

THE INTERFACE AT THE SKIN

If success in communication was once the art of reaching across the intervening bodies to touch another's spirit, in the age of electronic media it has become the art of reaching across the intervening spirits to touch another's body. Not the ghost in the machine, but the body in the medium is the central dilemma of modern communications. (Peters 1999:224-5)

At 14:55 on December 21st 2007 my two mobile phones beeped at the same time. I immediately rushed to read the message that had caused the beeping. Since both of my phones alerted me to an incoming message, I knew it could only be from my friend in Singapore who was due to give birth to a son that day. As I knew she would MMS both of my phones to make sure I got the message immediately, the double beeping worked like a personal ringtone, only mediated through several devices. It felt like a poke, and it even had the same effect: I jumped the chair in excitement. On one of the phones' display the message popped up and there he was, one hour old, squinting his eyes towards the lens of my friend's mobile phone camera, and looking slightly annoyed with the sudden change in climate. It was nothing like being there in person but it was the closest I could get, and Earth actually did seem to shrink quite a bit as the display in my hand evidenced the existence of a very new human being who had come into this world just one hour ago, 6,500 miles away.

110 years prior to this incident, my grandmother was born. She spent most of her life working hard on my grandparents' small farm, lived to be almost 100 years old, and I'm not sure she ever heard about the mobile phone even though it did exist in 1997 when she died. Her life almost embodies the rapid development of technology, but even though the history of (digital) technology could probably be told from the viewpoint of her life, that is not the reason why I mention her. I mention her because she once told me this little story about an experience she had when she was in her forties:

It was spring, maybe summer, and she was working alone in the field. She had been bending over for a while in order to work on something on the ground when all of a sudden, and for no apparent reason, the hairs on her arms rose. At the same time – or at least it felt like it was at the same time – she just knew that her mother was no longer alive. She explained to me how she got up slowly because her back was stiff from working, walked home, made herself a cup of coffee and prepared herself for the news, which – as she expected – arrived not long after she got home from the field. It appears that she got the feeling of the death as it actually happened, a couple of kilometers away.

These stories obviously span major emotional issues like life and death, past and present, but on a less dramatic level they are both tales about personal and emotional communication happening through some kind of medium – be it a modern technological one or an inexplicable communication happening through ‘the ether’. Whether my beloved grandmother was psychic, had a vivid imagination, or maybe actually had an invisible connection to other people is not super interesting in this context. What is interesting, however, is the similarity between the two stories; a poke or a touch that – although of an immaterial nature – immediately makes the receiver realise what is going on.

Agenda

In light of my two personal anecdotes above, I will in this essay move close to the body and the skin by discussing the idea of telepathy as it reoccurs as a ‘topos’¹ in technologies and interfaces that strive to be as close to us as they possibly can. The *Skin Probe Project*, two experimental dress-prototypes by Philips Design, will serve as my primary analytical artefacts as I aim to investigate how and with which historically prevailing communication dreams this kind of embodied technology is presented to the wondering public. Sensors in the two dresses read and emulate the body by measuring its data on the skin (e.g. pulse and amount of sweat) and displaying the results on the fabric, thus using the dress as a second skin serving as an interface to the body’s ‘raw’ flesh. I will argue that the *Skin Probe* dresses gained attention on both blogs and classic news media because they tap into an old dream about being intimately connected to others – brain-to-brain or body-to-body – and that this dream, or topos, is to be found in many other (also early) communications technologies. The dresses are somehow a fusion of my mobile phone and my grandmother’s psychic sensibility as they express an ability to sense intimate feelings and communicate them digitally while still bypassing the sign-system. Ironically, this sign-system bypass happens by producing a dress that gives access to the ‘real’ and unmediated communication of the body, and all the while the staging is highly dependant on the way the dresses are visually stunning, thus being signs in themselves: marketing stunts from Philips, aiming to signify a highly innovative and remarkable company.

¹ Topos is a term commonly used by media archaeologist Erkki Huhtamo and it denotes the concept of a theme resurfacing through time, making the current resurfacing a single instance of a general theme. Huhtamo has analysed this concept several times, thus aiming at a deeper historical understanding of concepts like interactivity (Huhtamo 1999) and arcade gaming (Huhtamo 2005). See also Huhtamo’s article in this volume.

Accordingly, the goal of this essay is to argue that the viral marketing of the dresses relies on a reinterpretation of what de Vries (using the mobile phone as an example) calls “ideal communication,” even though Philips Design may not have consciously remediated the historical precedents. The dresses are one example of how current technologies and their interfaces seem to be built in light of recurring dreams, and that even if communication channels and media change, the agenda for communication doesn’t necessarily change as well. The dresses may use highly advanced technology and they may be visually stunning, but they are not conceptually novel as they are instances of a telepathy topos.

