

LETH & GORI *Exhibition*
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<http://lethgori.dk/category/exhibition/>

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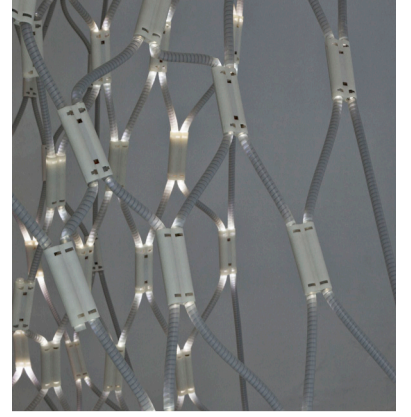
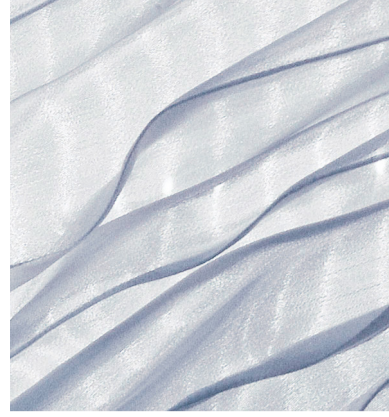
Woven Light was supervised by:
Jesper Nielsen
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Intelligent Textiles, Philips Group Innovation, Research, NL
Paul Nicholas
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for giving a hand with the setup of *Woven Light*.

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for great support with the computational scripting and 3D modelling.

Stamers Kontor
for beautiful photo documentation of the exhibition, see also image front: *Woven Light* and images spread *Woven Light & Pleated Sound*.

Thanks also to
Mads Johnson & Torben Valerius for help in the metal workshop.



TEXTILISATIONS *Pleated Sound, Woven Light*

Cecilie Bendixen, architect, PhD
Astrid Mody, architect, PhD student

Vernissage: 5th of June, 4 - 8 pm

Finissage with Budhaditya Chattopadhyay: 1st of August, 4 - 8 pm

LETH & GORI 5. June - 1. August 2014

Woven Light suggests a flexible plug and play system, consisting of only two components: LED nodes and varying lengths of connective silicone tubing. In *Woven Light* a digital pixel gains a new spatial agency. The occupant can not only look at the pixel – as known from usual media screens – but can engage with it. Firstly the occupant can walk along it, secondly he/she can look inside it and thirdly the pixel structure can be entered. The distance in between the pixels (pitch distance) differs and creates a variation of spatial transparencies, connecting and enclosing the inhabitant. *Woven Light* connects two usually separated logics: module-based logic of a digital pixel and textile continuity. Textile logic of continuity is operationalized to the logic of energy and control. Each node houses a cluster of four white low power consumption LEDs. A third part of the nodes (layer towards the back space) contains *Wireless control PCB (Philips Fine Compatible Light sources)* and enables control of the two sides of the nodes in regard to lightness and pre-set rhythms. The other nodes (middle and front layer towards the street) “just” light. To establish continuity of energy and control the modules are connected and a fabric-like, textile form structure emerges. In this structure only certain configurations of modules are possible to allow reliant energy continuity.

TEXTILISATIONS
Pleated Sound, Woven Light
Imagine if sound was not only an invisible phenomenon, but could be materialized and formed as a textile – layered, pleated or creased. Imagine if light was not form or material bound, but could be woven, casted or 3D-printed. Imagine if light and sound could address textile logics and materiality, while constructing and deconstructing spatial boundaries.

TEXTILISATIONS - *Pleated Sound, Woven Light* explores the immaterial phenomena of light and sound and how both phenomena can construct spaces that emerge from textile logic and materiality. *Pleated Sound* uses concrete textile material to construct a space composed of auditory sensations and visual associations. *Woven Light* explores the spatial implications of textile logics applied to LED technology.

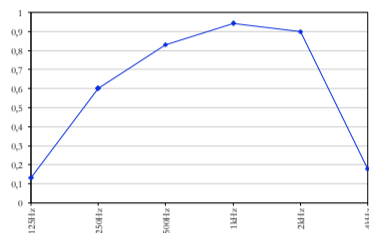
Pleated Sound is a wall panel of sound absorbing textile, folded and fixed with stitches to a three dimensional fluttering banner, frozen in the middle of a movement. Both the sound absorbing effect of the panel and its resemblance to a fluttering banner can build up space. Auditive sound absorption can be perceived as space constructing because the absorption of sound creates an auditory experience corresponding to the auditory experience of an open window - in both cases, the sound disappears. Architecturally, an open window is a significant expansion of space. However, the open window created by auditory sensations can only be audibly experienced – it is a non-physical space. Though, the auditory experience can be supported by the visual expression of the fluttering banner, which may evoke associations to the unlimited space outside where the wind is blowing and the sound waves roll freely across the landscape. *Pleated Sound* is made up of a textile, which in itself is sound absorbing. Sound is absorbed into a textile when its fibres and threads are exactly close enough to make the energy of the fluctuating air molecules convert into heat through friction. Sound is that way textilised in a very concrete way – it actually becomes (heated) textile. The sound absorbing effect of the panel is enhanced by the folds of the banner, which is altered by the materiality of the textile. The fabric's sculptural potentials emerge particularly from the rigidity and flexibility of the fabric. And finally, the design of the textile, imagining being an other type of textile: the textile of a fluttering banner, is a further textilisation of the sound absorbing fabric. *Pleated Sound* is an attempt to draw poetic elements of the weather into our houses.



