

SOFT MOTION

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Textile and Surface Design
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Concept

Soft Motion

Self-presentation and identity is a main factor in defining physical existence in our life. In the new media world and infinity of the digital sphere bodies are presented as visual spectacles. Identity and body image are constructed mainly from cultural and social aspects. This hardly corresponds to the real sensations as a body. We are sensually-perceptive, communicative, practical and thinking creatures.

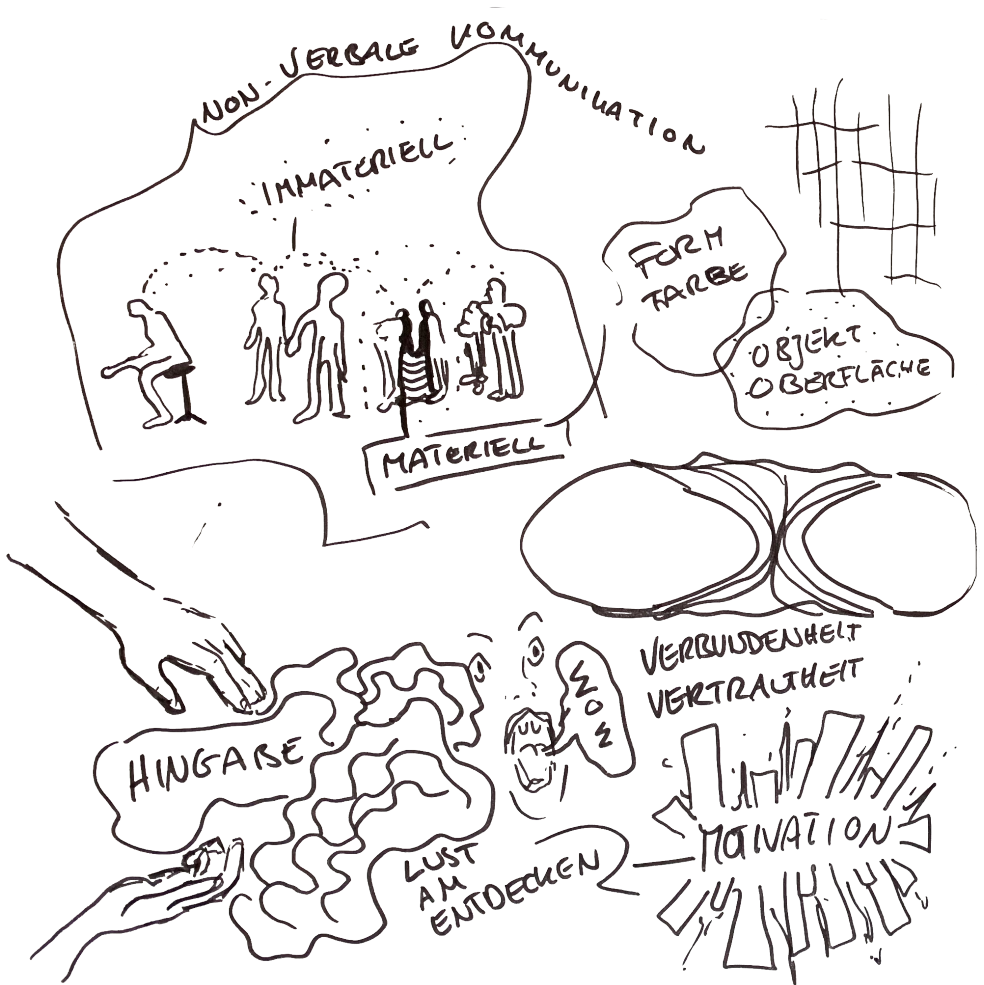
Despite local distance interactive online rooms allow sharing a space. In times of the pandemic we have increasingly entered the virtual spaces as independent places with our bodily reality. Our lives are infused with technology – digital tools as well as digital spaces have been adapted into our behaviors. The complex hybrid lifestyle is enduring and will be even more complex. How do we want to live with these hybrid devices and to what extent do we want to integrate them into our interpersonal relations?

The project *Soft Motion* focuses on the intimate relationship between body, material and movement. The materialization of transmit motion on haptic, auditory and visual level is experimentally investigated.

