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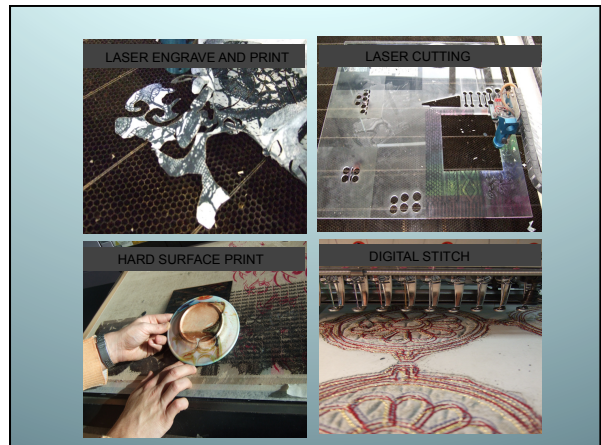
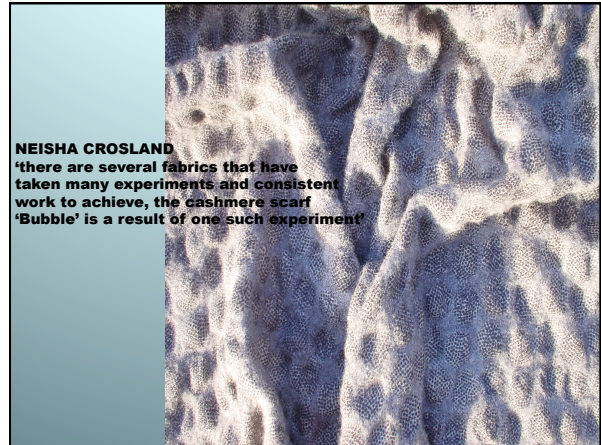
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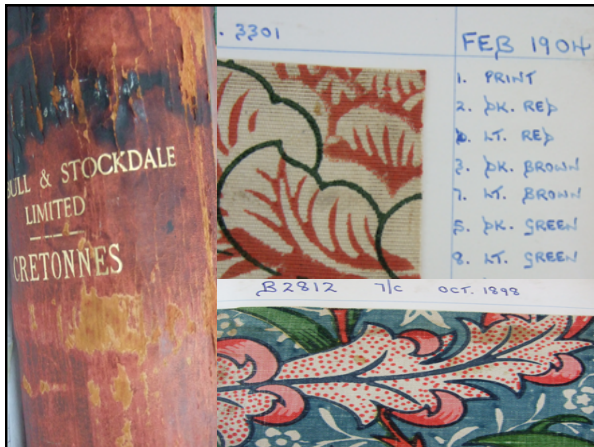
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THE LINEN INDUSTRY

By Michael Longley

University of Ulster
Smithsonian
Washington, USA
June 2007

digital
weave
stitch
print
laser
bond
devore
flock

The Lin
Pulling
to rot

The Linen Industry

Pulling up flax after the blue flowers have fallen
And leaving our handfolds in the peaty water
to rot those grasses to the bone,
we building stocks that

recreate the skirts of invisible dancer,
We become a part of the linen industry

And follow its processes to the gubby town
Where fields are compacted into window boxes
And there is little room among the big machines.

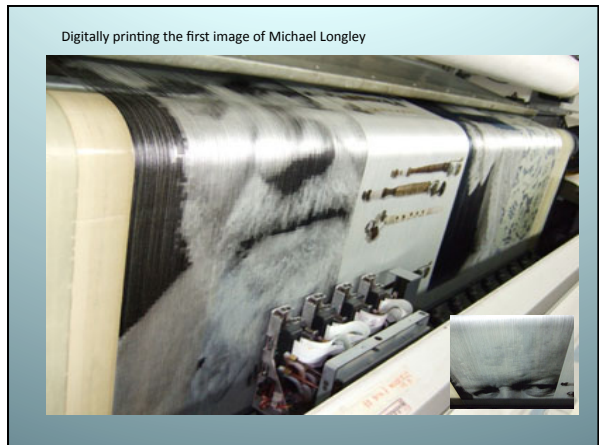
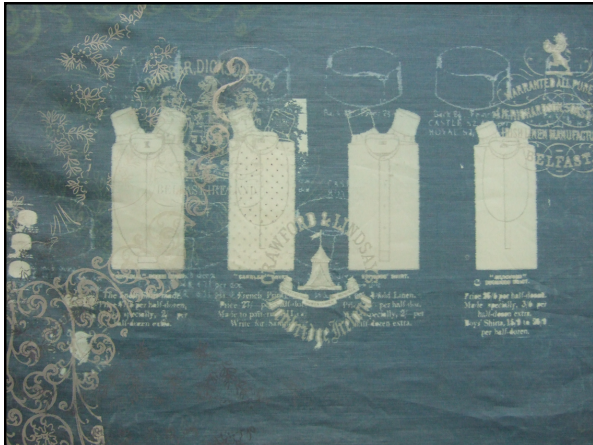
But even in our attic under the skylight
We make love on a bleach green, the whole meadow
Dipped with mineral turning white in the sun
As though some of them to melt in our attic.

