology, through wearables.

#1 Related work/Inspiration

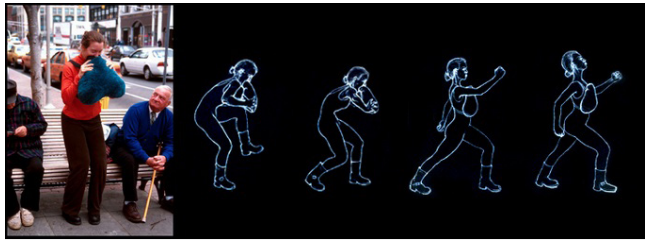
Farahi's *Iridescence* [7]
Image credit: © Behnaz Farahi
Photographer: Kristina Varaksina

A 3D printed collar with a facial tracking camera and an array of 200 custom-made rotating actuators that flip their colors and start to make patterns, in response to the movement of onlookers and their facial expressions. With this wearable Farahi explores "*how wearables can become a vehicle for self-expression, (..) enhancing one's sensory experience of the world.*" [7, p.674]

#2 Related work/Inspiration

Horn's *Feathers Dancing on Shoulders* [12]

Horn investigated the body and its movements through making and wearing a range of different body prosthetics, known as *body modification sculptures*. Her early body sculptures produced in the 70s "*investigate into the body's limitations and its sensory and tactile perception as an extended form of self-perception.*" [12, p.11]



#3 Related work/Inspiration

Dobson's *Screambody* [6]
Image credit: © Kelly Dobson

A series of visible and spectacular wearable body organs to explore the interplay of people and machines, which are "*carnival even, play-use objects-devices-equipments that both offer context sensitive functionality for their wearer and simultaneously announce their own need for existence by being used in public without being hidden.*" [6]

#4 Related work/Inspiration

Hartman *et al. Monarch* wearable [10]
Image credit: © Kate Hartman

The Monarch wearable uses EMG sensors placed on the arm to flex a pair of flaps made of textile that are attached to the shoulders. This transforms an expressive gesture of flexing to the bodily experience of taking up more space.

#5 Related work/Inspiration

Wilde & Andersen's *OWL Project* [25]

Wilde and Andersen investigated the body through a series of open and speculative body-devices, as referred to by the authors [25] . They were designed without a predefined function, and tested as design 'probes' to ascertain their functionality.

METHOD AND DESIGN PROCESS: AUTOBIOGRAPHICAL SOMA DESIGN

The main method used for this research project is soma design, grounded on the first-person experiences, articulations and reflections of the author. Soma design is an approach that cultivates a designer's appreciation for their *soma*, their mind and body, as experiential and cultural [13]. It draws on the philosophy of somaesthetics [23], which shows a path towards becoming more attentive to, and improving on our whole self: The fleshy body, mind, emotions, subjective understandings and values. By attuning to their soma, a designer can materially engage with how their body dynamically participates in interactions as a lively mess of mechanisms that are social, political, and biological, and that can be designed *with* [15]. The process of developing the Breathing Wings in tandem with exploring touch qualities of shape-change actuation unfolded through an autobiographical soma design process [13]. Autobiographical research through design in HCI focuses on using the experiences of the self as an explicit action within the design process for developing systematic understandings of a system's potential [19]. Throughout the process presented here data was gathered in the form of diary notes, illustrations, photographs, video and voice recordings. The subjective review of the gathered data guided the author to decide on how to proceed from one stage to the next, and consequently to open up the design space. There was no strict protocol followed for analysing the data, as it was deemed more important to reflect on first-person experiences at the meeting between shape-change materials and the soma. This is a common approach in soma design methods [13, 15], since the designer's soma and their first-person experiences and reflections are used as a guide to judge, validate and iterate throughout the process, with the ultimate goal to design for others. Methodologically, reflection-in-action [21], which is central to design processes, served here as a form of validation and critique for design choices based on the autobiographical data gathered along the way.

