



**PLAYFUL
RESEARCH
OF
SMART TEXTILES**

Exhibition of PhD-projects/ ArcIntex Network
17th and 18th October 2013
TIO3, Ronse, Belgium

TexTales – new way of weaving traditions together with the technology

This work is a collaborative design project from Eindhoven University of Technology with Unit040 Johan van den Acker Textielfabriek B.V. and studio toer.

TexTales connects traditional values and crafts with digital technologies for sustainability. It is offering a new way to translate fairy-tale knowledge into people's personal experiences and pass that wisdom through generations.

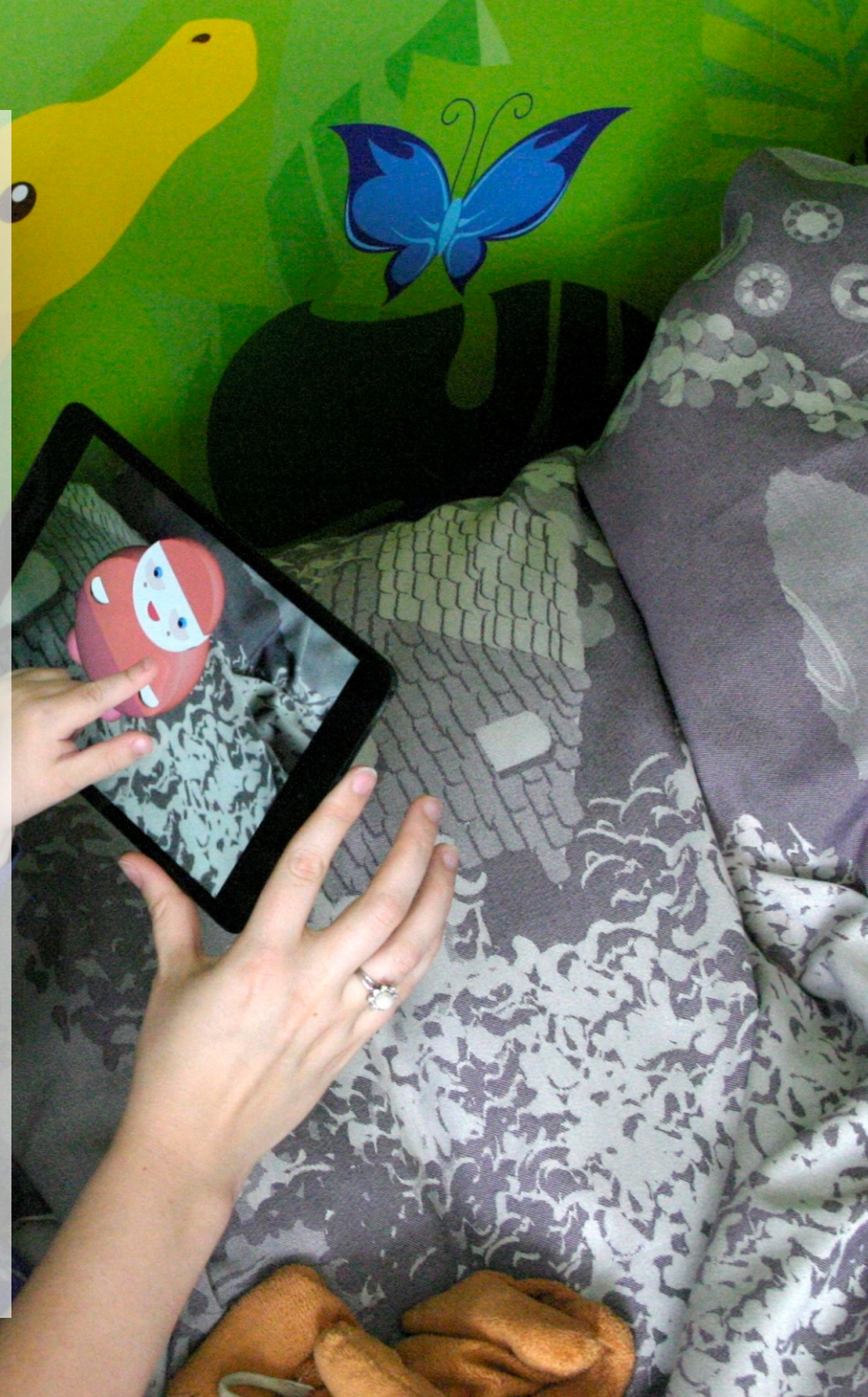
TexTales consists of a set of bed sheets that have images woven into the fabric. The images are recognized by a custom made software that displays 3D characters from a fairy tale through an iPad onto the textile. This allows parents to create personal stories with their kids while going to sleep. The sheets will be produced only on demand using a crowd funding service.

