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**Textile Territories: Past, Present and Future**

***A Selection of Papers***

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## **PROMOTING SUSTAINABILITY: A SILK COMPANY'S LONGEVITY AND ENVIRONMENTAL AWARENESS**

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Sustainability has a double meaning at Mantero Seta Spa, the one hundred year old silk company nestled in the picturesque town of Como, Italy. First it attests to the company's longevity and survival amidst a gradual decline of Italian silk production, and second it is a key ethical concern and guiding force for much of the company's business practices.

Silk production in Northern Italy dates back to Renaissance times when Mulberry trees were planted in abundance; today Como (about 40 km from Milan) is still greatly associated with silk. Initially the industry was composed of a loose organization of home weavers who lived either in Como or the surrounding countryside. By the end of the 19<sup>th</sup> century, manufacturing groups became more cohesive, and a group of family run companies were formed to develop designs and manufacture fabrics. Thus Riccardo Mantero formed his own company in 1902, and subsequently became one of the leading entrepreneurs of silk in 20<sup>th</sup> century Northern Italy.

In the beginning, the young entrepreneur concentrated on brokering fabrics from local manufacturers. Concerned with finding high quality and well designed fabrics, he began to work more closely with manufacturers and eventually the Mantero Company (Riccardo and his sons) took over the development and creation of the fabrics it sold. In the 1940s Mantero acquired its first weaving mill, and in 1964 opened the current plant it runs in Grandate near Como.

Mantero Seta SpA, is famous for producing beautiful high end fabrics seen on the most fashionable designer runways. These partnerships began in the 1950s when Paris designers, led by Pierre Cardin, began to show fashions that were "ready to wear" in addition to the traditional haute couture. This opened up a niche market for fabric manufacturers who foresaw the possibilities of creating exclusive fabrics that could still be mass produced. In addition to providing fabric to designers, in the 1960s Mantero also began producing fashion accessories, including lustrous multi-color print scarves for women and elegant jacquard woven silk ties for men. In the early 1980s, Italian fashion (with Armani and Versace leading the way) became extremely popular and companies like Mantero assisted and benefited from the "made in Italy" cache.

Throughout the 20<sup>th</sup> century, many factors affected silk production in Italy. Economic depression, war, new synthetic materials, and competition with third world countries are just a few examples. Many companies could not muster the flexibility required to develop new strategies for success amidst changing times. Mantero, however, managed to thrive by adapting to market developments and staying on the cutting edge of high end fashion. This includes developing non-silk fabrics such as polyester microfibers and forming joint ventures with Asia rather than merely competing with them.

Recently the company has dedicated itself to supporting textile art and consciously promoting ethical and environmentally friendly fabric products. As part of this new commitment, two years ago they opened La Tessitura, a combination concept store, gallery and café located in a former silk weaving factory. Even the building is recycled.

La Tessitura sells overstocks from many of the collections licensed by Mantero as well as a variety of inventive accessories and objects made from post-consumer textile products. Many of these items are developed by a creative think tank of young international designers. Products include wallets, notebooks, hats, and skirts made from men's ties. An acrylic chair with salvaged fabric sandwiched in between layers of plastic provides a new take on upholstery. Leftover warp waste in jewel toned colors looks like giant chenille in colorful throw rugs or slippers.

Tired of having to destroy excess or misprinted fabric due to severe licensing agreements, the Mantero lab was formed to develop new materials from recycled textiles. Some designers require immediate destruction of all recognizable fabrics in the name of exclusivity, others stipulate a time period such as five years before the fabric can be reused. Mantero Lab figured out a way to shred silk fabric and combine it with wool to create a felt material. The resulting *Resilk* uses minimal resources; there are no added chemicals; only heat, moisture and agitation transform the silk and wool. Mantero is especially interested in marketing their new, sustainable product to businesses outside of traditional fashion.

Mantero encourages collaborations with international designers as well as textile artists. They are a major supporter of the annual international Miniartextile exhibition in Como, and La Tessitura Gallery showcases artists who reuse materials and inspire a textile sensibility. The Mantero Award for Young Art is a competition challenging young artists to create an object from 3 meters of Mantero fabrics.

Another significant partnership is with London based fashion designer, Deborah Milner. Milner, who also receives funding from Aveda, has developed a line of clothing she has dubbed "ecoture". Mantero has provided salvage fabrics for use in her designs as well as researching dyes, fibers, and fabric structures that are less damaging to the environment than traditional ones.

The company realizes that nurturing young talent will result in the rejuvenation of textile traditions and aid future innovation. Likewise it understands that by promoting ethical working conditions and environmental consciousness it can help create a bright future.

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## DIGITALLY CRAFTED

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### Introduction

During a recent trip to Thailand I casually witnessed an amazing print and weave process, innovatively combining high and low technology. This hybrid processing was being practised daily as if it was normal. However I should have realised that nothing related to The Jim Thompson organisation would be that straightforward with its history steeped in unusual occurrences.

<sup>1</sup> Jim Thompson an American who was sent to Thailand at the end of World War Two, he fell in love with the spirit of the country and stayed to revive the Thai Silk Industry. Originally an architect, but when travelling around Thailand he became intrigued by the dust-covered hand looms in the villages; weaving at that time had all but stopped, due to competition from cheap imported fabrics. Jim Thompson sought out the remaining home working weavers, invested \$100 and brought a suitcase of colourful samples to New York. The success of Thai Silk was immediate. Jim Thompson had worked in Thailand long enough to know that he could not get the Thais to work under pressure (this is still one of the many cultural differences a western style management has to consider). Thompson sought out the weavers in their homes giving them raw silk and dyes. The colours he introduced were high quality; non-fading Swiss dyes that eventually replaced the vegetable ones. He insisted on quality and encouraged many old weavers to begin their trade again, something they had previously abandoned. In a few months he had 200 weavers working for him and by 1967 there were more than 20,000 weavers in Thailand. The Thai silk industry became so profitable that in 1960 the Thai Silk Company alone had 2,000 weavers on contract working for it. The year 1967 is significant in that on March 26<sup>th</sup> Jim Thompson went for a walk in the Malaysian Highland and has not been seen or heard of since. Today the house he built in Bangkok is one of Thailand largest tourist attractions, and The Thai silk printers and finishers company is still thriving in the district of Pakthongchai, 300km North East of Bangkok. An American colleague of Jim Thompson, Eric Booth is chairman of The Thai Silk printing Company, with his son Eric also on the managing board. Khun Booth (as he is referred to in Thailand) was recently granted Thai citizenship, a great honour for a 'farang' – foreigner. The Jim Thompson foundation is very much linked in with the Culture of Thailand setting up the Employees' Children Educational fund. In 2006 the Company awarded 225 scholarships; the objective was to emphasize the value placed by the Company on the importance of education to the future of the children and honour the memory of the company founder. Jim Thompson was a social entrepreneur, not always going with the system and would have encouraged the work of the foundation.

On the opposite side of the world Edward Turnbull Printers, having been located in the North West of England for many years, were traditionally hand-block printers, but over the last 20 years progressing to rotary and more laterally digital. The company formed at the turn of the century, originally called Turnbull and Stockdale, and then after World War Two became Edward Turnbull Printers Ltd. They was world renowned in the furnishing industry for their high quality printing. The Company is now managed by

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<sup>1</sup> Stevens, H (2005) *The disappearance of Jim Thompson*. California. Wolfenden

Paul Turnbull the great grandson of its originator. The irony is that Paul Turnbull was operating his print business very close to where I operated Belford Prints; printing for the high end fashion industry, we had shared customers and from a close distance respected each others business. With the onset of overseas competition it was only natural for Turnbull to look elsewhere to relocate. After a two year search throughout Asia he met and discussed relocation with the Board of The Thai Silk Company, A merge was formed in 2006. Turnbull Thompson was formed moving all but the design studio from the UK to Thailand. The Thai spirit and work ethic is still in full evidence, with three of the UK employees from Burnley fully settled and integrated into the Thai workforce, managing the Turnbull side of the operation. This was important to maintain and grow the European and American part of the business. It is an ironic textile tale twist that I am working in collaboration with Turnbull in Asia, when a few years ago we would have been considered competitors. Having been to the factory to discuss the creation of new print techniques along side the traditional I have been able to witness first hand the development of high digital technologies in combination with hand and traditional processes.

Perhaps the most interesting new process is the digital warp printing. Its evolution in essence is simple combine digital print and weaving, however its development has been complex, on the one hand utilising the hand weaving processes, in combination with Thai work culture, not dissimilar to the problems faced by Jim Thompson 60 years earlier. However the Thais are very considerate and diligent and with new encouragement there are exciting developments being made. The entrepreneurial vision for change in the print industry recognised by Paul Turnbull and a keen desire to work with Thai skills and culture have given rise to a new and exciting era for the global print industry.

The commercial arrival of digital print in 1996 was at the time a huge boost for the print industry, in that it created a revival in print and opened doors to almost anyone who wanted to print without the added cost of time and screens. The other side of the coin is that it somehow lost the skills of the creative textile printer. Anyone could buy a digital printer and run it from there front room. In parallel the hand loom was loosing pace as it was slow, requiring high labour input and struggling against the power and digital looms. For the creative textile printer, digital printing is limited in explorative processes in that fabrics are limited, and the results can often be flat, lacking depth. At Turnbull Thompson two completely different disciplines have created a beautiful unique textile fabric. The warp is specially prepared and fed through the digital printer. Several modifications were required; this took a considerable amount of patience, time and translation. The warp is digitally printed on a machine similar to the one within the Interface research centre. The advantage of digital is that any number of colours can be used and repeat length is not an issue. . Once the warp is printed the beam is removed and placed on a hand loom. The warp or weft can be a variety of yarns giving rise to print burn out possibilities after processing. The full processing is protected and hence I am not able to divulge the solving of issues such as coating and cloth movement. With the possibility of being able to introduce wefts from any source the diversification is open to a wide reaching creative perspective. The final product is a multi coloured softer print that lends itself to furnishing and fashion fabrics.

For recent participation at The Smithsonian Festival in Washington at Interface we created and commissioned large textile wall pieces using the warp digital process, and manipulating the fabric further utilising the textile resources at Interface, with application of stitch, devoré, laser cutting and bonding. The pieces are currently on display at The Millennium Court in Portadown, having been at Ormeau baths Gallery during August. Another project currently under way is applying the process to men's

wear and high end cashmere printing. The advantages in the men's wear is that the main market of high end is still driven by Italy, the introduction of this process gives the clients another 'look' that can sit along side the classical Italian signature print. The first cashmere trials have taken place and this will open up a new and exciting market, as to date cashmere printing is mainly a discharge route. However, one of the limitations for the lighter weight, and now more popular, product is that to have the stamp of high quality the reverse of the fabric has to be the same as the front. Digital weft printing facilitates this requirement.

The block printing house (Turnbull Thompson) is also engaging in this way of thinking. Blocks are being taken out of storage, some dating back to the beginning of this century; the warp yarns are block printed and the weft inserted afterwards. Block printing is very labour intensive, and this is one aspect of printing in Thailand that is not a problem, as there is a large workforce working at The Thai Silk Printing Company. The final product is innovative, the costs are high, both to produce and develop, and can therefore withstand a high selling price.

<sup>2</sup>

Throughout Asia there is growing evidence that design and creativity should be taken more seriously and not just be in the market as low cost makers. In Thailand a recent example is the formation of The Thailand Creative and Design Centre. This is the first learning and resource facility in Thailand capitalising on its creativity in designing products to better meet the markets requirements.

<sup>3</sup>A recent article 'Handmade in India' by David Nicholls for The Telegraph Magazine demonstrated further evidence of Asian countries being respected more for their innovative and creative input as opposed to just cheaper products. The Conran Shop is showcasing the new work of a new wave of Indian designers who are giving ancient skills a twist. The project called Rangoli was set up by Polly Dickens the buyer who wanted to put together a show of what was actually being designed in India, and not just made there.

Digital processes are facilitating the revival rather than the survival of the 'handmade' process. Some of the processes being carried out at Turnbull Thompson go further than using digital technology to mimic the traditional, but look at the soul of the handcraft to create new exciting hybrid textiles.

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<sup>2</sup> [www.tcdc](http://www.tcdc)

<sup>3</sup> Nicholls, D(2007) *Handmade in India*.



## FLAX – LINE AND TOW

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### Abstract

In the process of producing fibres from the stalks of the flax plant, during the final stages – scutching and hackling – two different products are obtained, long fibres ("line") and short fibres ("tow"). Characteristically, flax is a *long vegetable fibre*, whereas the "line" is the more desirable quality product, and the inferior "tow", more of an un-avoidable by-product.

Each of these two products has its own unique characteristics, which affect the methods used in the following manufacturing processes, i.e. spinning, weaving and post-loom treatment. Specifically, "line" is usually wet-spun, a process unique to linen, which utilises the wax and pectin present in the fibres themselves to "weld" the yarn into a strong, smooth and durable material. On the other hand, the inferior "tow" does not justify the above process, and is generally dry-spun, resulting in a coarser, fluffier and weaker yarn.

The various end products will vary according to the type of yarn used. "Line" based textiles are of the finest quality wovens for garments and other home uses. "Tow" is not wasted, and will be used for the production of coarse woven fabrics such as sacks, and additionally for semi-textile use as rope and cord, or non-textile use in paper.

This is true historically. Modern uses for "tow" include also high quality knitted linen and various wovens, in which the yarn may be blended with "line" or with other fibres. The presentation will include an historical overview of this subject, from the perspective of the times preceding up to the present, with specific attention given to the Bible (OT) and the Mishnah.

### Introduction

When categorising textile fibres – animal, vegetable, and synthetic – we distinguish between long, short and endless fibres.

Synthetic fibres are endless, but can be chopped or torn to shorter (cotton or wool) lengths in order to give them a more natural feel and appearance.

Cottons and wools vary in length, but within specific parameters, never drastically changing their fundamental characteristics.

Silk (reeled) is virtually endless, although its sister fibres, "waste silk" and "peace silk" are short or broken fibres that must be spun to produce yarn. These may be called "noile" or "tsumugi". Between these two silk groups, differentiate several dominant characteristics.

"Long vegetable fibres" include flax and hemp ("soft fibres"); and jute and sisal ("hard fibres"). "Long", at least regarding flax, is about 80-90 cm. Our presentation will concentrate on flax.

The length of these fibres requires - on one hand - special procedures for combing and spinning, and - on the other hand - grants the fabric woven from them unique characteristics, such as smoothness, sheen, and durability.

During the processes of combing flax ("scutching" and "hackeling"), tangled and broken – and therefore short - fibres are separated, and they will be further processed

separately from the long ones. The short fibres are referred to today as "tow", and the long ones – "line". Tow is considered inferior to line and a "by product".

Just as the case with the two groups of silk, there are distinct characteristic differences between line and tow which will define different end-uses for them.

The various end products will vary according to the type of yarn used. "Line" based textiles are of the finest quality wovens for garments and other home uses. "Tow" is not wasted, and will be used for the production of coarse woven fabrics for upholstery or sacks, and additionally for non-apparel textile use as rope and cord or upholstery filling, or non-textile use in paper.

This is true historically. Modern uses for "tow" include also high quality knitted linen and various wovens in which the yarn may be blended with "line" yarn and/or other fibres.

Incidentally, flax fibres (either tow, or line - *but it wouldn't be sensible to "waste" this valuable material*) may be "cottonised", i.e. cut to cotton fibre length, facilitating their blending in cotton system machinery.

In antiquity, this unavoidable by-product - "tow" - was common. In societies where flax was scutched and hackled in the home or nearby, the familiarity of tow enabled its mention as a successful analogy or metaphor where applicable.

One of the most prominent characteristics of tow, metaphorically, would be its high inflammability. Being almost pure cellulose, thin and dry - it could readily go up in flames, along with the whole building. This often happened in scutching mills in Northern Ireland.

Therefore, The Bible (OT) will use this as a metaphor for Samson's ability to burst strong ropes with which Delila had bound him, as if they were tow that just "smelled" fire (and burned up immediately).[Judges 16,9]

The prophet Isaiah threatens [1, 31] "And the strong shall be as tow, and the maker of it as a spark, and they shall both burn together, and none shall quench them."

An additional common use for tow was for wicking. In the Rabbinical literature, different materials are presented as options for use as wicking on the Sabbath. Jewish law prohibits touching a lighted lamp on the Sabbath, an act which may cause it either to burn more brightly, or alternatively extinguish the flame. In addition, the home must be well illuminated on the night of the Sabbath to provide a festive atmosphere, and if the (oil) lamp goes out, it is forbidden to rekindle it. Both of these conditions require a wick made of material which has excellent capillarity, and therefore does not flicker. Flax tow is such a recommended material. [Tosephta Shabbat 9, 5. Babylonian Talmud Shabbat 20b]

In all of the other 30 times that tow is mentioned in the Rabbinical literature, its context is either insulation or as a material which very easily burns – with actual or metaphoric context. The fact that other, more textile-related uses for tow are not mentioned in this literature is not especially significant, because the Sages did not intend to describe the material world, rather if a legal or moral connotation came up, then they would mention the relevant object. For our purpose, we will have to do with what we have – for there is no other Jewish literature from this time period (200-600

c.e.) in the Land of Israel or Babylonia! What we do clearly see though, is that the "man in the street" knows exactly what you mean when you mention "tow".

Many archaeological textile finds exist, such as rope, cord, and sacks - which are apparently made of flax (although there is great difficulty differentiating between flax and hemp in these cases) – and logically speaking would be made from tow. But it is still difficult to prove if that is tow or line, without unraveling a large number of examples and comparing fibre lengths to determine what are the lengths of both line and tow in that period and place. To this best of my knowledge this has not yet been done.

Here are some interesting philological – etymological notes on the word tow:  
Semitic Languages

Hebrew: *ne'oreth* - shaken (out, or off)

Aramaic: does not have a specific word for tow. *Kitan* is both flax and linen.

Syriac: *seraqta* [Judges 16,9 - Peshitta Translation] which is based on a Semitic root meaning combed (out). And see "oakum" below.

Indo-European Languages

(from: Chantraine, Dictionnaire Etymologique de la Langue Greque)

Greek: *stuppeion* (from *stuppos* = stem)

Latin: *stuppa*

French: *étoupe* (fabric = *étoffe*)

English

(from: Klein, A Comprehensive Etymological Dictionary of the English Language)

Tow: probably from O.E. *tow*- "spinning", M. Du. *touwen* "to knit, weave". The phrase "tow-headed"\* refers to tousled blond hair.

And P. Walton Rogers' new book (Cloth and Clothing in Anglo-Saxon England AD 450-700 (York 2007)) gives 'tow' as the generic name for all flax before it has been hackled.

Oakum: from O.E. *ācumba* - literally "off combing". See Syriac above. "Unkempt" hair\* - which looks like oakum-tow.

\*The similarity to human hair comes again: "The Girl with the Flaxen Hair". [Debussy – "La Fille Aux Cheveux De Lin"]

# LOCATING DIGITAL TECHNOLOGIES

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## Abstract

This paper will address the issue of location related to the utilisation of digital imaging and printing technologies in contemporary textile design education and practice. From an analysis of literature and qualitative interview data, the paper will discuss the importance placed on the teaching and learning of traditional textile skills and manual processes alongside digital technologies. The paper will evidence that location is a key aspect in integrating digital technologies into textile design education and practice.

*'...geography has played an important role in the development of the Scottish Textile Industry, not least because of the conditions, materials and available labour force specific to these geographical areas. What is important about this is that the development of education in textiles...has been a response to the changing industry, [and] will therefore have developed according to the same regional characteristics.'*  
(Olley 2005: 186)

## Introduction

The more advanced the designers understanding of digital technologies, peripheral devices, software and printing processes, the greater the ability to explore the creative possibilities of the technologies and extend creative practice. Previous research has evidenced that *'hand use, tactile skills and making by hand'* by practitioners impacts upon digital tool use (Treadaway 2006: 117). This is also true for students of textile design education. In this increasingly digital age, textile educators view teaching and learning traditional skills and manual processes as vitally important to students use of digital technologies. In the majority of instances digital technologies have not replaced traditional textile skills or manual processes, but have been added to and integrated into the curriculum.

This paper will address the issue of location related to the utilisation of digital imaging and printing technologies in contemporary textile design education and practice. From an analysis of literature and qualitative interview data, the paper will discuss digital textile technologies and education, student access to technology, the importance of teaching and learning traditional textile skills and manual processes, and the location of studio to digital facilities. The use of virtual learning environments (VLE) to facilitate learning from off campus locations will also be examined.

The Centre for Advanced Textiles at the Glasgow School of Art (GSA) will be used as an example to demonstrate how location and access are vital to promote the further exploration of the design and aesthetic potentialities of using digital technologies. Activities undertaken at the centre also provide mechanisms to link industry and education. Concentrating on providing expertise, support and producing textiles for the high-end and luxury market levels, has contributed to the rejuvenation of a region which in the past has thrived on the production and manufacture of textiles.

The paper will evidence that access and location are key aspects in integrating digital technologies into textile design education and practice. Proposals will be made for ways in which digital technologies can be further integrated into textile design education associated to methods of learning and teaching, location of resources and student access.

## **Centre for Advanced Textiles**

The Centre for Advanced Textiles (CAT) is located in the School of Design and exists as one of eight research centres at the GSA. Established in 2000, as a result of a Scottish Research and Development Grant, at its initiation CAT was the first funded centre for research into digital textile printing in the UK. Research at CAT investigates '*the aesthetic, technical and commercial opportunities presented by digital textile technologies.*' (GSA 2006: 3). The facility provides a resource for teaching, learning and knowledge transfer and provides a digital design and printing service to generate income to support the centre's activities.

The full paper will discuss the physical location of CAT at GSA. Examples will be provided to show the variety of work produced through the centre, including outputs from research, creative practice and student work. Quantitative data will be used to show the different types of individuals and companies that use the digital printing service, highlighting student use and access.

## **The Wider Project**

The topics examined in this paper contribute to an element of current PhD research, of which the wider project investigates the role of the designer educator in the development of digitally created and digitally printed textiles. The research aims to advance understanding of the designer educator phenomenon and the integration of digital imaging and printing technologies within textile design practice and education. The term *designer educator* articulates the phenomenon under investigation. I define it as, 'a practitioner working in design education whilst continuing to undertake his or her own design practice'. This dual position is a common feature in art and design higher education.

Motivation for the enquiry has derived from my experiences as textile designer and textile design educator, and responds to the two following inter-related issues: firstly, how to teach digital textile technologies and the impact this has on the teaching and learning of traditional textile skills, and secondly how educators working in this area learn about digital technologies whilst continuing to develop their creative, teaching and research practices. The study predominately relates to the UK Higher Education sector.

The research uses a quantitative survey, qualitative interviews and a self-reflexive case study. Analysis of the data will provide insight into the nature of contemporary textile design education and how those employed in this field function as designers, educators and researchers. The project will also enhance understanding into how digital design and printing technologies are perceived and integrated into design practice and higher education. Ultimately, the findings from this research will increase awareness of the designer educator phenomenon and offer further approaches for operating and supporting this dual role.

Understanding the role of the designer educator involved with digital imaging and printing technologies is vital for the UK HE sector, policy makers and, in a wider sense, textile practitioners and designer educators themselves. This research will provide valuable insights into methods of learning, teaching, research and practice for those working in these areas.

This paper uses an analysis of literature and qualitative data collected from interviews with different designer educators from Bath Spa University, Buckinghamshire Chilterns

University College, Chelsea College of Art, Glasgow School of Art, Leeds College of Art and Design, Nottingham Trent University and University of Wales Institute Cardiff.

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# **AS ESSENTIAL AS FOOD OR GUNS'. RETRIEVING FORGOTTEN REGENERATED PROTEIN FIBRES DEVELOPED IN THE CONTEXT OF WORLD WAR II**

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## **Abstract**

As mid-twentieth century tensions mounted in Europe and America, politicians and military planners were increasingly anxious about the availability of wool for military requirements and actively encouraged research into substitute fibres:

'Every ounce of this valuable fibre [wool] is needed for our men in the front lines ...warm clothes may become as essential as either food or guns. Americans are not taking all these difficulties [the wool shortage] lying down... Fibres from milk casein, from soya beans and many other sources are making their appearance'

This paper will explore the cultural context which encouraged the development of regenerated protein fibres (azlons), the role they played as politically acceptable substitute fibres, and how they have largely disappeared from the textile heritage. Figures as diverse as Henry Ford and Mussolini were involved in developing fibres from milk and soya beans. Motivated by a fear of perceived lack, the American government supported experimentation into fibres from such unlikely sources as feathers and egg white. As Lundgren and O'Connell, two American researchers into azlons, observed 'interest in the formation of artificial fibres from proteins has been stimulated by the war emergency'. Companies such as Atlantic Research Associates (USA) were directly promoting their new milk-based fibres to female consumers. An editorial in the American fashion magazine *Harper's Bazaar* shows how these concerns were used to market the new fibres, making them a patriotic purchase:

'Now we will wear milk - dress in new milk-fed clothes based on discoveries that are rocking the fabric industry and taking the sting out of wool shortages... '

## **Introduction**

As tensions mounted in mid-twentieth century Europe and America, politicians and military planners were increasingly anxious about the availability of wool for military requirements and actively encouraged research into substitute fibres:

'Every ounce of this valuable fibre [wool] is needed for our men in the front lines ...warm clothes may become as essential as either food or guns. Americans are not taking all these difficulties [the wool shortage] lying down... Fibres from milk casein, from soybeans and many other sources are making their appearance.' (O'Brian 1942, 512-514)

The second generation regenerated protein fibres came to play a significant part in the military preparation for both the Allies and the Axis, although they seem to have been used as substitute fibres for civilians to ensure sufficient wool for the forces. They were promoted as politically acceptable substitutes for wool and, as this paper will show, were produced in some quantity by a variety of manufacturers. However, these fibres are now little known and are rarely identified in museum collections, the keepers of our material heritage. This paper will explore the rise and fall of these regenerated protein fibres using Michael Thompson's rubbish theory to illuminate their transition from desirable substitute to forgotten fibre. It will be supported by textual and visual evidence, including patents, contemporaneous advertisements and evidence from the few known surviving artefacts.

## Defining a regenerated protein fibre

A regenerated protein fibre is essentially a non-fibrous protein – like milk - which has been reconfigured so that it takes up a fibrous form – like wool. A critical part of the manufacturing process was forming the cross-links which are naturally present in the wool fibres. Almost all soluble proteins may be turned into fibres – although whether these are useful fibres is another matter. The fibre-forming potential of a wider range of both animal and vegetable proteins was explored including:

- Gelatine, horns and hooves (slaughter house waste)
- Milk
- Feathers
- Eggs
- Fish and whale flesh
- Corn or maize
- Ground nuts (pea nuts)
- Soyabeans
- Seeds from lupins, castor oil plant and sunflowers

The manufacturing process will be briefly explained. In brief, this usually consisted of separating out protein from the source material, solubilising it so it could be extruded through spinnerets and then treating the newly formed fibres with a variety of after-treatments to harden them. The textile trade had great difficulty in finding an appropriate term for these new fibres. There was a rather acrimonious – not to say self-interested – debate between the English and American silk and rayon trade associations over an appropriate generic term. Terms such as 'natural protein fibres' and 'prolon', intended to combine 'pro' from protein and 'on' from nylon and cotton were rejected. Eventually the term 'azlon', which defined the fibre as a 'manufactured fibre in which the fibre-forming substance is composed of regenerated naturally occurring proteins', was adopted by the Federal Trade Commission.

## Why make a regenerated fibre? Lack and surplus

What was the motivation behind the great burst of research into regenerated protein fibres in the late 1930s and throughout the 1940s? One important reason was simply intellectual curiosity coupled with the search for commercial benefits. Some researchers were simply exploring, responding to the development of the regenerated cellulose fibres by seeking an equivalent viable fibre from protein sources which would be cheaper than wool or silk and could be as bulking agents for natural or man-made fibres. However, as Lundgren and O'Connell, two American researchers into azlons, observed 'interest in the formation of artificial fibres from proteins has been stimulated by the war emergency' (1944: 370). The interlocking pressures of lack (or perceived lack) and surplus will be explored. In America, there was great concern about the lack of wool required for military uniforms and equipment. With active government support, researchers explored the potential of milk, egg white and soya bean to form substitute fibres. In some cases this also had the benefit of using up a surplus. Excess milk production could be put to good use. In contrast to this reactive strategy, the Germans and Italians had been actively adopting a strategy of autarky, seeking to reduce imports by using substitute fibres in order to achieve national self-sufficiency. For example, Mussolini declared 'Carcadé (hibiscus tea) replaces tea, lignite replaces coal, *Lanital* [milk fibre] replaces wool'. On both sides, using regenerated protein fibres became the politically correct choice. *Lanital* was modelled as part of the modernist culture of new materials by the Futurist poet Marinetti whose 1937 poem praising the fibre was dedicated to Mussolini.<sup>1</sup>



## **Innovation: success and failure**

These fibres were launched with high hopes, but were dogged by technical problems. Key innovators and manufacturers will be briefly described, and reasons for success and failure will be reviewed. Examples of failed innovation include Henry Ford's soya bean fibre in the States and Courtaulds milk fibre *Fibrolane A, B* and *BX* {Wormell 1954:vi} in the UK. Successful innovations included Snia Viscosa's Italian milk fibres *Lanital* and *Merinova* and the American milk fibre *Aralac* developed by Atlantic Research Associates (ARA). The National Dairy Corporation, ARA's parent company, announced the successful processing of the new fibre in November 1941. It was named *Aralac* – the A R A from Atlantic Research Associates and the 'lac' from the latin for milk. By 1941, production capacity was 5,000,000 lb/year, using about 160,000,000 lb of skim milk.