The following essay will account for the history and concept of ‘ideal communication’ in general and telepathic communication in particular, in order to build a framework for understanding the *Skin Probe* dresses as more than a technological novelty. I will investigate how sensor-based wearable computing, as seen in *Skin Probes*, is the newest instance of a technological development implicitly or explicitly aiming at manifesting two parameters of communication especially: immediacy and instantaneity. Further, I will argue that not only can telepathy serve as an eye-opener into what these communications technologies aim for, but also that the differences between the closely related terms telepathy and mind-reading can serve as a powerful critique of today’s dominant technological paradigm.

The dream of ideal communication

The classic communication model by Shannon & Weaver (1947) describes communication as transmission; an idea is transferred from sender to receiver in a process where the idea is transferred into language by the sender and then again transferred into an idea in the receiver’s head. During this process, the idea is affected by noise in at least three places: from idea in the sender’s head into language; between the sender and receiver; and from language into idea in the receiver’s head. This model has mothered a long range of transmission communication models all focusing primarily on the noise aspect.

Where Shannon & Weaver saw language as the channel through which messages are transmitted, many theories about how communication takes place through media use the transmission model to describe how different media add different kinds of noise to messages transmitted, and to describe how (and why) some media are better than others at getting messages through.

Some talk about bandwidth – the amount of realistic impacts available to the senses: the more bandwidth, the better the communication possibilities. Depending on the medium (i.e. the coding of the message) there is a greater or lesser chance that what you think you communicate is also what other people think you say.

As most readers probably know, the transmission models of communication have a nice, clean way of looking at communication through media, but this model is also contested ground. It is highly questionable if the foundation of the argument (that there is a noise-free message in the first place) holds water and, as Meyrowitz (Meyrowitz 1980) points out, this view on the relationship between communication and the medium is quite reductive: When any medium is understood as a channel (a “conveyor belt” (Meyrowitz 1980:7)) through which a message travels from sender to receiver, communication is reduced to being a question of transmitting information and media is reduced to being noise-adding devices. The point made by Meyrowitz is that there are inherent problems with any channel as it always adds noise to the message while the message ‘travels through’ it and this is why it is equally important (and maybe even more rewarding) to study the structural and environmental properties and implications of media.²

Since the transmission model of communication – the channel metaphor – is the metaphor on which the artefacts presented later in this paper are based, I will be taking this as my starting point. Interestingly, as we will see shortly, the more nuanced ways of understanding communication (through media) are rarely noticeable in commercially conceived projects – maybe because the dream of the existence of a message core is alluring, as it promises that we humans actually know exactly what we want and what we wish for. And if we actually know what we want, it makes perfect sense to understand communication as something that can be transmitted to someone else, and it makes perfect sense to hope for a medium that will enable a noise-free transfer of our needs, thoughts and wishes to other people.

Accordingly, the transmission models of communication implicitly operate with a belief in immediacy: that it is possible for a medium to make ‘clean communication’ happen. By addressing the issues of noise and bandwidth it is implied that there is such a thing as noise-free communication, even if it is only theoretical: a ‘true’ message devoid from noise; a core content that is transferable (at least in theory). This also means that

² Further, as people subscribing to the poststructuralist way of understanding communication point out, it can be argued if there is such a thing as a message in the first place, as it will always be part of a much larger network of language and culture. The message is created in and through language itself.

there is a possibility of a medium whose channel does not add noise; which, by inference, means that the immediacy of communication, and thus the immediacy of the medium, is important. I will return to this argument shortly, but first we need to understand the dismal side to this way of understanding communication.

Bridging communication chasms

In his book “Speaking into the air”, Peters defines communication as an inherently contradictory term, since it is always both a bridge and a chasm: the bridge makes contact possible, but it never actually removes the distance between the brinks. According to Peters, this contradiction drives a never resolved urge for finding a way to communicate ‘ideally’ – that is with the least possible (preferably none) gap between the brinks. Or, as de Vries describes it when he voices reservations about the subjectivity embedded in the word, ‘ideal’:

[...] the concept of ‘ideal’ is of course problematic, in the sense that its interpretation is an exceedingly personal matter [...] ‘ideal communication’ will be referred to [...] as perpetual contact, the fulfilment of ‘sharing one’s mind with another’; in other words, as ubiquitous and pure communication without misunderstanding. (de Vries 2005:1 in print)

Simultaneously, Peters argues that almost all debate about communication can be seen in the light of how technology impacts people’s understanding of how communication takes place. Technology both makes new kinds of connections (or bridges) possible but has also been inserted into the discourse on – and thus understanding of – communication as a phenomenon:

‘Communication’ is a registry of modern longings. The term evokes a utopia where nothing is misunderstood, hearts are open, and expression is uninhibited [...] How did it become possible to say that a man and a woman ‘are tuned to different frequencies’? (de Vries 2005:2)

Not only has technology opened up a long line of possible communication channels, but these channels have in return greatly influenced our way of thinking about communications technology. Technology is in other words a big part of the communication discourse. To paraphrase Manovich's term *interface culture*, which highlights how the interface is also a cultural phenomenon, technology is not only a communication tool but also a cultural and discursive agent of, or frame for, communication. “We connected really well”, a friend recently commented when she had been on a date, thus implying that they had had a good rapport. There is something

inherently mechanical in this metaphor; in my inner eye I saw a woman establishing a connection with wires at an old-fashioned phone central.