The project tackles the on-going textile and garment production system change towards sustainability through proposing smart textile services as an emerging field to get inspired by craft techniques and principals, such as quality of the work, passion for betterment and experience. With the TexTales the high quality woven textile has gained an extra dimension. It's content can be updated by the digital layer it communicates to. This could extend the lifecycle of the textile by changing stories it tells.

Long-lived craft ways of working with the material and making for a specific person appear again in sustainable models where the end-users value the result higher and therefore turn away from over-consumption.



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Let your body print your dress

“Let your body print your dress” is a series of experiments exemplifying the practice-based research project aiming to explore the relationship between body temperature and printed garment with lecuo dye-based thermochromic ink as a method of creating new social relations through the changes garment color. The expressive reactive garments that have been printed with lecuo dye-based thermochromic ink with the activation temperature 27°C and also conventional textile pigment paste react to the wearer's body temperatures by changing their colors. The approach demonstrates playful temporal expressions in wearing or to influence the way in which one can express herself through the garments by wearing them.



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Vibe-ing Self-Care Tool

Vibe-ing is a self-care tool in the form of a garment, which invites the body to feel, move, and heal through vibration therapy. Vibe-ing is developed by our inquiry on how we design intelligent textiles for the therapeutic approach particularly for elderly women who are in danger of their health in menopause period. Based on our inquiry, we investigate how the effects of vibration therapy combined with textile design and electronics serves the therapeutic treatment for women and therefore, supporting the need for their physical wellbeing.

To treat menopause symptoms effectively this design project is implemented in collaboration with multidisciplinary experts, such as textile designers and design researchers. Therefore, the design of Vibe-ing realizes the intelligent garment in the twofold ways. First, the merino wool garment contains knitted pockets, embedded with electronic circuit boards that enable the garment to sense touch and vibrate specific pressure points on the body depending on the specific person's need for rehabilitation and healing. With this design we aim to inform a multi-disciplinary audience about the opportunities of integrating textile and vibration for healthcare applications at home or even everyday activities. Secondly, using fully-fashioned manufacturing technique becomes possible to customize the garment to the preferences of an individual body. This opens up new design possibilities for garment behaviours.

This work is being carried out as part of the project "Smart Textile Services" sponsored by the Dutch Ministry of Economic Affairs under the CRISP program. This work is a collaborative design project with TextielMuseum TextielLab and Metatronics for their contributions in realizing Vibe-ing.



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Textile pattern and Spatiality

This PhD project investigates the relationships between textile patterns, scale and spatial contexts from the perspective of textile design. Against this background, the purpose is to answer the research questions “How can the designer get a better understanding of scale and size in designing textile patterns and what kind of functions and characteristics do different patterns have in spatial contexts?”.

In order to examine this area, a physical model approximately in scale 1:10 was built to create a scenario for the design example. The design decisions were: a simple geometric pattern unit repeated in the 4 most common repeat systems, an all-over pattern was made in black and white, printed on paper and fabric. The choice of size in pattern is based on the viewer's distance; from 0.5 cm to 135 cm, distances that is actual for a “user” of patterns. The patterns are tried systematically in 6 different scales and with the 4 repeat methods.

