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## **Open to change: slowing down to explore and innovate.**

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### **Abstract**

A specific type of knowing comes from the handling of materials in the handcrafting of an artifact. This research looks at the relationship between the handcraft of weaving, and the decision-making process and knowledge of the textile designer. It investigates the potential for new design opportunities to be opened up for the commercial designer by moving out of the studio and back into the workshop environment. As an educator, manager and formerly a designer trained in textile design, this research explores an established industrial production method of weaving but revisited using a craft-like approach.

Slowing down the creative process to engage with the materials themselves, this paper starts to explore the potential of hand woven leno structures to be used within the landscape and to explore the process of change in response to environmental factors. Architect Philip Beesleys' work seeks to achieve a balance with nature, submitting itself to the natural cycles and inevitable decay, in which he deliberately designs mesh structures with weak and fragile links, whose materials soak up environmental forces. This paper starts to further explore the value of haptic intelligence and empathy for materials, also adopted by Beesley in his Haystack Veil (1997) and later Holozoic series. The process of creating leno structures on a handloom, has resulted in outcomes difficult to predict using digital software, confirming weaving as an emergent system (Philpott, 2011), where disparate threads are combined into dynamic structures.

There is a delicate relationship between textiles and the landscape, in response to which the designer of performance fabrics is required to create, indestructible solutions, with a lifetime guarantee. By embracing the science of uncertainty, fresh ideas and new solutions have the potential to be created.

### **Key words**

Landscape

Geotextiles

Design

Practice-led

Weave

## **Background**

As an academic, researcher and textile practitioner this Masters level research aimed to explore the potential use of textiles in outdoor environments and in combination with a rediscovery of haptic intelligence through leno woven fabrics. Responding to my fascination for abandoned items in the landscape and a drive to create substrates sympathetic with their surrounding environment, I identified a potential gap in which a new aesthetic could be potentially developed in performance fabrics by using the leno weaving technique. Archival research and investigation into the commercial technical textiles sector and led to a desire to create functional outdoor textiles to contrast with those already out in the market. This research also focused on the exploration of the differences between the commercial and craft processes and more specifically sought a personal return to the hand loom weaving in order to once again become familiar with the properties and characteristics of yarns and fibres.

My growing interest in the balance between the landscape and man-made products, surface quality and form, was developed through regular engagement with the outdoors, including walks through local woodland, hiking over the Pennine Moors and strolling along the beaches of Wester Ross. Forgotten and abandoned possessions, a stranded sock on a barbed wire fence, bailing twine to fix a gate, fisherman's nets washed up on the shore. On closer inspection of the surrounding landscape, these discarded items, had a strange and fascinating beauty. Observations around the patina and softening of surfaces brought about through weathering and the subsequent acceptance of these material interlopers in the landscape was seen as an opportunity to research the relationship between materials, erosion and beauty.

Part of the aim of this research was to raise the awareness of textiles by placing them in an outdoor environment where they are not traditionally sited. Fabrics and textiles are generally there by accident (discarded items), or performance driven in their application or submerged in the soil, as is case for many geotextiles. This practice-based research enabled me as a designer with a background in commercial textile design to explore the potential of an established industrial production method but using a craft-like approach and to slow down and engage with the materials themselves. Rather than relying on secondary information gleaned from other makers, textile artists and designers (through exhibitions, magazines and on-line) the role of practice in this research drove new

personal insights into the process of responding to a self-written brief but without the time pressures associated with textile design for mass production. This practice-led research follows the theory (Biggs 2004) that practice is an integral part not only of the communication of outcomes but also of the process of research.

The balance between textiles needing to function and perform at the same time to provide aesthetic pleasure is a complex skill and yet textiles can be taken for granted. Igoe (2010 p.5) ‘...alludes to the pleasure giving qualities of textiles, which maybe subtle, tactile or decorative and sensorial’. Often textiles are subdued, taken for granted, or not rewarded for their design input – and therefore they have accepted a less active role in pertinent debate around design research.

### Textile Design or Textile Practice

My personal experience points to a natural tendency as a designer to jump to a quick solution (Bruce 1963), an ideal or flash of inspiration that occurs at the first instance of the idea. The challenge throughout this work was to remain open minded about what the final result might be and to try and be receptive to building new findings and pieces of knowledge into the possible end solution. Designers do however need to be willing to embrace unexpected occurrences, and be open to possible changes in a brief at the end stage within the creative process. In design the final goal imagined, is in a way a constructed fantasy or shimmering prize on the horizon, a prize that we then seek out through exploration and experimentation. Previously captured influences, imagery trends and knowledge are drawn upon to offer a quick range of solutions, and so the designer is able to create (fabricate in a way) a back-story to support the relevance and suitability of the ideas proposed. Rust et al. (2007 p.13) refer to the expression “The science of Uncertainty” which has been used to describe the design process.