According to Peters, communication paradigms surfaced as an important area of research with the rise of telecommunication technologies and electricity as they made (especially verbal) communication possible, independent of place. Suddenly communication literally took place ‘in the air’.

Thanks to electricity, communication could now take place regardless of impediments such as distance or embodiment. The term conjured up a long tradition of dreams about angelic messengers and communication between separated lovers. [...] (Peters 1999:5)

As Peters argues, the very thought of direct connections between people – brain-to-brain or heart-to-heart communication – was not new, it just resurfaced due to the sudden appearance of a technology that seemed to make direct communication possible, or at least within reach. Or, to put it in a less techno-deterministic way, finally someone invented a technology that seemed to make the much desired smooth communication possible. Technologies like the telegraph and electricity were seen as obvious metaphors for bridging the gap between what you think you communicate and what other people think you say. If you could transmit sound without wires, why shouldn’t you be able to transmit thoughts the same way? And maybe thoughts already existed “in the air” even though humans were not aware of it because the technology that would enable this had not yet been discovered or invented? Even in this perspective, however, there were still problems to overcome, but they seemed easier as they appeared to be of a technological and not an interpersonal kind. As long as problems could be solved by inventing a suitable technology, all hope was not yet out:

Interpersonal relations gradually became redescribed in the technical terms of transmission at a distance – making contact, tuning in or out, being on the same wave-length, getting good or bad vibes, or “Earth to Herbert, come in please!” Communication in this sense makes problems of relationships into problems of proper tuning or noise reduction. (Peters 1999:5)

Thought was not a sign expressed by a body but, as one psychical enthusiast [(James Coates, *Seeing the invisible*, chap 8)] put it, “a dynamic force or an X-form of energy.” The problem of ‘communication,’ in this view, was one not of love or justice, but of proper tuning or channeling. (Peters 1999:104)

In other words: good communication became a matter of possessing a good ‘tuner’ both literally (with a physical antenna and good hardware) and figuratively (with good social skills). Technology used to only be able to help us with the literal part of tuning, whereas social tuning was an individual matter that, when taken to the extreme, used to involve

some kind of psychic capability - as in the phenomenon of telepathy or mind-reading. As I will argue later in this paper, technology is often still understood as something that can help us in both areas, and even in the social realm the dream of flawless or ideal communication continues to be influenced by advances in technology. Similarly, as I will also argue later, the advances in technology seem to be still influenced by the dream of flawless communication – a concept that had its heyday in the late 19th century, where the dream of immediate and instantaneous communication received a boost and where the term telepathy was coined.

Telepathy

Telepathy was coined in the late 19th century as electricity and radio waves were invented and became widespread.³ The concept of thought transference was not unknown, but with the advent of electricity it suddenly became clear that transfer of thoughts between people was maybe a physical phenomenon and not a matter of witchcraft. Since radio waves could travel invisibly through the air, maybe thoughts also travelled through the air, even though it was impossible to see it actually happen. Nowadays, the mere thought of telepathy or thought transference awakes nothing but laughter in most people, and that may also have been the case back then. However, as Luckhurst points out (Luckhurst 2002:78), it was a time where many different scientific genres worked with the notion of the brain being able to do more than what people were able to grasp. Thurschwell (2001) lists Freud as another example (albeit Freud is now seen as being in a different category) of how investigations into the brain's ability to communicate on a subliminal level took place, thus changing people's ideas of the connections between brain and body. The body was gradually becoming understood as a container of information and the self was understood as layers of supra- and superliminal consciousness – Freud's version of the subliminal consciousness being one way of understanding the invisible acts of the brain; mind-reading being another:

According to F.W.H. Myers (1843-1901), automatic writing, table-rapping, hallucinations, clairvoyance and dreams [were] all attempts by the subliminal self to deliver information to the supraliminal self [...] the human subject, in its combination of psychic and bodily automatism and symptoms, is a relay station for information [...] both [Myers and Freud] participate in a version of a late nineteenth-century hermeneutic project in which the subject is understood both

³ Thomas Edison invented the light bulb in 1879, and built the first power plant on Manhattan in 1882 (one of the first larger-scale power plants in the world). The power plants made experiments with, and theory about, electromagnetic waves possible. The possibility of transmitting predetermined sounds through the air via radio waves was demonstrated by the German physicist Hertz in 1886.

as a text to be read and a space through which information flows (Thurschwell 2001:18-19)

Basically, Thurschwell argues, a large number of researchers were investigating the invisible properties of the world (including several aspects concerned with the connections between brain and body) from so many points of view that it seemed almost a matter of repression to suggest that not everything had invisible properties and layers.