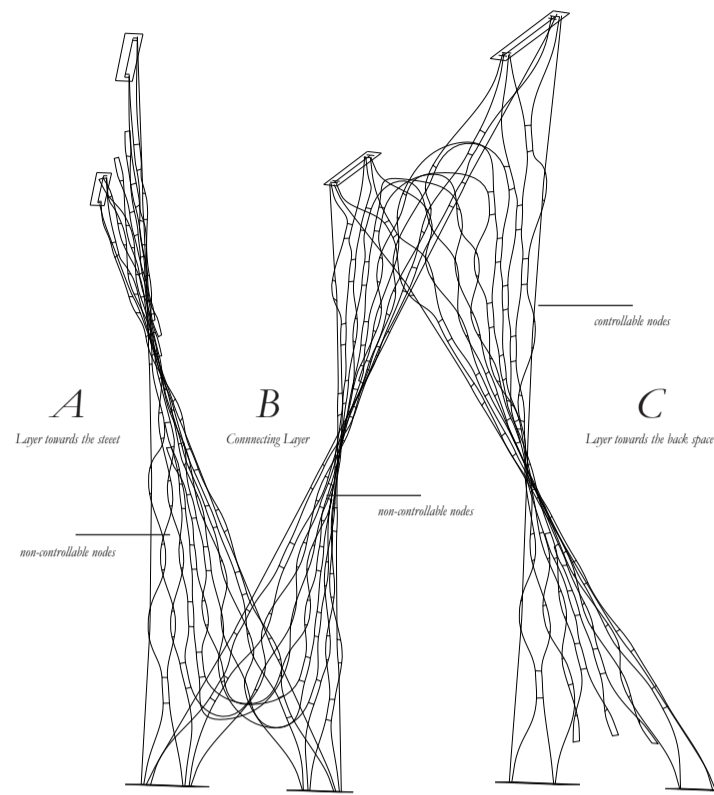
Pleated Sound - pleated textile detail. Photo: Stammers Kontor



The amazing configurations of textile and wind



Sound absorption of Pleated Sound



Woven Light - the spatial installation



Glowing Weave. Photo: Stammers Kontor



Assembly of "woven threads"

PLEATED SOUND

Cecilie Bendixen, architect & PhD

Pleated Sound is an attempt to develop the architectural potential of sound absorption with the intention of making sound absorption an architectural parameter, which, like light and material surfaces, can contribute to construct sensuous nuanced spaces.

The architectonic potential of sound absorption is relatively unexplored but emerges from the way we audibly perceive sound absorption. Sound absorption 'sounds' like an open window – the sound disappears which was demonstrated by W. C. Sabine in 1898. Consequently, the unit to indicate degrees of sound absorption he called 'Open Window Unit'.

Open Window Unit was an acoustical term, but architecturally comprehended the concept sounds like a designation for space constructing units. This architectural interpretation makes sense especially in a late-modernistic perspective in which the boundary between inside and outside is crucial. An 'open window' is a very precise metaphor of this interpretation of space where the yearning for outside is inversely proportional to the degree of indoor residency.

Open Window Unit can be understood as a concept for describing the architectural potential of sound absorption. At first the concept is only useful in relation to an auditory perception of architecture, as sound absorption most often is present in the form of relatively massive and extensive material and not in the form of actually open windows which both audibly and visually act as space extensions.

The waving banner suggests how a relatively massive and extensive material also visually can construct space as the banner can give rise to associations to the outside and maybe in this way support the auditory sensation of space.

Pleated Sound proposes how a sound absorbing material can give concurrent auditory and visual sensations about an imaginary space, which can nourish the dream about outside. As a designation for sound absorbing elements, which also visually construct space, the concept of *Open Window Unit* is hereby reintroduced.

Cecilie Bendixen is an architect and PhD. She runs the office *Textile Space* (<http://www.tekstilerum.dk/>), which develops and manufactures textile spaces constructed of sound absorption and flickering light.

WOVEN LIGHT

Astrid Mody, architect & PhD student

Woven Light is a site-specific installation.

The installation consists of 180 3D-printed nodes. Each node houses a cluster of four white low power consumption LEDs.

59 of these nodes (back layer towards back space) contain *Wireless control PCB* (*Philips Hue Compatible Light sources*), which are developed to control RGB LEDs.

In *Woven Light* the red, green and blue of RGB LEDs are replaced by four white LEDs. The two LEDs on the left side of the node are connected to the "blue control" of the RGB LED, the "green control" operates the LEDs on the right side and the "red input" is not linked to the system. The remote enables switching in between the two sides, the operation of three pre-settings and dimming of the system.

The other 161 nodes (middle layer and front layer facing the street) are non controllable.

As a part of the research trajectory other node configurations, control systems and modes of interaction were tested: One setup for instant "only" linked two LEDs to a node, another setup operated by the mobile app *Philips Hue* enabling individual and group control of the LEDs in regard to full spectrum of colours, moods or an image and a third setup explored the combination of four LEDs with light sensors, so the LEDs could respond to the light in the space and the light of their neighbours. This setup showed unfortunately too limited sensor functionality, but would be very interesting for further research.

Architecturally *Woven Light* speculates on how a media screen or digital pixel could inhabit a space. It explores how media screens not only could be limited to one side of the building but instead could become spatial structures in its own right.

And finally *Woven Light* operationalizes textile logic of continuity to the logic of energy and control to encourage others to consider new connections regarding LED technology in an architectural practice.

Astrid Mody is an architect and PhD student. The PhD project "*Textilisations of light – operationalizing textile thinking and materiality to develop the potentials of media facades*" is cooperation in between *Philips Research* (Netherlands) and *KADK, Institute of Technology*.