Initially this research aimed to create a fabric that would perform a function such as that of a substrate for use in outdoor seating, but what was unexpected as an outcome were the woven artefacts that came into being. The shortcuts to the end product or solution, typically adopted by the commercial designer have been enriched with the reflective practice of discovering and experiencing the weaving process by hand and specifically in this case through weaving leno fabrics (figures 1 and 2).

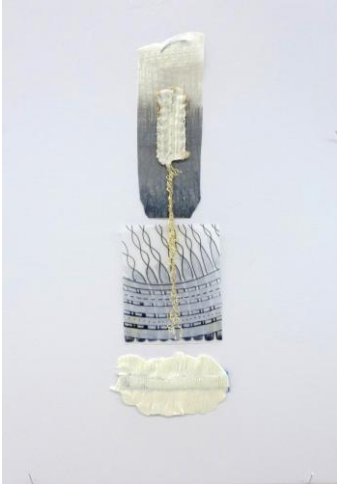


Figure 2: Design development



Figure 1: Weaving on the loom

There is no replacement for actually seeing and feeling the interaction with the threads on the loom and seeing how the subsequent removal of the warp tension allows the cloth to find it's natural state. Morozzi cites Claude Levi Strauss in his speech on receiving the Nonino Prize in 1986.

*'...The purpose of working with your hands is to have a dialogue with the nature of materials being worked. Man and nature collaborate in an exchange based on mutual respect...[man] must do his best to understand [nature] patiently, cautiously trying to get their attention and almost, even seducing them...'*

This research and the methodologies used to generate ideas were also further explored (during 2014 and 2015) through a project with Year Two Textile students at Huddersfield University. The academic team (Textiles with Surface Design) at Huddersfield are using their own research interests to lead small teams of students in developing research skills, methods and team work, prior to the students' final year when they commit to directing their own research and study for both their research report (monograph/dissertation) and Major Project.

### **Early outcomes**

The slow process of weaving became important during the initial research and key to further this enquiry was the dynamic process of learning and understanding through material experience. Critical reflection and creative thinking developed though practice led

enquiry (Rust et al. 2007) and the haptic intelligence of the weavers' hand was employed with the intention to scale this for industrial production. (Hemmings 2012, & Seelig 2005). In weaving, elements are brought together to create an emergent system, one that is unique and not easily predicted using digital software. Using my expertise as industrial textile designer and weave practitioner to employ design thinking and craft skills in the adoption of the role of a reflective practitioner.

Early artistic interpretation of the landscape grew from a personal immersion in the climate and topography of the Pennine Moors. The final pieces of open leno fabrics for the original research were photographed back in the environment that first inspired their creation and the sock on fence was similarly re-visited to note any further degradation. These pieces derived their inspiration from open webs (figure 3), and nets and were developed into transparent interlacing's typical of leno weaving, using monofilament, bright viscose and wool yarns. Leno weaving requires a loom set-up where parallel pairs of warp threads are further controlled by a set of doups or leno heddles that enable the weaver to deflect one set of threads across the adjacent warp threads. During this deflection the weft thread is trapped in the twist of the warp threads and results in very open (low sett) yet stable fabrics (figure 4).

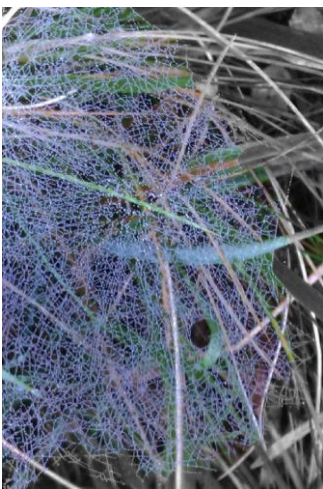


Figure 3: Cobweb mesh



Figure 4: Leno structure detail

A new position for textiles could be potentially be achieved through the continuation of this research and might lead to sculpting the landscape or rather exploring the landscape through the formation of meshes, and dynamic structures that would both protect and reveal their surroundings.