Not only was the brain's way of functioning up for debate, it was also debated because more established and reputable kinds of research (e.g. medical and natural science) were working from an assumption that everything had invisible properties, which technology was just about to prove the existence of. In the late 19th century, research into invisible properties was an 'inter-phenomenon' – everyone was researching the potential invisible properties of everything and this happened across all research categories (Luckhurst 2002:79). Pasteur's germ theory, for instance, was verified in the 1890s. We now know that the theory about 'invisible' germs holds true and that germs are actually causing a lot of trouble even though we are unable to sense them, but in the late 19th century the transmission of invisible germs seemed just as (im)plausible as the invisible transmission of thoughts (Luckhurst 2002:78). Thus, in the late 19th century people were gradually becoming aware of the invisible properties of several phenomena, and the leap from sounds consisting of waves (which can be verified by tuning forks) to brain activity also resulting in 'waves' in the brain did not seem that big.⁴ The logic was that if brainwaves were actually waves, it should be possible to measure them just like sound can be measured with the help of tuning forks. Following this, the next logical step would be to not only measure them but figure out how to transmit them. Again, the brain's way of functioning was likened to sound and sound waves. As a consequence of this thought, and despite some people attacking the concept of thought transference and calling it dubious, the Society of Psychical Research set up a laboratory in London in order to conduct more rigorous research into the phenomenon of transmitting brainwaves. According to Thurschwell, this is where 'thought transference' was coined as *telepathy* which, Thurschwell further argues, was not at all a new idea – it was just a new way of investigating it:

⁴ In this day and age we believe brain activity to be a result of chemical processes and there is a tendency to believe that all brain activity can not only be measured, but also explained with the help of neuro scans etc. This is probably true, but it is also a sign of the dominating scientific paradigm of our time.

Genealogically linked to the older concept of sympathy and the newer word empathy, telepathy is also related to love – the desire for complete sympathetic union with the mind of another (Thurschwell 2001:14)

The desire for complete sympathetic union with another person's mind is also addressed in the book *When old technologies were new* by Carolyn Marvin (1990), where the connections between early communications technology and the dream of 'ideal communication' are laid out:

Recurring anecdotes about electrically enhanced private conversations were often organized around the telephone, but the most fantastic projections concerned the prospect of eliminating all barriers, even wires, to the distant loved one. This communications topos was worked in endless variations, traced to antiquity, elaborated in a hundred hypothetical futures. The power of new electrical technologies to effect effortless intimacy between friends was perhaps the commonest of all prophetic themes about communication. (Marvin 1990:154)

In her book, Marvin mentions a plethora of examples of how late 19th century technologies were influenced by – and gave rise to – dreams of uncomplicated and immediate interpersonal communication. One of her examples is an idea for a future technology where two people, through mutual transplantation of a small piece of skin from each other's arms, would be able to communicate through the alien skin now being part of one's own body (Marvin 1990:154). A very poetic vision indeed, albeit maybe slightly impractical should one either have many friends or happen to become de-friended with the original owner of the skin.

Slightly more practical is the contemporary mobile phone, which also relies on the desire to always be able to engage in some kind of communication, be it a text message, a phone call or a third possibility. Nokia's corporate slogan almost says it all: "Nokia – Connecting People". As de Vries also points out, the underlying ideology is still that new technology (e.g. the mobile phone) will help us reach and understand each other quicker and better than before (de Vries 2005:10). In reality, we often experience gaps in mobile phone communication, but it is undeniable that the technological development is focused on providing access to a number of instant and 'true' communication possibilities – the latest being video calls and MMS as more 'realistic' versions of voice calls and text messages, respectively. On a more conceptual level, and regardless of the communications technology involved, uncomplicated communication means that transmission noise is as good as eliminated and that a connection is always possible – in other words, flawless and ideal communication is instant and immediate.

Immediateness

As addressed in Bolter and Grusin (2000), the paradigm of immediacy has always been important for new media (or technology as such) and it continues to be a major selling point:

[...] transparent media [...] desire to get past the limits of representation and to achieve the real. They are not striving for the real in any metaphysical sense. Instead, the real is defined in terms of the viewer's experience; it is that which would evoke an immediate (and therefore authentic) emotional response. Transparent digital applications seek to get to the real by bravely denying the fact of mediation [...] (Bolter and Grusin 2000:53)

Thus, the concept of transparent immediacy relies on a(n implicit) belief in a core content – there is something ‘more real’ behind the reality of the representation as it is precisely/exactly a re-presentation and not a presentation. In Bolter and Grusin immediacy is defined as a central aspect of remediation that consists of two equally important concepts: immediacy and hypermediacy. In transmission communication terms, immediacy can be said to be the dream of noise-free communication, whereas hypermediacy is focused on the nature of the noise-adding channel. In representational terms, one could say that transparent immediacy is representation camouflaged as presentation – it is supposed to be *as if* the represented phenomenon is in front of us. Conversely, hypermediacy is presentation only, as it is concerned with the presentational aspects of the medium; about *how* the medium represents. The quest for immediacy has driven many commercial products and research projects in interface design, or HCI community, where the aim has been to remove all doubt and provide absolute certainty about the nature of the core content (e.g. the possibilities in a computer application).