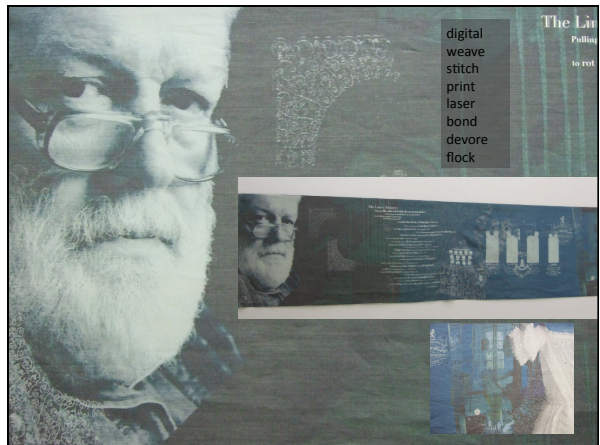
What's passion but a ferment of softness stalks,
This a gentle combing of fibers side by side,
And a weaving of these into christening robes,
Into garments for children's christenings?

Since it's like a betrothal once the labour's done
To find ourselves last workers in a dying trade,
Let flax be our matchmaker, our undertaker,
The provider of sheets for whatever the bed.

And he who craves beauty in the presence of death,
So that you look more beautiful in linen
Wearing white petticoats, the bone on your body,
At the body attending the embossed of flowers

(Michael Longley)







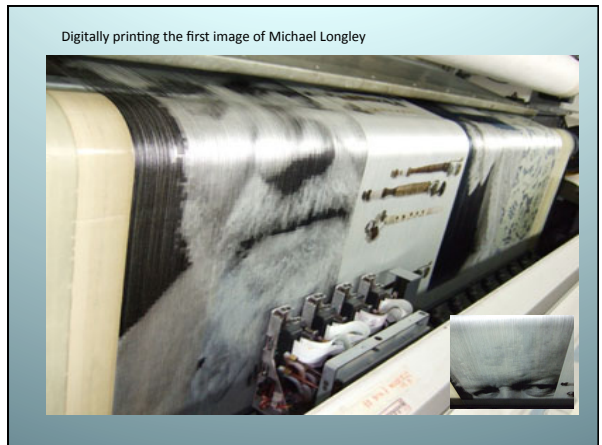
DIGITAL PROCESSES are facilitating the revival rather than the survival of the 'HANDMADE' process.

TURNBULLTHOMPSON go further than using digital Technology to mimic the traditional, but look at the soul of the HANDCRAFT to create new and exciting hybrid textiles

www.turnbull-thompson.com

A composite image showing a digital printing process on the left and a handcrafting process on the right. The text discusses the revival of handmade processes through digital technology.







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Soft Garniture: Developing hybrid materials between academia and industry.

Girli
CONCRETE

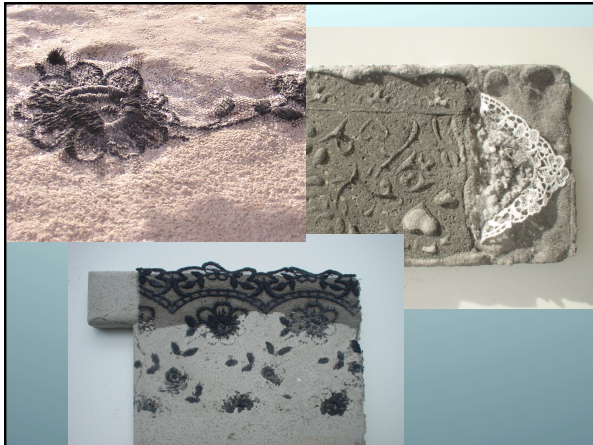
Patricia Belford
Senior Research Fellow
Textiles

Ruth Morrow
Professor of Architecture

University of Ulster, Belfast, Northern Ireland

HARD **SOFT**
harsh **gentle**

Girli Concrete
conceptually
marries concrete
with curtains.
columns with
socks, walls with
coats, floors with
mattresses.



