Crafting Smart Textiles – a meaningful way towards societal sustainability in the fashion field?

Kirsti Kuusk, Oscar Tomico, Geert Langereis
Department of Industrial Design, Eindhoven University of Technology
k.kuusk@tue.nl, o.tomico@tue.nl, g.r.langereis@tue.nl

Stephan Wensveen
Mads Clausen Institute, University of Southern Denmark
s.a.g.wensveen@mci.sdu.dk

Abstract
Smart textiles with its vast range of possibilities provide a considerable opportunity for societal sustainability for the waste-oriented fashion industry. May the new textiles react to the environment, wearer, have a mind of its own or simply provoke and inspire people – it is a great tool for the transition from the product-oriented industry to the service-minded economy. Fashion field needs to mature and adapt to the new rules set by the user within today’s environment. While developing the new field of smart textiles, this paper stresses the importance of learning from traditional crafts and the value of craftsmanship.

We start by introducing the importance of crafting and connecting it to the industrialized way of producing. Then, we ask whether we could merge valuable insights from both in order to develop the smart textiles area. Later, you will find an example project merging Quick Response (QR) codes with traditional embroidery that inspired a set of TechCrafts explorations in a form of student projects. In case of the embroidered QR codes, the link to technology is an add-on feature to textiles. In the other examples, craftsmanship technologies are used to create the textile substrate itself. These explorations are the input for a discussion about the role of craftsmanship and skills in developing materials with interactive properties that is held with relation to the possibilities for societal sustainability.

Keywords: craft, crafting smart textiles, digital technology, societal sustainability, culture of connectedness

Introduction
Textiles and traditions, and rituals and crafts related to them have existed for millennia. Natural fibers spun, weaved or knitted together have been close to the human body, environment and conscious for basic survival purposes, social distinctions, expressing different power relations and even interacting with the spiritual realms.
Crafts and everything related to them are much more than some old techniques. Sennett (2008, p. 9, 149) describes craftsman-ship as “human impulse, the desire to do a job well for its own sake,” and as a more advanced level of technique, such that the technique will be intimately linked to expression.

Everything from the cultivation of the plant up to the finalization of a garment used to be done by a specialized hand, therefore each step, stitch and loop had their own personalized share of attention and time, and the whole process involved could put their own personalities into it – “learning about themselves through the things they made” (Sennett, 2008, p. 9). With mechanical production textile and garment processes got standardized, automated and, due to the shift towards consumer culture mindsets, extremely wasteful.

Smart textiles are around for a while now with a great technology-driven emphasis on what is possible to develop. There are many consumer culture mindsets, extremely wasteful. 8). With mechanical production textile and garment processes themselves through the things they made” (Sennett, 2008, p. 9, 149) describes craftsmanship as “human potential”. (Bauman, 2011, p. 52) Education and social rituals of making together used to bring people into workshops and support it than just the act of knitting, weaving, sewing etc. Rituals of making together used to bring people into workshops and support it than just the act of knitting, weaving, sewing etc. Crafts and everything related to them are much more than some old techniques. Sennett (2008, p. 9, 149) describes craftsman-ship as “human impulse, the desire to do a job well for its own sake,” and as a more advanced level of technique, such that the technique will be intimately linked to expression.

Fashion industry, suffering in exhausting sustainability issues, doesn’t need a further drive by the “next cool” thing that is growing the pile of waste in few months. Next to all the efforts done in washer reuse, material, recycle and vintage promotion, new business models, it needs a way to close the loop from materials and energy use to the industry and user, and reverse the conventional value of old and new. Maybe some of the decisions and directions took while pursuing the efficiency in production and development lines that has shaped our “the way it’s being connected and belong, similarly to what used to be, but in a new non-geographical way.

The Nord Textile Journal...
cycles or changing the way people take care of the garments. Textiles that require no washing and garments designed to be some of the forgotten old wisdom into the new possibilities of digital and otherwise new technologies. While approaching the integration of textiles and technology she aimed to show and, through that also, see how new ways of communicating of digital and otherwise new technologies. While approaching the integration of textiles and technology she aimed to show and, through that also, see how new ways of communicating could be some of the missing ingredients that our soul and senses are rich visible history. This information could be shown intimately to the wearer or exposed to whoever cares to read it. It could be protected with a key that the owner can share or openly accessible by anyone. The data linked to the embroidery could tell a predefined story or be configured by users. For example, Tiina would get an item with the embroidered code on it. She would then have to create a QR code that would result in what outputs. It could tell a mutual joke on Monday, suggest a cake recipe on Tuesday, play a selected video on Wednesday, or transfer messages from one society to the other she ended up pursuing an exploration of embroidered Quick Response (QR) codes carrying cultural information in several layers (Fig. 2). This means changes from material up to processes and proposals for seeing completely different, in harmony with nature, business models.

Slow is not a simple description of speed. Rather it represents a different worldview that names a coherent set of fashion activity the beauty of the approach lies not only in the integration of traditional local colors and patterns with new technologies but also in the values, which have been taught through family line for centuries. Maybe the bed sheets could talk about the kid's own family and therefore enhance the interaction between generations daily basis. The information referred by the code can change in time, so it is another way a garment to become more valuable while being used. It carries tradition and history, in many levels while encouraging new ways of interaction. For example bringing fairytales back into our daily knowledge, not forgetting old wisdom.