On reflection I am not just considering a functional purpose, but allowing an artistic interpretation to lead the structural and aesthetic development of the work. Walter Seelig

(2005) recognizes the increase in the use of materials that re-sensitize, through exposure to the primal reality of raw material. He also identifies an increasing interest in:

*'...haptic intelligence and its role in understanding creative impulse in an age of multiple realities. Rarely is empathy for materials greater than it is in the textile and fiber-related media, where they are felt and experienced beyond their physical presence as if they were animate and alive.'* (Seelig, 2005, p.42-45 paragraph 7)

I am seeking a partnership with my materials (created on the loom), their purposes (to be cited in the landscape) and values (to build a relationship with exterior environments like moorland). Theoretical approaches of relevance to this research are 'Meshwork or Entanglement Theory' (Hodder, 2014) which investigates the archeology of relationships between humans and things, where everything is meshed together to form a whole entity – being permanently entangled. Tim Ingold's paper (2010) on the Transformation of the Line: Traces, Threads and Surfaces, is of interest as is his notion that 'Human beings leave reductive traces in the landscape, through frequent movement along the same route on foot...' These reductive lines (desire lines) or footpaths are 'drawn' onto the landscape, and drawn is also a word synonymous with the manipulation of a textile thread. He posits that 'threads may be transformed into traces and traces into threads' and through the transformation of threads into traces, Ingold argues surfaces are brought into being. A weaver starts with a set of parallel lines, through which the line of the weft is threaded. If all the threads are of a single colour the cloth appears homogenous, but if other colours, contrasting textures, or thicker yarns are used; the path of the thread, like a line then appears as a trace on the surface. Similarly knots in a cord represent a record of primal pathways, as is the case for the Kandingei people of Papua New Guinea, where the slipping of the knots through the fingers is a physical reminder of an important journey (Ingold 2010). Could I explore the footprints on a footpath, or could the visual echoes of the landscape be notated in the woven cloth or knotted yarn?

### Industry and tradition

The value of archival records and historical literature and manuals on weaving leno, have revealed vital knowledge, which has been little documented since the decline of the textile industry. Knowledge in manufacturing and commercial design contexts, is often presumed or remains locked within the mind of soon to retire technical designers. The textile industry

is naturally secretive and this competitive environment is such that technical knowledge is rarely shared, restricted to silos of know-how, each the property of a separate company. In contrast the world of the craft weaver is far more open and transparent, knowledge is readily shared through blogs and Internet forums, exhibitions and conferences. The technical scope of the craft weaver is driven by different requirements, as it has a smaller customer base and its practitioners naturally create a more indulgent outcome, working as they are on a smaller scale.

### **New horizons**

The plan is to develop this work through a practice-led PhD, highlighting ecological issues, develop a greater understanding of geotextiles, diagrid mesh-works, and architectural thinking for exposed sites such as the Pennines of West Yorkshire. This research aims to adopt the four steps that Janine Benyus suggests for studying and building a biomimetic future: quieting – immersing oneself in nature; listening – discovering the survival tips of flora and fauna; echoing – collaborating with nature (as a model/mentor/measure); stewarding – to preserve life's diversity and genius (Kwon & Fraiser-Scott, 2012). Design ethnography may be carried out to observe real experiences of walkers in a specific landscape or territory, using diary and photo-studies, and modified versions of participant observation. Unobtrusive methods (Martin & Hannington 2012) or physical traces could be used as erosion measures, showing evidence of wear patterns or other subtractive factors in the intended site for the woven trials.

There is evidence of a number of architects and urban designers applying textile thinking to architectural practice, through the study of textile construction techniques and or the dynamics of such flexible substrates, but little evidence of weave designers/makers using their knowledge to inform urban or rural landscape design or ecological awareness.

*'You cannot simply put something into a new place. You have to absorb what you see around you, what exists on the land, and then use the knowledge along with contemporary thinking to interpret what you see.'* Tadao Ando (n.d)

Dominique Perrault created textile based architectural urban designs, and it is his vision to apply highly innovative textile meshes to a more democratic, human and pleasurable type of urban space. His research into the emotive and atmospheric effects of textile-based



architecture extends to his belief that ‘...nature as a stable category, does not exist. Humans create nature, an artificial nature... we should control and build a specific nature for people.’ (2006, p 30) This is in reference to urban design and visible meshes as protective veils or wraps rather than the design of supporting or underlying structures.

The architect Philip Beesley states in his engineering of liminal geotextiles (2011) that they ‘...are used as a matrix which fosters life. So they are essentially artificial systems, self-organising entities that can generate remarkably potent things...’ His work as an architect of diagrid networks, developed in response to his extended dialogue with the weaver Warren Seelig and his work, was initially created by hand and he builds in deliberately weak bonds in his component mesh-works. These designed-in weaknesses allow human interaction and environmental conditions to deliberately affect the components thus giving the ‘fabric’ a flexible live hand. The proposal is to develop this live hand/interaction in a woven substrate similar to this earlier development seen in figures 5 and 6.