Soft sensors are integrated in the costumes and connected to sound response. This aims to allow the interaction of the body with the material in a very sensual way. Immaterial connection can be built by creating similarities on auditory and visual level. The interactive textile pieces shape the bodies into living body sculptures. Adding body movement and a thereby triggered sound, new kinds of spaces can evolve.

This performative and experimental approach questions the common use of hybrid interfaces and bodily communication by constructing and playing with textile interfaces. Merging the immaterial and material aspects of the interaction body, material, space and sound form a new complex materiality.

On the one hand it enables a different and new individual body experience. On the other hand these bodies combined lead to a new dimension of shared experience and interaction. How will these bodies interact? Even without material connection, can there be any connectedness? Will there be a different body language stimulated by the material and sound response surrounding the body?





Inspiration and Background

Utopian Materiality

Working with Utopian bodies in the context of fashion on theoretical and practical level led to the idea of utopian materiality.

The concept of utopian materiality is an anti-thesis in itself, since it describes a state in which an immaterial materiality prevails in. Through an object, body, space or another time, a utopian moment can be fleetingly experienced and become tangible. The simultaneously existing paradox of material and immaterial and an interplay of all factors allows a dissolution of the separate dimensions and combines them into something new.

Immaterial objects such as fantasy, dreams and identity meet real, tangible, material bodies. In the construction of dynamic bodies a transformation in form of blurring these opposites and a transgression of body boundaries takes place. The merging of object and subject, animate and inanimate, virtual and real, future and past, outside and inside – they form the hybrid character of the new.

Fashion embodies these contradictions and combines them into an image in a social and material context. Materials are inseparable from their interpretation in our material culture. Through a re-arrangement and a deconstructivistic approach, associations are detached or broken and a space for the new is opened up.

Movement supports the blurring of the visible boundaries of material, body and space. Material manipulation and construction help to create this effect through the colour and texture of the material - folds, patterns and lines serve as transmission of movement and enhance the play of kinaesthesia. In addition, the absence and disappearance of a body, through a negative space, identity loss and displacement or a mirror image, can create an utopian moment and be relevant in the design of utopian fashion bodies.

Hybrid interfaces and smart textiles are one approach for working with utopian materiality since they merges the immaterial data and the actual tangible material.



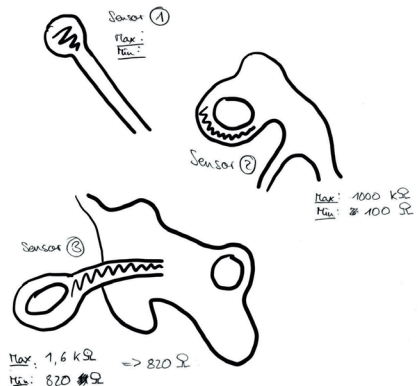
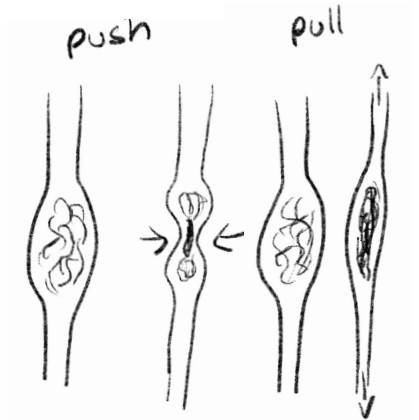
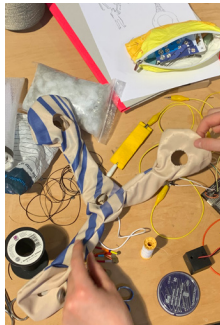
„LucyandBart“, 2008, Lucy McRae, Bart Hess

Communicating Bodies

In the context of the project Communicating Bodies different workshops helped to explore bodily communication and working with soft interactive technologies.

In a group of three a first prototype was developed made with conductive wool – functioning as a push or pull sensor and then connected to a sound response. The very thin steel fibres are mixed with wool fibres and either used as stuffing or spun into a yarn. The conductive material is connected in a circuit and once the fibres are more compressed through pulling or pushing more power can run through. With the help of an Arduino this change can be measured and the incoming data is transformed into a sound-output with the program PureData.