This pictorial will outline the stages of the soma design process followed: sensitising the body, identifying design and experiential qualities of touch and exloring these qualities with shape-change materials through the Breathing Wings wearable. Throughout these stages several creative approaches were used for engaging with the body and materials. Among them was Xerox art and poetry/storytelling, all chosen as unfamiliar tactics of documenting and communicating particular aspects of the research process, creating space for new ways of *thinking* about and *making* knowledge [17]. Xerox art (p.8) was used for documenting the experiential qualities extracted in a visual form, instead of using words. This had a strong impact on gaining a deeper understanding on the experiences I wanted to design for, and helped me to "stay" with these qualities throughout the design process. Using my arms and hands to represent and communicate each quality contributed to a direct experience and affective connection between body and qualities, and helped me to stay focused on each one by coming back to the visual representations that accompanied the textual descriptions. Poetry and storytelling (p.11) were used throughout the design process as speculative approaches for making an account of an encounter with an object [20]. In this case an encounter between body and wearable, arising through my actual experiences of wearing and interacting with it, but going beyond those, to imagining how it would be part of my everyday life.

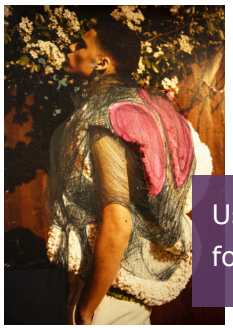
Ways of engaging with autobiographical soma design

Sensitising the body: Becoming attentive to the area of the back and shoulder blades

First-person experiences and reflections on wearing wings

Visualising and communicating experiential qualities through Xerox art

Exploring materials (latex, textiles, electronics) and doing prototyping



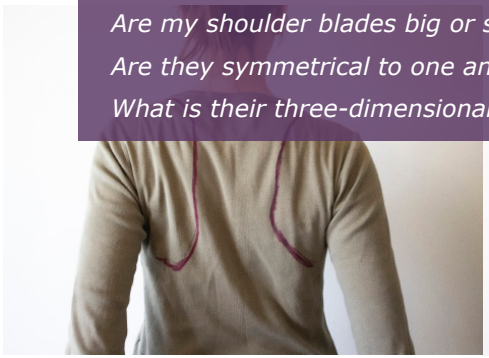
Using storytellling, poetry and speculative collages for imagining co-living with the Breathing Wings

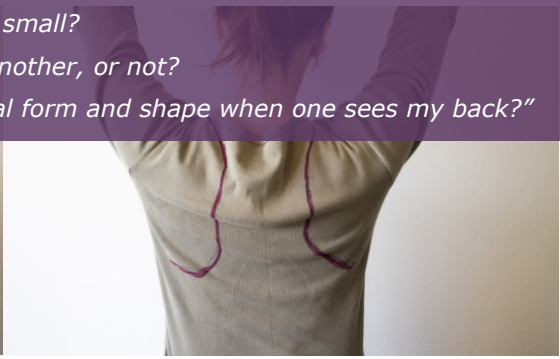
#1 Turning into the soma

The initial point of departure was to find ways of connecting to the area of the upper back and shoulder blades aiming to sensitise this bodily area by zooming into, and becoming attentive to it. Exploring touch on this bodily area was motivated by aiming to raise awareness and put attention to a body part that is somewhat neglected and is not as familiar as others that we can easily see or touch. I used my body as a point of departure for this exploration, having as an end goal to design for others (other bodies and other people). I used the metaphor of 'touch' as a way of becoming sensitised and of expanding my understanding on the anatomy of my upper back. I invited a close colleague to touch me subtly on my shoulder blades and hold her palm there, helping me, in that way, to feel the anatomical structure through her palms placed on top of my bones and skin. Through her touch, I slowly started to become more attentive to the three dimensional shape and form of my upper back, as I could almost 'see' my bones protruding and feel how the shoulder blades expand to my arms. As a next step, I invited her to trace the outline of my shoulder blades on a thin paper that she placed on top of them. Through the felt experience of the thick pen touching my skin, while she was tracing the outline of my shoulder blades - an experience felt almost like a slow stroke on the surface of my skin- I could feel their shape and imagine their size. Then I transfered the outline of my shoulder blades on a blouse I wore, recorded different movements I performed and viewed these images, combining first-person experiences and an outside view of my body. I combined this sensitising experience with me taking the role of the person 'turning into' and zooming into another soma, by doing the same to her. I observed and payed close attention to her shoulder blades, through tracing their outline on a thin paper. Combining the felt and imagined experience of the shape, size and contour of my upper back evoked through the other person's attention to my body, with the experience of me zooming in to her body, was a crucial step in gaining a first-person experience of the anatomy of my upper back and shoulder blades.