Tactility Factory

makes hard surfaces...softer and more tactile

Tactility Factory (TF) is a collaboration between a textile designer and an architect

TF applies the techniques and technologies of textiles to the manufacture of hard materials producing highly tactile and desirable surfaces

'mainstreaming tactility in the built environment'

Trish Belford textile pre-Tactility Factory

Over the last 3 years

Tactility Factory

has developed

Girli Concrete


Girli Concrete combines concrete and textile technologies

TF has resolved the technical challenges of placing delicate fabrics into the aggressive environment of Concrete

Textiles are specifically designed and manufactured to be placed in concrete

'Breakthrough' Technologies ensure that the textiles remain on the 'face' surface - the textiles are neither swamped by concrete nor do they peel off

The result is a fully integrated, highly tactile surface of concrete and textile



embroidered concrete detail

Tactility Factory

currently moves forward through

commissions (currently)
 Girli Concrete is currently commissioning panels, resulting in site-specific high-end products

Derry Playhouse
 prestigious NI cultural venue - 7.5m long folded frieze (£10,000)



Zumtobel
 Swiss lighting firm, panels for London HQ (invaluable product placement)

others
 Private Clients
 Commission for HRH Princess Anne on behalf of Women in Science, Engineering and Construction

exhibitions (currently)

IFAI Design Exhibition 2008
 21st - 23rd October | Charlotte, N.C USA
 "featuring for our innovations with advanced textiles for health & safety"
 (8000 registered visitors for 3 day event)

Urban Buzz Exhibition
 7th Oct - 15th November | Building Centre, London
 (2000 weekly visitors) the building centre is widely recognised as the cross-over venue for architecture, construction and the general public.




Having resolved the technological challenges of girli concrete

Tactility Factory

wishes now to:

- Maintain an R&D Unit (in the university)**
 TF has attracted approx £40K during the development of Girli Concrete. We wish to continue designing, testing and exploring other hard/soft processes and building products and have submitted recent research council application for £750K to develop the **Tactility Laboratory**
- Develop a Bespoke Workshop (external to university)**
 To carry out one-off, bespoke commissions allowing TF to carry out live R&D testing and use such commissions to attract publicity acting as the "Haute Couture" to off-the-shelf range (see below)
- License existing technologies / product packages to global Partner Companies to manufacture off-the-shelf ranges**

Linen Concrete Petal Detail




Tactility Factory

will license 3 technologies

- embroidered concrete:**
 the outcome looks as if the concrete has been stitched into. The surface is robust and possibly suited to external environments. Currently developing collaboration with Hand & Lock, London - bespoke global embroidery company (they have offered £30,000 product for G-Concrete use)
- puckered concrete:**
 linen and stainless steel woven fabric results in a unique 3 dimensional surface (acoustic properties)
- linen concrete:**
 The properties of linen mean it's a natural choice for use in concrete - we use multi layered fabrics to control the integration of concrete and linen

[Note: IPR on these technologies is currently being pursued by UUTech]

TF's Linen Concrete sample



So what is the size of the market for **Tactility Factory?**

At this stage it's hard to say...

We believe that TF has created **'disruptive' technology** that will create new markets.

People don't know they 'need' our products until they see them. Once they experience the samples they can't resist: it's one of the reasons **Girli Concrete** attracts exhibition invites and press attention without seeking it. We believe it is a unique and strong brand.

As Alvaro De Ferranti, the CEO of firm that specializes in luxurious wall surfaces for Middle east and Russia says: **'I have never seen anything like this'**

(Incidentally he would like to commission 6 designs to be included in his range)

TF's main challenge therefore is: **ensuring the girli concrete products and their potential application is fully recognised and understood** through active publicity

DE FERRANTI specializes in luxurious surfaces for wall surfaces, sourcing rare and unusual products for architects and interior designers.