A systematic way of testing is vital for this design example. To be consequent and accurate is the starting point for the investigation in order to help comprehending and criticizing the try-outs. This design example aims to share a systematic approach for understanding and teaching pattern design.



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REFLECTING RHYTHMS

Hybrid design materials are emerging in architectural design, materials which in various ways relate the digital and physical prototyping spaces to each other. *Reflecting rhythms* explore by design these new dynamic materials all the way from the surface knitted construction up to the interaction context; the textiles in *Reflecting rhythms* can transform according to outside conditions, e.g., light, sound, and relate these changes to human presence in space. The design process aims to provide an understanding of the expressive possibilities these textiles may generate for developing new methods for spatial design.

Scenario

Mirroring actions, synchronous - The textile is placed in front of the glass walls at the back of the room. The textile filters the light. The light passes freely through the holes shaped by the textile surface. When we move, the surface moves, slowly. When we move, light will leak through the openings which are created and slowly changing. When we stand still the surface is still. When we stand still, the light passing through the textile will stay the same. The light, which is filtered in a dynamic way from behind, will affect the space. People outside of the room, on the other side of the glass wall, will see the reflections of our activities through the movements of the surface.

materials/techniques: Pemotex/servomotors/knitting.



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Creating Material Meaning

The material landscape is changing. The amount of materials is rapidly increasing and the transparency of material properties is decreasing. Product designers have to navigate in the complex realm of materials to design products customized for specific applications. The necessity of being acquainted with both technical properties and embodied characteristics materials for a given product is challenging.

Based on experiences and observations from material teaching situations, the study focuses on how materials are articulated and communicated among students and between actors in the material landscape. This aims to help product design students to enhance their material awareness and to create material meanings by developing methods and educational tools that can be used in the material teaching as well as by students during their training and in their future professional practice.

As the study is merely about developing methods than physical artifacts, my contribution to the exhibition is examples of, how material meanings can be articulated.





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Recurring Patterns

Textiles can change expression over time due to use and exposure to sunlight, moist, etc.

The textiles on the Recurring Patterns furniture also change expressions in a dynamic interplay with their use: A bright pattern gradually reveals it self when someone sits on the furniture, and later disappears when the person leaves. This is only one possible scenario that can be created with the textile materials and electronics incorporated into the Recurring Patterns prototypes. These layered programmable patterns make it possible to let the patterns fade, change color or disappear completely. The changes in the surface can be activated by events happening far from, or close to the textile, or can be programmed to happen in a recurring temporal pattern.

The combination of electronics, textiles and the program we used to control the transformation open up for changing the pattern transformation and the interaction again and again. The design of the furniture is therefore never completely defined, and this make it possible to play with the dynamic expression and interaction, and adapt the interactive furniture after the different contexts it is placed in.

Researchers in the Recurring Patterns project: Linnéa Nilsson, Mika Satomi, Anna Vallgård, and Linda Worbin. The project was done in collaboration with the furniture company Ire Möbel and Smart Textiles innovation system.



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Tactile Dialogues

This work is a collaborative design project from Eindhoven University of Technology with De Wever, Borre Akkersdijk, Optima Knit and Metatronics.

“Soft Dialogues” is a textile object in the form of a pillow with integrated vibration elements that react to touch. The goal of the textile object is to enable a dialogue by triggering physical communication patterns between a person with severe dementia (the care receiver) and a family-member, spouse or caretaker (the care giver). In addition, the object also responds to activity and hand movement, which is important for people with dementia.

The object can be used in spaces where two people are sitting, e.g at a table, couch or over the armrests of a wheelchair. The object consists of a textile with integrated vibration elements. When these elements are touched (by rubbing, stroking or pushing) a soft vibration can be felt from multiple locations on the object. When both sides are touched simultaneously, the vibration will increase. This stimulates small movements and social connection between the people using the pillow, it allows for a dialogue based on physical interaction to appear.