(First-person vignette from diary notes)

"I consider my upper back and shoulder blades as a somewhat 'forgotten' area on my body: I cannot easily touch it and even if I can touch parts of it, when I stretch my right hand on the left side of my back and my left hand on the right, I do not have a full picture (neither visual nor tactile) of the anatomy in this area. Are my shoulder blades big or small? Are they symmetrical to one another, or not? What is their three-dimensional form and shape when one sees my back?"

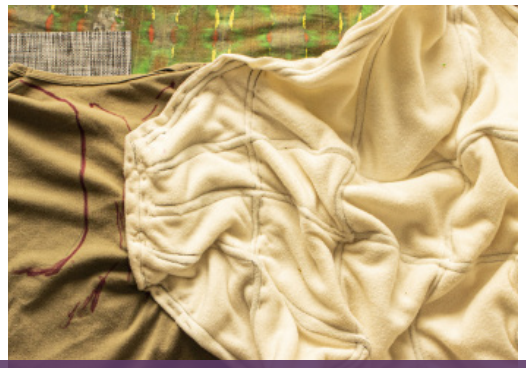




#2 Identifying design and experiential qualities through enstrangement

Moving from becoming sensitised to the area of the upper back and from gaining a deeper understanding of its anatomy, I seeked to identify what particular 'touch' experiences would be evocative to design for. I used the *wings* as a metaphor and guidance for identifying the experiential qualities of interaction I was after. Returning to experiences of having another person touching my back, which led to an expanded and nuanced awareness of how the bones and muscles around the shoulder blades connect to one another, I took the sensitising activities one step further and combined them to activities of enstrangement [26].

I made and wore a pair of custom-made wings for a week, aiming to reflect on the somatic experiences evoked through having this unusual material object attached to my back, as a type of body extension or 'person' touching my back, although inanimate.



Detail of stitching the wings on the blouse, extending from the spine and shoulder blades outside the body.

This experience deriving through somatically exploring the poetic metaphor of having wings attached to my back, as an extension of my body, became a pivotal phase in the design process: It served as an anchor for identifying the design and experiential qualities that should be put into focus. I documented my autobiographical reflections emerging from wearing the wings through sketches, diary notes and short written stories.

In this page is depicted the wearable with the attached wings and a sketch aiming to capture and visualise the materiality and spatiality of the wings surrounding the torso and neck.