## **Desirable substitute or ersatz failure?**

Substitute fibres had a mixed reputation, possibly on account of problems with the early regenerated cellulose fibres. Schneider's (1994) analysis of changing attitudes to synthetic fibres will be applied to the shifting - and manipulated attitudes to substitute materials during the war. Thyssen, a leading German business man, noted how the German Four Year plan called new materials the '*neue Werkstoffe* – new production materials – so as to avoid the word *Ersatz* which has had so bad a sound ever since the last war' (Thyssen 1941: 185). Not everyone saw man-made fibres as inferior substitutes. For example, J C Nichols, a businessman with interests in agribusiness, saw the arrival of milk fibre as transforming agriculture as well as the textile industry: 'Startling results are coming from the laboratories of our land, making superior fabrics from casein. *Aralac* wool from milk is rapidly becoming a part of your hat, your clothing, and draperies. In fact hundreds of products, through synthetic chemistry can be developed from milk. Some day the old family cow may be dressing as well as feeding us!'<sup>ii</sup>

An editorial in *Harper's Bazaar*, an American fashion magazine aimed at the more affluent female consumer, shows how these new fibres were marketed as a patriotic purchase:

'Now we will wear milk - dress in new milk-fed clothes based on discoveries that are rocking the fabric industry and taking the sting out of wool shortages... .' (1942). *Aralac* is modelled as a substitute fibre but it nevertheless had its own glamour. This is particularly evident in the fabric blends developed by West Coast textile convertors with names such as *Duvalara*, *Sutara* or *Lacara*, all including the tell-tale ARA which links them to *Aralac*. These were promoted by Hollywood film stars, such as Jane Wyman and Dorothy Lamour, including the promoted the fabulously named 'Vitamin Coat' made using *Aralac*. Snia Viscosa attempted to position *Lanital* in the USA market as a high-class fashion fibre, desirable in its own right rather than a substitute. They appointed Princess Caetanis, a well-connected Italian socialite based in the States, to promote *Lanital* as a high fashion fabric. However, the evidence suggests that garments and hats made of *Aralac* tended to be lower end of the market, appearing for example in the mass-market Sears catalogue. The tension between these two positions and the evidence for the status of the fibres will be examined. Post-war, interest in these fibres survived for some time in Western economies but many quickly ceased to be produced. For example, National Dairy ceased production of *Aralac* in 1946. As their President Ban Bomel announced:

'We are discontinuing the manufacture and sale of *Aralac*, even though this project resulted in substantial profit to the company. Development of other, more profitable uses for skim milk products has resulted in a marked increase in the cost of casein from which *Aralac* is made.' (National Dairy Products Corporation 1948).

Some thought that as post-war food rationing continued, there was little point in wasting good food for a poor fibre (Wormell 1954: xiii).

### **Rubbish theory and regenerated protein fibres**

Whatever their status, it is clear that considerable quantities of regenerated protein fibre and garments, hats, household textiles and car upholstery were produced. Where have these textiles and garments gone? There were practical and economic reasons for the end of production but why have these fibres been forgotten? They do not seem to have been collected by museums and, if they have entered collections, are not identified as regenerated protein fibres. Michael Thompson's rubbish theory traces shifting attitudes to the value of objects: 'relationship between status, the possession of objects, and the ability to discard objects' (1979: 1). It provides a framework for exploring why some objects fall from value and become meaningless and then become interesting and move from the 'rubbish dump' – either literally or metaphorically – to become desirable and collectable and can be helpful in understanding our own attitudes to textiles from the relatively recent past. The changing status of the regenerated protein fibres seems to fit this cycle closely: at first promoted as desirable and exciting and then disappearing from collective memory. The process by which they became perceived as inferior, substitute fibres associated with a commercial failure and a period of deprivation and hardship – something to forget rather than remember – will be explored.

### **Conclusions**

At a 1944 New York fashion show to promote new fibres, the mannequins stepped out of stylised test tubes wearing garments made from both regenerated protein and synthetic fibres. In the battle of the fibres the synthetics won, but there was a moment when both fibre types held equal sway. Technical problems were never overcome, and the competing synthetic fibres soon supplanted the regenerated fibres. The speed with which they were forgotten is a salutary case study of changing attitudes towards new textile fibres, and also contains important lessons for how these technologically innovative fibres are collected and curated by our museums. This research will, hopefully, help enable these fibres be rediscovered and enable them to be recovered from the metaphorical rubbish heap.

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### **Notes**

<sup>1</sup> *Il Poema del Vestito di Latte* (The Poem of the Milk Dress) was commissioned and published by the Propaganda Office of SNIA Viscosa.

<sup>1</sup> Speech made at Oklahoma City Chamber of Commerce, 5 December 1941.

## **EWART LIDDELL ARCHIVE**

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### **Abstract**

This paper is written as part of a personal initiative to preserve the knowledge and skill specific to the dying trade of the linen damask industry in Northern Ireland. Reflecting on my own experiences as a designer with Ewart Liddell, I have become sensitive and precious towards the idea of preserving what is left of this old linen mill. These experiences are associated with witnessing the demise of this industry, and the effects that it has had on the people who devoted their lives to working in an environment that required an infinite amount of knowledge, skill and talent.

### **Introduction**

This paper is written as part of a personal initiative to preserve the knowledge and skill specific to the dying trade of the linen damask industry in Northern Ireland. Reflecting on my own experiences as a designer with Ewart Liddell, I have become sensitive and precious towards the idea of preserving what is left of this old linen mill. These experiences are associated with witnessing the demise of this industry, and the effects that it has had on the people who devoted their lives to working in an environment that required an infinite amount of knowledge, skill and talent.

The disposal contract for the Ewart Liddell archive was signed by Baird McNutt earlier this year to allow Interface at the University of Ulster to host this material. As a research assistant for Interface, this area of study has become a significant component in my own research.

Ewart Liddell, an internationally renowned Irish Linen Company, was formed in 1973 when William Ewart and Sons, a Belfast based company founded in 1814, merged with William Liddell and Company, established in 1866. Now owned by Baird Mc Nutt the factory is virtually derelict, used only as a storage unit for Baird Mc Nutt fabric. The building is in bad state of repair and in time it will be demolished.

The construction of the Ewart Liddell company was recognised as being one of the worlds most substantial privately owned linen manufacturers of its time. Its site, located in Donacloney, Co. Armagh, Northern Ireland, is an affluent source of economical and social history within the linen industry.

The initial survey of the sight revealed that a lot of the material and equipment had been sold or destroyed. However, I discovered a large collection of design plates. These relics have become a fascinating element in this body of research and will provide an extensive compilation of indigenous design artefacts available to inform contemporary textile processes and a wide range of other disciplines.

The aesthetics of the plates are very beautiful in their own right. They hold qualities which simulate the delicate state of the industry and give an insight into the arduous and complex process of linen damask weaving.

The initial stages of the preservation of the design plates present a fragile entity. Each design plate is being meticulously cleaned, digitally scanned, documented and stored in suitable atmospheric conditions.

This archive will also be enhanced through the documentation of the experiences and the storey telling of the past factory workers and their families.

The complex variation in the design plates illustrates the diversity of the designers/draftsperson's skills. Although mostly traditional in their style, the plates show a strong amalgamation between traditional patterning and logos affiliated with their prestigious clients.

Strong representation of two-dimensional surface patterning is evident in the plates, requiring the dexterity of the designer to draw two-dimensionally, applying a technical mathematical approach with consideration to weave structures, harness tie-ups, size and densities of fabric.

The design plates have been utilised during the Interface Re-inventing Linen workshops. These unique interpretations of the design plates are being exhibited in the Northern Ireland at Smithsonian exhibition in Washington, the OBG in Belfast, and the Millennium Court Arts Centre in Portadown.

In relation to the preservation of the Ewart Liddell archive, my own personal textile piece, exhibited at the Smithsonian, reflects a sensitive and precious approach in its making. The materials used portray a fragile condition. Layers of fabric symbolising the element of time and memory present a state of erosion. The ubiquitous presence of death in the industry is simulated through the scorching effects of engraving a decaying texture onto the surface of the fabric. Muted colours have been applied to capture the discolouration and aging of the bleached linen. Verses have been selected from the poem "The Linen Industry" by Michael Longley not only as a tribute to the linen industry but also as a means of mark making. These words and images from the design plates are engraved, penetrating through the layers of fabric. In contrast, the flax plant and flax seedpods, representing the initial stages of the manufacturing process of linen, are captured in resin disks. When positioned on the fabric, (as if like a looking glass), these elements magnify the distressed imagery; hence, giving the viewer a sense of privilege. The linen industry is an integral part of the history of Northern Ireland. In its bereavement, I've been able to communicate memories, which I hold precious. As a result I have created samples that are quite beautiful.

The transition from the old design plates to the digital process illustrates how the plates can be interpreted within different processes. Mixing the old craft of the hand painted damask with the contemporary methods such as digital printing, laser and engraving onto fabrics. The working and reworking of the imagery opens new and exciting collaborations of techniques and results. It is possible to analyse the intricacy of the detail from the initial design plate even after being exposed to the impurities of digital experimentation. The conflict between the two – the skill and knowledge needed to produce the high quality product is mocked by the contemporary use of the computer and the very instant digital production.

It has to be acknowledged that the use of the CAD even in the discipline of the woven textile does not require the same amount of knowledge, as did the tradition methods of damask design.

The study between the two exposes the need for old knowledge to be revived. However, if we do not preserve what little knowledge is left of tradition methods it will literally die with those who hold it. Documentation of the old methods is insufficient.

I believe a deep understanding of traditional methods can make for a better-informed future both in the field of research and design.

# USING JURIED TEXTILE ART EXHIBITION AS CONTEXT FOR ARTISTS TO COMMUNICATE TRANSFERABLE KNOWLEDGE: RESEARCH TERRITORY FOR ARTISTS

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## Research Question/Issue

This paper is positioned in agreement with the claim stated in *Artistic Research – theories, methods and practices*, supporting the assertion “in the case of artistic research, methodological abundance is a particularly fruitful, productive approach” and secondly that “experience plays a special and central role in artistic research (Hannula et al, 2005).” The goal of this paper is to re-evaluate the construct of juried exhibition and propose it as a valid methodological construct for artistic research.

Is the construct of juried exhibition sufficient in providing a context for textile art artefacts to communicate transferable knowledge? What role does juried exhibition play in determining the function of the artefact? Can the structure of juried exhibition provide the exoskeleton that will allow the artefact to be viewed as new justifiable knowledge? Can it provide the experience, in the form of an argument for authentication, for the artefact as communicating knowledge? What are the implications for textile art researcher/educators and the field of ‘artistic research’? This presentation will analyse and propose a standardized construct for juried textile art exhibitions that can be used as a starting point for validating the work in a research context. The presentation will also address arguments on how ‘the art object does not embody a form of knowledge’ (Scrivener, 2002), as it seeks to assert the following: The context of the juried exhibition should be revisited and elicited to inform the realms of art practice, art evaluation, and the relationship between artefact and juried exhibition in the discipline of artistic research.

Juried exhibition, as a construct, is a long-standing and proven form of review for the recognition of artistic scholarship. Artists who submit their work for inclusion in national and international juried exhibitions are participating in a peer-review experience that can be compared to the practice of submitting written articles to peer-reviewed journals in other forms of research scholarship. There are key differences in the purpose and execution of the juried exhibition, though, from the functional role that research journals play. The submission of artwork to a juried exhibition in which the work will be evaluated within the context of a defined theme, or potential field of inquiry, allows the work displayed to be understood in reference to other embodied expressions of a similar theme.

The purpose of this research is to offer a solid working solution to address outputs of artistic research without appropriating entire methodologies from scientific or humanities research traditions, the inverse of which would be to expect “writers or critics to paint a picture of what they are saying (Peter Schjeldahl at the Stuart Morgan Memorial Lecture, Tate Modern, 19/10/04 – as attributed in Walker, J.F., 2004).” The juried exhibition construct provides a means for artistic forms of research to be conveyed visually, recognizing and understanding a potentially more ‘true’ context for artistic research, its outcomes and outputs.

The paper will conduct a visual analysis of selected previous juried textile art exhibitions, looking to strengths and weaknesses in conveying knowledge about the work displayed and the discipline as a whole. It will highlight ways in which the context

and 'reading' of the work can be richer than trying to communicate the work in a written format for a peer-reviewed journal. The long-term goal of this research is to re-evaluate the construct of juried exhibition and propose it as a valid methodological construct for artistic research in textiles.

### **Process for Juried Exhibition**

In order to defend the role of juried exhibition in communicating knowledge in the textile arts, the following will be assumed as the standard methodology for the process (with flexibility in order and complexity):

1. Theme of conference/ Exhibition Statement created
2. Call for Curator advertised or selected
3. Curator named and publicized
4. Curator works to find and secure gallery
5. Curator works to select initial jurors
6. Curator and committee create the call for entries prospectus, which includes:
  - a. Curator's statement and interpretation theme in relation to the exhibition
  - b. juror descriptions
  - c. entry categories
  - d. potential award opportunities
  - e. entry deadlines
  - f. shipping deadlines
  - g. exhibition dates and details
7. Submission process occurs
8. Curator works to locate potential publishers for the Exhibition Catalogue
9. Jurying process occurs
10. Notification of acceptance/rejection sent to artists/designers
11. Accepted items shipped to gallery
12. Curator travels to gallery to manage installation process
  - a. determines hanging devices and strategies
  - b. designs exhibition layout
  - c. has the exhibition professionally photographed
13. Exhibition opens
14. Curator writes response to exhibition to include in published catalogue
15. Curator collates images and descriptions of accepted work, exhibition statement and 'curator's response' and submits to catalogue designer
16. Catalogue design to publisher to print limited edition version of the catalogue with ISBN/ISSN number. (A digital format could be archived for download)
17. Catalogue is distributed to all designers accepted into the exhibition and made available to the public through retail and/or website options.

### **Role of the juried exhibition**

The submission of artwork to a juried exhibition in which the work will be evaluated within the context of a defined theme or potential field of inquiry allows the work displayed to be understood in reference to other embodied expressions of a similar theme.

What are the unique aspects of juried exhibition? Unlike the common receptacles for peer-reviewed publications, each venue for juried exhibition is different. This differs from long-standing research journals that have the ability to garner a ranking after time. People who submit research articles to journals know, to some degree, what the journal will accept and so are able to modify the presentation of their work to the given venue. This is not the case, generally, in juried exhibition. Some exhibitions are produced annually, but most are one-time events. The size and reputation of the gallery is also an important factor in determining the success or impact of a juried



exhibition. A large, well-known gallery which has a record of high attendance is desirable. In some cases, a gallery will sponsor a certain exhibition annually or bi-annually. An annual exhibit that has been around for a number of years signifies a strong venue, due to continued success.

Evaluating the rigor of juried exhibitions is inherently different than evaluating refereed journal articles, commercial galleries, fashion magazines or other venues in art and design. A primary factor in determining the rigor of an exhibition is the curator. The curator conceptualizes the theme and organizes the process for exhibiting artwork. They create, or are involved in the creation of, a prospectus which is distributed with entry forms describing the theme for the exhibition, eligibility, selection process and guidelines for submitting artwork. Not all juried exhibitions have a specified curator though. For instance, some exhibitions may be annual venues that are sponsored by a host gallery, and the gallery simply selects jurors who are appropriate to the theme of the show. Typically, respected jurors are chosen to evaluate the submissions and select the most appropriate artwork for the exhibition. It is not necessarily the case that an accomplished academic would be the most appropriate candidate to curate or jury a show. These individuals should be nationally or internationally recognized artists or curators, and should have a strong record related to the theme of the exhibition. It is a common, and valid, practice to advertise the distinction of the juror and/or curator as a means for signifying the degree of rigor for an exhibition. Juror/curator biographies are included in the prospectus, in order to direct and inform artists submitting their work, but also to communicate to a larger critical audience as to the level of recognition due to the artist, should their work be accepted into the venue. Lastly, a factor that is effective in determining the rigor of an exhibition is that of submission versus acceptance rate. Some regional exhibitions, such as the "Fiber Focus" annual juried exhibition in the United States, held at the Art St. Louis Gallery in St. Louis, Missouri, have such high submission rates and low acceptance rate, that the exhibition should be regarded in a very similar standard as a national or international juried exhibition.

Let's examine the critical components of juried exhibition by looking at relevant examples. The following statement is taken from the prospectus for *The International Exhibition: Visions in Textiles - From Tradition to Textile Art/Design of Tomorrow* and allows us to consider the context and theme of the juried exhibition:

"This exhibition will coincide with the 13th ETN Conference held in Izmir/Turkey from September 15th - 17th, 2005. Organiser is the Dokuz Eylül University, Faculty of Fine Arts, Textile Design Department in Izmir. Venue of the exhibition, that will take place from September 15th to October 8th, 2005, is the Izmir State Art and Sculpture Museum. The exhibition will be curated by Derya Akdurak, a prominent Turkish architect and designer. The aim is to present textile art and design inspired by the participants' respective cultural heritage, yet showing a modern expression and seeking to highlight new ways of designing for tomorrow. The theme was selected in the light of the rich textile heritage found everywhere in this host country, which the comparatively recent textile departments in Turkey's universities hope to draw on."

This statement clearly describes the corresponding European Textile Network conference venue, the sponsoring gallery, the juror and the theme for the exhibition. Any artist/designer who would submit work to this venue would understand that their work would be evaluated in the context of cultural heritage, modern expression and future directions. This means that the jurors will be visually determining if the submitted work represents the theme in some way, is structurally and aesthetically informative to this purpose, and will be displayable within the context of the rest of the

work selected. Describing the position and reputation of the juror in this context is similar to recognising the status of editors for prominent research journals. The inclusion of the acknowledged success of the juror helps to substantiate/validate the selection process. The information provided makes a case for why the juror should be able to visually analyse and recognize the work submitted to the exhibition.

Unlike the standard practice in written research publications, it is common practice for art/design work to be displayed in more than one juried exhibition venue. From a research perspective this can serve two purposes. Firstly, it can help to compensate for the fact that not all juried exhibitions have a mechanism for creating a permanent record of the event. Many exhibitions will have a catalogue produced, but not all will have registered ISBN numbers or methods of making the exhibition contents searchable (in the way that an article would be searchable in an indexed journal publication). Obviously, the greater the degree of official publication that can result from an exhibition, the higher level of rigor can be attributed to it from a research point of view. Secondly, it helps to substantiate the impact of the art/design work. By showing acceptance in multiple juried venues, it can be inferred that a piece of work has afforded a widespread degree of acceptance by those who are critically recognised as leaders in their field. In addition, it has the added benefit of retaining a larger public viewing audience, an aspect that is not paralleled in peer-reviewed journal publishing.

As such, the juried exhibition has circumstances and mechanisms that extend beyond the normal constructs of research journals, which serve to validate the work accepted in both a scholarly way and an art practice way. The juried exhibition provides direction and an environment for the contextual viewing of the work. This, in turn, allows the work to be addressed in its capacity to communicate new knowledge.

### **What are the implications for the field of ‘artistic research’?**

The acceptance or inclusion of an artifact in a juried exhibition venue is a mechanism for justifying the claim to new knowledge (or range of possibilities). Within the artistic research community, we should recognize this distinction as being substantially different (in the role and responsibility of the juror) than it is in the peer-review evaluation of articles for acceptance into journal publications (the role of the reviewer).

Who should be participating in juried exhibition? With well-crafted and conceptualised themes, it should be possible for any number of venues to be appropriate in the creative and performing arts as well as design disciplines. Thus, any artistic researcher engaged in developing a product/artefact that is a result of research and/or is intended to communicate knowledge or “novel apprehension” (Scrivener, 2002) should be interested in exploring this output opportunity. Real developments and improvements to increase rigor and transferable knowledge in artistic research will come from modifying the structure of juried exhibition, not from changing the way artists and designers work when aligning themselves with a research context.

What lies at the core of this paper is the assumption that we must continue to question whether the concept of knowledge as “true, justified belief” is appropriate in the context of artistic research. If we believe that knowledge can be conveyed through artefacts in the juried exhibition context, then we should be looking to mechanisms for increasing the funding for, and occurrences of, rigorous juried exhibition venues, with an intention to continue the dialogue as to the construct’s effectiveness as an exoskeleton to provide context for the artefact to communicate new knowledge.

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# CHARACTERISATION OF COTTON BROCADE OF *KODALI KARUPPUR*; A TRADITIONAL INDIAN TEXTILE

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## Abstract

The cotton brocade of *Kodali Karuppur* textile was produced in a village of the same name *Kodali Karuppur* near Kumbakonam of Tanjore district in Tamilnadu, India. Facts about the cotton brocade of *Kodali Karuppur* textile have not been fully documented and production records do not exist. The purpose of this presentation is to provide information about the history and significance of *Kodali Karuppur* and describe efforts underway to document the materials and methods used in their production.

## Introduction

The cotton brocade of *Kodali Karuppur* textile was produced in a village of the same name *Kodali Karuppur* near Kumbakonam of Tanjore district in Tamilnadu, India. Facts about the cotton brocade of *Kodali Karuppur* textile have not been fully documented and production records do not exist. The purpose of this presentation is to provide information about the history and significance of *Kodali Karuppur* and describe efforts underway to document the materials and methods used in their production.

The cotton brocade of *Kodali Karuppur* textiles: the sari, dhoti, turban and *angavastram* were produced exclusively for the Maratha rulers of the late 18th century. These unique textiles went into the trunks of the Tanjore palace and were selectively given out to a worthy few by the royalty. No commoners were seen to have even the simplest of these.

Materials used in *Kodali Karuppur* are cotton and metal thread (a heretofore unidentified metal composition). The base fabric is cotton tabby weave with gold metal thread embellishment. The metal thread was incorporated into the fabric using the inlay technique known locally as *jamdani*. This fabric art is a base for further decoration with natural/organic dyes. The organic dyes give the fabrics a color range of red, black and yellow. In extant pieces, pink is seen when the red color weakened or where the resist or mordant strength varied.

In colouring the *Kodali Karuppur* textiles, a range of techniques have been used such as wax resist painting and direct painting using a pen (*kalam*). Based on the extant samples, we were able to clearly define some of the techniques and make educated guesses on the rest. One highly developed decorative method used by the craftsmen was the hand-drawn resist for the white design areas, where they painted around the inlaid brocaded motives. To enhance the sheen of the inlaid gold, the brocaded area was usually painted red. These red and white areas were further brought out by hand painting with black outline around motifs.

The design vocabularies of *Kodali Karuppur* were standard; a set of designs were assigned by the designers only for the royal textile of *Kodali Karuppur*. The rows or fields of circles, squares, lozenges, teardrops, quatrefoils and stylized floral forms, such as flowers, fern leaves, tree of life and leaf scrolls, elephants and birds adorned

a few of the saris. However the placement and interchanging of the motifs varies from one textile to another.

During the British reign, production of *Kodali Karuppur* textile declined due to the absence of royal patronage, the weakening socio-economic status of the weaver and the rapid industrialization of the hand-loom sector. Therefore the existing textiles found their way to various museums in India and abroad.

### Scientific analysis

X - Ray Fluorescence (XRF) : To study the metal composition of the metal thread used in brocading the *Kodali Karuppur* textiles. Results of the test in the table below provide percent weight of the metallic part of the yarn attributable to particular metals: aluminum (Al), gold (Au), silver (Ag), zinc, (Zn) and copper (Cu).

The metals themselves make up a very small fraction of the total sample weight dissolved; most of the weight is contained in the organic fibers of the textile. Samples A and B are metal threads from extant *Kodali Karuppur* textiles, while Sample C is from a modern metallic thread.

	Wt% Al	Wt% Au	Wt% Ag	Wt% Zn	Wt% Cu
Sample A	55.33	13.33	11.62	7.00	12.72
Sample B	68.75	0.78	12.48	11.64	6.35
Sample C	16.13	3.25	8.27	0.00	72.35
STD Dev.	11.52	1.47	2.98	2.14	5.45

Scanning Electron Microscope (SEM):

(a) Identification of core yarn of the metal thread: The study of the samples revealed a thin strip of metal wound around the core of silk yarn. This technique is known as Passing and this was the kind of metal thread used in *Kodali Karuppur* textiles. This is the most basic and common kind of metal thread used in woven textiles.

(b) Characterization the metal thread in *Kodali Karuppur* textiles: A variety of manufacturing techniques of metal threads exist in order to create differing textures. The thin strip of metal wrapping around the core of silk yarn in the extant samples examined is evenly spaced revealing the core yarn; this character of the metal thread shows the passing technique which differs in appearance because of the spaced metal wrapping and is unique to these textiles.

## **Conclusion**

The XRF results of metals used in making metal threads in other traditional textiles have typically been predominantly gold, silver and copper (zinc, as a component of copper alloys, occurred frequently). The experiment to identify the metal composition of the metal thread from *Kodali Karuppur* textiles identified more aluminum content in samples A & B as compared to the modern metal thread sample C. The result is contrary to our understanding about metal composition used in making metal threads with concern to *Kodali Karuppur* textiles.

The results provide new information regarding an important cultural product in Indian history: *Kodali Karuppur* textiles.

Our study helps explain how these extant textiles have survived with untarnished metal thread over long periods of time. The study also provides a basis for further research on materials and methods involved in traditionally making the metallic yarns. Furthermore, the manufacturing of the metal thread (spaced - passing technique) itself could be revived and practiced in future.

# **THE EVOLUTION OF KIMONO TEXTILES IN THE INTERESTS OF PRESERVING TRADITION**

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## **Abstract**

This paper will discuss how the kimono has inspired and evolved as a garment and how the kimono fabric has been used for other products such as cases for iPods and hair accessories. Costume for theatre, film, parties and other social events have also been influenced and will be discussed in this paper. The importance of this evolution has allowed kimono textiles to be visually known and seen globally. Although the kimono is not worn regularly it is still an important garment within the Japanese culture. In addition to traditional festivals it is customary to wear the kimono during tea ceremonies. It is special occasions such as these and the persistence to maintain and pass on the skills to make kimono textiles, in addition to the garment being used as an inspiration, which has allowed the kimono to be conserved within our lifestyle and Japanese culture. These issues will also be further discussed.

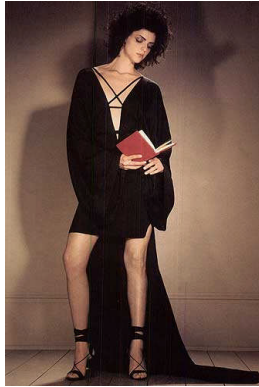
## **Introduction**

The Japanese are known for maintaining their culture and traditions through daily activities, entertainment, arts and craft, etc. In the past the kimono was worn regularly during daily activities and, today, has become an icon of the Japanese. Unfortunately, over a period the number of people who regularly wear the kimono has declined drastically. On special occasions and festivals, such as weddings, the coming of age ritual (when a person reaches the age of 20) or on New Year's Day, some Japanese make an effort to wear traditional clothing. In addition, the art of tying the kimono is a skill which is also diminishing slowly. This knowledge is normally passed down from one generation to the next; however, it is now not seen as an essential skill by the current generation, as they often rely on their mother or grandmother to assist tying the kimono when the rare occasion arises. As the use of the kimono has decreased, there has been an effort to use the kimono fabric for other products such as accessories and wall hangings. Fashion designers such as Issey Miyake have attempted to reinvent the kimono by using unconventional fabrics and rejuvenating the shape of the garment<sup>iii</sup>. The style of the garment has also inspired contemporary children's wear as well as general women's fashion wear from high end to high street. This paper will discuss how the kimono has inspired and evolved as a garment and how the kimono fabric has been used for other products such as cases for iPods and hair accessories. Costume for theatre, film, parties and other social events have also been influenced and will be discussed in this paper. The importance of this evolution has allowed kimono textiles to be visually known and seen globally. Although the kimono is not worn regularly it is still an important garment within the Japanese culture. In addition to traditional festivals it is customary to wear the kimono during tea ceremonies. It is special occasions such as these and the persistence to maintain and pass on the skills to make kimono textiles, in addition to the garment being used as an inspiration, which has allowed the kimono to be conserved within our lifestyle and Japanese culture. Additionally, the shape of the kimono, the patterns and fabric that it consists of has stimulated other applications.

## **Japanese Designers**

Japanese fashion designers such as Issey Miyake, Kenzo, Hanae Mori, Yohji Yamamoto and Rei Kawakubo were the first designers to be successful in the West during the 1970's and 80's. Their designs were known to be 'the Japanese fashion' as

their designs were predominately different to Western styles concerning the construction, shapes and fabric combination.<sup>iv</sup> At the time these designers were attempting to break through the Western fashion scene, however their cultural roots influenced their thinking and work. Given that these Japanese designers were trying to break the boundaries, in Japan, this also affected fashion in general, as the Japanese also wanted to explore Western styles. Nevertheless, Western designers have also explored other cultures for inspiration. To this present day, Kimonos have influenced not only Western high-end fashion designers such as Gucci, figure 1, but also costumes, accessories and interior applications. In Japan, the kimono is decreasingly being worn, which is partly due to the garment being seen as impractical



for daily practises as well as the desire to wear and express contemporary culture, specifically those orientated from the West. Nevertheless, some Japanese who do travel abroad and return are said to want to explore their roots and wear the kimono. This was one of the explanations for the recent “Kimono boom”<sup>v</sup>. From around 2003, there has been a number of discussions and hope that the Japanese were keen to wear the kimono not only for special occasions such as the ‘Coming of Age’ and weddings.

Figure 1 Gucci Kimono dress<sup>vi</sup>

Japanese kimono designer Jotaro Saito is the in-house designer for the kimono company San Sai, based in Kyoto, Japan. Saito is aware of the varying trends of the kimono, which has reflected on his work, as he explains “What I’m trying to do is turn kimono from being a purely functional tool (for formal occasions that necessitate wearing one) into a fashion item. More and more young people are discovering that there are many ways to wear kimono - that you can express yourself and have fun with them - and they are incorporating them into their lifestyles.”<sup>vii</sup> Many of Saito’s customers are under the age of forty. His kimonos are regularly seen on the catwalks, and he has pushed his designs to the extreme by producing kimonos made from black leather fabric. However, Saito has also seen the necessity to expand kimono textiles to other products as seen in figures 2, 3, and 4<sup>viii</sup>. Typical motifs such as mountains and flowers, which are usually seen on kimono textiles, have been applied onto furniture, lampshades and wall-coverings effectively. These products were exhibited at 100% Design Tokyo in 2005 and 2006.



Figure 2 Kimono fabric sofa  
At 100% Design Tokyo



Figure 3 Sofa with  
mountain peaks



Figure 4 Flower pattern wall-  
coverings and lampshades



## Inspiring other Applications

The kimono has also influenced costumes for films such as 'Star Wars: Attack of the Clones' and for general costumes in theatre and party wear. The patterns for the costumes are contemporary yet the shape of the garment, including the hair and make-up of the characters, are clearly inspired by the kimono and the geisha style.



The technique of wrapping a robe structure around the body is a simple yet effective method for applying textiles onto the body, which has influenced infant clothing. The effectiveness of applying a garment onto a baby easily is a factor some mothers regard as essential, as the neck of the baby is vulnerable during the early stages. These garments are also made from organic materials, which is another marketable factor when concerning sensitive skin. Web-based companies Ecoboo and Tiny Birds Organics retail these specific products.