What producers of new media artifacts are selling are experiences of immediacy. They engage in an ongoing struggle to define or redefine immediacy or authenticity of experience in a way that particularly enhances their own products. Often the immediacy of the product is expressed as transparency: you can see through the product to the ostensible reality behind it. (Bolter and Gromala 2003:69-70)

The dream driving the search for immediacy is that we will be able to forget all about intermediary layers (interfaces or noise-adders) and be brought to ‘know for a fact’ instead. Transparent immediacy is desirable as the developers searching for it believe it will erase the perception of the media in order to reach the “immediate (and hence authentic) emotional response” (Bolter and Grusin 2000:53).

The quest for authentic communication is, as both Peters, Luckhurst, Thurschwell, Marvin, and also Bolter & Grusin argue, not unique to digital technology.

Computers in all forms are just the newest examples of how new technologies are not just novel but also part of recurring topoi, to use Huhtamo's term.

As mentioned above, another important topos for digital communication (incl. mobile phones) is concerned with instantaneity: ideal communication is not only precise, it is also instantaneous. As with the telegraph and morse code, the landline phone and voice, the mobile phone and its ability to reach everyone anywhere with either voice or text also promotes novel possibilities for instantaneous communication. In all of these cases, however, the 'core desire' is less about accurate content and more about the here-and-now. As a technology, the telegraph prioritized speed over argumentative accuracy, and Locke (Locke 2002) refers to the text message as also being more concerned with time than content when he refers to how "Japanese children send blank text messages to each other as a way of saying a quick 'hello'" (Locke 2004). Locke also argues that the mobile phone is able to create temporary intimate zones (aka TIZ) that happen as a consequence of the mobile phone's ability to connect people anywhere, unlike the landline phone that is always situated 'permanently' in the same zone.

So two meanings of the word *immediate* are at play when it comes to the relationship between technology and the dream of ideal communication, which it seems like most technologies have been trying to accomplish since electricity came into general use: immediate as in instant, and immediate as in close or near. It appears that both are part of Nokia's corporate slogan "Nokia. Connecting people", and the mobile phone is generally understood (and advertised) as being capable of immediately making people feel less distanced from each other. As with me receiving a picture of my friend's newborn son lying in a bed on the opposite side of the Earth, the mobile phone does actually sometimes make the world seem smaller. It does actually sometimes manage to build a bridge over physical distances as it instantly connects the people at both ends of the mobile phone, be it via voice, text, or pictures. What the mobile phone is not good at, however, is building bridges over the communication chasms present in face-to-face communication. No technology has yet been able to reduce the transmissional noise coined by Shannon & Weaver even though it has been a prevalent topos at least since electricity became common. The development of the mobile phone has pursued the difficulties with remote communication and has tried to find a technical solution to the obvious communicative breakdowns happening when people are not able to see, feel and sense each other. This can be addressed by using telepathy and mind-reading as metaphors since

communication is as much about sensing other people's reactions and feelings as it is about hearing what they say.

Much of this sensing takes place through facial expressions⁵ and body language, but even though being in the same space is better than being apart when it comes to what we can call emotional or telepathic sensing, we are still not in a perfect world when it comes to ideal communication. One of the reasons is that some people are good at putting up a 'stiff upper lip' or a 'stone face', and another of the reasons is that some people are bad at reading others.

Fortunately, technology comes to the rescue again, which I will now dig into by analysing the implicit topoi in the project *Skin Probes* carried out by Philips Research.

Skin Probes

Design Probes is a research initiative undertaken by Philips Research Labs in order to “track trends and developments that may ultimately evolve into mainstream issues that have a significant impact on business.” (Philips 2006) *SKIN:Dresses* (2006) is one of their six projects so far and one of the few that has actually been made into prototypes. The *Skin Probes* project is a way to investigate possible modalities of future social interaction by help of wearable computing; in this case dresses with embedded biometric sensors and LEDs.

The dresses show emotive technology and how the body and the near environment can use pattern and color change to interact and predict the emotional state.

(<http://www.design.philips.com/probes/projects/dresses/index.page>) (acc. April 20)

Skin Probes comprises two dresses that are supposed to “express the emotions and personality of the wearer” (Philips 2006). By engaging in this research project, Philips does not wish to create something that is instantly able to be put on the market. Rather, they aim to investigate (hence the ‘probe’) emerging technologies in order to spot those technologies with potential for making money on a longer term. This is interesting since it means that the designers were allowed to let their imagination loose and invent all kinds of possible scenarios. Regardless of what Philips aims at, the project is interesting for what it implicitly assumes about the ability of (digital) technologies to mediate human signals and human perception. In its search for future possibilities for social interaction, *Skin Probes* thus becomes an example of an interface aiming at connecting the sensorial and

⁵ Hence emoticons in written, digital communication (IM, SMS, email)

perceptual mechanisms of two people in a way where the sign-system is bypassed. This is what I will be looking into in this section.

