When tech meets fashion

By Janna Degener – 14/01/2015

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Fashion is not commonly associated with science and technology. However, there has always been a close connection between these fields. Exploring the way both fields have evolved, finding synergies, brings some interesting insights into how technology can have a direct influence on the way people live. But it could also impinge on their right to privacy.

When lack of adequate policy to protect people’s privacy could negate the advances brought by the convergence between technology and fashion

During the past decades, the merging of science and technology with fashion has shifted to a new dimension as electronic devices are now being integrated into clothes. This could be perceived as an exciting progress, as technology converges with fashion. But there are a number of issues outstanding on the privacy of people wearing such clothes.

For a long period of time, scientific and technological discoveries have been reflected in fashion. “As a space artist, I have seen spacesuit technologies and styling integrated into everyday wear,” says Pat Rawlings who used to work for the Johnson Space Center in Houston, Texas, USA. “The moon boots, helmets, backpacks and other spacesuit elements have been reflected in the design of street, adventure, and extreme sports wear.”

And wearing clothes with embedded technology has become a way of expressing oneself. “Geeks and nerds used to be outcasts – now they are the coolest people on the block. This swing has set in motion a desire to be technologically

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astute and up to date,” Rawlings says. Indeed, “by having these technologies and materials, you can appear to be smart and environmentally conscious. Fashion is about being viewed in a positive light by those around you,” Rawlings adds.

In comes electronics

There is a whole industry dealing with the so-called intelligent textile products. “In the last 10 to 15 years, there were many EU supported research projects on smart textiles but maybe they came too early,” says Christian Stammel, CEO of Wearable Technologies, a technology company developing intelligent products like watches, glasses, wristbands or accessories, based in Herrsching am Ammersee, Germany. Today, we have the smartphone with a strong computing power and the capability to connect different devices to the cloud. “That’s why the topic of smart textiles and smart clothes has become more important now.”

Another expert agrees. “Fashion makers always look for the latest new things they can use and science always tries to push the latest new innovations. That is why they work hand-in-hand and they will do so in the future,” says Dan Plant, a research fellow at Imperial College, who graduated from the joint Imperial/Royal College of Art Innovation Design Engineering program in London, UK. He has engineered a new material, patented as Armourgel, an energy absorbing technology used in the production of protective sports apparel for cyclists, snowboarders and motorcyclists.

However, wearable technology is more than just smart textiles, according to Stammel. All types of electronic devices that can be worn close to, on or even in the body. That includes also connected objects such as smart watches, Google Glass and helmet cameras, for instance: “Today, fashion is more than clothes because our smartphones or iPads are also fashion; they are status symbols. And when I talk about fashion, I must also talk about intelligent jewellery: that trend will be very interesting for science and the research community,” Stammel says.

Miniaturisation

This development, of course, was only possible because the size of electronic devices have been minimised and big data has become more influential. “The wearables industry has been created in response to greater societal macro trends. Big Data has been one influential trend that has led the consumer to embrace the digital environment,” says Susan Smedley-Robert, senior lecturer at the School of Art & Design at Nottingham Trent University in Nottingham, UK.

There are many examples of how the integration of electronics, connected devices and every day fashion is become ubiquitous. “In his Autumn/Winter 2013 collection, fashion designer Asher Levine included tracking chips that let items be located by the owner using a customised TrackR app,” says Smedley-Robert.

Another example is Heapsylon which has a smart sock, Sensoria, that is paired with an ankle to automatically detect the type and level of activity based on pressure signals coming from the foot of the wearer. Sensors in the sock communicate data to the ankle, which then can relay the information to the user via an app. It can track a runner’s regular form and send an alert when he or she is making an injurious movement. Even more intimate than smart socks, intelligent sports bras can track users' performance. The NuMetrix sports bra, made by Textronics, has a small transmitter that snaps to the garment to tracks a user's heart rate. CuteCircuit is a fashion brand creating interactive Haute Couture. The hug shirt, Galaxy dress and Twitter dress are just some of their pioneering creations.