Figure 5: Leno woven mesh 1

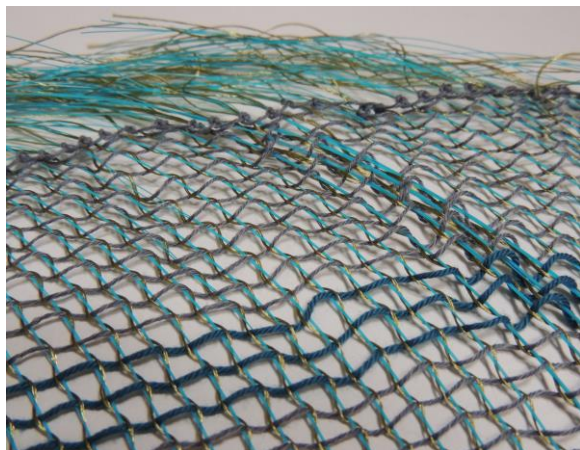


Figure 6: Mesh detail

Mixing craftsmanship, science and technology has developed some new areas of material combinations as established in the collaborative research between Carole Colett and Sir John Sulstan. In their exploration into ‘the design of obsolescence’ (2008), the traditional techniques of macramé and crochet were employed in a collection of suicidal textiles, designed to decay and compost over time as they were exposed to the natural elements.

Modelled on beech tree roots, the bronze work of Hamli Bhuta evokes the two central themes of spatial exploration and the idea of transience in her work. The Frieze sculpture, the culmination of the artist’s three-month residency at Yorkshire Sculpture Park was

inspired by her walks in the woods. She said, these walks 'were often languorous because she was mindful of what was underfoot'. In the same way, the sculpture attempts to bring to the fore the human tendency to not notice what lies below. 'I want it to be something you walk over and not notice,' Ms. Bhuta said (NY Times, 2012)

'The work is called 'Speed Breakers' and literally the composition is intended to stop people in their tracks, or at least to slow them down, give them pause,'(NY Times, 2012). Through the creation of exposed geotextile substrates a new awareness to the erosion of the landscape, by the public is proposed for this research.

### Macro Weaving

Arup's Advanced Geometry Unit has explored macro weaving, in order to consider textiles forms as more than those used curtain or tensioned surfaces in architecture. The reinterpretation of the topology of a weave has been applied to larger scale structural systems as in the Serpentine Pavilion of Alvaro Siza and Eduardo Souto de Moura (2005). Cecil Balmond's Studio applies his non-linear, generative methods to create extraordinary designs that fundamentally re-organise space and exploit the structural benefit of a woven fabric or plaited cord. Could this topology of weave create space-changing landscape pieces, which are unique to leno weaving?

The individualized and incremental approach used in the development of customized substrates to capture storm water, investigated by a team from Philadelphia 'Edaphic Effects' (2011), visually and conceptually references net-like weave structures. This example of manipulated geo-cells using a PLA compostable material was digitally modelled but joined together by hand. Could a textile surface be tailored to fit each individual surface?

Inspiration will also be taken from the 'variable morphogenic growth of a knotted surface' fashioned in a comparable manner to Macramé which enabled Miharuru Morimoto to 'weave a series of houses full of texture and sensation' as seen in his Carpet House (Spuybroek, 2009). Lars Spuybroek in reference to the work of Ruskin and Millais posits that craft is not after design and that weaving and braiding are inherent in design. Jeremy Magner used braided elements of hair/wool/leaves, and systematically intermingles them along a common trajectory in his Bespoke House, much as a weaver interlaces the warp and weft on the loom. These strands have a tendency to ultimately knot together, so this

development turned to the use of ribbon type structures in order to create a more formal system of organization. Observing the interlacing of braids led to choreographed spatial relations and using simple rules of connectivity a system that has also been used by Erasmus Ikpemgbe in Balloon House (Spuybroek, 2009). It is fascinating to note the use of the logic and interlacing's of weave in architectural practice but there is little evidence of the reverse. Could the knowledge of the weave practitioner produce surprising outcomes in the field of landscape architecture?

### **Moving forward**

There is a vast potential in the landscape and therefore the scale of the making in this investigation could match that of the environment in which the fabrics are ultimately situated. My further research will be centred on the development of textile responses to the landscape, on and off the loom, using leno weaving and other stable/flexible knot forming systems of fabric construction. Reflection and research into material combinations, and possible pattern combinations will be recorded and tested in the studio and on site.

Critically the research completed thus far has helped to position my own practice and enabled me to start to articulate the differences and shared approaches I have found between that of the craft weaver and the textile designer and establish the value of each. The value of hands-on practice has been established and will continue to be explored, with the aim to scale up this approach and work beyond the restrictions of the loom, creating site-responsive pieces. The potential to use a more craft or art based way of thinking to push the development of an area of textiles typically confined to functional solutions and industrial uses has been established. Further exploration into the possibility to transfer the skills and knowledge of the weaver into architectural thinking or landscape shaping will be key to further this research.

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