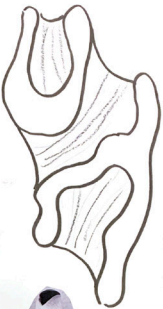
A first soft aesthetic was developed by using organic shapes and jersey. The idea was to create an object that allows people to interact with each other in many different ways. But the first prototype showed that there were too many options and the preference was rather to interact with the object on your own because it felt very intimate, soft and comforting.

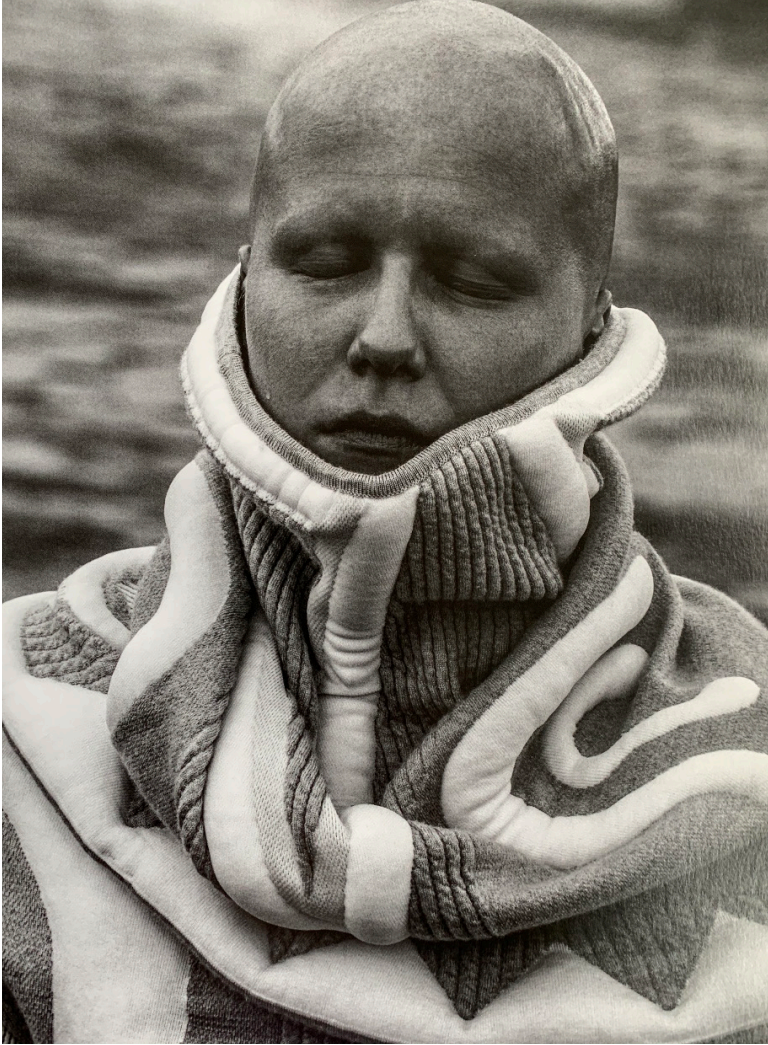




Body and Material

Another material approach was the translation of the picture from Issey Miyakes APOC garment into a textile piece and a self experiment on the body. The image gives a soft and intimate impression of the connection between the person and the material. By trying to move and feel in the textile piece interesting shapes emerged.