Figure 5 Kimono vests<sup>ix</sup>

High-street fashion designers have taken forward characteristics of the kimono to produce revamped, contemporary kimono style dresses. The sleeves are typically wide and the fabric is a close fit to the upper body. To replace the traditional obi, a plain belt is replaced at the usual high position of just below the chest, figure 6. As the kimono fabric has aesthetic advantages, the patterned textiles are applied for coverings such as iPod cases, figure 7, hair accessories and handbags. The application of such products has allowed kimono textiles to be recognised as a Japanese design, yet the user may not recognise that the pattern was originally intended for kimonos. Nevertheless, the use of such textiles enables this style of textiles to be regularly seen globally on contemporary products. Although technology is advancing, becoming smaller and more clinical, there is still the desire for products to be covered with traditional textiles.

Figure 6 kimono dress<sup>x</sup>



The manufacture of textiles is constantly developing in order to reduce costs and increase production. Consequently, a design support system has been designed for the production of the kimono<sup>xi</sup>. It was distinguished that depending on the wearers' preference and gender the garment's pattern was cut to meet these requirements. This system allowed the specification to be carried out more easily with the aim of reducing production time and costs. The effectiveness of this system could also influence the design of other systems to improve the manufacture of the kimono. The result of this could have an impact on the overall production of kimonos, thus considerably reducing the selling price to the consumer, which could also encourage the general wear of the garment.

## Conclusion

Since World War II, the kimono has been exchanged for Western style clothing. Nevertheless, the kimono and the textiles have stimulated not only Japanese designers, but also Western designers for high-end and high-street fashion, accessories and interior applications. The Japanese are known to persist with maintaining their traditions and to teach these to the following generation.



Figure 7 Kimono iPod cases<sup>xii</sup>

Japanese textile design house such as Nuno believe in maintaining traditional techniques, yet rejuvenating them by combining them with unconventional materials and techniques to produce dynamic and pioneering textiles. Although there has been a drastic decline in the use of the kimono, this is believed to be a part of a cultural evolution. Traditions are still being maintained in the home including the general celebrations and festivals, yet as other products such as technology evolves it is also essential for kimono textiles to revolutionise so that it is still a part of everyday culture to the present day. There are several layers to the kimono with the addition of the obi the garment which is tightly fitted to the body. With the intention of encouraging people to wear the kimono, designers should consider reducing the number of layers and redesigning the garment structure so it is easier to put on. These factors could revolutionise the kimono and motivate not only the Japanese but people across the world to wear the kimono. However, the shape of the kimono and kimono textiles continue to be a part of our society. They may not always be applied in the traditional method, yet they are still a part of our everyday culture with an unconscious sense of maintaining their Japanese origin.

<sup>1</sup> *Il Poema del Vestito di Latte* (The Poem of the Milk Dress) was commissioned and published by the Propaganda Office of SNIA Viscosa.

<sup>1</sup> Speech made at Oklahoma City Chamber of Commerce, 5 December 1941.

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# **THE 'TREE OF LIFE' ITS CONCEPT, IMAGE, SYMBOLISM AND ORIGINS, AND ITS USE AS AN INSPIRATION FOR CONTEMPORARY TEXTILES**

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## **Abstract**

The 'Tree of Life' or as it is sometimes known 'Flower of Life' is one of the most popular and enduring motifs of traditional folk art. Appearing in Indian, Chinese and Celtic art, this motif is found in a variety of forms throughout the world. Often linked with a belief in eternity the 'Tree of Life' pattern frequently represents a hope for survival (Meehan, 1995).

Initial research, which focused on the 'Tree of Life' imagery and patterns that were found in Chinese traditional folk art, was carried out for an MA degree by the first author. Exploring the relevance of such symbolism for the Taiwanese market it was found that Taiwanese customers wanted to see elements of traditional pattern in contemporary fashion. This was felt to be important for the Taiwanese textile and fashion industry which is currently in a state of change as it becomes design-focused rather than purely manufacturing-led.

Current PhD research (again by the first author) is exploring further the concept, image, symbolism and origins of the 'Tree of Life' and considering how it can be taken through into a range of contemporary textile designs for fashion designers for a global market. This paper presents the MA research and the PhD research to date.

## **Introduction**

'Tree of Life' motif is used to express ideas about immortality and the origins of life. As such these motifs have been an important element of traditional art and craft, frequently being incorporated into traditional textiles.

The reason why the researcher selected the 'Tree (Flower) of Life' to conduct research is because of the pattern motif, which not only exists in Chinese traditional folk art, but is also evident in the west as well. This indicates that the 'Tree (Flower) of Life' is a kind of cultural pattern around the world. However, little research has been undertaken with regard to understanding the concept of tree-worship and the cultural symbolism of 'Tree of Life' in China. This research aims to address this.

This paper will try to elucidate the result of many studies of the 'Tree (Flower) of life' and draw conclusions as to the concept of the 'Tree (Flower) of Life'. Besides, this paper will study the Chinese 'Tree of Life' picture collection, which is a source of inspiration for the design.

## **Aim**

The purpose of this project is to conduct a study on the concept, image and symbolism of the 'Tree (Flower) of Life' in the patterns of traditional folk art in China, and re-create the patterns in order to apply them to textile design for a global market. The project aims to investigate the reasons for establishment of sacred trees in China and discuss these reasons in relation to the motif of the 'Tree (Flower) of Life' in Chinese textiles. Based on the result of research, a theoretical design model will be presented to explain the steps and factors involved in the process of transforming traditional patterns into contemporary ones.

## **Objectives**

The Objectives of the project are:

- To review literature on the history and concept of the 'Tree (Flower) of Life', fashion theory, colour theory and semiotic theory.
- To review visual imagery of the 'Tree (Flower) of Life' pattern in art and textiles.
- To collect and analyse Yellow River Basin patterns and the South Western patterns in China. To compare these and analyse the designs in terms of geographical location and any ideological distinctions.
- To interview informants in the Yellow River Basin and the South Western in China.
- To research the textile industry and the fashion industry in Taiwan and China.
- To survey the target market.
- To develop new designs for textiles and transfer these textile designs to garments.
- To draw conclusions and evaluate the design products.

## **Methodology**

The research methodology involves both secondary research and primary research. The former is a review of secondary sources, which are the history and concept of the 'Tree of Life' and relevant theory. The latter includes the collection of images of patterns from the museums in Britain, interviews and questionnaires.

## **Literature review**

### The origins and concept of the 'Tree (Flower) of Life'

References to the 'Tree (Flower) of Life' can be found in a variety of publications from historical reviews to religious studies written by historians, anthropologists and artists. A review of secondary sources demonstrated that the origins of the 'Tree of Life' come from the worship of plants and fertility.

The origin of the worship of plants is associated with the environment of early humans. Trees not only provided primitive men with food, shelter and clothing, but they were also used for tool-making and fuel; thus trees had a practical meaning for primitive men (Li, 1963; Ennos, 2001). After that, some trees were devoted to the worship of divinities, and viewed as sacred due to their great size and longevity which symbolise the natural powers of growth (Altman, 2000).

The concept of the 'Tree of Life' is not only limited to the worship of plants, but also includes fertility worship. The origin of fertility cult associated with primitive man's ideas of conception is that it is governed by divine grace rather than by chance. (Philpot, 1897). The trees have been believed to be closely connected with the human fertility in many parts of the world. It is often related to the shapes of the trees and its reproductive features; that is, its abundance of fruit or seed. Besides, some particular trees are regarded as residences of fertility deities by many tribes. Therefore, trees have long been worshipped in fertility rites, such as Maypole dancing and Tree marriage (James, 1966; Maity, 1989; Altman 2000).

The 'Tree of Life' is identified as the religious 'metaphysical tree' and 'spiritual tree' in many cultures. In the ancient Near East, the date-palm was regarded as the 'Tree of Life' and appeared in literary and archaeological materials. The symbolism of the 'Tree of Life' is also mentioned in the *Old Testament*. It represented the uniting of God and human (Griggs, 1989). The oak tree was said to be the 'Tree of Life' and represented wisdom in Irish myths. Moreover, many traditional Celtic 'Tree of Life' designs appeared in ceramics and textiles. The characteristic of Celtic 'Tree of Life' pattern is a logical growth and unite in sacred animal patterns (Meehan, 1995). In the culture of ancient Egypt, the 'Tree of Life' was connected to Djed Pillar which represented stability and a fertility fetish (Fletcher, 1999). The theme of 'Tree of Life' is frequently combined with birds and dragons in order to symbolise immortality in Chinese folk arts

(Altman, 2000). Thus, nourishment, fertility and immortality are the words most often related to the 'Tree of Life', which is clearly an important symbol in many ancient cultures.

### Analysis of the collected pictures

The motif of the 'Tree of Life' can also be seen on the aprons of the Miao Tribe in China. Fig. 1 is an embroidered detail from an apron. The flower in the centre is shaped like a sun, and inside the pistil is a rolled up bird. Fig. 2 shows many kinds of flower and leaf images combined to create the pattern of the 'Tree (Flower) of Life' like the swastika pattern and the pierced coin pattern. Some of the 'Tree of Life' patterns are related to tribal mythology such as linking the origin of mankind with the maple. The maple gives birth to the butterfly mother and in turn it gives birth to animals like dragons, dogs and snakes. (See Fig.3)



Fig.1 The 'Tree of Life'  
Design from: Guizhou Province  
Source: Tsou Cheng Chung



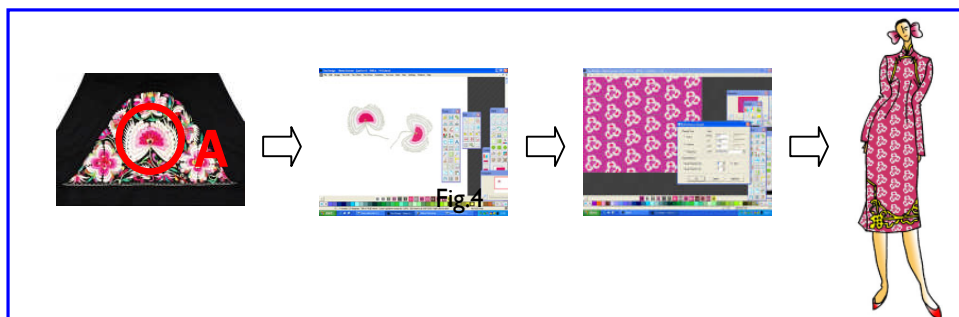
Fig.2 Continuous melon  
Design from: Guizhou Province  
Source: Tsou Cheng Chung



Fig.3 Worship of maple  
Design from: Guizhou Province  
Source: Tsou Cheng Chung

### Practical element (Design Development)

One aim of the research is to develop a range of fashionable contemporary printed textile designs for use in the fashion apparel industry which combine the traditional elements with modern styles. The researcher attempted to use the characteristics of traditional 'Tree of Life' patterns to develop different new patterns. As can be seen in Fig.4, the point A is a part of the pattern; the researcher utilized this element as an initial design concept to develop the new design.



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## FROM TRADITIONAL TO CONTEMPORARY

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### Abstract

In this paper, Turkish block-printing tradition known as '*yazmacılık*', which gave its best examples from the seventeenth century to the nineteenth century in centers such as Kastamonu, Tokat, Istanbul will be introduced. These textiles, which exhibit regional design characteristics with various end-uses like household textiles and costume accessories, had a cultural and social importance beyond mere everyday-use textiles. Their production were created by families either for their own use or for commerce. In time, technological developments and industrialization had a negative impact on this handicraft and screen printed versions took over. The present state of *yazmacılık* and future possibilities will also be discussed and questioned.

### Introduction

In the evolution of globalization, during which the Industrial Revolution was a turning point, many local handicrafts have undergone certain transformations, if not ceased to be practiced completely. Some of these handicrafts are still being practiced, but some others have lost their battle against the fast and impatient face of today's industrialised world. Although they could not compete with the cheaper, faster ways of production, they have always retained their unique character and appeal to most of us. Even the contemporary trends look to their exclusive features to enrich and add sophistication to collections in world textiles. Furthermore, people often add a touch of hand-produced classiness to their looks with a piece which reflects original local characteristics.

It is a fact that the textiles produced by mechanized means, and resembling the original hand-produced examples, do not usually have the same quality and charm as the originals. Then, why have many handicrafts not survived or reduced production? What is their present state? Are there any examples in which the production has been adapted to contemporary needs and expectations? How can they be used as a source in the search for innovation in the textile world? These are some questions that can be asked of any specific location or in general.

As a case study, all these questioning and evaluations could be directed to Turkish block-printing tradition known as '*yazmacılık*' from which the best examples are from the sixteenth century to the nineteenth century in various centers such as *Kastamonu, Tokat, Bartın, Gaziantep, Malatya, Elazığ, Hatay and Istanbul*. *Yazma* textiles can be classified in three subgroups in terms of technical features: hand painted, block-printed and a combination of both techniques. The hand painted examples were patterned by skilled craftsmen using the brush freely which gave an individual characteristic to each piece, whereas in block printed examples patterning was created by the use of wooden blocks made of linden, pear or pine. Blocks were dipped into hot wax to ease the carving process and to extend their use. Reserve applications and intricate outlining were made with metallic blocks. Separate blocks were prepared for outlining and fillings, and the patterns were created through the repetitive use of blocks on the cloth. Colour schemes were monochromatic "*karakalem*" or polychromatic "*elvan*" with natural dyeing on lightweight linen, silk and cotton. These textiles which exhibited regional design characteristics, with various end-uses like household items (wrappers, napkins, quilt covers, pillow cases, prayer mats) and

costume accessories (head cloths), originally had a cultural and social importance beyond mere everyday use. It is possible to observe reflections of regional folk art on Asia Minor examples, with the use of symbolic motifs, regional floral and fruit forms and strong colours; whereas *Yazma* textiles from Istanbul were totally different, with refined styles and influences from certain art movements. In both cases they were widely used on various occasions as well as in daily lives.

*Yazma* production was made in workshops by families either for their own use or for commerce. Different communities in the Ottoman period practiced the production. In time, technological developments and industrialisation had a negative impact on this handicraft and screen printed versions took over, with *yazma* textiles losing their popularity and wide usage. Today, there are only one or two workshops left which carry out the traditional ways of production. It seems they will possibly disappear in the near future.

The reasons behind this diminished handicraft may be more than a single factor. Some could be noted as;

1. Industrialisation; cheaper, faster means of production
2. Changing social lifestyles
3. Changing fashions and tastes
4. No encouragement and support for the skilled craftsmen and their production
5. Not enough effort to emphasize their beauty, uniqueness and importance as a cultural heritage; weak cultural consciousness and appreciation, especially among the younger generations
6. Not enough successful and effective attempts to adopt, revise and interpret the technique according to contemporary tastes in terms of design and end-uses\*

\* Amongst the contemporary Turkish artists, Bedri Rahmi Eyuboglu has a special interest in the technique and has organized *Yazma* workshops. He also uses inspirations from the technique in his own work.

### **What can be done?**

I believe there is a lot that can be done on the subject through art and design education, as well as through local organizations. Creative processes and the exploration of different possibilities with the techniques and materials can be realised in workshops, which would also provide the much needed consciousness and create enjoyment among the younger generation. These workshops would create a good atmosphere for them to see that it is possible to explore each handicraft technique in a more artistic way, if not as a contemporary handicraft. We already know that there are many examples which are successfully practiced both ways; the embroidery and shibori are two of them.

Fresh, creative attitudes and innovative perspectives seem to be a common need in the world of fashion and textiles today.



# REINTERPRETING THE AESTHETICS OF JAPANESE KATAGAMI STENCILS THROUGH NEW TECHNOLOGIES

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## Abstract

The Japanese used 'Katagami' stencils for over a thousand years to create patterned textiles using a technique called 'Katazome'. As a resource for this investigation, a collection of mid nineteenth century Japanese stencils, was used which is part of the University of Leeds International Textiles Archive (ULITA). This paper focuses on the reinterpretation of traditional Katagami designs by exploring new technology, including laser cutting and digital printing methods, allowing the creation of decorative textiles for interiors or one-off gallery applications. It will also address the interaction between technology and textile design and identify the possibilities for new approaches to the design process.

## Introduction

The use of Japanese stencils goes back as far as the Nara period (646-794). Later in the Kamakura period (1185-1336) stencils were employed in the decoration of deer skin and other kinds of leather used for making armour. It is not known when stencils and rice paste were first used on textiles, but it is almost certain that the basic techniques were derived from those used with leather. Throughout the Edo period (1615-1868) the versatility of katazome ensured that it was used on anything from farmers work clothes to elegant samurai costumes. The Meiji Restoration of 1868 marked the end of Japan's isolation from the rest of the world and the start of a period of rapid industrialization. The introduction of synthetic dyes and manufacturing processes had an inevitable effect on the Japanese textile industry. In the meantime the growing popularity of Western dress caused a reduction in demand for traditional types of fabrics. The rise of the Folk craft movement in the 1920s was especially important in reviving interest in these skills. A major textile artist of this time Serizawa Keisuke specialised in katazome and other kinds of resist dye/work [Faulkner, 1998, pp.7-10].

The paper used for making stencils is made of the inner bark of the mulberry tree. The sheets vary in size according to the intended use of the stencils, they usually measure about 25 x 40 cm. Each stencil is made of several sheets of paper laminated together with persimmon juice. This strengthens the paper and makes it water resistant. Cutting is usually carried out on several stencils at a time [Faulkner, 1998, pp.8-9]. Particular attention is given to the edges of the stencil to ensure perfect matching of the repeat design. [Fig 1].



Fig 1 *Original Katagami Stencil (ULITA)*

Stencils which have large areas of paper cut away and which are therefore easily susceptible to damage are strengthened with silk thread. Two identical sheets of paper are placed on either side of a mesh of silk threads stretched across a frame. After careful re-alignment, the papers are fixed permanently together with persimmon juice, with the mesh of silk threads sandwiched between them. The silk threads are so strong that even the most fragile patterns can be supported. They are also thin enough not to leave traces on the dyed fabric [Faulkner, 2006, p.10].

'It is difficult to maintain handmade katagami as a modern industry and in the Ise area of Japan, people are trying hard to restore and preserve its tradition' [Tanaka, 2006, [www.kansai.gr.jp/kansaiwindowhtml](http://www.kansai.gr.jp/kansaiwindowhtml)].

#### **Advantages- new technologies within the textile industry**

Realisation of textile designs has become increasingly dominated by digital ink-jet printing, due to the recent development of high-speed machines capable of meeting the demands of mass production. Digital images can be translated effortlessly onto the fabric surface. There is no longer any economic advantage for artwork to be in repeat or have reduced colour palettes [Treadaway, 2007, p.64].

It is also equally cost effective to produce small sample designs rather than to manufacture huge lengths. Individual products can be designed and digitally printed, reducing waste and providing the potential for innovative customized products printed on demand. There is now a significant advantage to using digital imaging technology in the development of artwork for printed textiles, and practitioners are now embracing the technology and exploring methods of working creatively with it.

The use of laser cutting has recently become popular within the textile field. Textile designer Savithri Bartlett [Kavanagh, 2004, p.4] investigated the use of lasers in textile manufacture to see what opportunities existed particularly in the area of marking a material surface. [Fig 2] Tord Boontje, an independent industrial designer, was able to exploit his vocabulary of narrative motifs through the use of new technology such as laser-cutting and application of new materials [Margetts, 2006, p.23].



Fig 2 *Garland light*, Tord Boontji

Seetal Solanki, a textile designer from the UK, currently challenged the use of textiles through urban regeneration projects. Her work included manipulation of different materials through laser-cutting, laser etching, laser welding and digital design [[www.textilefutures.co.uk](http://www.textilefutures.co.uk), 2007].

Kavanagh referred to Laser technology as a 'second-wave' technology due to the fact that it has been around for some time and because a substantial body of knowledge is already in the public domain [Kavanagh, 2004, p.5]. However there are significant areas of potential development that are worthy of further investigation by textile designers.

### **Disadvantages of new technologies in comparison to the traditional techniques used**

Although new technologies within the textile industry have many advantages in terms of speed, cost and manufacture, designers can become too absorbed in the technical process and forget that the main objective is to produce 'ground-breaking textiles'. Results using computational textiles are not always successful compared to the traditional skills used, in terms of colour, materials and quality of aesthetics. In order to sustain the unique aesthetics of the Katagami stencils the conclusion will show how digital technology is incorporated and used as a tool within the design process.

"New technologies should not be seen as creating isolation but can be integrated into the textile artist's tool box to inspire and enhance creativity" [Burton, 2005, p.217].

[Treadaway, 2007, p.69] investigated the importance of spontaneity, happy accident and intuition in a non-digital practice and how this forces the artist to relinquish full control of the colour. The digital craft is less spontaneous. Many designers mix aspects of traditional craft with modern technology to create innovative textiles for the future. Textile designer Lesley Sealey and fashion designer Roger Lee [[www.britishcouncil.org/arts](http://www.britishcouncil.org/arts), 2007] demonstrated how craft and technology could merge. Other designers refer to Britain's textile heritage, to keep tradition alive and establish a new meaning for a contemporary society.

[Kavanagh 2004, p.3] focused on designers working closely with technology and how they can often think of themselves as technologists. This is to be avoided as designers' enthusiasm for the technology can take them away from their stated ambition of producing new textiles and products.

### **Producing decorative effects on fabrics using laser cutting, CAD and digital print methods.**

The aim of the project associated with this paper was to investigate these technologies and to explore the potential for the transferability of the relevant processes into the production of interior textiles, fabric manufacture and one-off-gallery pieces.

Initial research involved the gathering of information; the University of Leeds International Textiles Archive (ULITA) was the main resource for this case study. The first stage of the project involved photographing and drawing sketches taken from the original Katagami stencils. The cutting techniques were of particular interest. The aim was to reinterpret the aesthetics of the Japanese stencils using appropriate new technologies. This is where the potential of laser cutting technology became apparent and the contribution it could make in the pursuit of producing similar, decorative effects on fabrics and papers. After discussions with design companies and making contact with the South Leeds City Learning Centre, this helped to establish the viability of the application of laser and digital methods to the decoration of fabric. The research was continued by investigating current trends and the market area for interior decorative textiles. Production techniques were explored and the sampling of different materials that would be appropriate to the processes was investigated.

Alongside the analysis of the feasibility of the technical process, the style and scale of Katagami design motifs were explored, as well as surface effects in relation to different CAD platforms, such as Adobe Photoshop, Illustrator and Ned graphics software. Through this initial development work and advice from laser engineers, it soon became apparent that in order to achieve a more sophisticated design and quality of line, it was necessary to explore the facility to export the designs in a vector file format, which would be capable of running on a laser cutting programme.

Digital printing technology was another concern. After scanning a collection of original motif drawings inspired by the Katagami stencils using Adobe Photoshop, and putting the motifs into repeat in either half-drop or block arrangement, the final design was then saved to compact disc. The file was then opened up in the digital printer- Mimaki TS 1600 and printed out onto fabric or paper using reactive dyes. The next stage was to laser-cut some of the motif designs [Fig 3]. It became apparent early on in the process that it would be necessary to re-evaluate the methods and criteria for approaching the design process. A few problems with the laser technology had already been encountered, as the heat became too concentrated for some qualities of fabrics, more specifically the non-woven material.



Fig 3. *Design by Lucinda Clements using digital and laser technologies*

### **Environment, ecological and sustainability issues**

The overall aim was to address the authentic/traditional techniques demonstrated in the Japanese stencils and relate them to more contemporary production methods. It was therefore important to explore sustainability and source recycled/used fabrics, leathers, papers (vintage wallpapers etc.), and to look into environmental methods of design and manufacture. Laser and digital technologies have a relatively low impact on the environment in terms of number of colours used and speed of printing etc.

### **Conclusion and intended future outcomes**

In conclusion, after re-evaluating the research work done so far, there remains much potential and further refinement in the design aesthetics and application of the technical processes for interiors or one off gallery pieces.

It is apparent that although new technologies have many advantages within the textile industry, designers can get too immersed within the technical processes and lose their focus on creativity and aesthetics. Through further research in this particular area, the unique aesthetics of the Katagami stencils will be reinterpreted through the use of digital technologies, examining how these can be incorporated as a creative tool within the design process.

Below are the stages identified which need to be investigated in order to promote further research and development in this area: -

- Continue to research into the traditional Japanese stencils and develop this further by pushing the capabilities of laser technology- exploring the maximum sophistication of cut, sharpness of line, angles and variety of mark making and etched effects.
- Continue to explore the use of CAD programmes suitable for Laser and digital technologies i.e., Adobe Illustrator.
- Collaborate with technicians and engineering companies in order to solve technical issues
- Focus more on laser cutting and etching techniques for the application of the processes for interiors/furnishing fabrics
- Continue to source/sample different materials
- Approach interior, accessory companies and contact designers/artists.

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Fig 1: A traditional mid 19<sup>th</sup> century Japanese Katagami stencil. Photograph by Lucinda Clements [2007]. University of Leeds International Textile Archive (ULITA)

Fig 2: Garland Light by Tord Boontje [2004] p57.

Fig 3: Textile design using digital printing and laser cutting techniques by Lucinda Clements [2007]



# POLYPROPYLENE TEXTILES: PAST, PRESENT AND FUTURE.

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## Abstract

Prior to 1956 polypropylene was an unknown soft waxy material with no real commercial use.

That is until Karl Zeigler and Giulio Natta invented coordination polymerisation, applied the technique to propylene and produced isotactic polypropylene. This form of polypropylene could be melt spun into man-made fibres. Quite rightly they were awarded the Nobel Prize in 1963 since their research work kick started an industry that spans both the plastics and textiles. This paper will trace some of the developments in polypropylene textiles over the last 50 years and introduce delegates to some of the commonly accepted products that owe their innovation and development to researches initiated and undertaken in Northern Ireland.

## Introduction

For approximately 30 years, starting from the early 1960's, the Northern Ireland textile industry, industrial and academic research community played a major role in establishing the polyolefin textiles industry. This brief paper recounts the establishment of this sector of the textile industry, with particular emphasis on the entrepreneurial role played by Northern Ireland's polymer scientists, textile engineers, textile technologists and research community.

**Polyolefins** are a group of synthetic polymers / plastics materials that include polyethylene and polypropylene. They are made from two gases extracted from petroleum cracking, namely ethylene ( $\text{CH}_2=\text{CH}_2$ ) and propylene ( $\text{CH}_2=\text{CH}_2-\text{CH}_3$ ).

**Polyethylene** was discovered by ICI in 1933. Commercial production of the polymer began in 1939. Initially this low density polyethylene (LDPE) was used for film extrusion and wire coating of electric cables. LDPE fibres, or more correctly thick monofilaments, were commercially available by the mid 1950's. Compared with natural textiles, these plastic textiles were lightweight, resistant to chemicals, insects, micro-organisms: non-toxic, odourless and abrasion resistant, but had very poor tensile properties (1.5 cN/dtex) and low softening point (90 C) which limited their commercial impact.

In 1953 Karl Ziegler in Germany successfully developed a special catalyst system in order to make a more regular or straight chain version of the polyethylene polymer. This new form of the polymer became known as high density polyethylene (HDPE). HDPE monofilament yarns and / or ribbon tapes were available in the late 1950's. They were sold under such trade names as Reevon™ or Courlene™ and had much higher tensile properties ( $> 5$  cN/dtex) than LDPE monofilaments. Whilst the commercial future looked good for specialist applications, HDPE fibres were never going to make it as a 'bulk commodity fibre'. The fibre softened or shrunk around the boiling point of water and the melting range of 120-130 C was way too low for general and domestic textile processing (MP of Nylon 6:6 and polyester fibres is approximately 260 C) .

In 1954, Giulio Natta who was working independently in Italy, but also 'collaborating' with Karl Zeigler used similar catalysts to Zeigler to polymerise propylene. He successfully developed a means of producing a highly crystalline form of the polymer known as 'isotactic polypropylene'. The human element then came into play, as Natta filed a patent on polypropylene in 1954 (ITX1128258 19540806) in terms of production of the polymer and subsequent use as a textile fibre, before informing Ziegler of its existence. Naturally, Karl Ziegler felt this action totally breached their agreement to share their research and the collaboration split in anger. Reconciliation between the two chemists was only achieved in Sweden in 1963, when they received a joint Nobel Prize for their research work.

Commercial quantities of isotactic polypropylene became available in 1957 (Cook, 1968). The primary attraction of this polymer came from its potential as a superior plastics material compared with polyethylene and not primarily as a raw material for synthetic fibre production. It was not until the early 1960's that small quantities of Italian-made 'Merkalon' staple and multifilament polypropylene fibre began to appear in the market, soon followed by production in the US and UK. In the UK, Ulstron™ polypropylene fibre was produced (under licence) by ICI at their already established polyamide spinning plant at Kilroot in Northern Ireland. Thus began a long and quite successful association between the Northern Ireland's textile industry and research community and the 'new world of polyolefin textiles'.

## **Polypropylene Textiles**

The production of multifilament polypropylene fibre was restricted by well written patents, but the polymer was freely available, albeit designed for other applications, such as a plastics injection moulding material or for the extrusion of sheet or film. However, the plastics film route looked a good route to circumvent the Montecatini patents and produce fibre.

Collaborative, industry wide, researches were undertaken to convert the plastic like polypropylene film into something that would be recognised and useable as a textile raw material for spinning or weaving. Success came on a number of fronts, for example the fibre from film process with the invention of on-line fibrillation processes and the slit-film tape yarn or ribbon yarn process, both produced from an extruded film or sheet of polypropylene.

The slit film tape route gave a 'textile ribbon yarn' that could be used directly for weaving, knitting or tufting. The addition of in-line fibrillation technology provided a 'tape' that could be subsequently twisted to form a round textile yarn which was suitable for direct applications in ropes, twines, netting and a host of other applications.

The fibre from film process was short lived for two reasons (1) the fibres just didn't have the look or feel of textile fibres, and (2) the quite ingenious circumvention of the Montecatini patents by Eugenio Capdevila in a Spanish patent application dated 19<sup>th</sup> November 1969. Capdevila's technology was acquired / licensed by the world renowned textile engineering company of James Mackie and Sons Limited in Belfast (JM&S). JM&S adapted and improved the technology and their Mackie CX polypropylene staple fibre spinning system was a commercial success for the company.

In-house polypropylene fibre production was a major 'culture shock' to the established synthetic fibre industry, because, for the first time, the spinner, weaver or whoever



could buy polypropylene polymer, purchase polypropylene extrusion equipment, obtain technical backup and make their own bespoke fibre or tape yarns. They now had a secure, independent supply of textile raw materials, be that slit film tapes or staple fibre, with which to develop a range of new value added and bespoke products.