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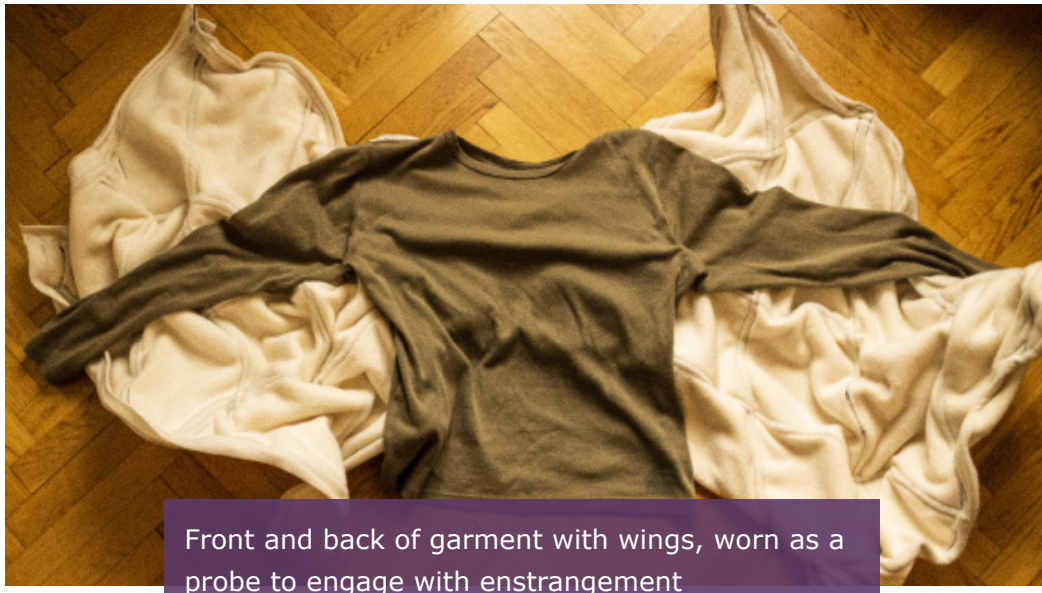
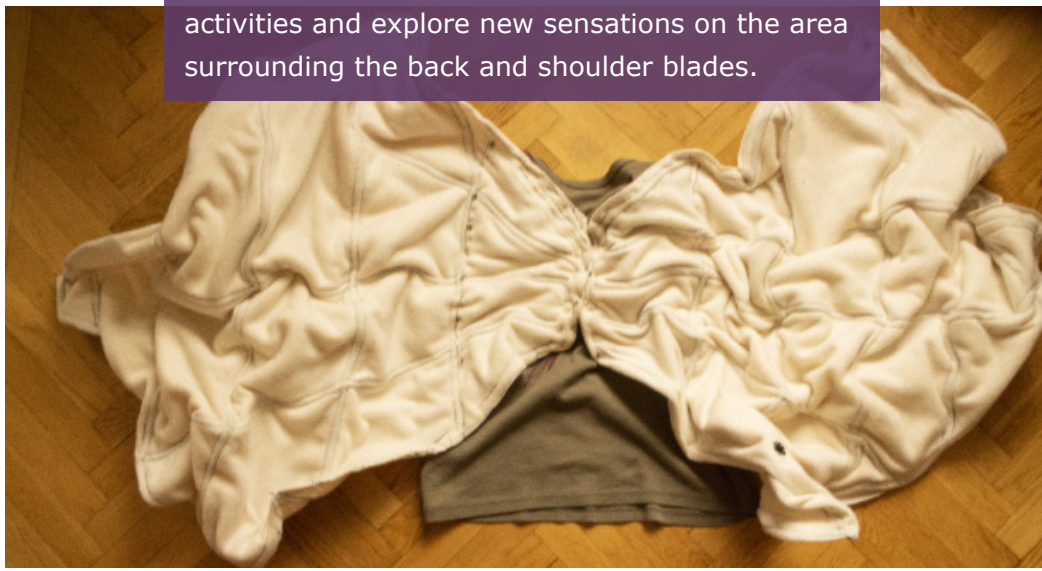


Front and back of garment with wings, worn as a probe to engage with enstrangement activities and explore new sensations on the area surrounding the back and shoulder blades.

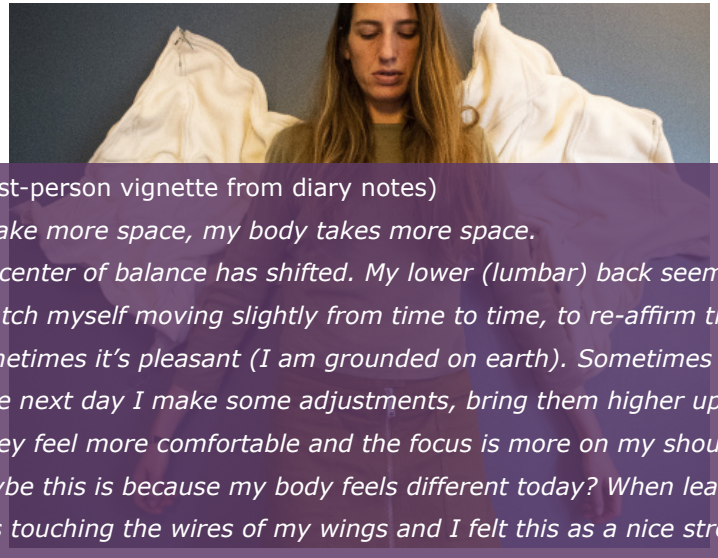
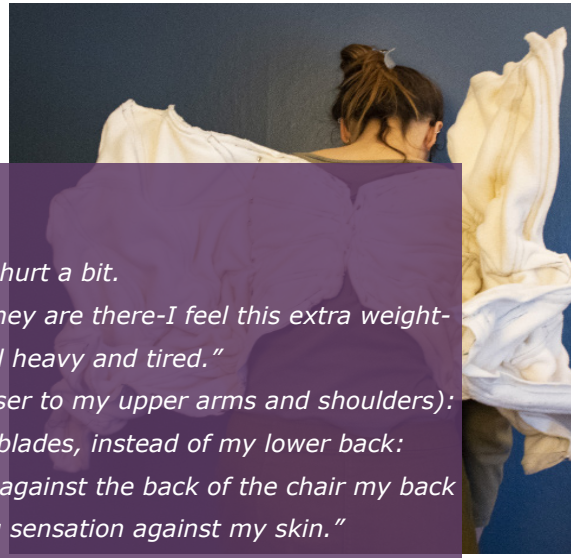