An earlier prototype of the blanket has been tested with five pairs of each a care receiver and a care giver. These tests showed that the object has potential for often difficult visits where conversation is not possible. However, long-term testing is required to find out the true impact of the product.



De Wever **crisp**
verzorging - verpleging
revalidatie - thuiszorg



Metatronics
embedded engineering

OPTIMA KNIT BV

TU/e Technische Universiteit
Eindhoven
University of Technology

Machine Crafted: 3-Dimensional Knitted Forms

Rapid advances in seamless knitting technology have created new opportunities in the design and production of knitted textile products. Introduced in the mid 1990's, this machinery allowed a new mode of production; shaped, 3-dimensional knitted forms could be produced entirely by machine. Although widely adopted by garment manufacturers for its economic efficiencies, the technology's use has been constrained by the complexity of its user software and a lack of understanding around seamless knitting techniques, resulting in standardised garment production. More recently, innovative and expressive seamless knit applications have begun to emerge from textile research centres, often focussed on the technology's 3-dimensional capability. Building on these examples, this practice-based research investigates the technics and aesthetics of 3-dimensional knitted textile forms. The approach bypasses the formulaic garment shapes embedded within the software to explore non-garment applications alongside specialty and smart fibres. In doing so the research opens up a creative playground, enabling innovative, aesthetic and emotional responses to be realised through a commercially sustainable mode of production. The research is conducted at AUT's Textile and Design Laboratory and includes collaborative case studies with established product designers and materials scientists. The samples presented here result from a formative study completed during Master's of Art and Design research, which explored shaping and 3-dimensionality of seamless knitted objects for the home. AUT's Textile and Design Laboratory and includes a number of collaborative case studies with established product designers and materials scientists. The samples presented here are from a formative study completed during Master's of Art and Design research, which explored shaping and 3-dimensionality of seamless knitted objects for the home.



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TIO3
Textiles Open Innovation Centre

RONSE
stad met nitzicht

Ronse for the symposium

'Playfulness and its transition towards economic meaningfulness'.

On Thursday October 17 and Friday 18 the Archintex network joins at TIO3, the Textiles Open Innovation Centre in Ronse for the symposium 'Playfulness and its transition towards economic meaningfulness'.

TIO3 is an interesting player in the field of Textile Innovation as it is not a traditional knowledge institution but an organisation that offers inspiration, possibilities towards experiment and also professional guidance towards a business launch, all of this with a clear focus on textile innovation.

TIO3 is honoured to welcome the Archintex network and host the exhibition 'Playful research on Smart Textiles' which shows the work of 9 PhD students from around the world.

More information on TIO3 can be found on www.TIO3.be
TIO3 - Oscar Delghuststraat 60 - 9600 Ronse - Belgium - info@tio3.be

ArcInTex NETWORK

ArcInTex is a network where Architecture, Interaction Design and Textiles join forces in developing ideas, techniques, methods and programs for new perspectives on design for building, dwelling and living and do so through:

- joint research projects,
- joint applications for funding larger projects,
- exchange programs on the Master and research levels,
- joint conferences and workshop on emergent topics.

As research into the natural sciences and the engineering sciences introduce new materials and new technology, there is an increasing need to explore what new opportunities and consequences are introduced for the design of our future living environments.

In opening new design spaces, it is of basic importance to look for connections to and to bridge traditional areas. In space design, it is of particular interest to bridge the near-field space design – interior and textile design – and the far-field space design – architecture. This is where interaction design provides a link that also introduces a duality in connections when switching identities, with respect to techniques and methods, between near-field and far-field perspectives.

The basic challenge for the network is, in a collaborative effort, to explore ways for architecture, interaction design and textile design to interact in order to provide foundations for new forms of space and interaction design.

<http://arcintex.se/>