

Interview with Sabine Seymour

by FoAM

THE EPIDERMIS AS METAPHOR: The Essential Balance of Function and Aesthetics

At a first glance, this interview might seem out of place in a publication on experimental media arts. Sabine primarily discusses mainstream applications of wearable technologies and smart textiles in global industries dealing with safety, sports and fashion. You might wonder - what does any of this have to do with .x-med-a.? For starters, Sabine presented at one of the workshops (soft-wear), but more importantly, she works on the cusp between arts, design and industry, easily crossing from one world to another on a daily basis. From Sabine's experience, it has become clear to us that if we are interested in developing and using active materials in experimental situations,

we should be aware of what technologies are out there, beyond our tiny field. It is important for technological artists to be aware of possible feedback loops between experimentation with technology on the one hand, and technological industries, on the other. Whether the applications are experimental or commercial, political or poetic, fashionable or conceptual, their underlying technologies can be recycled to serve an alternative goal, or to mutate the original goal into something new. An artistic exploration can become a sellable product; an industrial corporation can become a valuable partner in cultural research; a non-profit organization can create commercial spin-offs that can feed some of the more un-fundable ideas. Experimental media often require experimental economies. While we did not delve into the links between the mainstream and the experimental in this interview, the spores of such tangents are there, floating between the lines. For the purpose of a critical recycling of ideas, applications and technologies, we find this interview to be spot on in an .x-med-a. publication. At the same time as providing us with the good-to-know buzzwords and characteristic lingo of the 'creative industries', Sabine is a wealthy source of information on those worlds most of us (as technological artists) usually shy away from...



'...the electric age ushers us into a world in which we live and breathe and listen with the entire epidermis.'

Marshall McLuhan¹

What are 'Fashionable Technologies'?

'Fashionable Technologies' enhance the cognitive characteristics of our epidermis – the surface of our body and the largest human organ². The epidermis, or the skin, is our principle communicator of emotional and physical states.

Our skin has obvious communication abilities. It communicates through blushing, sweating and variations in tension and temperature. These localized variants can be extended through the use of sensor and actuator technologies. The sensors are able to detect signals from the skin and the actuators can in turn produce certain types of visual, sonic or haptic output. Reciprocally, this output can appeal to our physiological senses.

Several projects use the term 'second skin' when referring to the use of high-tech materials or 'enhanced' textiles. One such project is the Smart Second Skin by Jenny Tillotson, who researches the effects of smell on health and wellbeing. The cabling system of the Smart Second Skin dress mimics the body's circulation system to pump scents to the desired points on the body. Scent-Lok is exploring the opposite – camouflaging the human odor of a hunter that could otherwise be detected by the hunted animals. Before being knitted, the process of making Scent-Lok includes applying activated carbon directly to fibers, which enables production of stretchable odour-control garments – like socks, gloves and base layers.

How much of this is just speculation?

The success of wearable computing in fashion, or 'Fashionable Technology', outside of research institutions and academia will depend on how fast it matures and its ability to balance function and aesthetics.

How does this work in practice?

I will give you a few examples.

With her artwork entitled 'Dialectric: Connection' MacCary creates conductive fibers, by weaving lead into 36 amplifier circuits, which illuminate LEDs depending on where you touch the fabric. 'You're basically using your body to short out the circuit to light the LED,' says MacCary³.

Irmard Falkinger Reiter developed a DIY-style 'Enlightened Collection'. It's a fake special edition of the famous German knitting journal Verena. Falkinger Reiter, one of my students at the University of Arts and Industrial Design, explains:

'Even beginners will most easily finish some simple garments, like Bolero Jacket, Cap and Belt. These pieces are available as a kit, providing the customers with any necessary accessories, as bandages, threads and lamps; knitting needles and batteries, and of course, a plausible users manual. Once unpacked, you start with your knitting, do some final sewing stitches, fix the battery-unit for a clasp, and will be surprised of how quickly all of this can be finished.' Irmgard Reiter Falkinger

The fascination with such projects lies in their ability to educate an audience not usually exposed to electronics and to introduce the meaning of 'smart' in a new context. The functionality is not as clearly defined as it would be in a commercial setting, but these projects contribute to making us think about new applications for everyday wearable technologies. Fashion designer Hussein Chalayan is aware

of these technologies and allows them to influence his practice, by deploying new technologies for his textile manufacturing, fiber research and production, pattern designs and cuts. Such advances allow fashion designers the capacity to concentrate on the new functionality, without jeopardizing the beauty of the garments.

'The only new work you can do in fashion is via technology. It lets you create something you couldn't have done in the past.'

Hussein Chalayan

In what contexts can Fashionable Technologies be applied? Can you give us an example?