JM&S was also a major manufacturer and supplier of tape extrusion lines, weaving and winding equipment for polyolefin fabrics for carpet backing and agricultural applications, such as sacking and baler twines. When the Montecatini patents lapsed, JM&S also developed and installed extrusion systems for the manufacture of BCF carpet yarns (known as the Mackie Fibre M system).

During the 1960's and early 1970's, the advent and rise of in-house production of polypropylene tape, fibre and nonwoven fabrics (dry laid and stitch bonded) eventually killed off the UK jute industry located mainly around Dundee in Scotland. The traditional jute spinning and weaving companies embraced polypropylene textiles. Woven polypropylene fabrics replaced jute for use in carpet backing, sacking and agricultural applications. Tape fabrics were designed for geotextile applications and on-line tape fibrillation technology enabled the production of synthetic yarns that in many cases replaced natural fibre spun yarn, for less critical applications, in ropes, cords and twines. Throughout this period of rapid change, and decline in the general use of Jute, by far the majority of the 'jute industry's' research in reinventing itself as the 'Scottish Polyolefin Textiles Industry' was undertaken by researchers at the Lambeg Industrial Research Association (LIRA), that is the former Linen Industrial Research Association. During the 1970's and 1980's researchers at LIRA played a major role in supporting the fledgling polyolefin textiles industry on a worldwide basis, serving numerous clients both in the UK and overseas, and bridging the gap between academia and industry, collaborating with polymer and additive suppliers, textile engineers, standards organisations etc.

Northern Ireland based academic research in polypropylene textiles was undertaken by scientists at the Queen's University of Belfast, and University of Ulster at Jordanstown, with particular emphasis on extrusion technology and polymer structure; flame ignition and burning behaviour of polypropylene textiles; applications in civil engineering for underpinning reinforcement of roads and applications in building materials with respect to reinforcement of cement etc.

By the early 1990's the polyolefin textiles industry had well and truly matured and embarked on an intense period of consolidation, particularly with respect to high capacity fibre production, which quickly had to be moved from Europe for basic economic reasons.

It is 50 years since commercial lots of isotactic polypropylene became available. From a few limited applications of the fibre in the early 1960's its use and application in a variety of forms now accounts for approximately 6% of global fibre production. For example, in the US polypropylene fibre, in various forms, is sold under at least twenty seven trade names and manufacture by at least thirteen suppliers.

In Europe, 2003 statistics from the European Association of Textile Polyolefins (EATP) indicates a 39% European usage compared with other man-made fibres equivalent to 2,000,000 tonnes per annum.

The polyolefin textiles industry is not only firmly established on a global basis but certainly looks like being here to stay, judging by the range of technologies used and end use applications ( see table 1).

## NOTES

- **HDPE textiles** are still in vogue, specifically for manufacture of fishing nets, tarpaulins, agricultural shade mesh and screens etc. UHMWPE polymer can be spun by a process known as gel spinning to give very high strength fibres and yarns marked as Dyneema™ and Spectra™. These very high strength yarns are used to produce textile materials for extreme environments, such as, deep sea mooring lines, anti ballistic materials, light weight high strength sails for racing yachts etc.
- **JM&S** was also a major manufacturer and supplier of tape extrusion lines, weaving and winding equipment for polyolefin fabrics for carpet backing and agricultural applications, such as, sacking and baler twines. When the Montecatini patents lapsed, JM&S also developed and installed extrusion systems for the manufacture of BCF carpet yarns.
- There was little or no Northern Ireland research involvement with respect the emerging melt extruded nonwoven technologies to produce spun bonded and meltblown nonwovens. JM&S had a cursory glance at meltblown technologies, but unlike their entrepreneurial action in previous eras, 'they didn't bite the bullet'.

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Table1: CURRENT END USE APPLICATIONS OF POLYOLEFIN TEXTILES

<b>Derived from extruded sheet or film</b>	<b>Derived from spinneret extruded filaments</b>	<b>Derived from extruded filaments converted directly to fibrous nonwovens</b>
Slit film tapes	Tape yarns	Spun bonded fabrics
Fibrillated tapes	Continuous filament	Melt blown fabrics
Profiled tapes	yarns	Hygiene Fabrics
Fibres direct from film	BCF yarns	Sanitary fabrics
Carpet backing,	High tenacity yarns	Medical fabrics
Ropes, cords and	Textured filament yarns	Disposable garments,
twines	Bi-component fibres	Apparel interlinings,
Sacking fabrics	Bi-component yarns	Upholstery fabrics,
Agricultural fabrics	Staple fibre tows	Filtration fabrics
Circular woven bags	Monofilaments	Building materials
Woven geotextile	Monofilament braids	Roofing materials
fabrics,	Netting fabrics	Civil engineering and
Woven shade mesh	Medical sutures	geotextile fabrics
fabrics	Staple spun yarns	Floor coverings
FIBC fabrics	Carpet face pile yarns	Wiping cloths
Face pile for sports	Nonwoven fabrics	Durable papers
surfaces	Woven upholstery	Agricultural fabrics

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Industrial sewing threads	fabrics	Geotextile fabrics
Narrow width webbing	Apparel fabrics	
Knitted fabrics	Knitted fabrics	
Curtain tapes	Webbing	
Weather strip fabrics	Woven geotextile fabrics	
Dust exclusion fabrics	Anti-ballistic fabrics	
	Nonwoven geotextile fabrics	
	Nonwoven filter fabrics	
	Nonwoven sports surfaces	
	Stitch bonded fabrics	
	Curtain header tapes	
	Weather strip fabrics	
	Dust exclusion fabrics	
	Ropes, cords and twines	

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# MIND THE GAP: LOCATING AND MAPPING HAPTIC-SCOPIC CHIASMA EXPERIENCED WITHIN TEXTILE PRACTICE

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## Abstract

A practicing artist, my current work explores the triangulated relationship between artist, materials and textile tools in the process of bringing an artwork into being. This practice is necessarily trans-, and often inter-, disciplinary, taking many forms including video, photography, installation and performance.

One aspect of such expanded practice concerns questioning the role of the scopic in artistic discourse and practice. Gendered and occidental canons of art practice have handed down and perpetuated a dysfunctional relationship between the haptic<sup>4</sup> and scopic which actively negates the relationship between artist and tools in the bringing-into-being of an artwork.<sup>5</sup> For many artists it is a negation cutting directly across the grain of practice. This paper focuses on a practice-based engagement with materiality in art-making, most specifically that of the artist working with textiles, in order to suggest a more nuanced understanding of the role of the artist culturally and critically as a post-colonial, post-feminist and post-modern experiencing subject.

In considering *Lick and Lather* (Janine Antoni 1993-4), *Trade Delivers People* (Narelle Jubelin 1994) and *linings* (Ann Hamilton 1990) issues involved in locating and mapping haptic-scopic chiasma<sup>6</sup> within textile practice will be explored. This paper will address discourse aroused by these three artworks, in particular the inextricable relationship between cultural and critical locating of the artist and intentionality.

Utilising Kristevan concerns, this paper proposes an alternative to the binary discourse in favour of one which always confronts and is thus constantly in a state of flux or a process of metamorphosing. In seeking these points of departure and coming together, notions of translatability will be considered and the associated cultural 'excess' that arises from such a process.

This paper proposes that it is in this excess of translatability that new understanding and new perspectives can be established which exist not in the haptic, nor in the scopic, but in that murky place between the two which Laura U Marks refers to as the 'skin of the film', and which can be adopted more broadly in this context. For practising artists grappling with this shady arena there is urgent need for such a mapping, not one which is essential and caught up with binaries, but a more subtle feeling of the way around practice.

## Introduction

A practicing artist, my current work explores the triangulated relationship between artist, materials and textile tools in the process of bringing an artwork into being. This

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<sup>4</sup> Alois Riegl borrowed the term *haptic* from physiology (from *haptein*, to fasten) to differentiate it from the term tactile, which insinuates touching. It is used to describe engagement with surface qualities that invoke and provoke the sense of touch and thus speak, for the purposes of this paper, of a corporeal relationship within the process of art-making. Marks, Laura U (2000) *The Skin of the Film*. Duke University Press, Durham & London. p162

<sup>5</sup> Jay, Martin (1994) *Downcast Eyes: The Denigration of Vision in Twentieth-Century French Thought*. University of California Press, Berkeley. p3

<sup>6</sup> *Chiasma*, from 19c Greek meaning a cross-shaped mark, is used here to reference the unravelled nature of visuality from other forms of engagement with the world, where there are points of complete separation and other moments where the distinction is less clear.

practice is necessarily trans-, and often inter-, disciplinary, taking many forms including video, photography, installation and performance.

One aspect of such expanded practice concerns questioning the role of the scopic in artistic discourse and practice. Gendered and occidental canons of art practice have handed down and perpetuated a dysfunctional relationship between the haptic<sup>7</sup> and scopic which actively negates the relationship between artist and tools in the bringing-into-being of an artwork.<sup>8</sup> For many artists it is a negation cutting directly across the grain of practice. Nowhere more so than within textile practice. In focussing on a practice-based engagement with materiality in art-making, this paper considers strategies for re-negotiating a haptic-scopic relationship, using the notion of translation as a starting point.

According to Walter Benjamin, 'Translation is a mode' that demands a return 'to the original, for that contains the law governing the translation: its translatability.' (Benjamin 1992, p.71) It is this question of translatability and the associated untranslatability that sits between two modes of perceiving: haptic and scopic; to what extent can the one be translated to create meaning within the realm of the other; to what extent does a translation between the two realms further understanding one of the other?

It could be said that the process of translation operates through three different modes, three modes which are not necessarily mutually exclusive, nor exhaustive, but modes which provide a model for considering the haptic-scopic (inter)relationship: translation as a mediated mapping; translation as mimetic practice; and reflective translation. Alongside this tripartite model three works will be discussed and considered: *Trade Delivers People* (Narelle Jubelin 1994), *Lick and Lather* (Janine Antoni 1993-4) and *Linings* (Ann Hamilton 1990). These three works and artists will serve to test some of the subtleties found within this framework and further used to explore its usefulness as a model for understanding haptic-scopic relationships within textile practice.

Traditionally the relationship between haptic and scopic perception is one of hierarchy. This causes disruption and inequality in the flow of information between modes which necessitates consideration of an alternative model to that set out by Rene Descartes which sets mind and body, perceiving sight and sensing touch, apart. As a philosopher seeking an arena beyond dialectics and the associated binaries, Maurice Merleau-Ponty proposed a concept whereby there exists dynamic harmony between opposites:

'The opposites, no longer in competition, are at rest the one against the other.'

(Merleau-Ponty 1964, 1968 edition p54-55)

From this dynamic harmony, Merleau-Ponty proposes a model which refuses to acknowledge the Cartesian mind-body (in that order) dualism: the chiasma. In suggesting the chiasma as a model by which to explore the haptic-scopic (inter)relationship it is important to consider the subtleties and disparities it throws up.

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<sup>7</sup> Alois Riegl borrowed the term *haptic* from physiology (from *haptēin*, to fasten) to differentiate it from the term tactile, which insinuates touching. It is used to describe engagement with surface qualities that invoke and provoke the sense of touch and thus speak, for the purposes of this paper, of a corporeal relationship within the process of art-making. Marks, Laura U (2000) *The Skin of the Film*. Duke University Press, Durham & London. p162

<sup>8</sup> Jay, Martin (1994) *Downcast Eyes: The Denigration of Vision in Twentieth-Century French Thought*. University of California Press, Berkeley. p3

Originally a term from the process of meiosis, the chiasma refers to the points where chromosomes remain in contact after separation has been initiated. Further, these points of contact allow for mutual exchange of genetic material and so produce crossings over. A chiasma, as much an exchange as a state of being, carries the implication of areas where separation is complete, where such exchanges do not happen. It is thus that, within the chiasmic model of the relationship, there is a necessity for a translator and/or a process of translation which will enable transfer and exchange of understanding across the chiasmic divides.

Translating from one language or mode to another can be seen simply as mapping a set of information to another format, and yet, as soon as the process begins problems occur. Take, for example, the translation of *'j'ai une faim de loup'* from French into English. A literal translation holds meaning enough to be understood: 'I have a hunger of a wolf'. A more culturally embedded translation, one which the new audience will understand is 'I could eat a horse'. This, in turn, holds incomplete understanding for a French person. However, *j'ai une faim de loup* is more indicative of the way in which French culture perceives and relates to the veracity of a wolf's appetite, whilst the English equivalent (for this is what the translation is here) is more telling about the size of the English person's hunger, or perhaps it refers to the French penchant for horse meat with disgust – I am so hungry, I would even copy the French and eat a horse. This simple example highlights the potential role of translator as mediator for meaning. In this role elements of difference and otherness are highlighted, mediated and, indeed, policed.

Consciously seeking the chiasmic points of departure and coming together, notions of translatability will be considered and the associated cultural 'excess' that arise from such a process. This paper proposes that it is in this excess of translatability that new understanding and new perspectives can be established which exist not in the haptic, nor in the scopic, but in that murky place between the two which Laura U Marks refers to as the 'skin of the film', and which can be adopted more broadly in this context. For practising artists grappling with this shady arena there is urgent need for such a mapping, not one which is essential and caught up with binaries, but a more subtle feeling of the way around practice.

In creating a model for understanding and negotiating the haptic-scopic (inter)relationship, this paper suggests that the artist concerned with textile practice operates in a privileged position. With a heritage of craftsmanship which sits outside of the gendered and occidental canons of art-making, textile practitioners have negotiated the haptic-scopic relationship using strategies of mediation, mimetic practice and reflection. These strategies have been utilised, but the lack of theoretisation within textile practice has rendered them largely impotent. This paper proposes to set out the landscape within which the strategies of mediation, mimetic practice and reflection have and can be used to translate between haptic and scopic modes of production and draws on a range of theoreticians in so doing, including Sarat Maharaj, Laura U Marks, Mieke Bal, Vivian Sobchack, Joan Copjec, Homi Bhabha and Luce Irigaray. Finally, this paper will explore the idea that textile itself alongside its associated vocabulary can be used as the model for understanding the haptic-scopic chiasmic relationship.

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# **FASHION RETAILING AND LEISURE & TOURISM WITHIN THE UNITED KINGDOM AND THE EMERGING EUROPEAN MARKET**

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## **Abstract**

This paper presents the findings of an investigation into the interface between fashion retailing and leisure & tourism, focusing on the fashion retail environment as a leisure pursuit for both the tourist and the indigenous consumer. Comparisons are made between Western European markets and that of Central Europe where the market may be perceived by some as less sophisticated.

Using the Slovakian capital Bratislava and several major UK cities as case studies, this paper examines the differences between established markets in the EU and that of a more recent member country.

## **Introduction**

The link between retailing and leisure & tourism has long been recognised in many countries including those in Western Europe, and there is evidence through published research. However it may appear that in other parts of Europe that this link has not been fully exploited. Further to this, the relationship between leisure & tourism and fashion retailing as a separate entity is less well researched. Shopping is now considered a major leisure activity not least of all in the pursuit of fashion. Clothes shopping has become a recognised way of spending leisure time in our westernised society.

## **Fashion retailing, leisure & tourism**

The trade in clothing and related items has gone on for centuries but following the Industrial Revolution, less costly mass produced garments became available for people to buy. The middle of the 19<sup>th</sup> Century saw the development of the department store in France, England and the USA. These stores stocked a variety of merchandise with clothing a crucial element. The display of merchandise was an integral part of the shopping experience, and the success of the stores was due in no small part to their window displays. As Featherstone (1991) asserts "The inner logic of consumer culture depends upon the cultivation of an insatiable appetite to consume images".

It was recognised that the shopping environment was of vital importance to the customer. Tauber (1972) defines shopping to "include servicing people, [to] feel wanted, exercise, or spend leisure time with friends and relatives". The act of shopping is outlined by Roberts (1987) as "entail[ing] sorting, comparing, checking prices, selecting styles, browsing, walking and meeting with other people", as opposed to the act of buying (purchasing a specific item). Department stores became tourist attractions, providing a social experience with the utilisation of restaurants, libraries, roof gardens and even a skating rink.

It is common for town or city centres to contain a number of department stores as well as an assortment of shops of varying types and sizes. The out of town shopping centre or mall is a more recent development, as well as a variety of shops and department stores it also provides a selection of leisure facilities, although shopping was considered the main attraction. The first shopping mall originated in 1956 in Southdale, Minneapolis, United States of America (USA) White and Gray (1996). The enclosed area of shopping centres developed from the traditional markets in response to inclement weather. White and Gray (1996) identified the most prolific period of

regional mall creation as the 1970's and 1980's. Visits to shopping centres, particularly out of town ones, only developed in the last twenty five years in the United Kingdom (UK).

The term 'out of town shopping centre' is seen as being predominately British and mall as originating in North America, although both terms are used in this document to mean the same. Goss (1993) does not differentiate between them, but uses the term interchangeably. In towns and cities in the UK there are also groups of shops and shopping arcades, which are also referred to as shopping centres.

When city centre shopping centres were being developed in the United Kingdom, one or more of the major department stores would be invited to be the key anchor or flagship stores. This would then attract other medium and smaller retailers to these shopping operations. This formula has been repeated around the country. The popularity for tourism and shopping increased considerably with the advent of cheap flights. This growth in tourist destinations for the sole purpose of shopping has huge potential for the tourism industry and the purchasing of clothing items is of immense importance.

Shopping is now considered part of tourist activity. Timothy (2005) Identified shopping as an activity that is "based on the recognition of consumption. It (covers) the academic disciplines of sociology, anthropology, economics, politics, psychology and geography". He asserts "all types of tourism and tourist activities are, in one way or another, a form of consumption".

Out of town shopping centres compared to high street locations are recognized by Guy (1994) as "planned developments that are managed and marketed as a unified whole". The growth of destinations revolving around shopping centres, within certain geographical areas has been identified by the tourism industry as one of great potential. This was highlighted by Jansen-Verbeke (1991) in that "traditionally weak tourist destinations, shopping centres have evolved and become the major reason for the attractiveness to the visitor". Developments that utilise the shopping centre/mall concept combined with a variety of leisure offerings, attract significant numbers of visitors to a sophisticated one stop leisure and shopping centre.

Gateshead, northeast England, with its Metro Centre (one of the earliest developed leisure centres in UK) initially attracted visitors purely for its shopping, but with the development of its leisure products it has become similar to many shopping centres in its ability to diversify and become a one stop destination. With its airport and ferry terminal in nearby Newcastle, the proximity to Norway and other Scandinavian countries, it has become a popular destination and an inexpensive place to visit. Initially presented as a shopping destination, it is now considered to be equally important as a leisure provider. The centre became one of the earliest successful shopping destinations in the UK.

### **Shopping Centres UK**

Four UK cities and their shopping areas were researched: Glasgow, which has the second largest shopping centre in the UK, Manchester, Newcastle/Gateshead and Sheffield.

City centres in the UK, have developed organically over time and they have similarities. These centres host the same branded stores repeated throughout the country. City centres are usually comprised of high street shops along with smaller shopping centres or arcades. Development of out of town shopping centres has created competition for city centres, and these centres are rethinking their strategies in order to compete. Creation of out of town complexes have responded to growths in population in areas away from the city centre. Both city centre and out of town shopping centres have always contained major players known as anchor or flagship stores which have usually been the larger department stores which sell a variety of merchandise including a significant proportion of fashion items.

The shopping regions in Glasgow are a good example of the creation of a successful leisure, shopping, tourism destination. Considered to be a prime shopping destination in Scotland, it has renovated its city centre retail offerings providing for a variety of disposable incomes. Its city centre arcades, such as Buchanan Galleries and Princes Square amongst others, provide shopping and leisure facilities aimed at niche markets with shops that supply locally developed goods through to international brands.

Out of town destination Braehead has the usual range of retail outlets along with the ubiquitous food court. Its leisure provision revolves around sport, with an ice skating rink, curling rink and a sports arena. Access is by bus and car, but with its close proximity to the Clyde, the leisure connection is further enhanced with regular boat services including tourist commentary linking it to the city centre. One of its anchor stores is leading retailer Marks & Spencer, but unusually for an out of town centre of this type its largest anchor store is a supermarket. However its presence is historical, it was on the site and the shopping centre was built around it. The inclusion of supermarkets within this environment is not common in the UK.

### **Shopping in Central Europe - Slovakia**

Prior to the second world war, Czechoslovakia was considered a developed European country. The growth of its retail network was similar to that of its western neighbour but its progress was interrupted in 1948 when the communists took power. Following the demise of communism a free market was re-established, in 1991 nearly all subsidies were abolished and price levels no longer prescribed. With the coming of privatisation most of the retail outlets which had been controlled by former socialist monopolies changed hands. (Akehurst & Alexander 1995)

Because of a lack of financial backing for Slovak entrepreneurs, foreign investment plays an important role (Baker 1991). Foreign supermarkets used formulas which were previously successful in Western Europe; however there was always a desire by the local customers to purchase local products, although there was a willingness to supplement these with some foreign goods. According to a BBC report in 2002, shopping habits of Eastern Europeans including Slovaks have varied since the beginning of the 1990's. Initial enthusiasm for Western European goods was followed by such a backlash that foreign firms went to great lengths to disguise their nationality. Now these goods appear to have regained their popularity.

Internationalisation is becoming a key factor. In Central Europe 1989 saw the beginning of the arrival of Western European retailers, especially grocery hypermarkets. A visit to a Tesco store in Bratislava in 2004 indicated that at this time there was still

some resistance to foreign stores. Although the company name was displayed outside the store, there is nothing inside to indicate its ownership and there were a significant amount of domestic brands and locally produced goods alongside some imported goods. The interior was very different to a UK Tesco store and there was no clothing on sale at that time. However it now appears that foreign goods have regained ground. Discount food stores are increasing in popularity, there was the arrival of Lidl in September 2004, and Carrefour is introducing more locations within shopping centres as there is better trading within its mall locations than in stand alone stores. (Thorne 1991)

With the advent of the phenomenon of “fast fashion” in the UK, supermarkets are now in direct competition with some high street clothing chains and have had great success with the introduction of their own value clothing ranges. The introduction of textiles as part of the non-food ranges is now being experienced in Central Europe.

### **Bratislava Case Study**

In 1993 Bratislava became the capital of Slovakia when it separated from the Czech Republic. According to a survey by GfK Slovakia (May 2005) eating out levels in Slovakia are lower than in what they describe as ‘more advanced’ European countries due to a lower purchasing power. Bratislava contains a number of foreign embassies within a small area of the old part of the city and has a significant number of restaurants providing menus which equal those of some of the better establishments in parts of Western Europe. The retail environment in that area however is less well developed. According to the Mayor’s Office (2007) “Unlike other world capitals, it (Bratislava) does not have a typical high street, i.e. a street where exclusive shops are concentrated. This type of street is substituted by large shopping complexes”.

During a visit in 2004 it was observed that there was a selection of clothing retailers, but little in the way of familiar names found in other major European cities. However there was a mix of outlets, some stocking fashionable labels while others including the only department store in the area selling quite dated domestic labelled merchandise. Local retail development in the old town have not been as successful as the international branded stores, who by acquiring the space and subsidising the venture develop a sustainable position to effectively reduce competition. Local entrepreneurs do not have the same resources and consequently the lifespan of businesses is approximately around six months. This is a consequence of the high rent prices and low turnover of stock due to competition from these imported branded goods (Source: Bratislava Tourist Office July 2007). According to Euromonitor International (2005) few domestic suppliers remain successful. Shops in the old town still close around six to seven o’clock in the evening, unlike those of other European capitals which have maximised on the new concept of leisure shopping and usually have extended evening shopping hours, as do the Bratislavan out of town shopping centres.

Bratislava has three out of town shopping malls, two of which are within easy reach of the city centre. These malls, unlike most of the UK centres, house supermarkets and stores specialising in white goods. The Polus Centre, which opened in November 2001 by TriGranit Development Corporation, has a Carrefour hypermarket as its anchor store, although fashion and footwear retailers take up more than half the available retail space. Todd Cowan, Chief Development Officer for TriGranit states that there has been a shift in demand from items such as televisions and washing

machines to apparel and fashion items; he asserts "People are very image-conscious and fashion-conscious, especially the young generation, which has money to spend" (Thorne 2001). Another centre, Aupark contains a bowling alley along with multi cinema screens, which despite higher entrance prices captures half the visiting Bratislava filmgoing market. The retail outlets are mainly non-Slovak and the growing popularity of foreign stores was typified by the opening of the clothing retailer Mango, when an extra 10,000 visitors went to the centre within the first two days (Thorne 2001). Shopping Palace (Soravia Palace) has Tesco as its flagship store which is the largest hypermarket in Slovakia. On its website (2007) it is claimed that the centre has been built on the basis of analysis of many international shopping centres.

## **Conclusion**

It is easy to assume that shopping as a leisure activity has long been established in the UK and other countries, and that we have the correct formula. Shopping centres are a more recent occurrence within the newly established countries of the EU, but as seen in Bratislava they have learnt lessons from the old EU countries while adapting the formula to their own needs. They have established their out of town shopping centres around food super/hypermarkets and white goods providers also feature. This is generally not considered usual in the UK as white goods and supermarket shopping is not considered a leisure activity. In the UK department stores containing clothing and fashion take priority as part of the anchor/flagship store.

Cultural differences mean that supermarket shopping and the purchase of white goods were not easy prior to joining the EU. The element of choice of household goods and food reflecting on the problems of distribution and food chains in the old communist regimes made purchasing difficult. The consumer's experience today is in an environment that is about enjoyment and not a chore. The old queues for basic necessities have disappeared, choice and accessibility to goods is the driving force of the new consumer. Slovaks are now taking advantage of the increase in opportunity to purchase a variety of items, and there appears to a growing number of people willing to spend money on fashion items rather than household goods. The success of the Mango store is a good example of the growing popularity of clothing labels. The introduction of value clothing in supermarkets has to be an attractive proposition in countries where the earnings are not as high. The concept of shopping as a leisure pursuit married with other activities in a safe and entertaining environment demonstrates the capacity for further expansion to service the developing sophisticated choices of the new EU.

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# COLOUR EFFECTS IN TWO COLOUR STRANDED KNITTING

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## Abstract

Many traditional knitting patterns are based on two colour stranded knitting. Often labelled together as Fair Isle, they originate from diverse regions as Northern Europe and South America. Each region has its own particular characteristics however they have in common the rule that each course only contains two colours regardless of the overall colour count in the design. When one colour is not being used it is stranded across the back of the fabric to ensure it is in the correct position for knitting when needed again. In their original form most traditional patterns were designed to be striking, with bold use of colour. Fair Isle knitting from the nineteenth century predominantly uses alternating stripes of brown or blue contrasting with gold and red contrasting with white, however as Fair Isle patterns crossed into wider usage colour became softer, using more naturals and melange yarns, which made colour blending easier to produce successfully and the more subtle designs were more marketable to a wider audience.

As colour in fashion has developed, so has colour usage in Fair Isle knitting sometimes producing exciting colour effect but also producing some hideous disasters. This research aims to apply contemporary colour theory to traditional knitting techniques and produce a set of guidelines to predict the success of an intended colour combination.

Chevreur's (1786-1889) theories on colour harmonies and The Bauhaus investigations into colour interaction by Itten (1888-1967) and Albers (1888-1976) form the basis of the investigation. Additional research by more recent theorists such as Birren (1900-1988) has relevance to the effects of lustre, and luminosity. A major element to the investigation is the use of materials within the fabrics produced and the effect of texture on colour relationships.

This paper will report the initial findings of the investigations.

## Introduction

Two colour stranded knitting forms the basis of many traditional knitting techniques. The areas in which stranded knitting is found are not linked geographically but many of the patterns have striking similarities with regional variations. The uniting characteristic is the use of two colours in each row or course. This is regardless of the overall colour count in the design. When one colour is not being used it is stranded across the reverse of the fabric so that it is in the correct position when it is next needed. The patterns are mainly geometrical and symmetrical.

## Use of colour

In their simplest form patterns use only two colours over all, a ground and a pattern colour. This is a characteristic of Norwegian design and produces simple but striking fabrics. Stranded knitting in the Shetland, known as Fair Isle, utilises more complex colour combinations. Traditionally bright contrasting stripes build into a strong all over pattern. When producing Fair Isle fabrics there is the ability to alter the appearance of the design through the use of colour.

## Initial investigation

A cohort of level one students on the BA (Hons) Fashion Design programme at the University of Leeds were given a simple Fair Isle pattern graph and asked to colour it then produce the fabric. The resulting fabrics were compared and it was noted that

although all of the fabrics used the same pattern the different use of colour had produced a variety of emphasis in the pattern in some cases altering it substantially. This was first noted in woven fabrics in the nineteenth century by rug designer Wilhelm von Bezold.

The results of the initial investigation led to the question can the Bezold effect be predicted or controlled and what are the factors determining the effect. A series of knitted fabrics were produced using traditional Fair Isle pattern in a series of colour experiments.

### **The colour wheel**

To discuss colour relationships it is necessary to have a colour structure. For centuries colour theorists have endeavoured to form a working organisational structure for colour. These have ranged from psychological arrangement to scientific arrangements. The colour wheel of twelve divisions, containing primary, secondary and tertiary colours, is the simplest arrangement based on Newton's blending of the spectral range of seven colours into a circle (Jasper, p52). It provides a base for further investigations in the form of an achievable palette. It can however only be a guide in this investigation as the problems of matching yarn to the precise colours in the wheel has resulted in the formation of an imperfect palette. It was questioned whether the project could be achieved digitally by creating charts of colour rather than knitted fabrics however this was disregarded for two main reasons. Digital investigations would be based on additive colour rather than the subtractive colour of dyed yarns. Whilst not a major problem as the two types of colour can be matched it was felt a more honest representation would be achieved in yarn. More importantly the characteristics of a knitted fabric would be lost digitally. The knitted loop is irregular in shape and can be represented by yarn simulation packages, however the quality of yarn used and fabric textural properties can not be accurately represented digitally. This does however raise further questions as to how colour in knitted fabrics is influenced by the yarn type used.

### **Colour relationships**

A single colour is rarely seen in isolation and the effect differing of colour relationships is well documented. Successive colour theorists including Michel Chevreul (1786-1889), Johannes Itten (1888-1967), Josef Albers (1888-1967) and Faber Birren (1900-1988) were all interested colour harmonies and the phenomena created by colour contrasts. Fair Isle patterns rely on careful colour selection for their success. The close proximity of the constituent colours allows colour harmonies and/or contrasts.