Research and Design Development

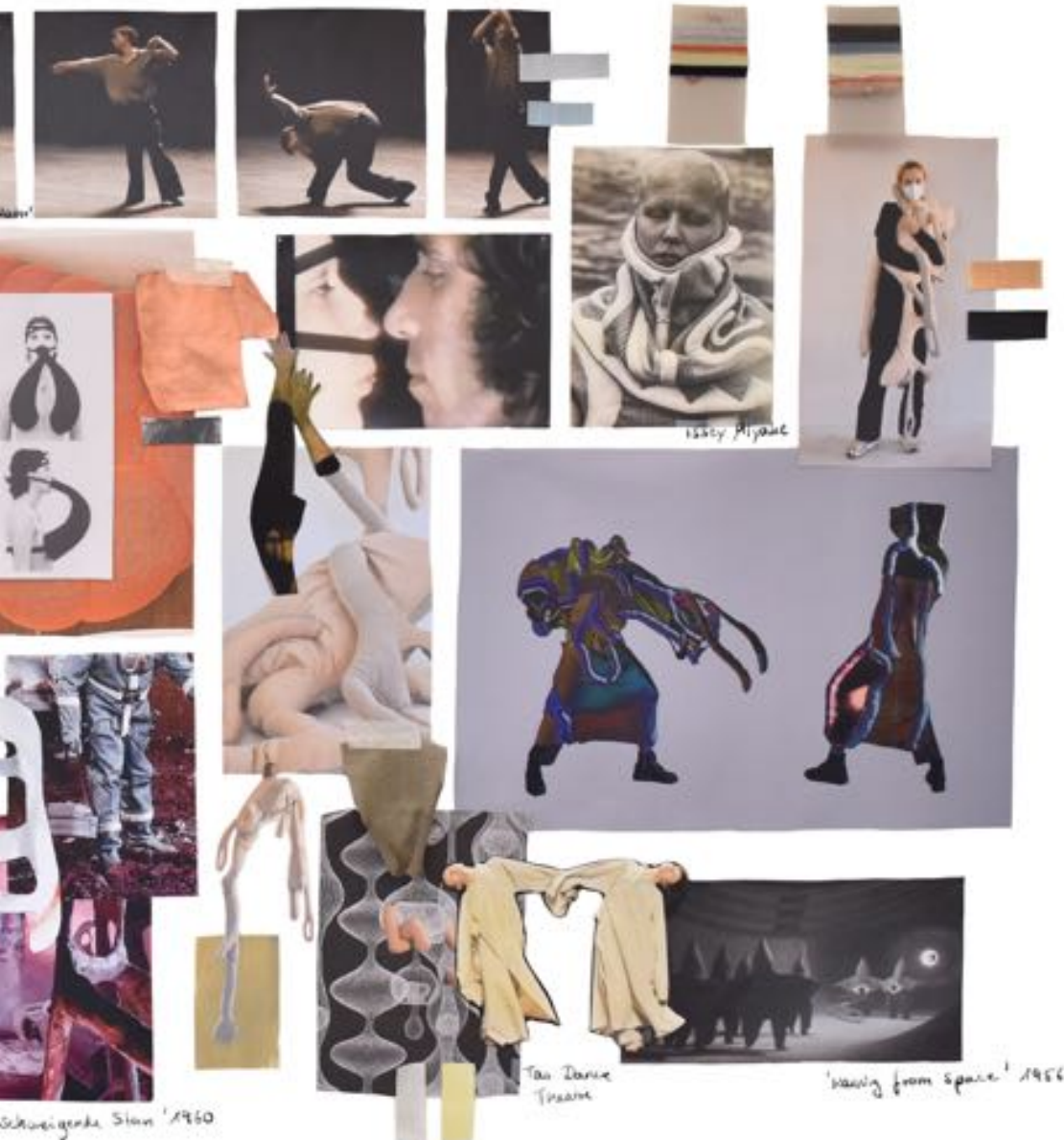
Experimental study on the intimate relationship between body, movement and material

whether there is a connection formed and to what extend do they interact?

By bringing all the primary and secondary research together a colour palette and a visual language was developed. In the context of the research question the design or especially form finding process results from three different approaches: feeling in the garments and how you will move in it, finding potential spots for the sensors and exploring a new visual language and aesthetic for smart textiles. It was a ping-pong between working aesthetically and functionally – integrating the right tensions in order to make the sensors work. A connection on a material and visual level should be established through similarities in design elements such as patterns or shapes.