The story defines the function. The story surrounding a garment – its theme, its meaning – defines the context of use. Using a contextual analysis we can define the degree of computation needed, ranging from non-computational to fully computational. The second point to look at is the balance between function and aesthetic. The story defines the 'amount' of functionality needed and how much focus should be put on expressive design. Those explorations also result in the brand definition and its attributes. By evaluating the story, the function of the project can be evaluated. There are many stories that my students explore in different projects. For example:

'The book-covers in the library are made of smart cloth and are white when the books are taken out of the library. Coming closer and closer to the due date, the book covers first turn yellow, then orange and when the time grows closer to the return date, their color becomes alarmingly red.'

Angela-Maria Holzer & Harald Moser, University of Arts and Industrial Design, Linz, Austria.

'A dress reacts to the stares of a voyeur. It shouts at the surprised voyeur.'

Celine Studer, Hyperwerk, Basel, Switzerland

'When Alicia Framis was living temporarily in Berlin, she was warned not to venture into certain parts of the city, where racist right-wing extremists hang out. Since Framis is dark-skinned, she might be attacked, she was told. The racists often set their dogs on immigrants and others they disliked. Therefore, Framis collaborated with various fashion designers to create a collection of clothes made out of Twaron – a material that is resistant to bullets, flames and dog bites.⁴

This real-life episode defines the work by Framis, and her audience / wearers understand the use of Fashionable Technologies within the context of this particular story. Born out of a particular social context, Alicia Framis' Anti-dog became an art project in the form of a clothing label.

microRevolt is another artistic project with a highly politically-tinted story. The project demonstrates the influence of computers on textiles, starting in particular with CAD (Computer Assisted Design)⁵, microRevolt addresses the issues surrounding the developments in CAD and textile design in the context of the globalized textile market, in particular looking at the rise of sweatshops in the knitting industry. The social function that the project proposes is clearly described in the mission statement on microRevolt's website:

'microRevolt projects investigate the dawn of sweatshops in early industrial capitalism to inform about the current crisis of global expansion and the feminization of labor. (...)



Is there much research done into the aesthetics of new technologies used in sportswear?

The issue of beauty, style and aesthetic is always important, yet currently can rarely be found in wearables. It is, of course, very important for the acceptance and success of wearables. Sportswear today is a means of expression, a channel for communication, an advert for a certain lifestyle, a brand. With designers like Stella McCartney's line for Adidas and Paul Smith designing for Burton many sports brands have become fashion brands and the need for aesthetics, expressive design and ergonomics have to work much closer together.

Vexed Generation recently collaborated with Puma to create the Puma X Vexed Cycling Jacket; 'The jacket, with its reflective piping, waterproof and windproof material and shape, and face mask/hood, is ideal for the stealth urban rider. The bottom end straps up underneath to keep the rider comfortable and dry in wet weather. The masked hood, with integrated ventilation chambers and replaceable filters, seals the rider's identity while keeping every inhalation pure.'¹³

Vexed Generation's See and Be Seen Parka using corwool, Teflon, and 3M Scotchlite Reflective Material was featured at MOMO's exhibition titled SAFE in New York and shows that functionality and aesthetics can be inclusive.

Is sportswear the only field where aesthetics and function of active materials became so well integrated?

Sportswear is a viable commercial application. The usage of novel and more pricey materials is accepted within this field. Furthermore, the market for fashionable urban sportswear for the end consumer is still growing. However, experiments with the aesthetics of wearable technologies can often be seen in

art and performance. For example, voyeurism and fashion as mythos serve as storylines for Fashionation, Mythos.Mode.Markt, an art/performance project developed as a master thesis by Celine Studer at Hyperwerk in Basel, Switzerland. Fashionation examines the architecture of the electronically 'enhanced' garments and achieves a stylish aesthetic through well executed textile and fashion designs. It shows that fashion and technology can be beautiful. Celine Studer describes the project as follows:

'Fashionation examines the potential meaning of 'intelligent fashion' in its combination of technology and design. What are the benefits, and what can it be used for? Our communication does not necessarily depend on language. There are other means at our disposal: the senses, gestures, body language in general. Fashionation creates three 'body-dresses' which make the complex interplay between the observer and dress perceivable. These dresses are meant to be 'intelligent' and 'wearable'. They work with 'intelligent textile', architecture and communication technology in order to relate to the physical surroundings. Hidden strategies of interaction become apparent through the direct impulses of the three dresses. Perhaps this will favor the emergence of new forms of communication.'

Wearables are moving away from the cyborg-like look advocated by Stelarc and Steve Mann in the 1990s to an aesthetic appreciated by the 'regular' consumer. Now it is important to take collaborations a step further to be able to merge wearable technology with the expressive design and aesthetics needed for a successful outcome of a 'Fashionable Technology' project.

With both functionality and aesthetics addressed, what are some of the issues that Fashionable Technologies should face in the near future?

Instead of an answer, I will propose a few questions that need to be addressed by anyone planning to become involved in this enticing, but potentially hazardous field: What about all the components that need to be integrated? How should the 'frequency mess' we are creating through wireless communication be best addressed? How should issues such as batteries leaking into our waters be handled? What is the best and most efficient power source? Isn't it time to seriously think about sustainability?