### **Pattern selection**

Fair Isle patterns can be categorised by size; as a simple guide small or peerie patterns usually cover five to seven courses, border patterns cover nine to thirteen courses, the traditional OXO type pattern cover fifteen to seventeen courses and the large stars cover twenty one to thirty one courses (McGregor, p17). This investigation chose to concentrate on one peerie pattern of five courses, one border pattern of eleven courses and one OXO pattern of fifteen courses, so covering a range of scales. Later investigations will look at large star patterns which can utilise more complex colour arrangements.

The patterns selected all fitted into a horizontal repeat of twenty four stitches. This allowed simple programming of the CAD system which controlled the knitting machine used to produce the fabrics.



### **Primary colour samples**

The three Fair Isle patterns were knitted in primary colours, first as a two colour pattern with each of the three primary colours as a ground colour and both of the other colours as the pattern creating six colour ways. The fabrics were re-knitted as three colour fabrics again in every combination of ground colour and pattern colour. The resulting fabrics are crude in colouring. They offered the greatest contrast in hue and in value, the relative lightness or darkness of the colour. Primary yellow is the lightest of the colours in the colour wheel. Primary red and blue are more closely related in value although blue is slightly darker. The eye is drawn to the lighter colour, so in the fabric with the yellow ground the ground dominates. However in the fabrics with the blue and red ground the eye is drawn to the yellow pattern. The scale of the pattern, peerie, border or OXO had little influence over the effect of knitting in three primary colours.

### **Secondary colour samples**

In the next group of fabrics the secondary colours were used. The pattern was restricted to the peerie pattern; as in the previous experiment scale had had little effect. Each colour was knitted as a ground with both of the other two secondary colours used as the pattern, in two colour fabrics. This was repeated using all three colours within the fabrics, striping both the pattern as in the primary colour investigations and also inserting stripes into the ground. In all thirty colour combinations were produced. These were less harsh than the primary colour fabrics. There was less contrast in the hue and more equal distribution of value with orange the lightest and violet the darkest. When orange was used as a ground the green and violet could be changed without greatly altering the pattern effect. When green and violet were used as the ground colour the simple peerie pattern took on a variety of appearances.

The Bezold effect was most apparent when the orange was replaced. The least effect was in the interaction between green and violet.

During yarn selection yarns had been matched for their colour rather than texture. Solid colour was a requirement, however in the orange it was necessary to use a marl of analogous colour. Orange remained the dominant colour, however it would be interesting to investigate the differing qualities that can be achieved using marl yarns in the context of the project.

### **Tertiary colour samples**

The third group of fabrics were created with the six tertiary colours in two triads made from equidistant colours on the colour wheel. Group one consisted of yellow/orange, red/violet and blue/green. Group two consisted of red/orange, blue/violet, and yellow/green. In group one again it was seen that changing the lightest colour within the three had the most effect in changing the pattern. The experiments in group two were least successful due to the yarns used. The yarns were selected for their colour, however the blue/violet and red/orange were too fine for the gauge of knitting machine used and the stitch tension required to knit the much heavier yellow/green. The red/orange yarn was the only yarn used that had lustre, the remaining yarns were matt. Although Yellow/green has a lighter value than red/orange when viewed as plain fabrics the red/orange was the dominant colour.

Again this highlights the importance of yarn texture. Throughout the series of experiments the replacing the lightest yarn in the colour groups of primary, secondary and tertiary colours has shown the greatest Bezold effect, however in the second group of tertiary colours the middle value colour, red/orange, became more dominant

in plain fabric, but when used with the heavier yellow/green the heavier yarn became more dominant.

### **Analysis**

In all cases the Bezold effect was most apparent when the dominant colour was used as the pattern colour rather than the ground colour and replaced with a less dominant colour. This had been observed by Bezold. He noted that when a hue used in even distribution through the design was changed the overall effect of the pattern was altered. If a hue used in un-even distribution was changed, the most dramatic effect occurs when the dominant colour in the pattern was changed (Anderson Feisner, p97).

In most cases the dominant colour was the lightest. The light-dark contrast was observed by Itten (Birren, p32) as one of seven kinds of colour contrast. Lightness was replaced by lustre as the dominant characteristic in the case of red/orange. The effect of lustre was noted by Birren (Anderson Feisner, p21) as one of five colour effects that give a new perception of colour.

Texture has been seen to have an effect on the dominant colour; the heavier yellow/green became the dominant colour when used with finer yarns although it could be argued that this has more to do with proportion of colour rather than texture. Goethe assigned colour values according to their luminosity (Kuehn, p58) and then created ratios of complementary colours. Further investigation could show how changing the proportion of the dominant colour would affect the Bezold effect.

### **Further investigation**

This investigation has covered a very narrow slice of colour theory and still requires further investigation to become fully resolved. It has looked at three-colour interactions from the perspective of triadic interaction only. In common use colour is not limited to primary, secondary and tertiary colour; it is seen in the infinite blending of the basic twelve colours used in this investigation.

This investigation has also ignored the use of tints and shades and, as has been shown, lightness is an important characteristic in the Bezold effect.

In the use of Fair Isle patterns scale has been shown to have little effect, however proportion and distribution of colour may be important. Further investigation could focus on colour proportion and areas of solid colour versus distributed colour. It would be interesting to evaluate the effect of optical mixing and the effect of optical mixing on the Bezold effect.

Although yarn texture has been mentioned it has not been explored fully. Further investigation could ascertain the effect of texture and colour mixing within the yarn, for example in marls, on the Bezold effect.

### **Conclusion**

Although successful in a limited form, this investigation has highlighted a greater range of questions that must be answered before it is possible to conclude that the Bezold effect can be predicted.

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# THE WEST RIDING RUGGERS IN YORKSHIRE

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## Abstract

The West Riding Ruggers are part of the continuing tradition of rug making in our region, both keeping alive a variety of traditional rug making skills, and also promoting contemporary design. The group formed in 1988, after the touring exhibition “Ragtime” (Shingley Art Gallery, Gateshead) came to the Bradford Industrial Museum. The paper follows on from the exhibition of the work of the West Riding Ruggers at the University of Leeds International Textile Archives; “The Art of Contemporary Rug Making”, in 2006/7.

The exhibition showcased rugs made in a variety of techniques, a collection of historic and modern tools and related pamphlets. While putting the exhibition together it became apparent that although some information is available about rug making in this country, little has been written about rag rug making in West Yorkshire, England. Rug making in America and Canada is comparatively well researched and documented. This became the catalyst for starting to investigate our own rug making heritage in West Yorkshire.

## Introduction

The West Riding Ruggers formed in 1988, after the touring exhibition “Ragtime” (Shingley Art Gallery, Gateshead) came to the Bradford Industrial Museum. The group currently has approx fifty members. Some of the group’s members have backgrounds in related textile fields, or are interested in the history and industrial archeology of rug making and its cultural contexts; others come to learn rug making techniques. The group meets at the Bradford Industrial Museum eleven times a year.

The group’s purpose is to promote and preserve the craft of hand rug making, using simple hand tools, making rugs in the home or community, using new or recycled materials which are often sourced locally and sometimes dyed at home.

The groups work includes gathering and recording the history and techniques of rug making, both locally and internationally, producing both traditional and contemporary rugs. We also keep alive the tradition of producing community made rugs and demonstrate rug making and exhibit regularly; our most recent exhibition has been at ULITA, The University of Leeds International Textiles Archives (2006/7). Individual members run workshops and lecture on rug making, and undertake commissions.

In the North of England “rag rug making was an indigenous craft commonly found in rural and industrial areas in the nineteenth and early twentieth centuries”. (Woodhorn Colliery Museum 1977). Although these rugs have been particularly associated with the Northeast; they were also made in many other parts of the country.

In West Yorkshire the landscape provided an ideal environment for sheep farming and for the textile industries of cotton, wool and silk. Rag rugs made in West Yorkshire are closely bound to this heritage, the product of a different environment to those made in the mining areas of Northern England.

## **Aims**

This paper outlines the influences on the development of rag rug making in West Yorkshire, re-examines the research undertaken by William Winthrop Kent in the 1930s, and investigates the developments and changes that have taken place, drawing on information held by the West Riding Ruggers and other sources.

The paper also looks forward to the future of the rag rug in our area.

## **The Rag Rug In West Yorkshire**

Writing in America in the 1930s, William Winthrop Kent set out to discover the origins of the hooked rug. Kent first investigated Coptic textiles made with loops, and the hangings and rugs of the Moriscos of Las Alpuharras in Spain, and then turned his attention to Yorkshire, gathering information which lead him to assume that thrums remaining with handloom weavers after their cloth was sent to market could have been hooked or brodded (pushed through with a bodkin) through a coarse backing. He also entered into correspondence with Mr. A. F. Kendrick of the Department of Textiles at the South Kensington Museum, and other contacts including the head of John Crossley and Sons Ltd. in Halifax, and Ann Macbeth. Kent was aware that factory made rag rugs were being made in Yorkshire, and described the upright frames and the tool used to make them; he then further traced the ancestry of the rag rug back to the Vikings and to Scandinavia.

This preliminary research retraces this story, with the benefit of access to local documents and stories, set against a background of cold stone floors, poverty and hardship, and two world wars. The process of creating a rag rug could have involved the sacking manufacturer, the local shop with sacks of sugar and other commodities, the cloth manufacturer, the hearth rug manufacturer, the mill with bales of wool tied with wooden "skewers" and the thrums taken home, the rag and bone man, and soldiers uniforms, and as such all of these industries have a part to tell in the story.

## **Conclusions**

The paper concludes by returning to William Winthrop Kent and his research and evaluating our knowledge to date, and looking at areas for further research.

It also investigates the future of the West Riding Ruggers and how we can continue to preserve our local rug making heritage, and the possibility of bringing the groups collection together at the Bradford Industrial Museum. Another initiative would be to create a photographic archive of rugs and tools, through a series of events in local libraries and community buildings. We are also investigating obtaining a grant to enable us to provide an informative internet site.

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A full list of references will be available with the paper.

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### Exhibition

The Art of Contemporary Rug Making. An Exhibition of work produced by members of the West Riding Ruggers Nov-March 2006/7 at University of Leeds International Textiles Archives.

# THE GREAT PAZYRYK FELT – A STYLISTIC ANALYSIS OF A DEEP-FROZEN TREASURE FROM KURGAN NUMBER FIVE IN THE HIGH ALTAI

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## Abstract

This paper presents a brief description of the so-called “Great Pazyryk Felt” and other artefacts discovered in the Pazyryk Valley, amid the Altai Mountains in southern Siberia, in the late-1940s, during a series of archaeological digs led by Sergei Ivanovich Rudenko. The felted textile was found in a kurgan (or tomb) and is currently held in the State Hermitage in Saint Petersburg. This paper discusses briefly the structural and thematic characteristics of the object’s design.

## Introduction

The archaeological digs, lead by Sergei Ivanovich Rudenko in the Pazyryk Valley in the Altai Mountains in Southern Siberia, in the late 1940s yielded substantial quantities of valuable archaeological material including many textile items: woven and embroidered silks, looped textiles, tufted pile fabrics (including the renowned Pazyryk carpet) various other woven, felted and appliquéd textiles. The focus of Rudenko’s search was a series of kurgans or burial chambers, seemingly used for tribal chieftains, their families or other dignitaries. Full details were given by Rudenko [1953 and 1970]. The work of Schurmann [1982] is also worth referring to, and a good concise, readily accessible article was provided by Artamonov [1965].

The kurgans in the Altai region have interested archaeologists since the nineteenth century, with expeditions led by Radloff in 1865, Giaznov (with Rudenko) from 1925 to 1929, Shibe in 1927 and again by Rudenko from 1947 to 1949. Eight kurgans in total were excavated, one by Giaznov and seven by Rudenko (seemingly dating to within 50 years of one another). Estimated dates range from the second half of the 4<sup>th</sup> century BCE to the early 3<sup>rd</sup> century BCE [Rubinson, 1990]. A kurgan is in the form of a mound around 20 metres high and 250 metres in circumference [Hubel, 1970, p.14]. The kurgans were numbered chronologically by the order of their excavation. The construction of the principal kurgans, numbered one to five, followed roughly the same layout, with the burial chamber at the bottom of a deep shaft. Comprehensive details were provided by Rudenko [1953, p7] and further discussion by Schurmann [1982, p.17].

The kurgans were numbered in the order in which they were dug. Kurgans number two and five were found to be particularly fruitful archaeologically. Many interesting artefacts, including the famous carpet, were found in kurgan number five. The circumstances of survival of the carpet and the other textiles were fortuitous. Shortly after the kurgan’s construction, water seeped into the tomb and, on freezing, held the contents in a deep frozen state for around two-and-a-half-thousand years [Bauman, 1987, p.14]. The provenance of the famous pile carpet has been the subject of much research and debate. By comparison, the other textiles found in Kurgan number five, although not ignored, have received much less scholarly attention. With this in mind, the intention of this paper is to present a stylistic appraisal of a large felted item refereed to in this paper as the Great Pazyryk Felt (adopted from the phrase used by Burkett, 1979, p.10). The paper reports on the outcome of a recent study visit to the

State Hermitage, where the author was given privileged access to the Pazyryk items on display and held in storage.<sup>9</sup>

### **The Historical Context**

In the first millennium BCE various southern Steppes pastoral nomadic people, with common interests and customs, seemingly formed a loose association. Their sphere of influence extended from the Black Sea to Mongolia, a 3000-mile-long corridor of grasses and other vegetation necessary to meet the grazing requirements of large numbers of horses, cattle, goats and sheep. To the west were the Scythians (800 -100 BCE), a semi-nomadic group that eventually turned to agriculture. In the mid-planes were various small groups including the Sarmations (600 BCE -450 CE). In the east, located around the Altai Mountains, were the so-called Pazyryk people, named by Rudenko from the local word for mound. It should be noted that scholars continue to debate the degree of association between the various groups, the period of dominance of each, their significance historically, and the extent of geographical influence. The collective term *Scytho-Siberian* is probably the most appropriate when referring to all of these groups. They appear largely to have adhered to common forms of decoration, dominated by the use of animal motifs, which were stylistically different from Chinese or Persian decoration of the time. They were however familiar with both Persian and Chinese decorated items. Horses were highly valued, as a source of transport as well as a source of food. They were unrivalled as archers, and were skilled at using the powerful composite bow from horseback. To the west of their sphere of influence, they challenged the greatest invading army of the day, that of Darius the Persian. Although each tribe within the larger Scytho-Siberian group probably roamed distances of several hundred miles, the tribes to the far east probably never came into direct contact with those to the far west. Comprehensive historical coverage was provided in relatively recent publications edited by Aruz *et al* [2001] and Davis-Kimball *et al* [2000].

### **Production and Provenance**

As mentioned in the Introduction, a range of textiles was discovered during the course of the Pazyryk Valley digs. These have been described and discussed elsewhere [e.g. Barkova, 1999 and 2000; Robinson, 1990]. Burkett [1979] acknowledged that the kurgans yielded over thirty different types of items made from felt; all the techniques of felt making were evidenced, including appliqué, mosaic, inlay and embroidery (needle work on a felt base). Additional further details of felting techniques and their early history were provided by Laufer [1930], Gervers [1973 and 1978] and Burkett [1979]. The Great Pazyryk Felt is an appliquéd felt design, measuring 4.5 metres by 6.5 metres. A bare-headed and moustachioed human male figure is depicted, seated on horseback, wearing a short cloak, approaching a female figure seated on a chair (or throne) who appears to be holding a flowering branch and wearing what looks like a fur cap. The unit is repeated six times with a suggestion of further repeats which may have been cut or damaged. The figures are separated by three bands of repeating floral-type patterns. On the right-hand side of the textile further figures are depicted, including partial representations of a bird-like figure and a fantastic winged creature. Similar figures to these latter creatures were depicted on another kurgan-five felt: "Remains of a felt wall hanging decorated with a sphinx., a bird., and a patterned border" [Rudenko, p.325].

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<sup>9</sup> The author acknowledges the assistance, advice and hospitality of various staff at the State Hermitage Museum in Saint Petersburg, including Professor Alekseev and Dr Dandamaeva who facilitated the visit. Special thanks are due to Dr Ludmila Barkova, Curator of the Pazyryk material and to Dr Ekatherina Shablavina. Thanks and appreciation are extended to Drs O'Neill and Rosenthal, who accompanied the author on the study trip, debated the relevant issues, and facilitated translation, interpreting and photography.



The intended identity of the two principal figures depicted on the Great Pazyryk Felt has intrigued scholars since the time of Rudenko. It is generally assumed that the figure on horse back is approaching a deity, thought by Rudenko to be either Apia (Goddess of the Earth) or Tabiti who was revered above all other deities [ Rudenko, 1970, p. 289-290].

Stylistically this composition has certain similarities with other felted textiles from the Pazyryk digs and other digs in the vicinity of the Altai Mountains. Indeed several of the Pazyryk felts appear to have been “drawn” by the same hand, with the use of flat colour and exhibit a common handling of positive and negative space. Most importantly, it must be stressed that the style evident in several of the felt pieces is convincingly from the same school and, at the same time, is (in the view of the author) radically different to that exhibited in the famous Pazyryk Carpet. Indeed, even today, felted textiles which bear a close similarity in terms of method of production and depict stylised floral patterns of the type in the three separating bands of the Great Pazyryk Felt, are produced within a few hundred miles of the Pazyryk Valley.

### **In Conclusion**

The Great Pazyryk Felt is the most significant of the Pazyryk felted textiles. There are various interpretations of its thematic content and this presentation makes an outline of these. The item’s probable end use is debated in the conference presentation and a critical appraisal is presented of the Rudenko’s original commentary.

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# THE USE OF CAD WITHIN AN UNDERGRADUATE TEXTILE DESIGN DEGREE

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## **Introduction**

Computer Aided Design (CAD) is an established tool used within the textile design industry. The use of computers for design is well established in higher education. But how effective is CAD both in terms of enhancing the process of design pedagogy, and producing students conversant with methods used in industry?

This paper will focus on the use of CAD in undergraduate teaching on a textile design degree at the School of Design, University of Leeds. The use of CAD, in conjunction with historic pattern, will be explored as a pedagogic tool to aid students specialising in print-based design solutions. The paper will look specifically at the design process, namely; visual studies, design development and design conclusions.

## **Visual Studies**

### Historic Pattern

Year three students are asked to choose a suitable theme to drive the visual studies aspect of their final year projects. The visual studies/research forms the basis of all subsequent design work, and is therefore a significant body of work. As a result the choice of theme can be difficult as students struggle to establish a topic that will sustain a body of visual research over an eleven-week period. This work also informs any future design work. To counter this it has been suggested that some students research an historic period of decorative art. This allows them to produce visual work through re-working decorative motifs, and can also influence any written work through investigation into historic, social and cultural issues related to their chosen period. The type of student encouraged to take this approach would normally have poor drawing and painting skills.

This process has seen a revival with regards to the production of contemporary textiles in recent years. Established companies such as Cole & Son have reintroduced designs from their own archives. Others, such as Timourous Beasties and The Designers Guild, have reworked historic patterns such as toile de jouy or damask into contemporary designs.

Student A had weak manual drawing skills, which had hindered the visual studies stage of most of the projects completed since the first year. The student chose to research the Arts and Crafts Movement, concentrating specifically on the work of William Morris. This allowed the student to produce initial manually drawn visual research based upon William Morris's design work. In addition the student also produced primary research through photography, which was used to produce drawn research and collaged compositions. It is also worth noting that the student also decided to investigate the revival of historic pattern in contemporary design for the Independent Dissertation module. This allowed the student to thoroughly investigate the theme for both practical and written work.

At this stage of the design process it has been found that students who are weak in terms of their drawing skills sometimes struggle to produce work that goes beyond merely copying the historic pattern. Student A attempted to use different manual techniques such as mono-printing and collage but still struggled to produce work that both existed in its own right as artwork, and would provide visual information to inform subsequent design development work.

### Digital drawing using Adobe Illustrator

Adobe Illustrator is a vector-based design programme i.e. the images produced are not made up of pixels or 'rasterized', which is the case with Adobe Photoshop. This results in much smaller file sizes allowing design work to be manipulated very easily, particularly with regards to scale, colour, and repeating motifs. Student A used Adobe Illustrator to redraw the manually produced visual studies work in a digital format. The initial drawn research was scanned and then imported into Adobe Illustrator. Using this imported image as a template, vector-based graphics are redrawn on top. The imported rasterized image is then deleted. The programme Adobe Streamline eliminates much of this process as it converts rasterized images into vectors, however this software was not available. Once this process of reworking had occurred, student A was able to explore line quality more effectively. In addition, they were able to see how colour, scale and repeat could influence the work without the complication of having to manually reproduce the work each time a new process was used. In turn, the student's confidence grew and they became more willing to experiment with contrasting line thickness, combining linear work with silhouettes, and composition. The digital process allowed the student to explore ideas through techniques that they would have not previously utilized, giving them a greater understanding of the design process and a broader range of work.

### **Design Development**

At this stage of the design process students are asked to take a more product orientated approach to their work. Based upon their chosen product and market level they have to apply a more rigorous approach to repeating pattern, colour and scale.

### Repeat Pattern

Adobe Illustrator allows students to copy and paste images, and move them around a design to achieve the required pattern. Motifs can be rotated and reflected quickly without having to manually draft a design using graph paper and a light-box. Student A used these techniques to take motifs produced during the visual studies stage of the project to create repeating patterns for wallpaper. Again, the process is considerably easier than manually having to create a design each time. It is also very easy to see a pattern as a block repeat or drop repeat. Students are encouraged to use varying scales of motif, combine different motifs, and group imagery together to form more complex repeating patterns. This process further increased student A's confidence, allowing them to concentrate upon achieving effective results without having to worry about the actual process. The text *Repeat Patterns: a manual for designers, artists and architects* (Phillips and Bunce, 1993) was a valuable reference for student A, along with the William Morris research conducted at the visual studies stage.

### Colour Palette

Student A used the text *Color Index* (Krause, 2002) to apply a specific colour palette to designs. This palette was researched using either market research or William Morris as a starting point. Each colour was then matched using the *Color Index* text. The book is a resource that allows designers to match specific colours and enter the exact RGB or CMYK values for that colour into Adobe Illustrator. This eliminates problems of colour matching and reproduction, but also allows a more thorough approach to mixing a colour palette through combining manual and digital processes. Each of the processes on their own pose problems, such as time constraints or accuracy of reproduction, but used in conjunction work very well.

### **Final Design Collections**

During the final stage of the design process students are required to refine their design collections. This involves further investigation into colour palette, and repeat drafting. This stage highlights what has been found to be the main drawback with using CAD for surface pattern design. There is a tendency for students using CAD to accept the first solution they find. It is easy to go through processes such as repeat drafting, and using a colour palette, so the students achieve very quick and immediate results. These initial designs are often very basic, particularly in terms of repeat, but are also very flat with little texture or surface interest. In addition, the student work tends to look very similar as they often use the same design tools, such as mirror imaging or rotation.

This is a problem that student A encountered throughout the project. The digital manipulation enabled them to progress beyond problems with drawing or manual repeat drafting, and initially instilled an element of confidence that was badly lacking. However, it was difficult to get the student to see that the designs needed refining. To remedy this problem, all of the students were instructed to refer to their product and market research and encouraged to produce several versions of each design. Students were also shown further exercises demonstrating how texture and simple pattern can be added to motifs and backgrounds. This helped them to produce work that had a broader range of textures.

This ethos of reworking and not accepting the first design solution has proved to be the biggest problem of using CAD for undergraduate textile design. When overcome, students are able to produce work that is not only technically competent, but also in line with industry standards.

## **Conclusion**

CAD can be a very effective pedagogic tool that can help students with poor drawing and painting skills to produce industry standard design work. However, it is also very difficult to get students of this calibre to understand that the amount of work and effort required is comparable to that for manual manipulation through paint, collage etc. There are stages of the design process that CAD can be of particular benefit to, especially visual studies and design development, but to gain the full benefits it should be used in conjunction with manual processes.

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## **EFFECTS OF PERCEIVERS' INTERNAL TRAITS ON EVALUATING SENSORY IMAGES OF FASHION MATERIALS**

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The purpose of the study was to examine the effect of internal traits of perceivers on sensory images of fashion materials and dress wearers. Perceiver's internal traits included aspects of Gender-body Ideology (GBI), as well as interest in fashion and fashion life styles. The research was conducted on a quasi experimental basis, with subjects numbering 187 male and 207 female college students. Data was collected in the period from March 19th to March 31st, 2007. Two sets of stimuli and three measuring tools (to assess GBI, fashion interest and fashion life styles) were used. The stimuli were thirteen fabric specimens (each measuring 12 by 14 cm.) and thirteen photographs of dress styles. Variables included: (a) motif colour (white, grey, pinks and blue); (b) motif categories (plain, paisley, floral, stripes, and zebra effect); (c) focus on fabric design or dress style. The data was analysed by factor analysis, ANOVA, and the major findings were as follows:

- (1) Four sensory dimensions emerged of importance: salience, attractiveness, comfort and femininity.
- (2) Gender-body ideology separated into agonistic and hedonic dimensions.
- (3) Fashion life style activities of importance, included social activity pursuits and brand life style pursuits.
- (4) GBI, shopping life-style pursuits and brand life-style pursuits influenced the evaluation of sensory images for some of the selected categories of motifs, as well as sensory images of dress wearers. However social activity, life-style pursuits and interest in fashion did not appear to influence sensory images.
- (5) The internal trait of perceivers influenced preferences and buying intentions. Shopping life-style pursuits had more impact on influences on preferences and buying intentions than other measured internal traits.

The importance of the study was that fabric stimuli was developed using computer-aided digital textile printing, and dress items were developed by Cad systems. This paper will present a fuller explanation of these results, and will explain how they could be used in the development of valuable marketing strategies for the fashion industry.

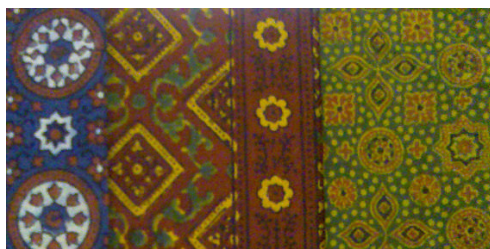
## AJRAKH – BLOCK PRINTED CLOTH OF KUTCH, GUJARAT

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### Abstract

India has, since ancient times, enjoyed a monopoly of cotton and in particular of printed goods. The printed material unearthed at the site of Fustat in Egypt, appeared to be the earliest Indian printed fabrics and it is believed that they were from Gujarat region in India. Gujarat remains an important place with respect to the availability of hand printed cotton in the terms of volume and quality. The name Gurjar-ratha indicates the land had inhabitants who had migrated from Central Asia – Gurjars. Gujarat has been open to outside influences from ancient times, which brought their own traditions which were absorbed in to the life of early settlers and still have been retained. This led to development of rich and flourishing traditions of textiles and is one of the only states in India who can boast of producing fabrics in all four categories printed textiles, painted textiles, woven textiles and embroidered ones. One such jewel called Ajrakh belonging to the crown of printed textiles has been found studded safely in the places of Kutch, Gujarat India.



### Introduction

**India has, since ancient times, enjoyed a monopoly of producing printed cotton goods. The exact era when printing started is still to be ascertained but a cotton material dyed in vegetable colours found at Mohen – jo – daro revealed that the dyeing and printing in India was known from earlier times. Evidences found in the frescoes of Ajanta clearly illustrate block printing on cotton in India.**

The printed materials unearthed at the site of Fustat in Egypt, appeared to be the earliest Indian printed fabrics and they are believed to be from Gujarat region in India. Historical records show that as far back as the 12<sup>th</sup> century, several centres on the western and eastern coasts of India became renowned for their excellent printed cotton. In the Medieval age printing and dyeing of cottons was specially developed in Rajasthan and Gujarat.

Gujarat remains an important place with respect to the availability of printed cotton in the terms of volume and quality. The main inhabitants, who had migrated from Central Asia – the Gurjars brought in indigenous designs, which were open to outside influences from ancient times. Besides sea contacts with the outside world the land routes brought in a large number of tribes, which settled in Gujarat. These people brought their own traditions, which were absorbed into the life of the early settlers and still have been retained.

The hand printing industry of Gujarat retained its indigenous designs, despite its involvement in manufacturing of products for export and for urban market. The region of Kutch, in the state of Gujarat is one of the oldest places for perfecting printing styles and techniques both on cotton and silk.

The people belonging to the Khatri community in Ajrakhpur (12 kms from Bhuj) and Dhamadka (60 kms from Bhuj), Kutch, are masters in the printing of ajrakh – a printed fabric that can be traced from the early ages of the Indus Valley Civilization. Traditionally, the craft of ajrakh printing was found to have its roots in Sindh, Pakistan. These printers belonging to Khatri community were originally from Sindh and brought to Kutch by Raja Bharmalji I.

The word 'Ajrakh' is believed to have a number of different meanings. According to some historians it has originated from the two words in hindi – Aaj rakh, meaning 'keep it today'. It also stands for "making beautiful" according to other sources. The word Ajrakh is also said to have been coined from the word "azrak" meaning blue in the Arabic language.

Ajrakh is traditionally, a double-sided block printed cotton fabric in the dominant colors of rich crimson and a deep indigo. A little bit of white and black is also used to give definition to the geometric patterns. The textile is decorated in an all over pattern with geometrical motifs in combination with some floral designs. The authentic ajrakh is printed on both sides by a method of printing called resist printing with the help of blocks. It is a large rectangular piece of cloth put together from two strips of narrow cotton cloth and is usually about 2.5-3meters long. This magnificent textile had a peculiar characteristic of being stitched from centre. Hence it was called as *Bi-poti ajrakh*. Ajrakh can be said to be of two types- *Ek-Puri*, which is printed on only one side and *Bi-Puri*, which is printed on both the sides and hence is a double-sided fabric.

### **Objective**

Ajrakh is still produced in its traditional form, but the technical revolution and the changing forms of fashion are adversely affecting this beautiful textile art of Gujarat. Therefore, there was a need to document the craft in the terms of its history, tools and equipments, process of production, colours, motifs and range of products.

To fulfil this objective, a descriptive study was planned. It involved the use of the observation method along with personal interviews for collection of primary data. On the basis of the literature available, a structured open and close-ended interview schedule was formulated and for the collection of the data, a sample of four families was selected purposively from Ajrakhpur (12 kms. away from Bhuj) and Dhamadka (60 kms. away from Bhuj). The respondents were interviewed for the collection of data regarding their demographic details, history of craft and the details of the craft like tools and equipments used, ingredients used, process of manufacturing ajrakh, colours, motif, types of ajrakh and the range of products. This entire data was supported by the photographic documentation and fabric samples of each successive stage of the printing process.