Projected turnover figures for TF Workshop

TF Workshop will produce Bespoke Projects and small, high-end product ranges (see current commissions)

Three Year Summary Profit / Loss			
	Year 1	Year 2	Year 3
Sales Revenue	75000	44800	150000
Production Materials	25000	4500	7000
Direct Cost of Sales	18750	9000	14300
Gross Profit	21480	20800	30000
Salaries & Wages	6100	7000	11642
General Overheads	5000	4100	4700
Sales & Marketing Costs	2080	1240	7000
Profit / Loss	-10704	3936	8158
Initial Cash Support	9000	0	0
Net Profit/Loss	-16704	3936	8158

Royalties for licensing

We are currently seeking advice on how best to manage licensing and determine percentage royalties. At this stage TF can not sufficiently predict figures to include in turnover figures

Action Plan

Phase 1: (without additional investment)
Complete Current Commissions - use to generate images insitu, press attention, etc

Actively pursue interest already shown from potential clients

follow-up potential in non-uk markets (Emirates, Russia, Switzerland)

Phase 2: (requires additional investment)
Utech has offered TF £30,000 on condition that a further £30,000 is found from an external source. TF has had initial conversations with Invest NI on support to start the TF Workshop. We aim to bring this funding 'package' together in the months ahead allowing TF to:

Find Permanent Space
Appoint Teams
Generate product samples to promote through tradeshow and high profile interior/ architecture magazines.

TF aims to use trade fairs to identify 1. potential partners to license technology/ product package to and 2. bespoke clients

Linen Concrete detail

'from Islamic through European to Eastern patterns...'

Tactility Factory

A range of product forms is possible:
Friezes, wall panels, tiles, folded elements, screens, exterior seating etc...

To date the motifs and graphics used within the products make reference to historical architectural symbols and imagery- such imagery can be designed to suit any culture.

Girli concrete in
hotel lobbies, transport interchanges, board rooms, public libraries, waiting areas, public building foyers, temporary public events, 2012 Olympics...

folded embroidered concrete element

girli concrete samples and wall panels

photoshop image showing potential location

FUTURE Potentials and Benefits:

Tactility Factory

During R&D, TF developed a lot of techniques/ technologies combining concrete and textiles which have been set aside in order to focus on refining 3 technologies. There remains much more to exploit within the girli concrete range.

Not least- its **acoustic properties**.

Concrete surfaces are hard and acoustically, highly reflective. Their mass makes them ideal sound barriers. A soft surface concrete allows TF to exploit the acoustic strengths of concrete and resolve its acoustic weakness.

Benefits for industry and university:
Unique distinctive project, interesting local story, strong profile.
Cross-disciplinary practice-based research that links high levels of creativity (blue sky thinking) with academic and **practical outputs** offering a range of potentials to exploit on a global market

Embroidered concrete detail

Tactility Factory is


Belford originated Belford Prints in London (1986) a unique textile company supplying to high end fashion market. (eg Vivienne Westwood, Jasper Conran) this aspect of commercial innovation and managing a small company (30 employees) is invaluable in the development of the TF.

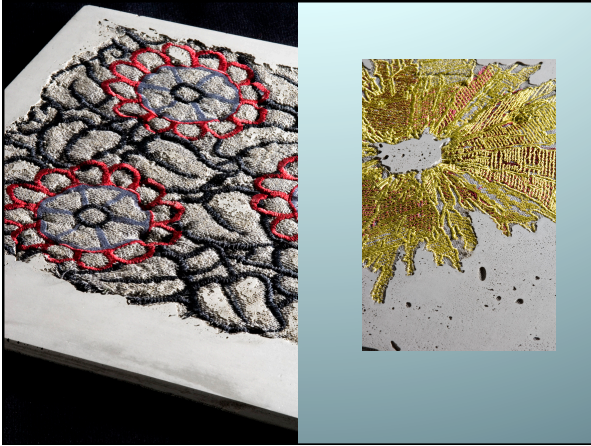
Morrow's family background is concrete production. She has worked both as an academic and practitioner and was appointed Professor of Architecture in 2003. Her work is framed by an entrepreneurial and collaborative approach. She is professionally well networked across Europe and is currently Chair of Northern Ireland's Architecture Centre.