First-person reflections of wearing wings

Push
Ground
Heavy
Stroke
Lift
Extend
Movement
Space





(First-person vignette from diary notes)
"I take more space, my body takes more space.
My center of balance has shifted. My lower (lumbar) back seems to hurt a bit.
I catch myself moving slightly from time to time, to re-affirm that they are there-I feel this extra weight- sometimes it's pleasant (I am grounded on earth). Sometimes I feel heavy and tired."
(The next day I make some adjustments, bring them higher up, closer to my upper arms and shoulders):
"They feel more comfortable and the focus is more on my shoulder blades, instead of my lower back:
Maybe this is because my body feels different today? When leaning against the back of the chair my back was touching the wires of my wings and I felt this as a nice stroking sensation against my skin."

#3 Visualising experiential touch qualities using Xerox Art

Reflecting on the experience of wearing wings as an extension of my body, became a pivotal phase in the design process and served as an anchor for identifying three experiential qualities. These were used later for exploring 'touch' qualities evoked through shape-change actuation applied on the area of the shoulder blades. I used Xerox art to visualise the qualities extracted, aiming to create a direct experience and affective connection between body and felt sensations. Xerox art is a form of creating prints by putting objects on the glass of a copying machine (in this case my hands), and by pressing "start" to produce an image.

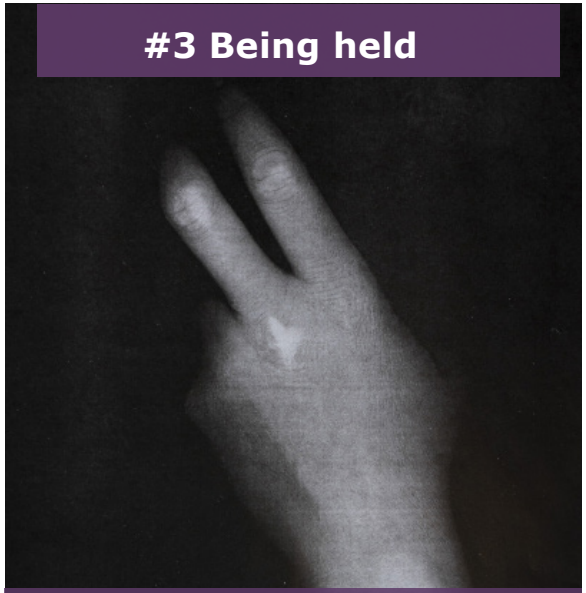
#1 Being embraced

From the first-person experiences of wearing the wings, which helped me to expand my perception of the anatomy on my upper back and to become more attentive to this area on my body, the quality of 'feeling embraced' emerged. Feeling the wings touching my back and expanding from the middle to the outer area of the shoulder blades I experienced an embracing feeling. Unpacking this quality, aiming for an "embracing" experience through shape-change could arise through the shape and size of the shape-changing materials and the degree of pressure applied against the skin. But also through the actual wearable, in which these materials would be placed, enclosing the torso and evoking an embracing experience.

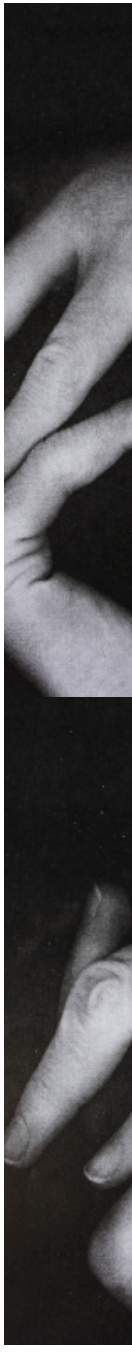
#2 Being taken care of

Building an increased awareness of the bodily area being in focus, felt nice. I experienced the touch of another person (during the sensitising activities) and the touch through the wings as slowly building trust between me and the other person holding me, or between me and the wearable wings: there was a feeling of being taken care of by someone else. This experience was conceptualised in a 'touch' quality aiming to an interactive experience that would evoke a sensation of 'being taken care of'. This quality was deemed rather abstract and subjective, but was there to remind me of aiming to design for trust and intimacy, resonating from my experiences. I imagined the shape-change actuation in combination with the wearable hosting the materials, to evoke an experience of being taken care of, while supporting the wearer to become attentive to their soma, and to provide a space for reflection and appreciation through the shape-changing interactions.