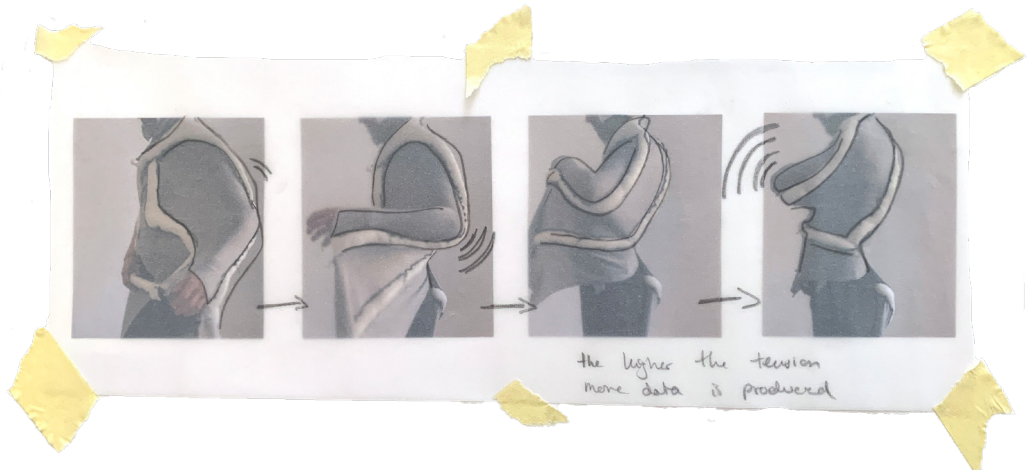
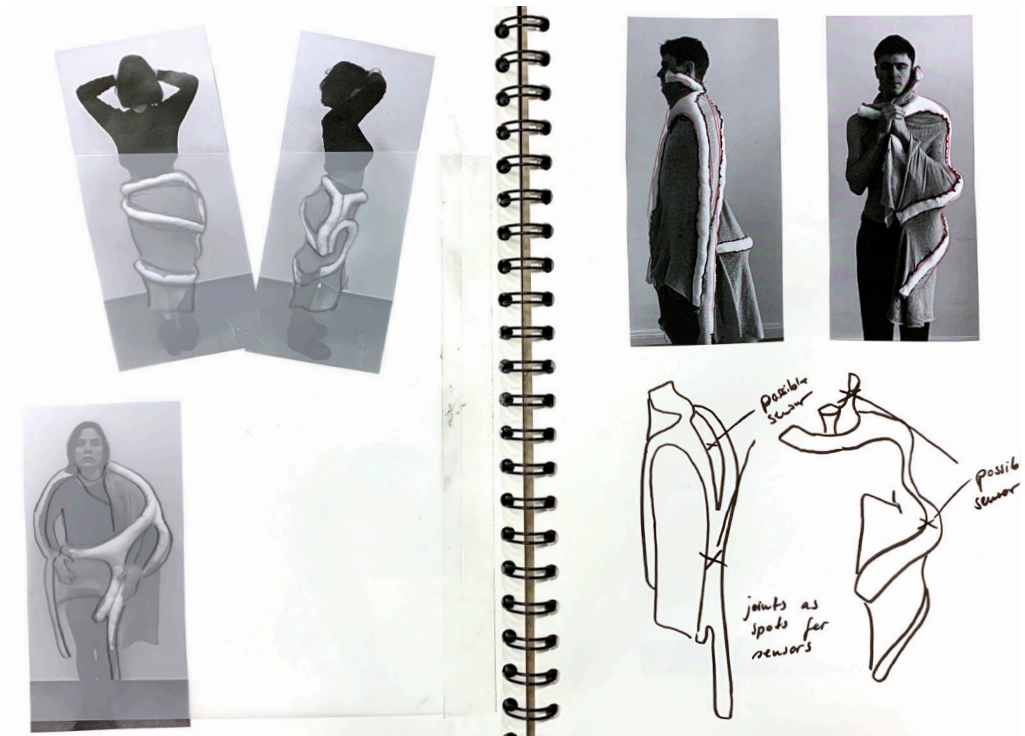
Since the garments are connected to a sound response it is important to already think about the sonic aesthetic during the design process. Sound can be used as an extension of the haptic and create a more complex multisensorial materiality. One goal of the project was to achieve a soft experience material wise, movement wise and how the wearer feels and interacts. Sounds that are not so quickly linked with associations appear more otherworldly.













By draping tubes and jersey surfaces on and around the body and trying to move in the constructions forms could be explored and further developed through drawings.