Such interactive ornaments on our textiles, on one side feel just get old - it might hide new exiting message next day and while changing and always growing. While the physical embroidery is changing and always growing. While the physical embroidery is static and always present. Maybe those could be the tools and artifacts Milli John Tharakan (2011) is asking for, that would help us to find a balance when the changes caused by rapidly developing technology, are happening too fast. Towards Crafting Smart Textiles Application used to be the force demanding material innovation. Now we are strongly driven by the new technologies - anything is possible and that might be the problem! Development in the smart textiles area is mainly driven by material sciences, new opportunities in fiber level. But not everything technologically lized QR codes can be used for. One of the main technical limitations is conceptually very challenging and funky has no value if nobody needs it. Towards crafting smart textiles. Referring to the modern constant lack of satisfaction she argues, “The ability to transcend the physical through myths and the slowing in the making and use of craft artifacts could be some of the missing ingredients that our soul and senses are longing for.”
New valuable concepts can be achieved mixing traditional and new in different levels. There are various approaches possible to take to integrate technology and crafts. We have done series of explorations in Eindhoven Technical University (TU/e), Industrial Design, Wearable Senses theme. And based on that we are making first attempts to create a mutual language to talk about crafts mixed with technology.

During a project TechCrafts Bachelor students started up each getting to know one craft rather deeply. They researched about weaving, silversmiths, crocheting, knitting, bobbin lace making etc. and found themselves a master of the specific craft to learn from. From practicing the skill, they took a step further and started to merge the old technique with new materials and electronics keeping in mind what the craft traditionally had served for. The intention was to learn the wisdom of the old craft and to bring it into today, not as a museum would do - preserving it, but hacking, cracking, re-thinking and inventing way.

Unlace (Fig. 3) is an interactive lace lingerie garment which allows two-way interaction for the piece to react on touch and heat up thermochromic yarns, while also the interactive change invites and guides the touch into desired places. Combining bobbin lace making together with its values of slowness and details with new smart materials, we have a very delicate piece of technology.

Morrow (Fig. 4) is a fence made for climbing plants. The stimulating lights will turn on when a person interacts with the fence. In this way the plants will grow towards the light. It creates a moment for observation and realization between plant and the one taking care of it.

Intimacy tower (Fig. 5) is a circular woven tower that uses the textile to represent the complexity of one’s inner self and the growth of it with his experience. It plays with the privacy and the allowance to reach it. The goal of the tower is to create empathy between people that have the same experience at the same time.

Discussion

“Technology can be part of the actual textile (e.g. smart textiles), a tool for their creation (e.g. the software CAD), or used to manipulate the input (e.g. using wearable technologies).” (Seymour, 2008 p. 173). From the described and other realized projects conducted in TU/e we can see that the concepts developed through making with one’s hands and learning straight from a master even after combining with high technologies still carry the core values of the craft started with. And even if the prototypes are not technically perfect, they incorporate a strong value for relationships between people or environment and people. “Skills are also a certain way against superficiality. Skills lead to quality, to refinement, to depth.” (Trotto, 2011, p. 42).
To craft the smart textiles in order to the revolutionary valuable need to have access to the tools, skills and inspiring materials. Similarly to the development of digital applications, websites users dominating industrialized-consumer glasses. Textiles find its own way of seeing the world, without the deserve a childhood of playing hands-on trying to figure out from industrialized point of view. The field is too immature and need-driven beginning, as textiles had, and has to start already a new challenge as smart textiles, to tackle. It missed the slow developed from handicrafts into industrialized factories has a made explicit. Textile realm that has naturally step by step Crafts incorporate a lot of layers of value in them; it has to be appreciated the value created by combining time and attention to make things ourselves, give personalities to them and to make things helps us to learn about ourselves (Sennett, 2008, p. 8) and give values to the objects around. With those developments part of the making process becomes visible again. “Work created with the hands gives birth to new ideas.” (Trotto, et al, 2009, p 13)

When talking about crafting smart textile we don’t necessarily mean applying the skill of handicrafts, but more the attitude of embracing open-source digital fabrication, which with the hands gives birth to new ideas.” (Trotto, et al, 2011). When talking about crafting smart textile we don’t necessarily mean applying the skill of handicrafts, but moreover the attitude of embracing open-source digital fabrication, which with the hands gives birth to new ideas.” (Trotto, et al, 2011).

In response to the excess of globalization and over the top digital technology can be seen as a key element here. Appreciate the value of crafts and says it is the “new luxury” the textile industry is heading towards smart and interactive garments. Let’s make really sure to learn from the fashion industry is already able to teach us today, to treasure quality over quantity, trusting relationships over dependency and meaningful applications guiding people to that direction.

In response to the excess of globalization and over the top digital technology can be seen as a key element here. Appreciate the value of crafts and says it is the “new luxury” the textile industry is heading towards smart and interactive garments. Let’s make really sure to learn from the fashion industry is already able to teach us today, to treasure quality over quantity, trusting relationships over dependency and meaningful applications guiding people to that direction.

Conclusion
Clothes and objects provide a crucial “carrier” service, helping to bond the relationships between others and us and with the society as a whole. The continued relevance of things to people through change or novelty is essential in this context, for all of these relationships are in constant flux as our own perspectives and the values of society co-evolve (Fletcher and Grose, 2012, p. 138).

Textile industry is heading towards smart and interactive garments valuing our need for connectedness and sharing. With lost craftsmanship approach of drive for detail and quality and values applied through tradition and rituals, craft techniques and the lack of the knit next stage could be ecologically more responsible stepping stone for the next era approaching.

Acknowledgments
We thank the TechCrafts students of the Industrial Design Department at the Technical University of Technology, more specifically Eef Rosélinders, Liza Blummet, Otfréd Looi, whose work was presented in the current paper. In part the Dutch government and industry funded Creative Industries Scientific Programme (CRISP) funded this work.

References

The Craftsman

The Nordic Textile Journal

The Nordic Textile Journal