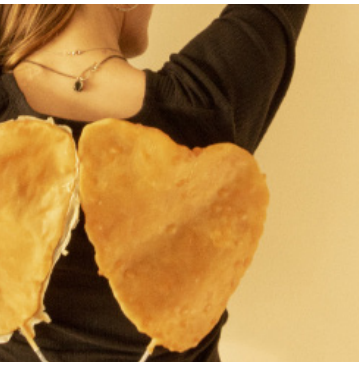
#3 Being held



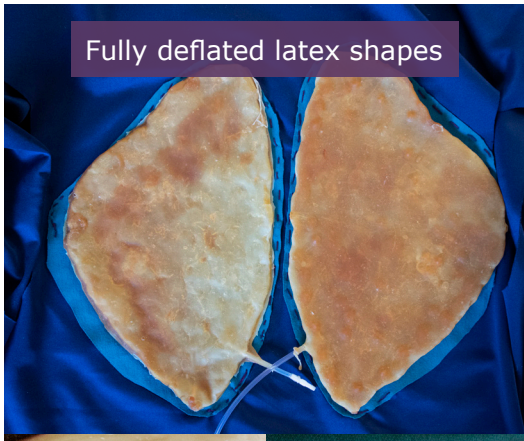
Having something or someone touching my back was an experience that both created awareness of how the muscles and bones in this area connect, and also caused a soothing effect of relaxation. Apart from being an experience that "created an awareness through touch", this was also articulated as a design and experiential quality of 'being held' through touch. It was not only the fact that there was something touching me, but it was the fact that there was a slight pressure or warmth felt when touch was applied to smaller areas on the back (felt through another person's palm during the sensitising activity and when wearing the wings) that contributed to an evocative and aesthetic 'touch' experience on this area on my body. I imagined smaller shape-change materials placed on distinct areas of the shoulder blades, evoking an experience of 'holding' a bone, or a muscle, when inflating and deflating.



#4 Experiencing shape-change materials on the shoulder blades



The design process moved to exploring how to evoke such touch qualities through shape-change materials on the shoulder blades. I made shape-change shapes with latex, which could be inflated and deflated manually with an Arduino Pneumatics microcontroller connected to air pumps, through an application developed on a mobile phone. Initially I made a pair of rather flat and big inflatable shapes, to explore further the quality of 'being embraced' and 'being taken care of' while being touched on the back. For a week I experienced the shape-change shapes for 30mins every day and recorded my first-person experiences directly after each session, on a diary. In each session I played with different patterns and timings of inflation and deflation, including inflating both together as a synchronous choreography of shape-change, followed by an asynchronous actuation, with one being inflated first, and the other following after 5 secs. Below are two excerpts from first-person experiences reported on my diary (3rd day).



Fully deflated latex shapes

Fully inflated shape (left) and semi-inflated (right)

" I felt their subtle inflation and deflation almost as a stroke against my skin. An immediate reflection was that a slower inflation and deflation felt much nicer than a quick one, contributing to a soothing sensation. A slow but steady inflation until both shapes were fully inflated, followed by a slow and steady deflation until both shapes were fully deflated, contributed to an increased awareness of my shoulder blades' shape and structure. I felt a "strong presence" of the muscles and bones located on this area of my body, emerging through 'being embraced' by the big shapes. Even though not intended with these big shapes, I also felt like 'being held' by these sturdy materials and their pressure felt against my back."

"Gradually, I started moving my whole torso, slowly, as if I was trying to respond to their movements. For a while I only focused on the left shape, and I started tilting my back towards that side. I suddenly wished for a mirrored experience on the right. Am I leading or following the movements of my wings? Or both? The boundaries of body and shape-change materials started to become blurry: Were the wings moving first and I was following, or was I moving first and they were following?"