The first look was developed through draping on the moving body and connecting surfaces inbetween the tubes to find potential sensor spots. The patterns of the knit are created on a single bed brother KH-910 – one is knitted with a digital pattern connected to AYAB. The final prototype has five integrated sensors in the upper body and every sensor was very sensitive to movement. .





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The second look is composed of pieces from the domestic knit machine and Jacquard knits and tubes from the stoll machine. Again five sensors are located on the upper body and the final prototype showed that connected to sound all sensors were working and made the wearer move in a soft way.

Repurposing yarn waste

Since throughout the project the element of stuffed tubes became very important the Jacquard technique allowed a very elegant way of having stuffed tubes in a surface. To make the look more interesting the technical aesthetic is combined with domestic knit.

Another approach for this look was to use yarn waste which was produced during the knit process. On the one hand it is a sustainable approach to repurpose your own waste. On the other hand the yarn chopped in very small bits and mixed with the wool created an interesting colour and material mix. By using monofilament little windows in the knit show the inside of the stuffed tubes and make it more complex.



chopped yarn waste



mixed with wool



stuffed in knitted tubes







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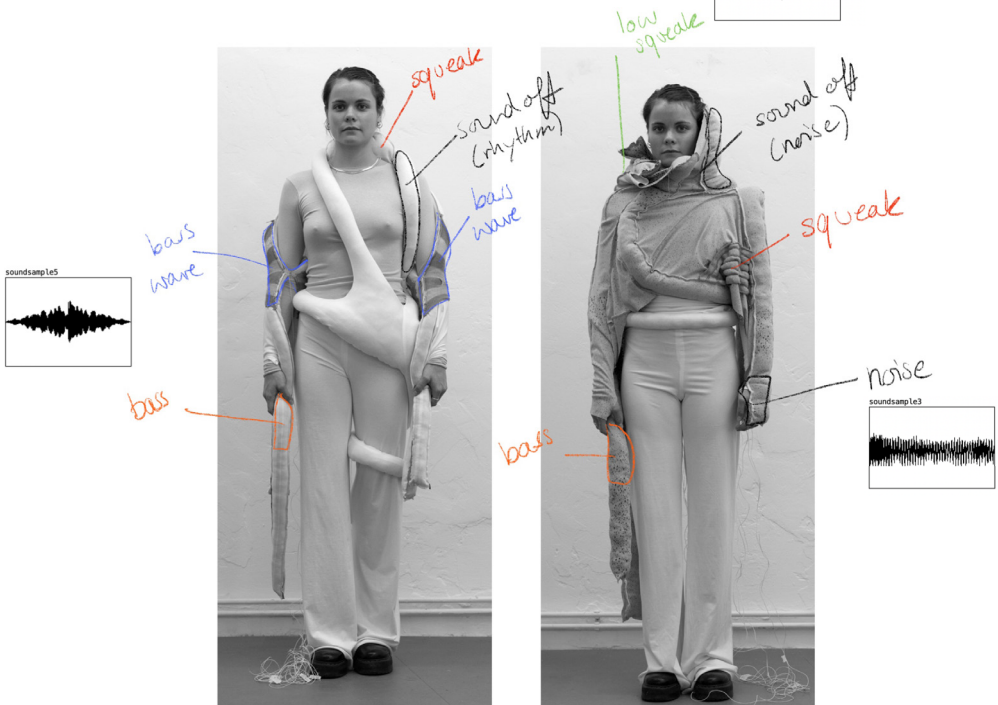
Sound Concept