### **Findings**

The findings revealed that the craftsmen belonged to Khatri Muslim community and their mother tongue was *kachhi*. Only the men of the community carried out the craft. These craftsmen had undergone schooling but only till primary level. This craft was handed over from generation to generation and the craftsmen started learning the craft between the ages of 10 – 14 years. The printing served as the main source of income for these craftsmen.

Each stage of printing ajrakh required a different tool and ingredient. The equipments and tools required for printing this textile were traditionally all hand made. The major materials



used to prepare the tools were wood and locally available clay. The women earlier prepared these tools at home, after finishing their household work.

The process of ajrakh printing is a laborious one including 14 stages. These stages of ajrakh printing include steps in pre-treating the fabric (pure cotton) with alkalis, natural ingredients and soap to make it soft and free from impurities so that it absorbs the dye readily and then treated with *harda* (myrobalan). It then under goes steps in printing with different blocks (*Rekh*-for outline of the design, *Gadh*- for background filling, *Mavi* and *Datta*- also filler blocks for final resist application). The fabric in between these stages of printing with the blocks is dyed with indigo and *manjith* (Indian madder).

The findings related to colours of ajrakh revealed that traditionally it was found only in red or blue with a bit of black and white. But today one can find colours like green, yellow and brown also. On inquiring about the colour and their significance, it was found that Ajrakh was distinguished by the colours used and colours had a specific significance and were produced by following a particular procedure.

Traditionally ajrakh fabrics found its use by men only, as a lower wrap called as *Lungi* and as a shoulder wrap. Some types of ajrakh were also used as *Odhani* (veil) and *Ghaghara* (long skirt) by women and as *Chaddar*(bedspread) and *Rajai* (quilt). These fabrics were worn throughout the year because it was believed that it provided warmth in winter and was cool in summer. Today, ajrakh has found use in a wider range of products being manufactured. These products are mainly produced as per the demand of the buyer. The printers usually get orders and depending upon the specification of orders they produce the products.

The range of products is generally in yards and not stitched garments, where the ends are finished. For saris, they print two at a time and then it is cut in to required length of five and a half metre. Similarly for stoles and dupattas, they print four at a time and then are cut to the required length. The stoles are of 1.25 m in length and *dupattas* are 2.5 m in length.

The craftsmen also confirmed that today being an age of modernization, this historical textile is still preferred largely with its distinctive colours and design with no specific change in traditional motifs. It was found that the motifs that are printed on ajrakh were combination of geometrical and floral ones. These motifs covered the whole areas of fabric. Each motif signified a particular aspect of nature. The motifs are seen in borders and overall patterns. The respondents explained a major fact that the foundation of any Islamic art is 'Mizan' which meant balance and order. This principle also governed the design and pattern of ajrakh. The artists incorporated their geometrical knowledge to achieve a systematic and a perfect inter – relationship between the part of the design and whole design. The design square was perfectly divided in to quarters and then was divided in to further sixteen parts.

The traditional motifs that are preferred on *dupattas*, saris, stoles and bedspreads were *kan kharek* (dates), *riyal* (coin), *ginni* (circular coins), *mifudi* (small water droplet) and *bodi riyal* (coin without star). The craftsmen are also printing the newer motifs according to the need of the buyer. The buyers prefer motifs like zigzag lines, motifs inspired from aquatic life and floral motifs resembling the kalamkari prints of Andhra Pradesh. In its pure form, the people belonging to upper middle and elite class preferred this particular craft. They also said that they do get orders from the designers. This craft is said to be gaining in popularity and have an increasing number of Indian and International buyers.

On comparing the collected review and the documented data, it was seen that the craftsmen are aware of the history of the craft and are also aware how the craft was traditionally carried out. The method has changed to a great extent in order to meet the growing demand of the market and less availability of time. The method that is used currently has not changed in the number of stages but has found a tremendous change in

the ingredients used at the different stages. Earlier the fabric that was used for the Ajrakh prints was made from hand-spun yarn and was hand-woven. The fabric was coarser and uneven on the surface. But today a simple plain weave mill made cotton fabric is used. It was also mentioned by the craftsmen that earlier, the dyes that were used, like Indigo and *Majith* were grown in the field by the workers, in order to reduce the cost of production and get a better quality dye. But today these dyes were procured from the southern parts of India. The tools that are used today are made up of metal and wood, but traditionally they were only made with clay and wood. Today the stages had simplified to a much greater extent for eg. *Saaj* (pre-treatment given to the fabric), earlier was the most important stage and was carried out by ingredients like gissi (camel dung), today it has become a simple process of washing the fabric at the *ghats* (public water tank) by using *soda khaar*(alkali). The ajrakh, in the present scenario is dyed with synthetic indigo to get a better and brighter colour and also for cutting down on the time taken to dye with natural indigo, which was traditionally used and grown by the craftsmen. Earlier, in an ajrakh, one would find green in a very small amount but today a whole lot of yardages are printed in green colour.

### **Conclusion**

It was concluded from the study that in spite of the changes that the craft of azrakh printing has undergone in its processes, tools and equipments used, motifs and colours, it has still managed to retain its essence and characteristics and will continue to do so till there is a demand and a market for it.

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# UTILISATION OF TRADITIONAL DRESS: THE CASE OF SLIT AND KABA IN GHANA

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## Abstract

The primary influence of dress type worn by individuals in a society is culture. Dress, a material culture, whether traditional or contemporary, is used by individuals and groups to create meaning. *Slit* and *kaba* ensemble is made in traditional fabrics and designs and consists of a tailored blouse (*kaba*), long ankle length skirt (*slit*) and a two-yard rectangular piece of cloth used as a shawl or head tie. This dress, which has a cultural significance is worn by women of most ethnic groups in Ghana for formal and informal occasions and may be used in the establishment of identity, wealth, status, beliefs, age and the moral values of the society. This paper focuses on the uses of traditional dress (*slit* and *kaba*) and the meanings individuals attach to it.

## Introduction and background

The primary influence of dress type worn by individuals in a society is culture. Dress, a material culture, whether traditional or contemporary, is used by individuals and groups to create meaning. The diversity of the meanings of dress shows the important social function it plays in the life of individuals as social beings. Roach and Eicher (1973) were of the view that understanding the meanings of dress requires knowledge of the relationship between the cultural setting and the individual, as dress has meaning only within the society in which it emerges.

The uses and meanings of dress vary among different ethnic groups in West Africa, although there are some similarities. The *slit* (skirt) and *kaba* (blouse), a-three-piece ensemble is considered as an adaptation of the indigenous two piece wrapper that women wore before contact with European traders and colonizers. This dress, which has a cultural significance is worn by women of most ethnic groups in Ghana for formal and informal occasions and may be used in the establishment of identity, wealth, status, beliefs, age and the moral values of the society. The focus of this paper is on the uses of traditional dress *slit* and *kaba* and the meanings attach to it.

The use of the word 'traditional' here is not intended to suggest lack of change; it is used to emphasise the association with local cultures and traditions. *Slit* and *kaba* is made in local traditional fabrics such as the ceremonial hand woven kente, expensive wax prints, inexpensive fancy fabrics, or, hand-dyed batik and tie and dye and also recently made in Nigerian hand-woven *Aso-Oke* and imported lace fabrics. These fabrics are used with cultural meaning, and have overwhelming significance at the individual, group and social level to define identity, social status and acts as a measure of value (Perani and Wolff, 1999).

Dress is also used to communicate ethnic as well as national identities. According to Salm and Falola (2002) traditional dress in Ghana is used to communicate regional and ethnic identity as well as national ideas. Dogbe (2003) emphasized that the use of *slit* and *kaba* at the group level has become a channel of expressing gender, ethnic, nationalist as well as class affiliations. In Ghana today, the traditional *slit* and *kaba* has become an acceptable way of expressing oneself such that most women attending state functions are often seen wearing this dress.

## Method

For this study three government ministries and three polytechnics were selected from three metropolitan centres- Accra, Kumasi and Takoradi- in Ghana. This sampling procedure has been described as non-probability purposive sampling technique in which the elements of the population are not deliberately given equal opportunity to be included in the sample. The workers in the three Government ministries and the students and staff of the Polytechnics come from different ethnic backgrounds and also consist of different age groups. By selecting the ministries and the Polytechnics as the sampling frames, it was assumed that these women earn incomes large enough to afford slit and kaba, have developed a sense of fashion and interest in dress. Even though the students were still in school, they had allowances from their parents and guardians and also received tertiary education loans which can be used to acquire slit and kaba.

Stratified sampling technique which first divides the population into strata (or sub-groups) was used as the census of Ghana (2002, Ghana Statistical service) already divided the population into various age groups. The sample consisted of 7 strata of age groups of women between the ages of 20-54 who are considered as consumers of the traditional dress slit and kaba. In April 2005, 230 copies of questionnaire, specifically designed for the study with a three and five point Likert scale items were administered to female workers of the three selected ministries and staff and students of the three Polytechnics in Accra, Kumasi and Takoradi. In all 214 questionnaires were returned giving a response rate of 93%.

## Discussion of findings

The preliminary results are presented in four main themes as this study is still on-going.

**Table 1: Percentage of Meanings attached to Slit and Kaba**

Item	Percentage
Ghanaian identity	80.9
Cultural heritage	93.5
Self esteem	62.2
Sense of belonging	65.7
Admiration	89.1
Reflection of religious values	19.5
Status in society	33.5
Reflection of moral values	28.3
Reflection of age	40.0

**n = 214**

The results in Table 1 suggest that meanings attached to slit and kaba include cultural and national identities, self esteem and sense of belonging to the Ghanaian culture. The percentage of respondents who agreed with statements regarding national identity was high and nearly all respondents agreed to the statement on cultural heritage (See Table 1). These findings agree with the views of Eicher and Sumberg, (1995) that clothing as a material culture is used in the establishment of ethnic and national identities. Dogbe (2003) also explained that the use of slit and kaba at the group level has become a channel of expressing gender, ethnic, nationalist as well as

class affiliations. The results further suggest that, the respondents also use this dress to elicit positive response which in turn enhances self esteem which is line with the view of Kaiser (1997) that dress is used to develop positive self image.

**Table 2: Factors Affecting the Development of Slit and Kaba**

<b>Factors</b>	<b>Influence</b>
Western fashion	54.7
Improved sewing technology	83.1
Media	65.9
Improved skills of dressmakers	78.2

**n=214**

In terms of the development of slit and kaba all the four factors have significant effect on its development. The results in Table 2 suggest that, improved sewing technology and improved skills of dressmakers had the most effect on the production of the traditional dress. This can be attributed to the fact that it is currently easier to acquire state of the art sewing equipment. And also, the polytechnics are producing more qualified dressmakers who have gone into the manufacturing sector. The media has also influenced the evolution of the slit and kaba in terms of highlighting and portraying of new designs that are in vogue which explains the fact that culture is not static but dynamic.

**Table 3: Fabrics and Designs Used for Slit and Kaba**

<b>Types of fabric</b>	<b>Percentages</b>	<b>Type of Designs</b>	<b>Percentages</b>
Wax Prints (Traditional local fabric)	74.4	Western style catalogues	41.3
Lace	47.8	Traditional style catalogues	89.2
Batik, tie and dye (Traditional local fabric)	20.9	Dressmakers creative ability	83.0
Hand woven kente (Traditional local fabric)	47.8	Designs from the sub-region	76.5
Aso-Oke (Traditional Nigerian hand woven fabric)	21.8	Newspapers and magazines	80.5

**n=214**

Respondents were asked to rank the popularity of fabrics used for the slit and kaba and the source from which designs are selected. The results in Table 3 indicate that traditional wax print is the most popular fabric used for slit and kaba and designs are mostly selected from traditional style catalogues. The findings are in line with the view that slit and kaba is a traditional dress made in local fabrics and designs. This can be explained that, with expensive ceremonial hand woven kente beyond the reach for many, wax prints have become the most accessible cloth for most social events. Although some elements of western fashion have been incorporated in the design of slit and kaba, this dress has largely remained a traditional dress. This is consistent with the view of Salm and Falola (2002), that some African designs consist of both

traditional and western type of designs as in the case of the slit and kaba. As a result, Matthews (1979) refers to the slit and kaba as a modified traditional dress.

**Table 4: Usage of Slit and Kaba in percentages**

Functions	Usage in percentages
Home	1.3
Shopping	4.3
Work	13.0
Church	82.0
Western weddings	30.0
Funerals	91.3
Traditional Marriages	78.3
Traditional Festivals	65.2
Parties	10.0
Naming Ceremonies	72.5

**n=214**

Respondents were asked to rank how often slit and kaba is worn based on the above functions and occasions listed in Table 4. From the findings, it is clear that slit and kaba is worn more often for formal traditional occasions including funerals, traditional marriages and festivals. Similarly, the findings also show a high percentage of traditional dress usage for church. Slit and kaba utilisation in Ghana has an overwhelming significance at the individual, group and societal levels. It defines ones identity and creates a sense of belonging and self worthiness. It is also a reflection of moral as well as religious values within the socio-cultural context. Therefore the use of this dress for traditional occasions emphasises its cultural significance and underlines its importance as a traditional dress. Although church is not considered as a traditional function, slit and kaba is mostly worn to show reverence for God and the religious service.

## **Conclusion**

From the findings it can be concluded that slit and kaba is a traditional dress with strong 'cultural connotation' which serves as a link between Ghanaian identity and cultural heritage and is used to create meaning in everyday life within the society. Individuals attach several meanings which include moral, religious and self worthiness. This explains why the slit and kaba is still a popular dress form.

*Slit* and *kaba* although widely used in Ghana has received very little attention in research.

The unique contribution of this paper is its emphasis on the utilisation of this traditional dress and the meanings attached to it within the social and cultural context. By studying the development of the *slit* and *kaba*, its future utilisation in the Ghanaian context can be evaluated in relation to mass customisation.

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# FROM MUSICAL COMPOSITION TO PAINTING: FROM PAINTING TO TEXTILE DESIGN

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## Abstract

This paper charts a private passion and describes aspects of two practice-based, research-led investigations: *Tectonics* and *Uncertain Harmonies*. Common to painting and musical composition, both projects were concerned with the formal aspects of audible and visual composition, their similarities and differences, their processes and systems.

## Introduction

With the exception of programme music, classical music does not knowingly set out to represent or mimic the world we live in. As a painter and musician it seems that a factor driving the development of abstract painting was its continued desire to establish itself as a serious art form within the cultural arena of music. Abstract painting continues to seek its own formal language, a language based upon the principles of composition and creative intuition. Music's inherent qualities of non-representation and use of form as content are peculiar to this particular discipline and I can think of no other art form which is able to communicate its ideas in such a way, with the exception perhaps of non-objective / abstract painting. This conference presentation includes a series of images and text relating to this project.

## Art and Music

The translation of musical ideas to a visual format is fundamentally a contradiction. I would like to consider a work by the eighteenth century Swiss Rococo decorative and portrait painter, Angelica Kauffman. The composition shows Angelica choosing between the two arts personified by two female figures, one bearing sheet music, the other a palette and brushes. The painting dating from 1765 is called '*Herself hesitating between the arts of music and painting.*' The scene depicts Angelica's decision to follow the muse of painting, and with regret she gestures her intentions to music. The decision that Kaufmann made was one that other artists would also confront, such as Schonberg, Klee and Kandinsky. Let us imagine what drove Kaufmann to reject music in favour of painting and what finally swayed her decision? Without making a gross generalisation, perhaps Angelica's decision was born out of a fear of failure. Are all painters of this kind aspiring or failed musicians? Whilst it should be recognised that Angelica was an accomplished musician, music requires qualities different from that of painting. Perhaps Angelica's own representation of herself as demure, even shy, would eventually drive her from the recital rooms and concert halls of society, much preferring the solitude of the artist's studio. It is worth noting that artists that are skilled in both disciplines tend to employ the less dominant art to inspire the dominant one.

Important literature concerned with this debate includes:

Kagan, Andrew, (1986),  
Kandinsky, W, (1914).



## Tectonics

The aim of *Tectonics* was to conduct a practice-based research-led investigation into early twentieth century British painting and musical composition; to consider their relationship and associations. More specifically the project examines the idea of formalism in abstract and pre-abstract British modern painting and its links with music. *Tectonics* highlights the work of two Scottish Colourists, Francis Cambel Boileau Cadel and Samuel Joseph Peploe, and a symphony by British composer Sir Arthur Bliss. The title of the series was derived from the word '*Architectonics*', a term used to express the spatial qualities more usually associated with architecture. The term in this context describes the architecture of the orchestral score that is in keeping with the metronomic structure of linear music and the two-dimensional qualities of the picture plane. The *Tectonics* series relates to the spatial arrangements or composition of organic and geometric forms in two-dimensional space. For the purposes of this investigation I have defined *Tectonic* as a non-objective painted composition inspired by the architectural qualities of musical composition.

In collaboration with Manchester Camerata<sup>10</sup> and Tim Chatterton<sup>11</sup>, I was involved in developing a musical response to both the Bliss Symphony and the *Tectonics* Series. The *Tectonics* series is in part based on the numerical divisions of the time signatures of the four movements of the Bliss *colour symphony*.

Artists and composers have produced works in response to each others practice since the time of Aristotle. For example, '*De Stijl*' from (1985), the work of the Dutch minimalist composer Louis Andriessen. I found Andriessen's formal approach to composition similar to the systems I have used in the *Tectonics Series*. '*De Stijl*'<sup>12</sup> is the third movement of *De Materie*, (or 'the matter',) the work explores the relationship between matter and spirit. Here Andriessen takes Mondrian's composition *Red, Yellow and Blue* from (1927) and translates its geometric proportions into a work for large orchestra. Andriessen's *De Stijl* is characterised by its popular urban sound, a sound reflected in the work of other minimalist composers like Michael Torke and Steve Reich. Fifty-eight years on, Mondrian's evocation of Jazz returns to sound in *De Stijl*.

The *Tectonics* exhibition included a series of nine oil paintings, plus ten paintings from two previous projects: *Controlled Chaos* a solo exhibition from (2002) and *Five Character Pieces* from (2004). I included the earlier work to show how my painting practice and ideas had changed since the development of the *Tectonics Series*. *MC* is a non-objective portrait, made in (2002). My intention was to capture the subject's personality without reference to the observed form. The idea of using initials to hide the identity of the portraits in the series was borrowed from Elgars *Enigma Variations* of (1899). In this composition the oil paint is applied to the gesso panel using thick impasto marks juxtaposed with horizontal and vertical geometric shapes. The high-keyed colour is arranged throughout the composition using complementary colour combinations. In contrast, the work from *Tectonics* uses thin washes of oil paint set against pencil drawn grid structures on a gesso ground. *Group One Purple*, oil on gesso on panel, (2004). The work is less vibrant and is in keeping with British colourists of the 1920's and 30's.

Alongside the *Tectonics* series, a selection of curated paintings and sculpture from the Ferens collection of early twentieth century British Art were also exhibited. British musical composition between the first and second world war might be considered

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<sup>10</sup> Manchester Camerata, a professional chamber orchestra in the North West of England

<sup>11</sup> A member of the Manchester Camerata brass section and composer

<sup>12</sup> Louise Andriessen, *De Stijl*, (New York: Elektra Entertainment 1994)

characterised predominantly by the twin threads of sadness and optimism. Sir Arthur Bliss' associations with colour, symbolism and nationalism help define the *Colour Symphony* of (1922). A fundamental association with musical composition during this period are its links with the English folk song and its response and treatment of the British landscape. These influences were significant for many British composers and painters including Vaughan Williams, Fredric Delius; Gustave Holst; Paul Nash; Francis Cambell Boileau Cadell; Ben Nicholson and David Bomberg.

The two art forms of painting and music do possess a number of shared associations that are similar whilst seemingly at odds with each other. Music is composed and performed within a given time or metre, whereas painting is not. The quality of sound, derived from a single note is defined by duration. Sound quality is characterised by articulation and phrasing through the composer's use of musical contrast.

I chose to focus the *Tectonics* project upon the notion of composition. It is in the examination of composition that one can begin to understand process, form and structure. I needed to identify a link common to both disciplines. The spatial arrangement of sound or ascribed time signature seemed like a logical place to begin. I decided to translate the upper and lower numbers of the Bliss time signatures to the respective picture planes within the series. In addition, I incorporated a further horizontal division based upon the number of instrumental parts in the Bliss orchestration. The time signatures and orchestration numbers were then used to establish the surface structure for the eight compositions. These two component parts of the Bliss composition provide a constant reference to the composer's intentions regarding the architecture of the symphony. The translation of the time signatures from the score to the surface of the picture planes created a two-dimensional grid structure. Purple grid structure division four-by-four, *Andante Maestoso* and the red grid structure division four by eight. *Allegro Vivace*. Blue grid structures division of nine by eight, '*Gently Flowing*' and the green grid structure division of four by four. '*Moderat*'.

The scale and divisions of the grids cause a particular spatial sensation for each of the colour movements. However, I did encounter one problem with the *Purple* and *Green* movements, in that they both have the same time signature of four-four. To ensure each colour movement had its own distinct grid structures I gave myself the freedom to sub-divide the grids in line with the tempo markings provided by Bliss. Subdividing rhythmic structures and patterns is common practice for conductors, composers and performers in the interpretation of difficult rhythmic structures. At the beginning of each colour movement, Bliss indicates one tempo direction.

The first group of four paintings were to act as preliminary studies for the second group. I adopted both a systematic and intuitive approach to the studio practice. Throughout the project I have kept a written and visual account of each paintings development. At times these photographic details provided unexpected and interesting observations. I began to measure and calculate the areas of interest so to replicate the visual effect in other paintings or within the same composition. I calculated the area of positive and negative space as a percentage and transposed the information onto a new or existing composition. Kevin Laycock, '*Group One Green*', (2004.) *Group One Green* is an example of a painting developed using this proportioning system. The three green squares at the base of the painting where proportioned using geometric structures found in earlier compositions.

Kevin Laycock, *Composition One*, 2004, oil on gesso ground. '*Composition One*' takes elements from the structures of the preliminary studies and the final four works

and presents them in one final composition. As a musical idea presented within the same picture plane *Composition One*, could be considered as a theme and set of variations. Elements of forms and structures are represented and re-represented in different locations and in different ways throughout the paintings. This idea is similar to both simultaneous representation found in primitive forms painting and in the twentieth century movement of musical composition known as Serialism. The technique of simultaneous representation can be seen in primitive and medieval painting. Simultaneous representation is not new to painting and drawing, nor is the concept uncommon in mid to late twentieth century music where musical rhythms and motifs are played out at the same time and in parallel.

Relevant literature includes:

Brougher, Strick, Wiseman, Zilczer, Hirshhorn, (2005),  
Evans, Brian, (2005),  
Gerstner, Karl, (1986),  
Laycock, (2004),  
Laycock, Withy, 2005,  
Matthews, David, (1992).

### **Uncertain harmonies**

A recent studio project called *Uncertain Harmonies* takes the theory of musical cadences and re-presents them as colour scales and cadences points (or points of visual punctuation) in a series of oil paintings on paper. The decision-making and formal aspects of composition rely more upon intuition than the application of ridged painting systems. Whittle uses the term musicality to define the collective qualities of the series, the paintings were in part composed using a musical system, and for me as a painter a system that is constantly at odds with my instincts. The tension that Whittle speaks of can be seen in other contemporary abstract painters such as Alex Harding (consider 'Ruinart', II from 2001, oil on gloss paint on MDF). Although Harding employs grid structures, the grids are not used to place or locate motifs, but instead the grid becomes the motif. Harding pours enamel or gloss paint on to fresh oil paint to make loose linear networks. As the process develops, the grids slide and disintegrate across the oil paint ground. And as the physical qualities of the two materials react, the grid structures become physically fused establishing a unified paint surface.

The title *Uncertain Harmonies* comes from the title of a composition entitled: '*Ramifications for String Orchestra-Nocturnal Landscapes*' by Hungarian composer Gyorgy Ligeti. In a pre-concert BBC Radio 3 broadcast in the summer of 2006, Ligeti spoke about the way the string sections were tuned separately, creating a unique harmonic tension. This variation in tuning established what Ligeti describes as an "*uncertain harmony*." The idea of *uncertainty* seemed to reflect this unfulfilled quest for a new visual music that was the driving force behind the concept for the series.

*Uncertain Harmonies, series number six*, oil on gesso on paper. The surface of this painting was heavily worked with geometric tonal ranges of reds, yellows and corresponding earth colours. I made many attempts to establish a multi-layered cadential surface, but for whatever reason I struggled to resolve the composition and define the surface structure. Using vigorous sanding technique I took the paint surface back to a distressed condition. As a result of the physical action of sanding process the structure of the paper began to breakdown around its perimeter. The surface had now acquired a quality reminiscent of a decaying Roman wall painting and in the absence of any significant forms was ready to accept a formal structure.

The painting was quickly resolved with the introduction of seven vertical bands of different widths. The bands were placed in a random order using cadence sequences of Perfect V-I, Plagal VI-I, Imperfect X-V and Interrupted V-VI.

In contrast and informed by a previous association with musical composition; a new body of work *Open Geometry* by British painter Estelle Thompson, explores abstract painting through colour and surface space. The paintings make reference to the formal qualities of constructivist composition and explore the spatial arrangements of the picture surface through asymmetric and symmetric use of colour and pattern. Michael Archer describes these new works as a 'new set of articulations'.<sup>13</sup> Thompson's '*Open Geometries*' employ the same structural device throughout the series where similar spatial arrangements and line quality re-appear from one painting to the next. Sol Le Witt referred to this effect as the 'grammar for the works.' Horizontal and vertical lines are used to bisect the picture surface diagonally from left to right, whereas the paintings in the *Tectonics* series are constructed using regular grid structures. Thompson's use of angles is based on x shapes derived from hand movements used to gesture magical incantations. The magicians wand waving or figured incantations carve shapes in space, whilst the gestures of the conductor mark time in space. The patterns created by these movements are in some ways not dissimilar to the magicians wand waving. For example, each time signature has its own pattern or spatial structure that could be represented as a single line or series of lines.

For me, exceptional notable paintings in the *Open Geometries* series include '*Stellar*', and '*Chroma Chora*'. The use of colour throughout the series is reminiscent of the works of post-revolutionary art of Varvara Stepanova and Alexandra Rodchenko. '*Stellar*', presents a star structure in linear form placed on a distressed painted background. Thompson's paint application is composed of many flat paint layers and the surface quality is design like in appearance. Like Thompson, I respond to the changing condition of the picture surface, making both dramatic and subtle adjustments to the processes of composition as it unfolds. In a recent conversation with Dr. Michael Spencer, we discussed the notion of chance and the hypnotic qualities of composition. To quote myself

*'Mistakes or the use of deliberate visual obstacles can create something unexpected and exciting within a composition. For a time, these twists and turns take me away from my original intentions. They are part of my working process and keep my practice active'*.<sup>14</sup>

It's is unclear whether Thompson's paintings are born out of design or chance although I expect chance plays an important role in her practice given the quality of paint surface and minimalistic nature of the compositions.

Important literature includes:

Evans.Brian, (2005),  
Michael Archer, (2007),

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<sup>13</sup> In music, the phrase articulation is associated with the quality and interaction of sounds between instruments and within the individual registers of instruments. The ability of the performer to interpret the intentions and to clearly articulate the music is significant in an accurate reading of a musical composition. Similarly, the control of the painter's medium and in part the facility of the artist to articulate the visual elements clearly within a composition allow the audience to receive visual information in a way similar to that of a competent instrumental performance.

<sup>14</sup> Kevin Laycock, *Uncertain Harmonies*, (London: Art First/University of Leeds, 2006) p. 47

Michael Spencer, (2007),  
Townsend, Chris, (2006).

## **Conclusion**

The first part of this research investigation has enabled me to recognise those areas that are more relevant toward informing my future practice. Recently I have become increasingly interested in the composer's viewpoint and approach to composition. For the purpose of *Tectonis and Uncertain Harmonies* I have invested more time exploring questions relating to the compositional devices or themes, which link the two disciplines and the significance of their relationship in contemporary painting practice.

## **Further Work**

I intend to explore the limits of integration between sound and visual imagery. This will involve extending my current practice beyond the realm of painting, to include mixed media practice in musical composition; projection and object making. This shift in practice will take the form of an innovatory arts project combining a visual art commission and a parallel music commission in association with British composer Michael Berkeley and concert master and conductor Peter Manning of the Royal Opera House Covent Garden. The new suite of painting and objects will form the basis of a digital wallpaper based on the development of visual and audible information. The wallpaper will form part of a gallery installation along with a new recording of Michael Berkeley's music, as well as a group of paintings and mixed media objects.

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# **PAST, PRESENT & FUTURE**

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## **Abstract**

To explore the fundamental definition of what constitutes a pair manifested through shoe-derived forms created by textiles processes. KEYWORDS; Venice, embroidery, shoe, artefact, practice-based, experiential, methodology

My research and developing art practice has been anchored in past, historical Venetian themes. Venice is unique in its production. Past ergo historical - influences, diversity, understanding, aesthetics and philosophical reading of surfaces made or exploited. This propensity is paired with the embroiderist who has an affinity with surfaces, whether decorated, manipulate or totally constructed.

The quintessential Venetian painting by Carpaccio of 'Two Venetian Women' circa 1495, includes a seemingly anecdotal pair of 'Chopine' shoes which have lead to preponderances of shoe philosophy, their social significance, gender implications and the role of the object.

My inquiry engages the historically referenced with that of the art practice methodology of 'making'. This mode of research demonstrated that I needed to make the work because it does not exist, paired with the knowledge that this process would elicit the critical answers.

## **Introduction**

'Binary Oppositions' became the title to research that investigated what constitutes a pair. How I answered my research question is rooted in the methodology of the practice of 'making'. This mode of research demonstrates that I needed to make the art work in order to answer the critical question, paired with the fact that the physical artwork does not exist and therefore needed to be made. Engagement with the 'process' finds understanding, assimilation and critical analysis. As Prown says, this experience with the making 'provides the bridge between the realm of the material and that of concepts and ideas'. (2001 p4)

From the inception of the research, two intrinsic features were metaphorically united, that of visual sources of Venice paired with the iconic form of the shoe to address philosophical preponderances of a pairing. What emerged from the 'making' process was oppositions of design paired with concept; object paired with social politics and materiality with gender which defined the research as critical thinking. I saw this research mode as a way that the art specialist could elevate the practice, validate the medium and galvanize it within contemporary debates which crossed critical territories. This united ethos of design, history, concept, theory, social, gender, object-based and material culture, suggesting that the specialist's research can have wider applications for diverse audiences that contributes to new knowledge or 'changed knowledge' (McAllister 2006).