#5 The Breathing Wings wearable and the experience it evokes

Parallel to experiencing touch through the shape-change latex materials, I started developing different versions of the wearable. Focusing on the experiential qualities that I was after, the research question driving the process of developing the Breathing Wings was "*how to design the wearing experience in a way that would contribute to evoking touch qualities of feeling embraced, being held, being taken care of*?" Working with textile and my body, I decided to make a wearable worn as a type of vest, but which should be "strapped on" the body slowly, by tying two long pieces of textile around my waist and knotting them together in the end. It covers mainly the back side of the body, extending from the neck to the lower waist. It has pockets covering the areas of the left and right shoulder blades, where the inflatable latex shapes are inserted and stay in place. I designed the experience of wearing it almost like a ritual, and I imagined that it would take some time to wear the Breathing Wings, as a way of being initiated to the interactive experience.

When the 'wings' inflate and deflate, 'breathing' in and out, they touch the back and evoke a range of somatic touch experiences, materialised at the meeting between body and wearable. Feeling the soft latex materials changing their shape against the skin evokes a touch sensation on the back: A touch that can either be soft and subtle or more abrupt and sudden, depending on the rate and speed of inflation and deflation that can be controlled manually through the mobile phone.

Prototype Version #1

2 big latex shape-changing materials

Experience of being held and being taken care of through touch: Start by inflating all shapes simultaneously to create an embracing experience evoked through the actuation slightly squeezing the skin. When the shapes are half-inflated and the wearer feels their presence on their back, each shape starts to inflate and deflate slowly, resembling a breathing pattern to resemble an 'holding' and caring sensation on the upper back.

Prototype Version #2

4 small latex shapes; two for the left and two for the right side of the back, subdividing the 'touch' applied through the shape-change on smaller areas, 'touching' each muscle separately. This version can be worn inside out (Figures on the right) and can host both the 2 big shapes and the 4 small shapes all at the same time.

Experience of feeling embraced through touch: Start by slowly inflating the bigger shapes simultaneously (for 5 secs), followed by pausing the inflation of the bigger shapes and start inflating firstly the 2 smaller shapes placed on the left shoulder blade (for 3 secs), and then the two smaller shapes placed on the right shoulder blade (for 3 secs). This is followed by a similar deflation pattern.

"The smaller shapes were aimed at capturing the topographic nuances of the anatomical construction on the shoulder blades, but they evoked a 'poking' sensation, as the inflation and deflation was located on smaller areas. When a shape was inflated too much, the material felt like taking over, almost like pushing me, and then my focus was shifting from my body to the shape change material instead."

A poem and a prose - The (caring) Breathing Wings

I used poetry and storytelling for imagining living with the Breathing Wings, and for articulating and expressing my affective relationships to this wearable, evoked through our interactions.

It is a kind of ritual.
It is an intimate and sacred space for me,
where I can enter to hide, to be, to exist.
This memory of my
wings.
The body. This remembers.
(the tired shoulder blades
- forgotten)
And then I long to wear
my Breathing Wings.
They can help me remember.
They can help me (re) experience
(a touch, a stroke, a push)
- my lost wings.

Speculative collages and sketches to imagine the wearable on other bodies

I pick it up (it is resting on my reading sofa).
I put it around my back and shoulders
and make sure the two wings
are touching my shoulder blades.
I slowly start wrapping the fabric around me.
It takes time. But I don't mind.
The process of strapping it on my body makes
me feel like I am initiated in a sacred
and intimate space. I slowly reach the end.
Now it is firmly wrapped around my torso, tightly.
It feels nice.
The pressure around my body feels nice,
as if someone is wrapping their arms around me.
I am being hugged.

Now I can lie down or sit and lean against
the back of the chair.
I feel the support. I feel the care.
Once my back touches a solid surface,
the wings start breathing.