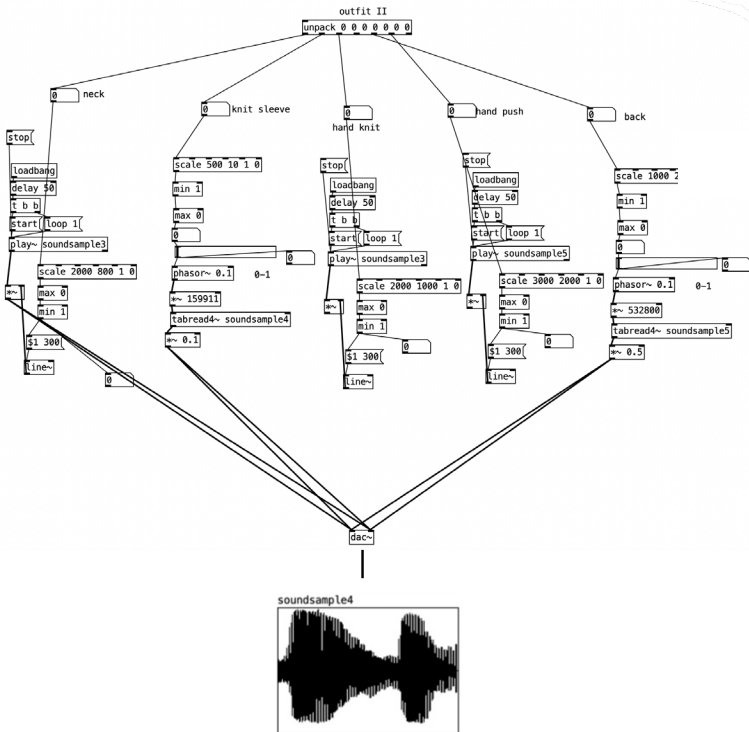
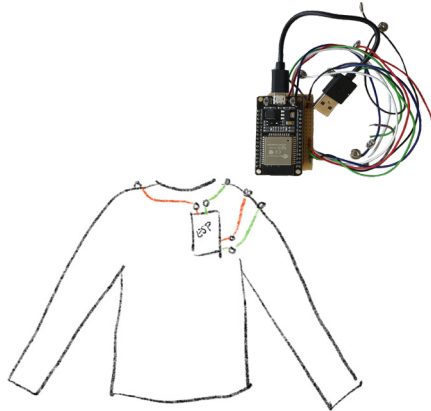
The integrated sensors in the garments need to be connected and programmed. For having a wider range of motion it is good to have a wireless connection – an ESP (mini-controller) sends the incoming data via a router to the computer. A longsleeve underneath the knit helps to protect the skin from possible small current stroke. A pocket for the ESP and battery brings the hardware close to the body so the weight and size doesn't bother too much.

The measured data range is transformed and programmed with PureData into a digital sound-output. Collected soundsamples like a bass-wave or a noise are either changed in volume or frequency and have therefore a soft response to the movement.

The choice of the sonic aesthetic complementing the whole materiality is based on creating a spacy, undefined and otherworldly effect. On the one hand the sounds must be interesting to explore individually for the wearers. But as well as exciting for those who perceive those people interacting with the material itself and with the other person.

Each look has five sensors in the upper body on similar locations. To try to build a connection between the two bodies and provoke a certain interaction – same sounds are placed on different sensor spots or different sounds on the same spots.







Final Experiment and Perspective

In the context of the research question the final experiment dealt with two bodies coming together in the sensoric garments – documented and analyzed how they are interacting with the material on a individual level and then with eachother. In this case they were non-performers given some small introduction and instructions. They were told to feel into the garment and they knew where the sensors are and what sound each sensor creates.

First all ten sensors of the two bodies were active and connected to sounds. This was too overwhelming and at the same time too unspecific that you would not understand which sound is coming from where. That made it hard for the wearers to have first of all a sensual and intimate experience with the textile piece and for me to adjust the incoming data.

We reduced it to three sensors each look and different sounds for the different bodies. After it was easier to explore and understand this sensoric experience another instruction was to try to pay more attention to the other person. They started to copy movements and moved slower to perceive better what the other person was doing.

To conclude both of them moved in a very soft an sensual way as I hoped to achieve. When they were paying more attention to one another it seemed like they shared an intimate space by

sharing this experience. They told me that it really felt like second skin and opened up their imagination of adding a sound level to all your movements even in daily life.

The project Soft Motion was based on a experimental study on the intimate relationship of body, movement and material. In my opinion it is still a work in progress which can be seen as a tool to develop in different kinds of contexts and bodies. It is very adaptable since you could program it with different sounds or even other digital outputs such as light or vibration.

In this case two friends came together but it would be very interesting to see how complete strangers interact with eachother. Another approach is to work with a performance artist since they have a different understanding of movement, body expressions and feeling. In addition a sound artists expertise would make this sensoric experience even more complex and rich.

