

Electrifying trends

Man's earthly interests are all hooked and buttoned together, and held up by clothes...

Thomas Carlyle, *Sartor Resartus* 1866

Thomas Carlyle would be surprised to know how literally his narrator's satirical musings describe our emergent sartorial condition. "If the cut betoken intellect and talent," he wrote, "so does the colour betoken temper and heart." Could he have foreseen this era of reactive fabrics and wearable technology, when the colour of your shirt can register your mood swings and the length of its sleeves can change automatically with the weather?

"The era of garments being designed as static and predefined objects with very short expiration dates is drawing to an end, allowing for fashion to become a dynamic, semi-permeable membrane open to the increasingly malleable surrounding enveloping the human body." So wrote fashion forecaster Maja Kuzmanovic in 2004. Good riddance, we would all agree, to clothes designed for speedy obsolescence, but what are garments if not predefined objects? And what are we to make of the second half of her sentence?

A bit of shallow digging turns up answers to those questions and reveals that Kuzmanovic's is not some far-out futurist prognostication. Already underway, the paradigm shift is being led by academic and independent laboratories in Europe and North America, and high-tech product manufacturers and mainstream retailers are showing interest in their findings. Marks & Spencer, for example, launched a line of iPod suits for Fathers' Day in 2007. Integrated into the lapel is a soft electronic touchpad that allows wearers to control their iPods without removing the devices from their pockets. The men's fashion chain Celio

Emerging technologies are helping to spawn 'intelligent clothing', whose social and ecological impact promises to be revolutionary. **Sarah McFadden** looks forward to wearing her cell phone on her sleeve

placed the controls on the inside breast of one of their suit jackets, and upmarket house Zegna has come out with a Bluetooth iJacket. One manufacturer advertises textile touchpads that can be washed and dry cleaned and are good for 100,000 key presses.

Impressive, but hardly revolutionary: you still have to tote that iPod and remember to remove it before throwing the jacket into the washing machine. On the street, techno-fashion is still in its gimmick phase. When it matures, *Techno Fashion* author Bradley Quinn predicts, wireless devices such as cameras, mobile phones, personal stereos, laptops and digital music players will be fully integrated into the clothes we wear. Quinn writes of a wearable 'body area network' that will enable us to 'surf the web, monitor vital signs and even administer medication through the ... skin'. Imagine downloading movies onto the cuff of your sweatshirt and receiving transdermal sedatives when bio-sensors in your collar detect stress or anxiety. Searching for a mate? A lab in London specialising in 'electronic nose' technology is developing a textile that analyses the pheromones of people who come into contact with the wearer and sends out alerts when perfect partners (those who match the wearer's pheromone profile) are found.

Laboratory specimens

So far, so practical. The impact which these kinds of innovations in textile (and other sorts of) technology are having upon fashion as a vehicle of personal expression, as opposed to clothing as a repository of wireless communication devices, is still largely confined to those university labs referred to earlier, but the

work coming out of them is exciting, if not yet entirely wearable. Take XS Labs at Concordia University in Montreal, where specialists and students in the fields of material science, nanotechnology, biotechnology, physics, chemistry and engineering collaborate on fashion projects initiated to address ecological concerns raised by the prospect of an imminent worldwide surge in wearable technology: the very movement it is a part of.

Power consumption, for example, is the 'subject' of two series of prototype garments conceived more as discussion pieces than as everyday dresses. In one, human kinetic energy generated by the body (which has to work against the garment's built-in restraints) is converted into electrical energy that powers small, decorative light-emitting components; in another, the power needed to illuminate the lights (in this case, they dot the fabric's surface like stars) must be drawn from an external source worn by another person. The wearers' actions in both cases are playful and amusing and in the second instance, necessarily socially connected. And the dresses fuel themselves.

Less radical, perhaps, but no less fun or revealing of the wearer's temperament is a shape-shifting dress whose hemline rises and falls of its own accord, thanks to the presence of Nitinol (aka muscle wire) in its weave. "Clothes are full of sly and often bold allusions to non-sense, dreaming and desire," Adam Phillips writes in *The Concise Dictionary of Dress*. He might have been referring directly to XS Labs' productions.

Kuzmanovic explains why universities lead in the field of responsive fashion. "At the end of the '90s," she says, "there was huge enthusiasm for all of the things these new technologies were making possible, and there was a



Mirroring your every fear and desire: *Enleon*, 2007, from XS Labs' *Skorpions*, a series of kinetic electronic garments (the horse shoe-shaped scales seen here are programmed to open and close of their 'own' accord, revealing a mirrored interior). Uncomfortable to wear, impossible to control, the series references fashion's time-honoured traits.

XS LABS 2007

lot of money for it. When the bubble burst in 2001, many of the organisations that were either very blue sky or focusing on a specific technology didn't survive."

One of the casualties was Starlab, the blue sky research centre in Brussels where Kuzmanovic headed the department linking Starlab's projects to culture and the arts. Fashion designer Walter Van Beirendonck was an advisor for Starlab's iWear clothing line, whose aim, according to its research director, was "to get rid of all the stuff we're

carrying around" – our bagful of digital devices. Many of the thinkers in such institutions, says Kuzmanovic, have now gone back to work in universities.

Kuzmanovic herself directs FoAM, a transdisciplinary creative organisation in Brussels. She no longer concentrates on fashion specifically. But she was happy to give her views on the prospects of what is sometimes referred to as conductive couture.

"For me, one important thing is sustainability. If it was successful, it would change the

fashion world. If you have a garment that can change its properties, it can become a different garment every six months without having to use up new materials. It could change to a more fashionable colour or even change its shape. The users could do much more with the garment; they're not just presented with a particular top or a particular dress."

Digital DIY

She speaks of the creative potential of computer-aided manufacturing, 3-D printers and community looms, a system still in its infancy but which will allow people to print their own textiles and fashion them from patterns found on the internet. "So you can do much more on your own rather than depending on the industry. Maybe this will bring out creativity rather than just consumerism in people."

"It's easy to research a garment's history now on the internet," she continues. "You can find out where fabrics and patterns come from. When you buy a coat, you're also buying the story of the coat, which maybe makes you more attached to it. If there were more demand from people buying clothes to know how things are sourced, manufacturers might be more careful. A lot of responsibility is involved in buying things."

Thinking of XS Labs' human-powered dresses, I ask about the possibility of producing enough human energy to power our computers. "You would have to really run around a lot," she laughs, reminded of a project conducted by an electronic music studio. "They asked, 'If we were to make electronic music using only our own energy or solar energy, what kind of music would we make?' So it's not that they had to create enough energy to make the same music as usual, but that their music would change in accordance with the energy they had at their disposal. So maybe we don't need such big computers," she says, tapping her laptop, "maybe we need something that uses less energy." Maybe one of these years, that thing will be integrated into our clothes. ●

FoAM holds residencies and training workshops for people from all walks of life, in the interest of fostering a more holistic and resilient world culture. <http://fo.am>