DISCUSSION

The autobiographical soma design process presented offers a detailed account of using first-person experiences for exploring relationships between shape- change materials and body, through surfacing qualities of 'touch'. Similarly to Wilde and Andersen's OWL project [25], the Breathing Wings does not have a specific predefined functionality. It is made as a rather poetic artefact that initiates the wearer into a unique experience of re-discovering their soma and the often neglected area of the shoulder blades. It does so by inviting the wearer to experience novel 'touch' sensations on the back, emerging through the encounter, interaction and dialogue between body and shape-change actuation. The 'touch' qualities foregrounded, evoke sensations of 'being embraced', 'being held' and 'being taken care of'. These were exctracted during the design process, and in particular through sensitising and becoming attentive to the area of the upper back, in addition to engaging in de-familiarising activities of touching this bodily area. Beyond offering novel felt somatic experiences of touch, the Breathing Wings resembles a form of a speculative body extension attached to the upper back, that invites the wearer to reflect on and question the boundaries of their body in relation to the actuated materials that are part of the wearable surrounding the body. From the process of developing the wearable, and through the experiences of interacting and living with it, two themes emerged. These surface aspects that challenged the boundaries between body and wearable by shifting the agency from the human body to a co-living experience between the two: a) experiencing caring and creepy feelings of 'aliveness' and b) evoking affective engagements with the 'other' material body that breathes.

Experiencing Caring and Creepy Feelings of 'Aliveness'

Having a wearable attached to my upper back and feeling its warm touch and 'breathing' effect against my skin, while touching the breathing body, was experienced as messing and troubling the perception of where the body ends and where the wearable begins, through evoking a caring and creepy experience, at the same time. Feeling the soft latex shapes touching my back, in different ways, evoked a sense of reciprocal caring experience [4], betwen human body and wearable: Through the embracing qualities of the wearable wrapped around my body and through the 'breathing'of the shape-change materials experienced so close to it, I started caring about this non-human and machinic soft body attached to mine. At the same time, I felt comforted by it, wrapped around me and gently touching my back, giving me almost like a soothing massage on my tired shoulder blades. The experience of wearing the Breathing Wings and feeling the actuation against the skin also evoked a feeling of imagining having wings or having something alive attached to the back that breathes in and out. This was a rather creepy feeling of 'aliveness' extended from the inside of the body (breathing as an internal mechanism) to the flesh and to the wearable, acting almost like a parasite attached to the body, that might suggest, or even force me on how to breathe, or even how to move by suggesting movements for me to follow. Additionally, the co-breathing experience shared between me and wearable, evoked creepy feelings of shared agency and control over my breathing, as the wearable was experienced as having a life of its own.

Evoking Affective Engagements with the 'Other' Non-human Material Body that Breathes

Beyond experiencing caring and creepy feelings when wearing the Breathing Wings, the actual materiality of the shape-change elements and their 'breathing' in and out, through inflation/deflation, created further affective engagements with this 'other', non-human material body. Through making the latex shapes and through experiencing those directly on my body, I started becoming aware of their material vibrancy [2], pushing me, stroking me, or suggesting a movement for me. According to Bennett [2], "*an actant never really acts alone. Its efficacy or agency always depends on the collaboration, cooperation, or interactive interference of many bodies and forces*" (p.21). In the case of the Breathing Wings, material assemblages, movements, flesh, breathing materials and breathing body, created an entangled new 'body' as a combination of multiple actants collaborating and cooperating together. The material vibrancy of this other material body was highlighted through the latex materials and through their performed act of breathing. The tactile and visual properties of latex remind one of organic substances, e.g. inner organs or actual skin, and bring to mind living organisms or autonomous systems, such as previously explored in [3], that have a life of their own, detached from the human body. This organic quality, beyond being only a visual one, was also experiential. While being in close contact with the skin, the breathing act of the latex shapes enhances the dynamic embracing experience offered by the wearable and contributes to affective engagements with this other body surrounding the human one. The potentially crude, and for some even disgusting touch and feel properties of the latex bladders, started to become an important material property in this context. Mainly because it contributed to further blurring the boundaries between human body and material body, extending existing research on exploring boundaries between the inside and outside of bodies [15]. It further opens up for future research on questioning what constitutes a body [5], and whether the human body is limited to the boundaries of the skin, or extends beyond that.

CONCLUSION

This pictorial offers an account of designing with the body, materials and felt experiences through an autobiographical soma design process resulting in the Breathing Wings. It surfaces relations between human body and wearable, while challenging the boundaries between the two, shifting the agency from the human body to a co-living experience with the non-human 'breathing' material body.

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