Endnotes

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An international collective of knit and crochet hobbyists have stitched a 14-foot wide blanket of the Nike Swoosh. Each crocheted pixel (square) acts as a petition for fair labor policies for Nike garment workers. Once the border of the blanket is knitted together, the Nike Blanket Petition will be delivered to Phil Knight, Chairman of the Board of Nike Corporation.'

microRevolt uses its own web application KnitPro to generate a knitting pattern from a digital image. Cat Mazza from microRevolt uses the knitting pattern as her 'binary code' to input the design into the Brother knitting machine. Mazza plans to make a textile animation using a Zoetrope as her next venture.⁶

What social functions do Fashionable Technologies currently perform?

'All clothes have social, psychological and physical functions.'

Andrew Bolton⁷

The Killing Zones shirt prototype has a very specific function. It is a project by Maurizio Galante, Tal Lancman of Interware Sarl and Arik Levy of Ldesign Sarl, as a part of the Safe Being program, a line of garments directed toward civic protection.

'Safe Being is a layer system that incorporates materials such as polycarbonate, metal foil, or swan feathers mixed with cotton in order to add ballistic protection and reinforcement to everyday clothes. The most vulnerable areas of the body – the chest, the belly, and other parts that cover internal organs – are 'decorated' with a pattern made of rip-stop and ballistic materials that ensures freedom of movement and creates an in-motion overlap. The more layers superimposed, the greater the level of protection.'

Silver lining garments by LessEMF.com shield the wearer from 'power line and computer electric fields, as well as microwave, radar and TV radiation. This silver-plated, stretchable, washable nylon mesh is electrically conductive.⁸

Set up as a commercial project, the SmartShirt by Sensatex is derived from the prototype developed at Georgia Tech called Wearable Motherboard in 1999.

'The Motherboard is activated when there is a break in the circuit, signifying a bullet wound. The PMS (Personal Status Monitor) records the vital signs of the soldier and relays the information to an on-site medical triage unit.⁹

Today the applications advertised by Sensatex for the SmartShirt range from sports to healthcare.

'It is woven or knitted, incorporating a patented conductive fiber/sensor system designed specifically for the intended biometric information requirements. Heart rate, respiration, and body temperature are all calibrated and relayed in real time for analysis.¹⁰

Except for protection and surveillance, what other sectors currently use 'smart' clothing?

In sports the balance between form and function is the most obvious – partly because of the use of enhanced materials and smart textiles. 'Material designers strive to marry function to form and the practical to the aesthetics.'¹¹ Wearable technologies – electrical circuitry, enhanced fibers, communication systems – are still in their infancy and hence not cheap. In the snowboarding culture, consumers are already used to hefty price tags for sports clothing with specific functionality. For example, an average snowboard costs about US\$500¹², and it is quite usual to spend several thousands on full snowboarding gear at least once every few years. Sports clothing often includes waterproof, breathing textiles from Gore-Tex and Outlast, as well as base layers (Marmot) which integrate elemental silver as an antibacterial agent. Burton is using panels of Spaceloft, an insulator using aerogel molecules around a fabric matrix by Aspen, for a few of their Ronin Katana and Radar Type-Z jacket designs.

You can find clothing with in-built communication abilities, such as Burton Ronin's Espionage Jacket, a snowboarding jacket with a built-in digital camera. Burton's new Audex line – jackets and helmets – seamlessly integrates an iPod and a mobile phone communicating through Motorola's Bluetooth protocol. Products by O'Neill and Spyder (ski-clothing manufacturers) are using Eleksen's ElekTex technology, adding solar-powered entertainment and communication capabilities to snowboarding jackets and backpacks.

SlopeStyle is a prototype for a 'wearable' snowboarding jacket, developed by Moondial with functionalities geared towards all mountain sports. The functionality focuses not only on the actual sportsmen but also on instructors, guides, rescue teams and maintenance staff. In its current iteration SlopeStyle focuses on three areas of the mountain (resort): the freestyle park, the slopes and the backcountry:

'Technology has enabled a greater degree of personalization in fashion. Marrying elements of extreme sports and urban couture with smart and high performance textiles, our team has developed a concept and prototype for a functional and fashionable athletic jacket. Digital photographs from a camera phone or PDA can be transmitted directly, or downloaded wirelessly from the internet, to a display embedded in the jacket.'

Sabine Seymour

Being a worldwide activity, sports constitute a large market for Fashionable Technologies in the future. An interesting development in contemporary sports is their increasing social engagement. For example, Surfrider Foundation USA is a non-profit environmental organization working to preserve our oceans, waves & beaches. Riding for Breast Cancer is an organization to promote awareness about breast cancer amongst female snowboarders. Such ethical engagements might expand the needs and functionality addressed by technologies used in sportswear.