Some of those products are also used to increase security. Motor-cyclists can profit from clothes with integrated air bag systems. Parents of newborn children, older or sick people might be grateful for nappies or T-shirts that can measure the pulse or the blood pressure and send warnings or emergency calls, when needed. When missing people wear clothes with integrated GPS functions, they will be found rapidly.

Healthcare applications

And people who are suffering with chronic diseases have new possibilities for dealing with the issues living with such illnesses raises. “With wearable technologies you are not any more stigmatised when you are sick because health care products could become fashion items,” Stammel says. “When I have a chronic disease like diabetes, I can

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exchange my personal health data with other diabetic patients in a community in order to help each other by exchanging different types of exercises."

Other experts emphasise another potential advantage of wearable technologies in healthcare. “Wearable technologies will grow, especially in the field of digital health,” says Plant. He believes, there is more content produced by people over 70 than by people under the age of 17. “It is clear that we live not only in an age of aging but also in an age where the future generation is very, very up-to-date,” he adds.

Another expert concurs. “Healthcare as we know it today is not sustainable. The combination of less resource in the sector, less financial means, less human resource, and a demographical mix consisting of more and more elderly and chronically ill is a serious challenge to society as we know it today,” says Thomas Olesen, a Dane who is the commercial director of the company Qualcomm Life based in Munich, Germany.

However,” if applied the right way, technology will ensure increased quality of care at a significantly lower cost.” According to Olesen, today technology already ensures that thousands, if not millions of consumers know and understand their condition much better and they’re able to involve care givers, physicians and other relevant supportive stake holders effectively.

Privacy issues

Still, the development of these products can also produce questions and anxiety. Critical voices are also rising. They are asking common sense questions: how can we be sure that the devices won’t harm our health? How can we protect our privacy when electronic devices like cameras become smaller and smaller so that they can be hidden in clothes or glasses? Will our communication and our relationships change when, for instance, hugs can be sent digitally? Will we have another relationship to our own bodies when we use electronic devices in order to optimise them? And last but not least: Will we be happy with the consequences of these developments?

“All these topics have been discussed for years and there are pros and cons for each of the arguments,” Stammel says. His company collaborates with certification authorities in different countries that have a look on the consumer’s concerns. He agrees that data security is an important issue, but says: “You must also see that live video recording is only one feature of Google Glass, you can also visit websites or check your emails with it, and these functions have been overshadowed by the discussions. And at the end of the day the consumers also need to take care where they upload their data.”

Stammel indicates that hug shirts were produced for children who suffer from ADHS and who can calm down when activating the device - the hug shirt helped and was very popular today. As well, the control of body functions can in Stammel’s view first of all help people: “When an allergic person is doing exercise in a city and the air pollution is too high, the person will get automatic updates to calm down and stop exercising. That's possible because a provider combines his heart rate data with environment information. It can be a real health benefit for this person.”

Finally, it is the consumers who can decide – although they are not always aware of that. In particular the expected story around the Internet of Thing (IoT) emergence is clearly going to put the topic of personal data and privacy in the middle, says Patrice Slupowski who works at the Technocenter of the company Orange in Paris, France: “With billions of connected sensors, the world is going to be put into data, and we have to give the control to the end-user to respect their fundamental rights. This is what we had in mind when our CEO has signed a charter to commit on the privacy, transparency, security and control we want to give them on their data. This is also how we’re currently building our Datavenue platform.” He is sure that the use of data, its aggregation, and all the innovative use cases that companies will be able to bring, are going to provide a very large number of innovative daily services for the consumers but they have to respect them to be adopted widely.

Consumers will continue to benefit from the integration of fashion and technology, but they also have to learn how to handle certain products – and how to avoid products that have the potential of changing their lives in a negative way. Clearly further regulations will also be required, so that people can enjoy wearing embedded technology without fear for their privacy.