The dresses

The *Bubelle* (figure 1) dress expresses a blush. It contains two types of biometric sensors: a heart rate sensor and a galvanic skin response sensor. *Bubelle* is meant to monitor your anxiety level by calculating the sensors' measurements and letting the software decide if you should actually be blushing right now. The idea – based on scientific studies on bodily reactions to different kinds of emotions – is that if your heart rate is suddenly high and you sweat a little bit, there is a high probability that you, along with most people, would be blushing. Consequently, the dress blushes for you by lighting up the LEDs contained in the fabric of the dress, if the measured data complies with the data for when people normally blush.



Figure 1: The Philips Skin Probe Bubelle, promotional photo

The *Frisson* (figure 2) dress, or rather, bodysuit, is gooseflesh remediated through LEDs as the bodysuit's visual appearance changes according to the wearer's state of excitement.

The dress has long and very light copper tentacles modelled after the antennae//sing. or plural? of an insect. The end of the tentacles light up when brushed or blown on, and by performing calculations on the sensor's data, the dress thus emulates the way skin 'rises to the occasion' and becomes goose pimpled. It is implied that the moving of the tentacles is likely to be a result of the sensation of another body being close to yours and that this sensation would have caused excitement.



Figure 2: The Philips Skin Probe Frisson, promotional photo

As pointed out by Philips, the idea behind *Skin Probes* is to construct technologies that express the emotions and personality of the wearer. The project is technical (as Philips is basically a company of engineers making hardware) but it is of course based on how the group envisions the potential use of the technology. As Philips further writes in the press material about *Skin Probe*:

The SKIN probe project is part of the program [of Design Probes] and challenges the notion that our lives are automatically better because they are more digital. It looks at more 'analog' phenomena like emotional sensing, exploring technologies that are 'sensitive' rather than 'intelligent'. Two outfits have been developed as

part of SKIN to identify a new way of communicating with those around us by using garments as proxies to convey deep feelings that are difficult to express in words. (Philips 2006)

The concept of (or the idea behind) these *Skin Probes* is that they make visible some of those aspects we have a hard time sensing consciously even when being very close to other people and, as such, the dresses ‘enhance’ social communication. In the current ‘analogue’ world, we may be able to vaguely sense that something is going on in or with our communication partner, but since we do not have certain knowledge it can be tricky to both begin and sustain a fruitful conversation. Accordingly, the aim of the dresses is twofold: to make social interaction more immediate, and to convert potential interactions to highly probable ones. The general idea being that by knowing more about each other – by getting certain knowledge – we will be able to use this knowledge to communicate better and more often. So, allegedly, Philips has set up ways for social interaction to become easier, better, more meaningful and more exciting with the help of algorithms and digital technologies.

Philips’ rhetoric is a study worth its own essay as the company uses a terminology that implies quite a few things about the benefits and detriments of the current interface culture. However, a brief touching on some of the more interesting implications of the above quote is relevant here, as the quote implies a split between mind and body; or between the controlled and ‘cold’ thoughts of the brain and the immediate and ‘warm’ state of the body. The split occurs in dichotomies like “emotional sensing” vs “technologies”; “sensitive” vs “intelligent”; “deep feelings” vs “words”; and finally in “digital” vs “analog”. Like Kraka from the Nordic Sagas, *Skin Probes* miraculously seems to bypass all of these dichotomies by introducing the garment as interface, and thus mending the split between the intelligent mind and the sensitive body. Here, the garment of the dresses is part technology, part organic matter, and whilst it covers the body it also exposes it. With Bolter & Grusin one could say that *Skin Probes* remediates the skin. The dresses are part digital and part analogue, and despite the algorithmic brain of the embedded computer, this computer is almost a part of the body of the wearer through the biometric sensors.

In reality, Philips Research Lab has made a computer out of the wearer’s body as it has relabelled the body into becoming a container of information receiving input and sending output via the interface of the skin. This skin is now to be remediated into an interface or a medium as immediate as it gets/can be?. Even though these dresses are

permeated by hypermediacy (they display technology as fashion) they do not become? any more transparent, as their hybridity between the analogue and the digital enables certain knowledge on the 'deep feelings' of the wearer.

I will return to this aspect shortly but let me first briefly investigate what a project like this is also all about.

Performing Philips

These dresses have a very performative side to them. As is the case with fashion and clothes in general, this performative side includes aspects like the expression of self, the performance of oneself, and the making of a fashion statement (cf. Barnard 2002). When it comes to what the *Skin Probe* dresses perform, they are mostly a spectacular performance of the Philips brand.

The spectacular nature of the project lies in the fact that it catches the eye. Evidently, one of the main purposes of the whole Design Probes research initiative is to create showcases that establish Philips as a trendy, cutting edge company and a cool brand. Apart from probably being a fun, innovative and challenging workplace where spectacular projects are invented, the Design Probes research initiative is also a flagship of Philips and is thus promoting the company as both a cool place to work and a cool brand to buy. The many spectacular projects of the Design Probe program – *Skin Probes* and its sister projects – are likely seeking to attract buyers as well as innovative and creative employees.

With respect to the spectacular performance of Philips, the project proved to be efficient even though only Philips knows if it was also effective: the dresses were widely blogged⁶ and were also mentioned in traditional media. So, viewed as a viral brand-marketing campaign, the project was definitely a success. It did very well in striking the right note of internet spectacle so it is safe to say that the performance of the Philips brand was successful.