Both partners are driven by the desire to innovate beyond their territories. They are keen users of IT to support the exchange of ideas, images, docs and maintain an active blog for the girl concrete project.

TF recently commissioned a small animation (final slide) to explain the TF concept and express our ambition to cover the world in Girl Concrete...

Trish Belford, textile designer
Ruth Morrow, architect
girlconcrete.blogspot.com







Tactility Factory

Sound absorption coefficient measurements using Impedance Tube

IFAI Design Exhibition 2008
21st - 23rd October | Charlotte, N.C USA
"Texturing far out Innovations with advanced textiles for health & safety"

School of Architecture University of Sheffield

WOVEN CONCRETE

a Tactility Factory Project

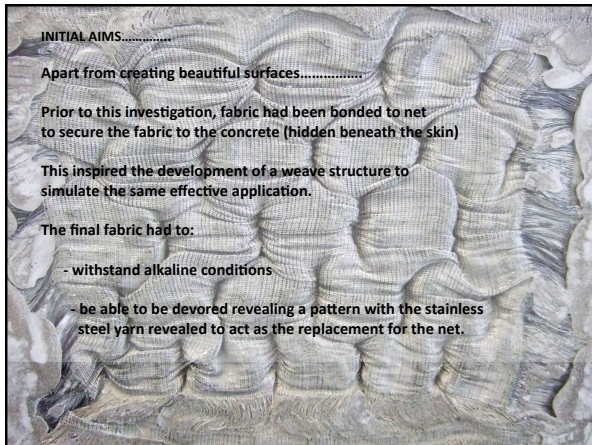
Patricia Seford
Senior Research Fellow
University of Ulster

Ruth Morrow
Professor of Architecture
Q.U.K.

An AHRC funded project
assisted by
Dr Andy Crangle Research Associate
Textile Materials
Donna Campbell Research Assistant
Weave

Woven Concrete

Linen bonded to a mesh before embedding, the concept of
was to remove this process



INITIAL AIMS.....

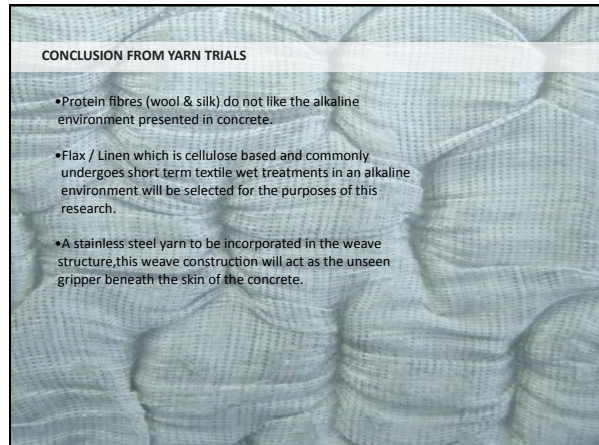
Apart from creating beautiful surfaces.....

Prior to this investigation, fabric had been bonded to net to secure the fabric to the concrete (hidden beneath the skin)

This inspired the development of a weave structure to simulate the same effective application.


The final fabric had to:

- withstand alkaline conditions
- be able to be devord revealing a pattern with the stainless steel yarn revealed to act as the replacement for the net.



CONCLUSION FROM YARN TRIALS

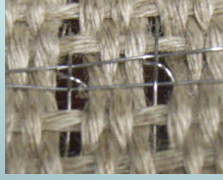
- Protein fibres (wool & silk) do not like the alkaline environment presented in concrete.
- Flax / Linen which is cellulose based and commonly undergoes short term textile wet treatments in an alkaline environment will be selected for the purposes of this research.
- A stainless steel yarn to be incorporated in the weave structure, this weave construction will act as the unseen gripper beneath the skin of the concrete.



weave trials

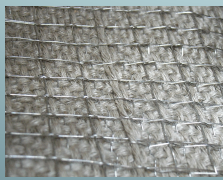
Stainless steel warp and weft





True Leno

- Investigated as a potential means to secure the structure of the mesh, working on the principle of 2 warp ends working together to bind and lock the weft insertion.
- Small samples worked well but production not possible due to time restraints and twisting of the 0.22mm diameter stainless steel



Mock Leno

- Leno shafts replaced with standard shafts to create a mock effect.
- Although solving some of the time issue problems to configuration of a stainless steel warp and weft needs consideration from a practical point of view.