## **PAST ergo historical - influences**

Historical Venetian art and design and the fashion iconology of the shoe have become the vehicle for expressing notions of what constitutes a pair. The painting by Carpaccio of 'Two Venetian Women' circa 1495, with the depiction a pair of red 'chopine' shoes has been the anchor to this research. Prown, who poetically states, '(one) learns to read history and to dream history' this pedagogy allows the 'value on the interpreter's own input'. (2000 p9) How I have perceived and responded to this painting has been what has given me the critical question and the means in which to

articulate ideas. The inclusion of the 'chopine' shoes questioned the role of the object, social and gender issues which led the inquiry into the language and allegorical role of a pair of shoes. 'Chopine' shoes transcend function, with little to support that one could walk in them never mind be graceful; this improbability over logic and reason still warrants pro-active expression of identity by shoe wearers. What has held my fascination is the 'improbability' of these ever aiding mobility, comfort and elegance of pose. Fashion is a provocateur of defiance and shoes are at the front line of this confrontation.

Surfaces are not for me only decoration on top of, superficial to the form and function, they can be structural and of substance. While Venice is unique in its production, diversity, aesthetic understanding, and to instilling a philosophical reading, this propensity is paired with the embroiderist who has an affinity whether they decorate, manipulate or totally construct them. Succinctly put, Venetian surfaces have two things in common, firstly that of movement or implied movement and secondly that light as a real tangible substance articulates these surfaces. The ubiquitous 'Billet Moulding' is enlivened by light and 'Palli' (stone balls) had only one function, to create shadow and decoration for a wall surface. The Palli could be likened to the bunion of the foot but unlike the Palli, bunions are not superficial; they can determine a foot's structure. The bunion motif is paired with the structural pattern of the 'Billet Moulding' as constructs for joining two halves to be a whole.

The continuum of the Venetian influence also appeared while investigating their highly developed genre of 'narration' painting which encapsulated the notion of the visual 'testimony' equal to the 'public document or written history'. (Brown 1988 p79) This particular 'reading' made for an attitude and ethos of wanting the viewer to perceive things pertaining to Venice in a particular way.

Venice paired with materiality and the shoe motif encapsulates the very notion of co-existence, concept paired with materiality, technique with self identity, and practice with research inform the work and redefine the art practice. The opposing tensions were metaphorical of my methodology as well as to be found in the physical art work, where the creative process needs contrasts and conflicts for better command of the utilized medium.

### **PRESENT ergo practice – methodology**

Embroidery is one of the most sensual of media yet the shoe also is sensual to hold and to work in the hand. While questioning the notion of a pair, it emerged that not only assumptions are made of shoe wearers but equally assumptions are made of media choices. Embroidery and shoes reinforces some female accrediting. These female attributes often fall short of the lofty notion of demonstrating critical rigor. As Sparke says, embroidery is 'marginalised within contemporary cultural life (as) women's aesthetic production is a form of light relief'. (1995 p223) The notion that related studies of fashion artefacts or embroidery as subjects are not at the cutting edge of academia 'are all potentially gendered, therefore has been seen as a lowly focus of attention' (Taylor 2004 p67)

The binary partnership is more than a theme; it is a methodology which continues through the whole process to viewer engagement with the visual art. The highly tactile medium of stitch and manipulation establishes an immediate intimacy with the viewer, allowing for pro-active involvement with the work. Duchamp stated, 'The creative act is not performed by the artist alone; the spectator adds his contribution to the (creation)'. (Le Feuvre 2005 part 2) While true of all art practices, it has equal significance for critical research that must be viewed and evaluated by critical peers.



Therefore the placing and presenting of practice-based research, takes on significance. I found it was important that the artwork exhibited was seen as central to my rationale. Neidderer believes 'practice used in research should provide data and evidence and be a possible knowledge base from which to develop a theory'.(2006) I suggest ones practice can be the theory and not only a means for data and evidence gathering. Morgan clearly argues this when she says, 'artwork is not a prelude to theory, to knowledge or to constructions of meaning. It is not the fieldwork, the preliminary data, from which conclusions are drawn and meanings are made'. (2001)

The affinity with embroidery (or to use another term, the manipulation of surfaces) has always been the continuum of my art practice where I find it to be limitless. Textiles can have resonances in the sciences / design and the humanities / conceptual. Yet this word 'textiles' makes for emotional responses as it negotiates its position as contemporaneous art / design. Therefore not only are polemics present in my critical question, they also characterise the nature of this investigation through design principles and textile practices offering opposing forces and processes between principle and practice, discipline and didactic and methodology and matrix.

Embroidery (and the wider subject of textiles) can utilize interdisciplinary / multidisciplinary / transferability of knowledge or as Kolar calls 'pluralism' (2006) methodologies. Practice-based research in textiles employs the methodology of the experiential which harnesses the activity as opposed to predicting the activity to establish outcomes. The material in hand is the critical platform where the manifestation of artefact is decided, the methodology engaged with, and confidence and intent find their articulation. Formulating doctoral research from experiential practices is often of opposing encounters or worse parallel existences. Jones points out 'the absurdity of the theory / practice dichotomy which seems to imply that you switch your brain off in order to make art or design and then switch on again in order to reflect on what you have made'. (2006) Yet Scrivener cautions, the making methodology 'does not necessarily demonstrate 'knowledge, ideas and intentions'. If an art practice of making is to contribute to research's 'changed knowledge' then this is to be a continuing debate for the future. Biggs says 'objects alone cannot embody knowledge because they need to be interpreted in order to communicate knowledge'.(2002 p23-24) The evaluation of the physical artwork, and how best to record and disseminate the subsequent research, yet it is the role of the text's role that the research finds validation for PhD and evidence of understood critical thinking.

### **FUTURE ergo research – continuum**

The 'after-life' of the PhD is for me a pressing concern. While it was the critical research question which propelled the art practice, an art and research practice paired for a common goal, are these practices always to be together? Terence Love ponders on 'the professional practice stopping creativity and improvement and wonders how professional practice can get fed back into research'. (2006) Critical thinking is not a necessity in all that is produced in art and design practices. Researching has repositioned my art and educator practices, 'as a response to research, the practice has to change, inform and have impact of consequence'. (Biggs 2006) I am conscious of an unspoken belief that for an art / design practitioner to become a respected researcher with reputation they need to move, or at least shift position, from their previous art design practices no matter how successful they may have been.

I have offered one case study to the rationale for practice-based research processed through embroidery. Embroidery was found to be relevant to the methodology of research, to the content of inquiry and to be a contributor to contemporary art. My case study is only one small avenue in the wider positioning of textiles. The future for

textile research, whether as a philosophical / social communicator, or as a contributor to innovative design / science, even influencing architecture constructs, is rich and vibrant, making it applicable subject matter for new, 'changed knowledge,' (McAllister 2006) a prerequisite for doctoral research. I have wanted to demonstrate the role that embroidery paired with the expedient mode for PhD study both need clarity of vision, taking collective ownership of their domains. They both function in interdisciplinary dialogues, yet they both need change for them to expediently grow being valid, confident contemporaneous stake holders and contributors to enriching knowledge.

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## SEA-SILK – REVIVAL OF A RARE TEXTILE

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### Abstract

Sea-silk represents only a tiny chapter of the long story of textiles. In the last years, however, a first exhibition in Basel, Switzerland, several publications and last but not least the media coverage about a textile portrait venerated as Volto Santo (face of Christ) of Manoppello, a small village in the South Italian mountains - suspected to be made from sea-silk - has given a broader publicity to this rare and extravagant textile material.

Sea-silk is a product of the Mediterranean seashell *Pinna nobilis* L. It fastens itself in the sand with a beard of very fine, strong filaments, the so-called byssus. These fibrous tufts are the basic product for the golden shining Sea-silk.

### Introduction

Sea-silk represents only a tiny chapter of the long story of textiles. In the last years, however, a first exhibition in Basel, Switzerland and several publications brought a revival of the knowledge of this textile material. And last but not least the media coverage about a textile portrait venerated as Volto Santo (face of Christ) of Manoppello, a small village in the Southern Italian mountains, which is claimed to be made from sea-silk, has given a broader publicity to this rare, golden shimmering textile (for more information see: [www.voltosanto.it](http://www.voltosanto.it)).

Sea-silk is a product of the *Pinna nobilis* L., a bivalve endemic in the Mediterranean. With a length of up to one meter and more it is the largest shellfish of the Mediterranean. Since 1992 it has been protected in the European Union and in Croatia. The shellfish attaches itself in the sand with a beard of very fine, strong filaments, the so-called byssus. These fibrous tufts, having a length of up to 20 cm, constitute the raw material for sea-silk.

Both, the first written reference and the oldest material found go back to late antiquity, Tertullian, a Roman officer converted to Christianity, denounced the clothing luxury in around 200 AD, mentioning a textile material „*obtained from the sea, where shells of extraordinary size are furnished with tufts of mossy hair*“ (Marquardt 1886: 500). The oldest textile fragment made of sea-silk has been found in a woman's grave dated 4th century AD in Aquincum, the Roman Budapest (Hollendonner 1917; Nagy 1935: 35-39; Wild 1970, 20).

The first substantial monograph was published in 1998 (McKinley 1998), and in the same year the Project Sea-silk started at the Natural History Museum in Basel, Switzerland (Maeder 2002). It has three main goals:

- 1) tracing the history of this textile material, of its production and manufacture;
- 2) documentation of the knowledge and the remains of this cultural heritage of the Mediterranean world;
- 3) compiling an inventory of all objects in sea-silk still existing in museums and private collections worldwide.

The Project Sea-silk appeared in public in 2004. An exhibition in the Natural History Museum and the Museum of Cultures in Basel, Switzerland showed the biological, historical and cultural aspects and presented together for the first time more than 20 sea-silk objects. It was accompanied by a richly illustrated catalogue (Maeder et al. 2004).

Until now the inventory contains around 50 small textile objects, e.g. gloves, cravats, shawls. Most of them are knitted; some are woven or have a fur-like aspect. We know already some aspects of the sea-silk production in the last 200 years, and one can trace the history of some objects of this period (Maeder 2004; Maeder and Halbeisen 2001). Nothing, however, is known of the origin of the oldest still existing object, a cap dated 14th century, found in St. Denis near Paris. And the suggestion that the Aquincum fragment could have come from an Eastern Roman province is until now only a hypothesis (Maeder, in print), as we have no sound proof that these regions had a sea-silk production.

Almost all objects are found in natural history collections, most of them in Europe, some in the USA. That these objects are not kept in textile collections may be one of the reasons why textile researchers were not aware of them, i.e. textile experts are not looking for research objects in zoological collections, and zoologists usually aren't interested in textiles.

Sites of production are known on the Northern Mediterranean coasts, as Taranto in Apulia (Mastrocinque 1928) and the island of Sardinia (Basso-Arnoux 1917) in Southern Italy. The islands of Sicily, Corsica, Menorca, and Andalusia in Spain are assumed and other places around the Mediterranean are mentioned in literature but not yet proven. Has there ever been a sea-silk production on the island of Malta, along the Dalmatian coast or in Tunisia? Was sea-silk ever known in Eastern Mediterranean? Until now the most important archaeological textile findings of the Eastern Mediterranean regions do not show any sea-silk fragments.

Even more difficult to solve is a linguistic problem. Sea-silk is a modern term, as well as the German term *Muschelseide*. Another term for it is byssus silk – derived from the zoological term *byssus* for the tufts of the *Pinna nobilis* L. However, in ancient literature as well as in the Bible the term byssus meant a fine textile material, predominantly in linen, but also in cotton or silk (Vial 1983; Sroka 1995). An example is the byssus linen used for Egyptian mummies. In some textile studies of the 19th century the term byssus was used only for linen textiles (Bock 1895). These few examples may give an idea of the terminological problems to be studied.

Thus sea-silk existed since late antiquity. But the question is: How was it referred to in different languages, places and times?

Recent research suggests the presence of Sea-silk in Jewish Rabbinical texts (Tosephta Shabbat 9,3) of around 200 AD (Nahum Ben-Yehuda, personal information) and in Chinese traveller reports of contacts with the Eastern Roman Empire in 2nd and 3rd century AD (<http://depts.washington.edu/uwch/silkroad/texts/weilue/weilue.html> and [http://depts.washington.edu/uwch/silkroad/texts/hhshu/hou\\_han\\_shu.html](http://depts.washington.edu/uwch/silkroad/texts/hhshu/hou_han_shu.html), appendix B). Some authors claim to have found sea-silk in Arabic texts of Tunisian and Spanish medieval sources (Lombard 1978: 113-116). These are the fields where research is now ongoing.

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# TEXTILE TECHNOLOGIES IN CONCRETE ENVIRONMENTS

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## Abstract

Girli Concrete is a cross disciplinary funded research project based in the University of Ulster involving a textile designer/ researcher, an architect/ academic and a concrete manufacturing firm.

Girli Concrete brings together concrete and textile technologies, testing ideas of concrete as textile and textile as structure. It challenges the perception of textiles as only the 'dressing' to structure and instead integrates textile technologies into the products of building products. Girli Concrete uses 'low tech' methods of wet and dry concrete casting in combination with 'high tech' textile methods using laser cutting, etching, flocking and digital printing. Whilst we have been inspired by recent print and imprint techniques in architectural cladding, Girli Concrete is generated within the depth of the concrete's cement paste "skin", bringing the trades and crafts of both industries together with innovative results.

Architecture and Textiles have an odd, somewhat unresolved relationship. Confined to a subservient role in architecture, textiles exist chiefly within the categories of soft furnishings and interior design. Girli Concrete aims to mainstream tactility in the production of built environment products, raising the human and environmental interface to the same specification level as the technical.

This paper will chart:

- The background and wider theoretical concerns to the project.

- The development of Girli Concrete, highlighting the areas where craft becomes art and art becomes science in the combination of textile and concrete technologies.

- The challenges of identifying funding to support such combination technologies, working methods and philosophies.

- The challenges of generating and sustaining practice within an academic research environment

- The outcomes to date.

## Introduction

*"This is the positive role for the engineers genius and skill; to use their understanding of materials and structure to make real the presence of the materials in use in the building, so that people warm to them, want to touch them, feel a sense of the material itself and of the people who made and designed it."*

Peter Rice, *An Engineer Imagines* pp76-77

Patricia Belford and Professor Ruth Morrow work in partnership in the inspiration and development of this cross disciplinary research project. The collaboration was initially sparked by an invitation from The Crafts Council of Ireland to present textiles to a group of architects and furniture designs. It was evident from discussion that architects use textiles with suspicion, nervous of their ability to hang, furl and drape; they impinge on the integrity of architectural space. Where textiles are used by architects, they are framed and strictly regulated; taut, stretched and controlled; the 'smart'

petrochemical constituents of lightweight and space age structures, that are seen but not touched.

It would seem that architects (at least those whose default is modernism) prefer concrete to curtains. The smell of the dust and greyness of its gray, it is a material that is so manifestly 'there', brutal and monumental.

Girli Concrete conceptually marries concrete with curtains, urbanity with suburbanity.

## **Background**

Girli Concrete seeks to bring together the expertise and technology of two indigenous industries rooted in the culture and economy of Northern Ireland, in a creative and aesthetic process. In so doing, our aim was to produce products which were both technically and aesthetically designed.

Girli Concrete designs and creates innovative 'soft' interiors. It is borne out of a larger drive to transform traditionally 'hard' building products, defined by technical performance only, into innovative 'soft' products that address both technical and human performance. Our key phrases have been 'to mainstream tactility in the built environment' and 'to increase the quality of the human interface with built environment products'

Girli Concrete brings together concrete and textile technologies, testing ideas of concrete as textile and textile as structure. Previous past experience in the printed textile industry has been one of the foundations for the techniques used in the initial research. Girli Concrete uses 'low tech' methods of wet and dry concrete casting with 'high tech' textile methods using laser cutting, flocking and digital printing. Applying experience and understanding of traditional textile techniques to the concrete mix brings about a new relationship to traditional print processes. The main textile techniques used to date are outlined below.

## Devoré

The devoré process of printing has been with us for centuries, developed in France and referred to as 'Chemical lace', this print process relies on the destruction of one fibre against the strength of an opposing fibre. A common practice textile process, but the basic chemical reaction of acids and fibres is the originating point for some of the Girli Concrete concepts. The inspiration of the devoré process has been used in the development of bubble concrete (Fig. 1) and fossilizing Aran (Fig. 2)



*fig 1: devore concrete*



*fig 2: fossilized aran*

## Flocking

An electrostatic charging process used to attach fibres (generally viscose or nylon) onto cloth or wallpaper through a screen print technique. References have been used from a William Yeoward<sup>15</sup> flocked fabric created in the late nineties. This manifests itself in the large flocked bubble panel. The three dimensional flocked technique on a

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<sup>15</sup> [www.williamyeoward.com](http://www.williamyeoward.com) Handmade crafted textiles and products. Kings Road, London



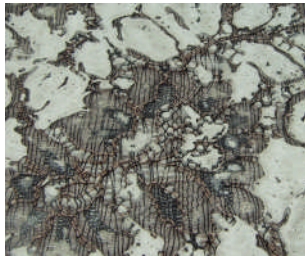
hard surface is a unique way to soften the concrete surface. The flocking process can also be derivative of a lichen wall. (fig. 3)



*fig 3: large bubble flock*

#### Lace making

Lava Lace is the signature piece for Girli Concrete in that the concrete mix is practically woven into the varying densities of the lace pattern, thus making it truly integral with the concrete. The chemistry applied in the concrete mix allows the pattern to alter and therefore offering a bespoke surface where the relationship between the textile and concrete technologies determines the final result. (fig. 4)



*fig 4: lava lace*

#### Differential shrinkage

A textile printing process designed to protect and shrink different parts of a protein or cellulose fabric. The fabric, when incorporated with the concrete, moves and softens the hard structure, allowing the hand to move from the cool concrete to the sensuous cashmere. This combination is extremely relevant when considering the acoustic properties and potentials of the new concrete / textile hybrid panel (insert fig 5). Our aim is to test the acoustic profile of the resultant panels (in a sister research project) and allow the results, in turn, to inform the design and manufacture of the textiles.



*fig 5: cashmere concrete*

In the first instance, many trials were carried out on a small scale to understand the properties and combining factors of the mix; early assessment proved that for the varying fibres there had to be specific concrete recipes developed. The Concrete Society<sup>16</sup> was commissioned to conduct a literature search for technologies and products in the area. They have a comprehensive Information Service handling over 120.000 published references on cement and concrete decoration. They were able to

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<sup>16</sup> [www.concrete.org.uk](http://www.concrete.org.uk) Advisory and technical development for professions and business networking

identify some very useful supportive information but struggled to find references with any large degree of similarity. For this reason they have been very keen to follow our progress. An initial patent search was carried out and identified a few patents of interest though again not in similar territory (one patent in the area of flocking electrostatically onto concrete stairs for grip purposes) Girli Concrete faces many challenges by being in relatively unexplored territory but initial results prove that in facing these challenges we are working within a highly innovative context and there are currently no known technologies, products or processes that mirror Girli Concrete.(at least as far as we can currently establish).

Having carried out many small-scale trials and received positive responses the next natural step was to approach a concrete manufacturer to support the development of the concrete technologies; Creagh Concrete<sup>17</sup> a large Northern Ireland Concrete manufacturer understand the need for innovative approaches to sustain their business, and as such have proved to be very supportive of the Girli Concrete Project. In academic environments we are well placed to support and create 'patterns' of innovation that can be taken up by industry. They were interested in the concept of combining textile techniques to apply softness to the concrete surface and are particularly interested in the acoustic profiles of the resultant panels. There is clear potential to create products that provide a structural skin, a high-quality design finish and an acoustic profile all-in-one. Such a product would certainly appeal to a market place that wishes to simplify the construction process (reduce number of fixings/trades) in order to reduce time and costs.

### **The Wall**

In order to test the market place and identify areas of development we built a prototype 'Wall' and installed it in The Switchroom Galley, Belfast in Dec 2006 (figs 6, 7). We manufactured over 50 variations of panels and selected fewer than 30 for display. The developments and ideas that were involved in producing this range of panels provided the first serious testing ground for the product concept.



*fig 6: the wall (reverse facade)*



*fig 7: the wall (front facade)*

The intention of the wall was to demonstrate and promote Girli Concrete. Representatives from Industry, Press, Interior Product Suppliers and Specifiers (such as Architects and Interior designers) were invited to view and provide feedback. A feedback / comment sheet was designed to collect their thoughts on each of the finished panels on the prototype wall. This provided us with invaluable insight as to which elements worked best and has helped concentrate our ongoing efforts. The feedback in general from the exhibition was interesting from several aspects, not least that the wall panels and samples on display did incite viewers to touch them. We see this as the first step in mainstreaming tactility in the built environment.

<sup>17</sup> [www.creaghconcrete.com](http://www.creaghconcrete.com) Produce products for the construction, civil engineering and agricultural sectors

Themes for the wall panels were selected identifying traditional textile techniques in parallel with Irish craft processes.

#### Imagery:

Carrickmacross Lace images were used with permission from The Ulster Folk Museum<sup>18</sup>

Aran Knit

Original textile techniques used in development of previous work for designer Neisha Crosland.<sup>19</sup> The objective of this was to create interest in the bespoke commission market. A past textile technique and design processed for Neisha Crosland has been used in the concrete.

Techniques applied to the concrete derived from traditional textile practises mentioned earlier:

- |                              |   |
|------------------------------|---|
| Flocking:                    | an electrostatic print process used in the production of wallpaper, this process had to be manipulated to enable the glue to be printed onto concrete panel.  |
| Bonding:                     | a process of binding the textiles to a mesh to embed the textile but accommodating relief and tactility.  |
| Digital printing:            | directly onto the panels utilising imagery from lace and aran, this is carried out only as a hybrid technique combining other processes with print i.e. cutting and flocking. Digital printing on its own has already been in the market place for several years. |
| Laser cutting and engraving: | Again only as part of a textile based process   |

Specially manufactured formwork was commissioned from Creagh Concrete, this was necessary to create a uniform base from which to work, and perhaps more importantly it allowed for ease of manufacture. Each textile or process had to be treated and evaluated according to the fibre.

Throughout the initial concept testing stages there is no doubt that the product has gathered a lot of interest. The responses to its tactile and visual qualities had always been very positive BUT at this point we still had to address the largest 'doubt' in the project i.e. the longevity of textiles in a hostile alkaline environment.

#### **Where next?**

Resolving longevity: The effect of the highly alkaline environment in concrete on the techniques and fabrics used in Girli Concrete is an issue that is currently being researched. This next phase of research will hopefully result in an established working fibre or range of fibres that will withstand the high alkaline nature of concrete and also lend itself to customisation. As already analysed by Torsten Textor, Dierk Kknittel, Thomas Bahnners and Eckhard Schollmeyer (2003) there are Inorganic-organic hybrid polymers for coating textile materials. This is significant in that it is a problem that is being resolved but we are keen to try and develop by not merely applying a coating, as this will alter the inherent characteristics of the fibre, but in some way protecting the fibres while retaining there handling characteristics. Further documentation by Hans-Erik Gram (1988) illustrates that for thousands of years natural fibres have been used to reinforce inorganic materials, with particular interest given to cellulose fibres.

Woven Concrete: To date we have used a number of existing woven fabrics, but we now wish to design and develop weaves that in combination become integral with the

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<sup>18</sup> [www.uftm.org.uk](http://www.uftm.org.uk) One of Irelands' foremost visitor attractions, recapturing a disappearing way of life

<sup>19</sup> [www.neishacrosland.com](http://www.neishacrosland.com) Contemporary home interior designer. Awarded Royal Designer for Industry 2005

concrete. In March 2007 we were awarded an AHRC grant for the project "Woven Concrete: developing weave for use in textile/ concrete hybrid wall panels." This project is ongoing with a completion date of Dec 07. It allows us to

1. test the robustness and longevity of a range of yarns and resultant weaves in the concrete environment
2. generate 3-D weaves that are specifically designed for integration into the concrete.
3. Apply textile methods of erosion and distortion to mimic a lace structure.

We are working with a chemist, weave specialist and Concrete Manufacturer on this project.

**Acoustic Properties:** Concrete panels in themselves fulfil a basic acoustic requirement for mass. With the addition of a soft material and a material of depth we can greatly enhance and manipulate the absorption and acoustic nature of the panels. We are currently working with acoustic experts to work up a research proposal that will allow us to test the panels we have manufactured to date and also inform the design and manufacture of future textiles for embedding in concrete.

### **The Future**

Like its products, the nature of the Girli Concrete project is that it is also a hybrid. That is it is a Research-; Product development-; and Creative practice –led project, and as such it can work in a number of territories with a number of partners. The final products of Girli Concrete will emerge as the materials develop and as clients and partners inform the project, however we expect that the resultant furniture / landscape form will be simple, sculptural yet functional. The simplicity of their form will be in contrast to the richness of the material, echoing the character of the handcrafted vernacular elements.

Creativity is our currency and our working methods chase challenging, if not impossible, ideas. The belief is that along the way, innovative methods and products evolve that can be taken up and/or adapted by industry and other designers. As an ongoing research and development project, Girli Concrete is open to likeminded individuals/groups with an interest in forming creative associations.

More information on the project is available at: <http://girliconcrete.blogspot.com>  
Alternatively, if you have any queries, ideas for collaboration or wish to discuss potential commissions, please contact us.

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# **SURFING THE ARCANE ARCHIVES**

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## **Abstract**

My textile practice has evolved through experimenting with materials and methods of making in which handwork and craftsmanship provide both direction and context. Hand skills are transposed through the work in a humorous commentary on social and textile history within the contemporary gallery. My textile work employs a variety of techniques and materials fusing traditional skills and contemporary reinterpretation through photography and digital manipulation. Recent work involves collaboration with animators rm\* and continues to fuse traditional skills with computer manipulation. Through examples of recent exhibitions and commissions I will illustrate my methods of research and work within contemporary textile practice. I would like to demonstrate the fusion of traditional skills and technology in my work, and how I develop and adapt skills to suit each project. Projects illustrated allow both traditional and digital skills to sit comfortably together within a variety of site specific locations

## **Introduction**

I would like to introduce my work and methods of working. I have always been very interested in hand skills and making from an early age. I studied embroidered and woven textiles in the design department of Glasgow School of Art and on graduating was very interested in working outwith the studio environment with people through teaching and interaction with community. Experience working in the community and teaching has directed my practice in many ways, and as a result I am interested in making work in which skill and concepts are accessible and inclusive.

Research into textile and social history and traditional textile techniques direct my practice through illustrating idiosyncratic aspects of past and present. I collect and create narrative in making work which takes a wry look at past and present culture. Much of my research begins with a text, story or conversation, and I adapt techniques, tools and skills to suit ideas and create works, which move between traditional hand skills and new technologies.

## **Tools of the trade**

Crafts people have always used the tools and processes available to them at the time and I would like to present the tools I use in my work (sewing needle, scissors thimble, computer, computer mouse, cd digital printer). Through an experimental approach I have knowledge of materials and making processes and an understanding of the full potential of the tools used in my textile making. It is crucial as a craft maker to remain a current part of contemporary culture to embrace tools available. Embracing technology has not been about changing the fundamentals of my practice or concepts but providing an opportunity to develop traditional skills with new processes and aesthetic. Using digital media has provided me with a new freedom in my craft and allowed me to creating new works exploring scale and movement. The development of ideas are paramount and making involves interaction with materials and is not to do with one particular skill alone – traditional or digital. I will illustrate how I work between traditional textile techniques and digital imaging through a series of projects which work with museums, archives and heritage.

## The dangers of sewing and knitting

*Dangers of sewing and knitting* is an ongoing body of work where I am unearthing arcane and quirky facts/ fiction related to sewing and knitting. I am interested in developing ways in which textile stories can be told in an accessible way. I would like to show some of the works and explain my methods of interpretation though linking the historical and contemporary through traditional textile skills.

My research comes from a broad range of source material from archives to the internet. The exhibition tells twenty stories in which narrative is explored, imaging lives beyond the story through retelling and updating. Each work is linked with the idea that far from being a passive and safe activity as generally perceived, needlework is fraught with perils. The work draws on humour and juxtaposes traditional skills upon contemporary objects.

## Museums

I have had the opportunity to work within museum and archive collections in creating works which again fuse both the historical and the contemporary. My work and interventions into museum locations highlight the collections and create a dialogue with the past but also address contemporary life.

## Photography, embroidery and digital print

An interest in photography of objects associated with textiles lead to digital print at the Centre for Advanced Textiles @Glasgow School of Art. I link 'hand made' with digital in recreating digitally embroidered textiles allowing me to explore scale. There is much debate about the loss of hand made qualities (such as the human and personal) elements in digital works, and how the application of digital technology in some way depersonalises the work. My aim was to retain a handmade quality in the work and use the technology to achieve this by attempting to push technology in a softer direction.

This can be illustrated in two projects which employ traditional stitch techniques with photography and digital print. '*Atropaeic cache*' (a series of large-scale digitally printed banners which were hung in the arches of the ruined orangery at Gibside Estate Northumberland) and *Bugged* (a nine metre carpet digitally printed with embroidered insects at Brodsworth Hall South Yorkshire.) Digitally printing the work provided an opportunity to shift scale and exhibit monumental embroidery outdoors and within site specific locations.

## Collaboration with animators rm\*

*Bugged* lead the work in a further direction in collaboration with animation company rm\*. Hand stitched insects were photographed and digitally manipulated to create a length of digitally printed floor cloth. I collaborated with animators and sound artist in order to bring the insect characters of Brodsworth to life through movement and sound. Computer generated insects were made which incorporated textures directly from the original handmade embroideries. Developing an aesthetic which complimented the digitally printed cloth and keeping an essence of the stories of the people of Brodsworth, a piece of animation was created in order to be projected onto the floor cloth creating a moving section of carpet.

Collaboration leads me to not only observe the working methods of other makers, but also to observe my own practice and the similarities between different approaches. The painstaking creation of 3-D objects through stump work in 'bugged' is closely

mirrored by the meticulous virtual modelling of the insects by the animators, revealing commonalities between highly disparate media.

#### Experimental work Interface Belfast / residency Australia

Through examples of experimental work I would like to talk about recent experiments with Interface Belfast and a recent residency in Australia where I had the opportunity to work with laser cutting, uv digital print and computerised embroidery.