The project is spectacular in several other ways and one of them is its visual appearance. Beautiful, stunning and slightly odd dresses photographed advantageously, featuring a slim female model and focusing on the specific features of the dresses (the LEDs and Frisson's pointy appearance). The form factor of the dresses alone would

⁶ On YouTube the official video from Philips Design has been viewed only 532 times although there is a mirror video on another account which has been viewed 13,480 times. The sister project with the most views is Electronic Tattoo with its 238,000 views but that project presentation is clearly designed for video and not still pictures as it features a very erotic (although not pornographic) video where movements are key, as a naked woman's caressing of a naked man causes his skin to 'grow' a tattoo.

possibly have made it to the news, as they lean on the parade dresses of haute couture. On top of the spectacular form of the dresses, they are visually striking due to the embedded lights. It is very likely that the lights made the pictures travel the blogs. LEDs are considered cool and are always a hit – something containing LEDs seems to be worth taking pictures of, as the response to the various projects from Graffiti Research Lab (amongst them *Throwies*⁷) indicates. As technology, LEDs belong to the internet and the computer as they look good in print but are particularly stunning on the computer's backlit screen.

Further, it is hard to imagine the dresses getting worldwide online coverage in 2006 had they been outputting something other than light. Take sound as an example: sounds are a lot more difficult to present online especially if the viewer/listener has to be able to make a connection between the data source and its auditory representation. Sound is temporal, so video would have been needed; video would have meant larger files and since really fast broadband was not as widespread in 2005 (where I have to assume the project was conceived) as it is now, and since YouTube was launched in 2005 and hence not yet ubiquitously present on the web, a video presentation of Skin Probes would have been presented in a very poor video and sound quality. Further, auditory output would have excluded most conventional, printed media from presenting the dresses. Similar arguments are even more valid for any other non-visual output type (vibrations, smell, pressure etc).

All the above to say that the Skin Probe project is of course made for a specific purpose with a specific medium (or transmission channel) in mind. The research initiative is not just about future technologies, even though that ties in nicely with the many earlier attempts at, and dreams of, connecting two minds that I presented previously, but is also about creating breaking news.

Performing communication

The striking visuality aside, the *Skin Probe* dresses are mostly spectacular because they visualize communicative signals most humans almost desperately wish to grasp, but are

⁷ *Throwies* is an interesting case since it was the first open source graffiti project coming out of eyebeam's Graffiti Research Lab and it instantly made GRL famous in the blogosphere. *Throwies* is a simple project, as a throwie is an LED taped together with a battery and a magnet. The battery fuels the LED and the magnet enables it to stick to metallic surfaces. Thus, if you make thousands of throwies, you can 'tag' any metallic surface with lights and consequently transform any metallic surface into a light installation. *Throwies* have since conquered the world, as there have been public performances in almost every large western city. Even I have thrown a throwie in Boston.

often very bad at grasping. The primary spectacular aspect of the dresses lies in their functional properties, where physical signals are remediated and where the remediation promises that there are ‘deep feelings’ to be ‘conveyed’. This psychological bias makes the dresses the newest example of an artefact or a service that promises to make communication, and thus understanding of other people, less complicated.

If I were to be rude and put it very provocatively, these dresses are gadgets designed to satisfy the geeky functionality gadgeteer who falls for easily understandable eye-candy and who is lacking so much social competence, and maybe even social intelligence, that s/he is only able to understand other people when they can be translated into algorithms. It is, however, not so easy to dismiss *Skin Probe* as yet another useless gadget as one might think, because it ties in so nicely with the mind-reading and telepathy topoi that I presented earlier.

Penetrating the sign

As is probably obvious by now, *Skin Probes* in general, and *Bubelle* in particular, is a new occurrence of the telepathy topos embedded in many other communication technologies throughout time. The *Bubelle* dress reacts to internal stimuli as the sensors are turned towards the body, towards the skin, promising some kind of closeness to the mind by being close to the skin. *Bubelle's* touching of the skin promises a touch of the mind, acting as a translating membrane between inner self and outer appearance. The wearer of *Bubelle* may be in her own bubble (bubelle) both figuratively, because she has a mental shell surrounding her (cf Locke 2002), and literally, through the name and form of the dress, but she is not isolated as her surroundings are actually able to access her ‘true’ feelings on the outside of this bubble. In the dominating paradigm of *Bubelle*, physical reactions are taken literally and are, in this case, furthermore assigned predominance.

Even if the dresses are spectacular in their appearance, the most spectacular aspect of the dresses – especially *Bubelle* – is that they do what ‘we’ have been dreaming of for ages. They make visible what our bodies and hence our minds ‘actually’ feel, and they appear to aim at finally closing the communication chasm described by both Peters and de Vries.

