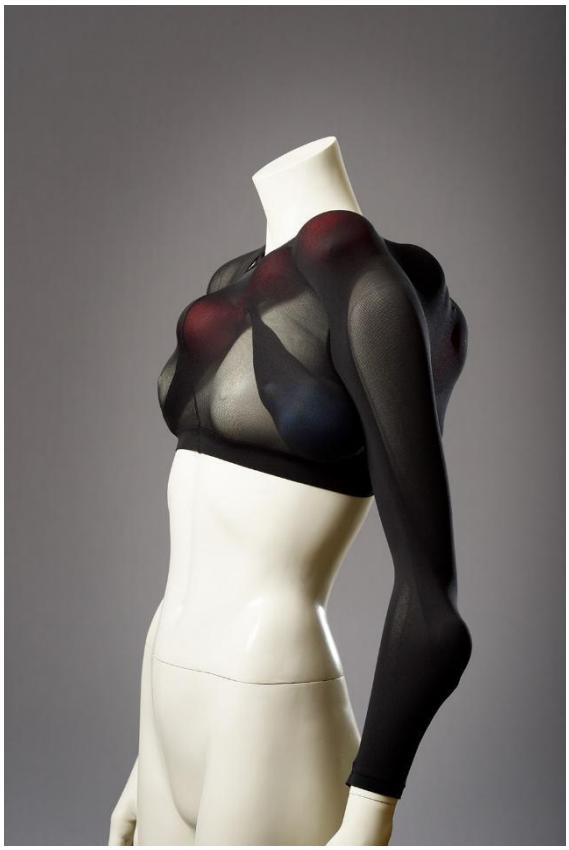
Air Tight: Also Known as UnderAir

Karin Niemantsverdriet, Department of Industrial Design, TU Eindhoven
Iva Resetar, Design Research Lab, UdK Berlin

What if you were wearing your climate on your skin? AirTight is a wearable climate prototype, acting in the space between skin and clothes through interconnected chambers of pressurized air. Warm and cold air circulates through the pneumatic vessels, resulting in surprising bodily sensations and appearances. Sometimes, a burst of fresh air makes a breeze on your skin. At other times, an unexpected pressure accumulates behind your back, and someone needs to rub off for you.



AirTight: a personal wearable climate system

We foresee a future where the outside world is less and less habitable due to the changes in the climate. Instead of relying on the steady, homogenous environment of the inside, or the unforeseeable conditions of the outside, you will need to carry your individual climate close to your skin. Within this not-too-unrealistic future scenario, we started thinking about the various social, temporal and physiological aspects of the climate, and how these might change if the climate would become an individual experience on the scale of the body. Would we still be surprised by a sudden shiver or a flush of the sunlight? Would we miss the sensation of the time passing in daily and seasonal rhythms? And what would happen to the weather as our favourite topic for small-talk?

We created a series of small design explorations - including a *climate timer* to interact with temporal changes and routines, a *sauna spoon* for hedonistic experiences with more extreme climates, and artificial goose bumps to communicate feelings of discomfort to the outside and to comfort others. These explorations allowed us to reflect upon issues like *control vs. surrender*, *individual vs. shared* and *artificial* vs. *natural,* which were important to get a glimpse of a likely future and develop a shared understanding of human comfort as an individual and collective phenomenon.

However, we decided to create a concept that embodied our imagined scenarios, rather than suggesting or displaying possible implications of the future climate. By presenting the prototype to the audience, we imagined to open up a discussion and explore the consequences *together* with participants.

Envisioning, making, and reflecting during our exploration of design concepts around new ways to emphasize social, temporal and physiological aspects of climate.

Therefore, we continued sketching different embodiments of such personal climate – ranging from autonomous robots and *weather bugs* that can crawl on the skin, to full body suits representing future underwear. In the process of making, the most intriguing task was to localize the climate on the body and specify the intentions of the provided comfort. The resulting concept AirTight is a set of inflatable tubes that can be worn underneath one's clothing. It consist of two separate pneumatic vessels – one for the cold and another for the hot air – that run over the skin of the person wearing it. The wearer can control the system up to some extent, and, although the general comfort can be ensured, the separation of cold and warm air allows for surprising sensations. The vessels can act independently ('breathe') by circulating air around the body and occasionally accumulate air or release it on their own initiative. The wearer can interact with the tubes and deflate air volumes by pressing and rubbing the skin. While AirTight in its current shape does not include the dynamics of the air movement, it communicates the possible deformations and the intimate character of the climate close to the body.

First explorations: sauna spoon, goose bumps and climate timer

As a research artefact, AirTight is meant as a discussion piece. It raises questions around issue of autonomy and control, such as to what extent could the technological systems behave autonomously? And what if this behaviour would lead to awkward sensations? AirTight also brings up the discussion of intimacy with the technology: how close to the body would we let it become? And how visible can the intimate feeling of comfort or discomfort get? Lastly, AirTight alters the shape of the body and in this way challenges the dominant aesthetics in contemporary fashion.

We found that for an object to form a successful discussion piece, it is important to balance the clarity and specificity of the concept with the openness of the possible scenarios. The audience needs to be guided through the narrative of the future but not steered towards the assessment of a solution. Projecting the consequences mutually seems to be a much more fruitful approach. After the artefact was presented in the exhibition, we concluded that AirTight in these terms functioned much better than, for example, our three initial design explorations.

Exploring the sensation of cold elements moving on the skin, using cut-up tights and cold marbles.

Looking back at the workshop, we can clearly distinguish some benefits of 'making' in our process. First of all, making enables one to visualize and concretize ideas, which is especially helpful in interdisciplinary teams. The physical embodiments form an alternative language; they present a way to demonstrate a concept without relying on the domain-specific jargon and therefore greatly

support communication and help align thoughts. Secondly, when being asked to give an embodiment to abstract notions, decisions have to be made. This does not only expose the open-ends and conflicting thoughts but also makes qualities and weak points of the concept more accessible. No matter how rudimentary the physical shape is, it allows for the concept to be experienced rather than just envisioned. Altogether, this resulted in quick iterations and decision-making that were indispensable in the short time frame of this workshop.