[...] all media we have seen so far have one thing in common: they were initially perceived as trying to bridge space and time to such an extent that people would be able to communicate without obstacles and without misunderstanding. Fear of miscommunication and restoration of the natural balance of our extended sense-organs is what drives us to improve existing media. (de Vries, 13)

As de Vries argues, most media have been conceived in light of the fear of miscommunication. The same argument is relevant when technology moves into clothing and other artefacts because these artefacts also seem to fall into the transparency trap: they are close to the body and then close to the mind, and the ‘true self’ of the person. Where the goal so far in many media has most often been to obtain interface transparency (cf. Bolter & Grusin 2000 and Bolter & Gromala 2003), *Skin Probes* also address another kind of transparency: the telepathic transparency where we know what goes on inside the other. The dresses are visually striking examples of a dominant development strand focusing on envisioning technology as something that ultimately has no interface, as the project subscribes to the paradigm of ultimate transparency – hypermediacy is not the conceptual goal here, even though the dresses in themselves do nothing but point at their own mediacy. Conceptually and rhetorically, *Skin Probes* subscribe to the paradigm of the perfect invisible servant responding to our needs even before we are aware of them ourselves. Further, by regarding the skin as a membrane for the mind, *Bubelle* becomes the interface to emotions, feelings, and other traditional mind-reading topics, by reading signals from the skin where the body underneath can, apparently, never lie.

In this respect, the dresses are mind-reading machines; sophisticated lie detectors that promise more nuances than just a true or a false. As is the case with lie detectors, there is still a chance that the interface ‘lies’ because all it does is read data, even though this data stems from a living body. Based on the popular assumption that the brain controls the body’s functions and, more importantly, based on the also popular assumption that while the brain does control the body’s moves, much of this control happens on a subconscious level, *Bubelle* addresses the skin as a way of getting to facts and ‘pure data’ from the ‘inner self’ of the wearer. So even though the body does often react in certain ways according to emotions, *Bubelle* (like a lie detector) still only reads data. This data is then processed through algorithms written in light of the same cultural paradigms in which we interpret the algorithms’ results. It is thus possible to argue that noise is added in two places even though the dresses appear to comprise noise-free communication: first of all, noise is the programmer’s cultural embedment in a culture believing in the primacy of the body’s signals when it comes to finding the ‘truth’, and the second noise is the interpreter’s embedment in the same discourse. However, all *Bubelle* reads is signals; it is the body doing something and these actions need not be reactions to certain feelings.

Literally, the body becomes a data source – a site playing host to a diversity of ‘true’ or ‘false’ feelings that we are now able to distinguish between because of this new technology.

Further, at this point in time, the dream of flawless communication appears to have reached another level as digital technologies now allow for information processing on the body of communicators. By introducing sensors able to read the body's signals, these signals are being highlighted as signs and not only physical processes.

The Skin Probes project takes the symbolic understanding of blushing literally and converts the symbol so that it becomes reality. If a specific combination of data can be read from the wearer's body, it automatically means that the person is experiencing a specific emotion. Affect becomes effect.

To put it in semiotic terms, the *Skin Probe* dresses have an iconic expression but they 'pretend' that the indexical and the symbolic are identical; that the symbolic has been engulfed by the index. The interface is normally thought of as a semiotic relation between sign and data, as something mediating otherwise incomprehensible digital data. In *Skin Probes*, however, the interface seems to have transformed from a semiotic relation between data and expression into a direct translation, where the expression appears to be pure and uncamouflaged data. In this case, the body is seen as a container of information just waiting to be tuned into, in order for the world of interpersonal communication to become a better place. Luckily, Phillips have come to the rescue as they have found a way to extend the skin, thus finally enabling us to penetrate the skin and get access to the raw and unmediated flesh.

As is probably apparent by now, I find this mind-reading aspect, as re-proposed by *Skin Probes* interesting, but also limited. It is limited because it sort of renders the more complicated feelings and desires invisible at best, obsolete at worst. What was interesting about both the principle of telepathy in the late 19th century and my two anecdotes in the beginning of this essay (especially the most recent one with the MMS) was not the receiver's ability to feel exactly what the sender felt or thought. The most interesting part of both telepathy in its broader definition (non-verbal communication of sensations and feelings but not actual thoughts) and my anecdotes was how these messages signified (deep) emotions and how they enabled a non-verbal emotional connection between two people. In the case of the MMS, it was not so much a matter of me feeling exactly what my friend felt as she had just had her baby boy, it was a matter of her conveying a feeling which also evoked a feeling in me, even though it was not at all the same feeling. I was happy and proud of her son, but in a completely different way than she was.

Communication technologies working close to the skin are able to connect bodies – to transfer signals appearing on one body to another body's skin, thus creating a sensation on another person. But unlike what *Skin Probes* strive to do, these connections need not aim to make people aware of each other's thoughts or feelings in order to be interesting. They need not try to pass through the skin in order to get to the core of the person (literally and figuratively). Instead, they – and other communication technologies or applications – could aim to allow for interpretations instead. Allowing for people to interpret the connections, their signals and their signs, so that the interface does not try to penetrate the skin but instead aims to keep the interface *at* the skin, where the sign-system will not be bypassed but will become embodied instead.

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