#### Conclusion

Reoccurring themes pass through my work: people past and present, traditional skills and new technology. The ideas are paramount and making involves interaction with materials and is not to do with one particular skill alone – traditional or digital. I am currently interested in the hand and the movements associated with hand skills such as sewing and knitting.



# **BOTSWANA TRADITIONAL DRESS: PAST, PRESENT AND FUTURE**

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## **Abstract**

This paper presents an insight into an identified traditional dress in Botswana. Three aspects are considered in this discussion: dress worn in the past, present and whether traditional dress has a place in the contemporary Botswana. Focus will be on the style, materials, and production technologies used.

## **Introduction**

Botswana traditional dress has seen dramatic change over the years in material and technology used, style, and its usage. The changes have their roots on global trade, as they were fuelled by missionary traders who settled in Southern Africa in the 19<sup>th</sup> century (Tlou and Campbell, 1997). At the time Batswana wore animal skins which were styled to suit gender, age, activity as well as express social status; while the missionaries brought along their western mode of dress and textiles, as well as cultures such as formal school and jobs which required the 'new' type of dress. The traders' economic activities, coupled with the changing economic values of Batswana, triggered mines worker emigrants to South Africa. Batswana men, who worked in the mines, bought sewing machines, modern fabrics and clothing for their spouses. Furthermore, concern for the environmental depletion with regard to hunting of wildlife instigated regulatory policies which made the skin inaccessible and expensive to obtain. As well, livestock became a source of economic empowerment for families and the country; because of this people stopped slaughtering their animals for clothing but reared them for commercial purposes. This influenced change of values and led to the development of new cultural identities in which modern fabrics and styles now dominate.

It is therefore important to note that as the world has become a global village, the nations' values, cultures and practices are altered. Because of this, it becomes difficult to talk about 'a traditional dress'. For the purposes of this study 'traditional dress' refers to an established and accepted way of dress of a society or group which represents its cultural values and identity. This paper presents part of an ongoing study on dress and culture in Botswana. Of specific interest is the dress worn before contact with European cultures, the modern dress, and whether traditional dress has a place in the contemporary Botswana.

It is interesting to note that, although modern dress has become part of the culture, some of the modern dress items which have been adopted and are used in various cultural activities in Botswana represent a symbol of 'cultural authentication'. Cultural authentication as explained by Eicher, Evenson and Lutz (2000, p.225) is 'a process of selectively borrowing a cultural object and making it a part of the receiving culture'. The scholars suggest that transformation from original into valued indigenous objects occurs through selection and use, by characterising and giving names different from the original, making it part the groups' social life and cultural significance; and adapted cultural designs. The dress used in marriage rites is an example to which cultural authentication process apply. However, traditional dress, whether in the past or present, has played an important role in the social life of Batswana and made statements concerning status, respect and social conduct.



## Methodology

A qualitative approach was chosen using observations and in-depth interviews. In observations, dress items from museums and marriage rites were documented using a visual analysis guide sheet. Photographs of dress items and passage of rites were taken, and these provided information about the changes observed in the two timelines; while in-depth interviews were carried out with sixty-nine key informants by a means of a semi-structured interview guide. Key informants were elder members of the society vested with indigenous information. All these approaches yielded rich data which shed light in the effects of change in traditional dress in Botswana. The data analysis of the interviews followed an inductive approach embedded in grounded theory by Strauss and Corbin (1994) and interpretative phenomenological analysis by Smith (2003). It is anticipated that the contribution of this study will provide a basis for proper documentation, interpretation and conservation of dress as a cultural and historical heritage in general.

## Findings and discussions

### The skin and Modern dress era

#### Observations

The research has revealed a variety of dress items worn in the past by different groups in accordance with age, gender and ethnicity. Examples included female adult dress consisting of *phaeyana* or *mojamboro* or *mothikga le motlokolo* (two piece skirt with the back piece longer than the front), *mokuru* or *mokobolo* or *metlhose* (cloak), necklaces, bracelets and headbands; and girls' *makgabe* (fringed waist skirt). Male dress constituents were *motseto* and a two piece loin cloth, *mothibampana* (cloak), conical styled hats made from bat-eared foxes, *dirampheetshane* or *metswapirwane* sandals made from the forehead skin of a cow and boys' *tshega*. Almost all garments were made from skins of animals such as steenbok (*phuduhudu*), duiker (*phuti*) or sheep and calf skins. Natural fibres such as sisal known as *bogokgwe*; bark from the trees and reed from the river were used to make *makgabe*, headgears and bracelets respectively. There were accessories and cosmetics which were made from materials sourced from the environment such as ostrich eggshells, plant pods, twigs and lemon grass. The leopard skins which are used for enthroning paramount chiefs and half-aprons made of glass beads with elaborate design were also found. The dress items were collected from different areas in the country.

#### In-Depth Interviews

The interviews endorsed what was found in the museums and revealed information concerning adoption of modern dress, as well as explained the skin production process and the significance of the dress items to their culture.

Production of skin utilized natural materials and traditional equipments available at their disposal, and seamstresses were mainly men. The process for tanning and dyeing of skins was similar for all the ethnic groups interviewed, they differed in the brain mixtures applied to soften the skins for tanning. The animal fermented brain and fat mixture were used by some of the ethnic groups in the southern part of Botswana, while a mixture of brain and *tshwang* (a type of grass) was popular in the north. After tanning natural dyes were applied such as *Terminalia Sericea* (*mogonono*) root, which gave gold and yellow colours, while *Elephantorrhiza elephantina* (*mositsane*) root, *Peltophorum africanum* (*mosetlha*) bark and *Garcinia livingstonei* (*motsaudi*) bark yielded tints and shades of brown colours. Appearance and aesthetics in production of dress were pertinent.

### The modern dress – the present

It was noted from the findings that, the facing out of the skin dress was gradual; and the last dress items such as *motseto*, *tshega* and *makgabe* were finally lost in the mid

1970s (Grant, 2006). It is believed that the first fabrics that came into Botswana markets were jean 'denim, which' was called *satane* (a Setswana name for 'devil') or *matalanyane* (referring to the colour of the fabric), and the indigo dyed printed fabrics the blue and white dots *leteise*, also called *leteise* or *jeremane* (Germanprint), popularly known as *kgaka* – 'guinea fowl' which fashioned women's garments. A linen fabric with stripes called *segele* was worn mainly by nursing mothers who had just completed confinement; while men's trousers and shirts were made from a khaki fabric. These fabrics were liked because of their performance characteristics, including durability, suitability for all situations and that they did not soil easily. With time, new fabrics and fashionable clothing became widely adopted and remain an important cultural domain for social expression.

### **Dress significance**

The findings demonstrated that the meanings and interpretation of modesty vary culturally (Michelman, 2005). Although traditional dress seemed skimpy and was considered immodest and barbaric by the missionaries, dress for older and young adults covered the parts that are considered to have sexual and moral connotations. For example, an elderly or married woman had to cover her knees, as a short skirt was deemed indecent and disrespectful. Furthermore, men wore a knee-high rectangular leather piece called *mothibampana* in front over *motseto* for decency. For young boys and girls, revealing garments were not sexually suggestive until they reached puberty.

Dress can have a powerful influence on socialisation of individuals and continuance of a cultural system (Hamilton and Hamilton 1989). Examples can be seen by the wearing of *lomipi* (peritoneum) by the bride as a veil, and in the current usage of a shawl (*jale* or *mogagolwane* of *leratsha*, headscarf (*tukwi*), skirt and half apron made from *leteise* fabric by the marriage rites delegation as well as the bride. These dresses signify change of status, social admittance into marriage and transforming of a girl into womanhood.

### **The future of the traditional dress in the contemporary Botswana**

Although a traditional dress common to all Batswana does not exist and dress is generally contemporary, the findings revealed the quest for traditional dress. As already indicated garments made of *leteise* (Germanprint) fabric are a common feature in cultural occasions and functions. Nevertheless, there are conflicting arguments as to whether it should be a national or ethnic dress. Questions about the type of fabric, style and colour, as well as the usage have been raised. Furthermore, the informants also wondered about the implementation process and its implications to cultural heritage. This research hopes to draw from the findings, interpretations and come up with recommendations.

### **Conclusions**

It is evident that the original traditional dress has been transformed and an authenticated dress made of modern *leteise* fabrics has been adopted for use during passage of rites and that its usage is significant to the married. Traditional skin dress and the modern ones are imbued with symbolic meanings which are embedded in the Setswana culture. The growing interest to use *leteise* in cultural occasions is indicative of quest for cultural identity.

**Note**

1 Etymological root – The country = Botswana, the people = Batswana, the culture = Setswana, the language = Setswana. The Batswana are all the Setswana all Setswana speakers and the majority of the population of Botswana.

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## **THE PERUVIAN CONNECTION: A GLOBAL ATELIER**

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### **Abstract**

The Peruvian Connection is a global business with a humble beginning, whose fashions are synonymous with luxury, exquisite design and the use of high quality natural fibers. Although the brand's origins began with sweaters, Peruvian Connection currently designs, manufactures and markets seasonal lines of men's and women's clothing, fashion accessories and products for the home. The Peruvian Connection is an interesting story, for it successfully maintains an artisanal brand image based on Andean and international traditional textile techniques, materials and motif-based fashions, with global reach achieved through the latest information technology marketing strategies and tools.

This paper explores the building of the brand in 1976, which was based initially upon Peruvian knitted sweaters, fashions adapted upon the Andean manta and poncho, and luxury fibers such as alpaca, vicuna and pima cotton. The paper traces how the business grew from a small entrepreneurial Mother/Daughter venture to a multi-channel retailer with a presence in the US, UK, Japan and Germany through mail order catalogues, Web based catalogues, two brick and mortar stores and four outlets.

### **Introduction**

The Peruvian Connection is a clothing company unlike any other, a textile lover's dream come true with its high production values, commitment to sustainable production and support of indigenous makers. Exquisite designs are produced with luxurious high quality natural fibers and blends. Although the brand's origins began with sweaters, Peruvian Connection currently designs, manufactures and markets seasonal lines of about 85% women's and 15% men's clothing, fashion accessories and products for the home. All of these attributes have led The Peruvian Connection to achieve a distinctive brand, focused on artisan-produced goods, many of which are hand crafted, hand-knitted or hand-woven. What is most significant to this study is that many of The Peruvian Connection's designs are inspired by authentic, historic global textiles, with a long-standing focus on textiles from past and present Andean civilizations. The many global designs are carefully and correctly attributed, an extraordinary commitment that sets the Peruvian Connection apart as a role model for other fashion brands.

The Peruvian Connection is a global business with a humble beginning. The inception of the Peruvian Connection is an interesting story, and the story of the business cannot be separated from its founder and hands-on owner Annie Hurlbut, anthropologist turned accidental businesswoman. The story on the company's Website tells how she purchased a Peruvian hand-loomed alpaca sweater coat for her mother's 50th birthday gift. Annie had been living in Peru to study marketplace women when she encountered the locally-produced hand woven mantas, ponchos and sweaters. Her personal discovery led to expanded research and acquired knowledge about Peruvian traditional textile arts and clothing items. Mantas, large shawls woven on backstrap looms and assembled from two pieces, are typically woven with alpaca and sheep's wool and have designs consisting of stripes, intricate patterns and subtle colors. The skills and visual vocabulary of mantas and traditional knitted sweaters directly contributed to what the Peruvian Connection brand epitomizes today, as locally produced natural fibres, pima cotton, alpaca and vicuna, are featured in the company's mail order business.

Over the years since her acquisition of the fateful sweater coat in 1976, The Peruvian Connection has grown into an artisan-made brand image based on Andean and international traditional textile techniques; materials and authentic motif-based fashions with global reach achieved through the latest information technology marketing strategies and tools. For almost 25 years, the Peruvian Connection sold their clothing via mail order telephone. The business then grew with wholesale sales to boutiques throughout the United States, and then it developed a small mail order catalogue, still sends out seasonal mail order catalogues, established four brick and mortar stores with more on the way, and created a growing internet presence with sites in English, German and Japanese.

To help craft its brand, the Peruvian Connection constructs an aura of exclusivity, exceptional design and a fair-trade artisan ambiance, literally a "Peruvian Connection", through travel-brochure-like glossy photo presentations in authentic Colonial settings featuring stone, old wood, wrought iron, antique furniture, and artistically peeling paint in rich, uncommon colours. The website features short, cultural and educational spreads about holidays, travel and the art of knitting, where Peruvian Connection designers call upon the traditional highly refined skills of generations of native knitters to produce expensive hand-made sweaters. There are brief articles on the company's social consciousness to uplift workers by investing profits in organizations like Pro Mujer Peru which helps women combat poverty by establishing their own businesses, offering loans and health care. The Peruvian Connection also supports the Textile Museum of Washington D.C. Significantly, the company has been working with many of the same small ateliers in Peru for over 25 years, and in this way sustains the crafts workers who craft beautiful hand-made accessories that epitomize the brand that makes The Peruvian Connection customer happy, what Annie Hurlbut calls "enlightened self-interest".

This paper is based upon correspondence and a lengthy interview with Annie Hurlbut on July 10, 2007. One of the goals of this research project is to discover what it means to The Peruvian Connection brand to properly attribute global design inspirations of their garments, to understand the design and production necessary to maintain "the global atelier" image, and to learn more about other distinguishing attributes that set the company apart from others in global fashion retailing. Most of the issues Annie Hurlbut discussed with the author are below, and form the basis of the presentation of this research paper. The slide lecture depicts The Peruvian Connection's distinctive colour palate, artisan-made accessories and respectful adaptations of authentic world textile designs while presenting Mrs. Hurlbut's responses.

- What attributes identify The Peruvian Connection brand and what do these mean to the brand?
- Please tell me about The Peruvian Connection's use of globally inspired designs in the design process.
- How and when did the company's design vocabulary expand beyond Peruvian and South American designs to become more globally inspired?
- What percentage of Peruvian Connection designs are made by hand by individuals?
- What is the company's design process and how are its designs developed?
- How did you grow the business from small scale to huge? What were important steps on the way?
- How important is it that Peruvian Connection maintains an artist-made, socially responsible image, and what are the challenges in maintaining this image?
- As a privately owned company, what is your role in the design process?

# **AN INVESTIGATION INTO THE CHANGING ROLES OF STRUCTURE AND SURFACE IN KNITTED FABRIC DESIGN WITH REFERENCE TO ARCHITECTURAL PRACTICE.**

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## **Abstract**

This study examines the concepts of construction and surface in relation to knitted fabric design and architecture. This paper argues that the separation of structure and surface is detrimental to the value assigned to both buildings and fabrics. By isolating the structural framework from the surface, the surface can become ornamental losing its functionality and significance.

With reference to pleated fabrics the relationship between the structure and the surface of knitted textiles is examined further. Pleats both unite and separate the surface of a material. Folds transform the fabric into a more compact state creating surface pattern and structural texture. Within weft knitted fabric design pleats can be written in to the fabric structure at a programming stage and the impact is visible on the surface of the final fabrics.

The investigation explores the ability to manipulate the surface of a knitted fabric through simple changes to the structure. A series of swatches illustrate the potential to radically change the fabric appearance exclusively through structural developments. Principal findings of this study suggest that in the case of knitted fabric design, the surface appearance is inherently linked to fabric structure. Conclusions suggest that fabric developments, enhanced by technological innovation, provide the means to create knitted fabrics which unite a technical understanding of construction with the aesthetic values of surface appearance.

## **Introduction**

Conceptually textiles operate in a similar way to architecture; the human form provides both the scale to work to and the boundaries to work around. Current research within these two distinct disciplines considers the shared conceptual ideas and materiality as a starting point for innovation (Garcia, 2006; Quinn, 2003). Using folds and pleats as a point of departure this study analyses the relationship between surface and structure in architecture and knitted fabric design. Through a series of knitted fabric developments the unique interplay between surface and structure is explored.

## **Context**

Buildings and textiles are saturated with shifting meanings, from associations with function and form, to cultural ideologies. Semiology provides a potential reading of both constructed textiles and architectural structures. Barthes argues that the connection between the signifier and signified is no longer a simple binary relationship, but that the signified changes according to different points of view (Barthes 1977). In material terms this suggests a changing relationship between the structure (signifier) and the surface (signified) of an object.

The physical manifestation of this separation can be observed in architectural practice. Contemporary building methods no longer rely on walls to play a structural role in construction. This allows the internal spaces within a building to be opened up and new possibilities for materials to be explored. For example in Shigeru Ban's Curtain Wall House, curtains replace permanent walls creating an external space that is revealed when the curtains are drawn back. (Tokyo, Japan 1995).

However architect and critic Bernard Tschumi suggests that this separation of structure and surface has lead to an increasingly ornamental role for the surfaces of buildings, whilst the structure of the majority of buildings remains the same. By separating structure and surface the structures have become an 'endlessly repeated, neutralised grid' (Tschumi, B, cited in ed. Read, A. 2000. p170).

In response to semiological analysis new conceptual frameworks have been developed. One framework considers the fold as a dynamic structure which provides a completely different reading of the relationship between structure and surface. The conceptualisation of the fold, developed by Giles Deleuze in his critical examination *Le Pli* (Deleuze, G. 1993) has had a significant impact on the conceptual understanding of architecture and textiles. According to Quinn the importance of folds was identified through deconstructing the meaning of the surface: "Deleuze opened the relationship between form and function by applying the fold as a model of decoding the relative meanings of surfaces, identifying expressions of structures, voids, dissection and ornamentation." (Quinn, B. 2003 p216).

Folding materials brings surfaces together whilst also dividing them. Folded fabrics distort the surface across different planes and manipulate the form to create three dimensional effects. Folding materials, for textile or architectural applications compresses the surface area into a more compact form. Through the development of these folds it is possible to transform surfaces within a fabric. In knitted fabrics these folds can be developed as pleats; designed into the structure so that the fabric will return to the pleated state even after it has been deformed through wear and manipulation. When these fabrics are worn the inherent folds respond to the shape of the body providing a dynamic surface with a three dimensional form.

### **Initial Studies**

To explore the ability to manipulate the relationship between structure and surface using pleats and folds a series paper folding techniques were undertaken. Paper folding provided a suitable medium to create three dimensional forms from a flat surface. To create dynamic structures the initial investigations considered the possible outcomes when vertical and horizontal pleats intersect.

This provided two distinct outcomes; either a peak can be formed when the pleats twist around a central point of intersection (fig1 1). Alternatively a flat diamond shaped surface is created by manipulating the point of intersection into shape by hand (fig 2). The diamond shape locks the pleats into position.



*fig 1: Intersecting pleats (peak)*



*fig 2: Intersecting pleats (diamond)*

### **Fabric Developments**

A series of development fabrics explored the potential to translate the idea of intersecting pleats into knitted fabrics. To achieve the peak effect links/links was used either as an all over design or within areas of patterning. The combination of the technical face and the technical back created curls in opposing directions. By pleating the fabrics the structural changes are visually enhanced (fig 4).



fig 3: Box pleat



fig 4: Peak formation

Using the pleating technique across both the horizontal and vertical plane it was also possible to create hidden pockets of fabric within the piece. Initial developments, based on a 1x1 rib structure were bulky and unsophisticated. Further developments combined areas of 1x1 rib with areas of single bed to reduce the bulk of the concealed space.

### Analysis and Conclusions

Analysis of the fabric developments clearly shows that in the case of knitted fabric design, surface appearance is inherently linked to fabric structure. The three dimensional nature of the fabrics is created through manipulating the inherent properties of a single bed knitted fabric. Intersecting pleated structures in double bed fabrics allow concealed areas of fabric to be revealed as the fabric is stretched. Translating paper folding techniques to knitted fabric design provides the facility to camouflage decorative areas within a plain structure. Only through manipulating the fabric are these hidden surfaces revealed.

The fabric developments illustrate the potential to create knitted textiles with a unique interplay of surface and structure which do not reflect a semiological reading. The transformative nature of the fabrics, and the ability to conceal and reveal hidden surfaces, illustrates closer relationship to the theoretical understanding of the fold. The external appearance cannot be considered without reference to the internal fabric construction and it is this relationship between the surface and structure that imparts value to the knitted form.

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# THE DEVELOPMENT OF MULTI-LAYER WOVEN FABRICS WITH POTENTIAL AS GEOTEXTILES.

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## Abstract

Due to the progression of technology, textiles today can be used in many different applications. These fabrics appear in architecture, agriculture, automotive, and aerospace industries. By using traditional weaving techniques we can create materials for use in these modern situations. This project deals with woven fabrics, with a prime function to reduce the amount of materials used in construction. Preventative measures must be taken to reduce the amount of natural resources being used in construction. This Project explores how new products can be developed and tested to help solve and ideally prevent problems that require the use of natural resources. Ideally the outcome will be a new geotextile material.

## Introduction

With environmental issues coming to the forefront of everyday life people are becoming more aware of the origination of materials and their impact on the planet. Biodegradability has become a word we hear everyday. New houses are being built with renewable energy sources in mind. With the introduction of wind turbines and solar panelling in these new builds we are also starting to incorporate new building materials and techniques. These measures can be taken to different areas of construction. Global changes in weather and temperature are leading to problems in existing constructions. These problems often require continued maintenance and an extensive use of natural resources. This project aims to provide preventative solutions to these problems.

## Geotextiles

The word geotextile is used as a general term to describe permeable textiles, which can be woven or non-woven, used in conjunction with soils and various types of aggregate as part of a man-made project. Geotextiles are widely recognised as a preventative measure, used in embankments as reinforcement and as a separator in road construction.

The main polymer families used in geotextiles are polyester, polyamide, polypropylene and polyethylene.

Where reinforcement is the prime function the most important geotextile properties are tensile strength, together with elastic modulus and surface bond. (John, 1987) A good example of an application, which requires these standards, is road construction. However, there are other important factors in this specific area such as skid resistance, temperature resistance and longevity.

## Multi-layer Woven Fabrics

"The Dutch were the first to conceive the idea of using two layers of geotextile, pinned together at intervals, as flexible framework for cast in-situ concrete revetments" (Hillen, 1968)

**A multi-layer woven fabric can be developed to contain strength in specified areas. Dependant upon the type of loom used to weave, the fabric designs can be developed to have different fibres and shaped cavities. These can be tailored to answer particular specifications. This type of fabric is then specific to it's**

application making this type of technology different from existing non-wovens used as geotextiles. These types of multi-layer woven fabrics are well established as engineering composites. This project aims to use this technology across different disciplines, such as environmentally sensitive areas like geotextiles.

These fabrics could be used as:

- Reinforcement
- Filtration
- Containment
- Separation
- Barrier

### **Practical Sampling**

A number of different samples have been developed using a range of fibres in order to create a new type of geotextile.

The first samples have been woven from cotton. Cotton is a natural fibre and therefore biodegradable. This makes it unsuitable for a number of applications. The cost of cotton in a multi-layer woven is higher than that of a typical non-woven geotextile made from a polymer material. The fabrics, woven on a 40 shaft dobby loom, are restricted to block shapes. A range of fabrics with various shaped cavities were developed to test containment. This research showed that filling substance often dictates the weave structure.

Typical challenges that occurred in sampling stages include:

- Creating an entrance for filling substance
- Leaking of substance
- Even filling of substance
- Sealing of cavity once filled
- Prevention of distortion of shape

The shaped fabrics were further developed to include high density polyethylene as a melt yarn. These samples successfully created a channel in the centre of four and five layer fabrics. However, the channel was not totally sealed and so some substances would leak.

Some of the successful sample fabrics show potential as reinforcement or separation geotextiles.

Other fibres have been used to develop these shaped fabrics.

Rayon has been woven in multi-layer structures with the same intentions as the cotton- to develop a leak proof channel in the centre. Experiments were carried out using rubber as the internal material. This proved a challenge as the rubber was quite thick and so left large gap areas in the inner channel.

Polyester and polypropylene were sampled to create multi-layer fabrics. Some of these samples show potential as reinforcement or filtration areas.

The polyester was woven into shaped cavities suitable for containing foam or solid substance. However, the structure prevents filling with water, air or substances likely to leak. The weight of the polyester samples is high and therefore unsuitable for many geotextile applications.

Polypropylene is a fibre associated with geotextiles and therefore the obvious choice for testing. The fibre was woven in tape form in a two-layer fabric with areas of un-woven yarns. This fabric could be tested in a filtration capacity, but also shows potential as a reinforcement fabric.

Polypropylene in a multifilament yarn was then woven in a four-layer fabric. These fabrics were very different from previous experimentation. The shape of the fabric is quite regular in shape and is woven in an open structure. Research into this area of

fabric development is ongoing. These multi-layer polypropylene fabrics are to be specifically designed with applications in construction. Testing is being carried out for strength, elongation and abrasion resistance.

## **Conclusion**

Research into geotextiles and using existing multi-layer woven technology to create engineering composites in alternative applications has led to an interesting set of woven fabrics. These materials have qualities not available in non-woven fabrics already on the market. Strength, weight and longevity are particular characteristics available. With this in mind the areas these fabrics show most potential in geotextiles are reinforcement and containment. These fabrics offer the construction industry an alternative to using large amounts of aggregate and the need for regular maintenance and replacement. The new geotextile materials may be at a cost disadvantage in comparison to existing non-woven alternatives, however, they do give unique qualities, which can be tailored to each individual application. Further sampling and testing of the fabrics is to be carried out.

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# TILING POLYHEDRA - THE PRINCIPLES OF THREE-DIMENSIONAL TESSELLATIONS

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## Abstract

**The patterning (or tiling) of regular solids in ways that ensure precise registration and the absence of gaps or overlaps is neither a trivial nor a straightforward matter. When regular repeating patterns, which perform to satisfaction on the Euclidean plane, are folded several times, into different planes, their component parts will not readily correspond. Only certain pattern types, with particular symmetry characteristics, are suited to the precise patterning of each Platonic solid. This paper identifies a systematic means by which appropriate pattern types can be identified. The symmetry characteristics of importance to the process of applying two-dimensional repeating designs to regular polyhedra, are identified, and the patterning of each of the five solids is explained.**

## Introduction

It is well established that regularly repeating patterns (or tilings) exhibit symmetry characteristics. That is, certain geometric actions (translation, reflection, glide-reflection and rotation), known as *symmetries*, which combine to produce seventeen possibilities across the plane. In the context of this paper, patterns are best considered as those repeating designs that comprise a motif (or motifs) and background, which repeats at regular intervals across the plane. A tiling may be considered as a restrictive category of patterns (tiles, or polygons) that cover (or tessellate) the plane without gap or overlap. Both categories of repeating designs conform largely to the same symmetry rules and structural geometry. Moving into three-dimensions, a polyhedron can be defined as '*a three-dimensional solid that consists of a collection of polygons, usually joined at their edges*'. There is a set of polyhedra, known as the *Platonic* or *regular solids*, which are composed of combinations of one specific type of regular polygon. Within each Platonic solid the faces are thus identical in size and shape, and the same number of faces meets at each vertex. The five Platonic solids are as follows: the *tetrahedron* (four faces), the *octahedron* (eight faces), the *cube* or *hexahedron* (six faces), the *dodecahedron* (twelve faces) and the *icosahedron* (twenty faces). An understanding of the symmetry in two- and three-dimensions can help provide a means by which patterns can be applied to the surface of polyhedra in a systematic and complete way, avoiding gaps or overlaps and ensuring precise registration.

## Fundamental Principles of Symmetry

As noted in the introduction, it is well established that regularly repeating patterns (or tilings) exhibit symmetries, which combine to produce seventeen possibilities across the plane. Translation moves a figure over a given distance and direction whilst maintaining the same orientation. A translated figure (motif or tile) may undergo repetition horizontally, vertically or diagonally. Reflection produces a mirror image across a reflection axis. Glide-reflection combines reflection and translation across a glide-reflection axis. Rotation in all-over patterns or tilings may be two-fold (180 degrees), three-fold (120 degrees), four-fold (90 degrees) or six-fold (120 degrees). A further geometrical element of importance to pattern structure is the underlying framework or lattice. Each lattice (of which there are five distinct types) is comprised of unit cells of identical size shape and content. Each cell contains the essential

repeating unit or element of the pattern or tiling, as well as the symmetry instructions for the pattern's construction. When translated in two independent non-parallel directions, the full pattern or tiling is produced. Designs possessing the same symmetry combinations are said to belong to the same symmetry class, and may be classified accordingly. Further accounts of the classification and construction of regularly repeating patterns and tilings have been given by Woods [1935c], Schattschneider [1978b], Stevens [1984], Washburn and Crowe [1988] and Hann and Thomson [1992].

In three-dimensions, a polyhedron consists of polygonal faces, with these faces meeting at edges, and edges joining at vertices. Composed of faces identical in size and shape, equally surrounded vertices and equal solid angles, the regular convex solids, known as the *Platonic solids*, are highly symmetrical polyhedra. The symmetry characteristics of reflection and rotation that govern the properties of regularly repeating patterns and tilings, are of importance also to three-dimensional solids. This investigation considers the links between symmetry in two- and three-dimensions and examines how these characteristics govern the application of repeating patterns to the Platonic solids. Further accounts of the properties of polyhedra have been given by Coxeter [1948, 1969], Critchlow [1969], Wenninger [1971], Williams [1979], Cundy and Rollett [1989], Holden [1991] and Cromwell [1997]. From an interdisciplinary perspective notable works include: Shubnikov and Koptsik [1974], Pearce [1978], Kappraff [1991] and Gabriel [1997].

### **Tiling the Platonic Solids**

The purpose of this investigation is to discover which of the seventeen pattern classes can regularly repeat around the Platonic solids, applying only the restriction that the unit cell must repeat across the solid in exactly the same way that it does in the plane pattern. In order to assess the geometric characteristics of importance in this patterning process, the investigation focused on the application of areas of the unit cell (capable of building-up the repeating pattern) to act as a tile when applied to the faces of the polyhedra. Emphasis was placed on the pattern's underlying lattice structure and the inherent symmetry operations.

The first step involved matching the polyhedral faces to a suitable lattice type. Considering the polygons that comprise the faces of the Platonic solids, the equilateral triangle, square and pentagon were seen to be of greatest significance. All of the seventeen all-over pattern classes may be constructed from either a square or hexagonal lattice and some may be constructed on both lattice types [Tantiwong, 2000, p.27]. Suitable patterns applicable to the tetrahedron, octahedron and icosahedron, whose faces are equilateral triangles, must therefore be constructed on a hexagonal lattice, where the unit cell comprises two equilateral triangles. The cube is the only Platonic solid that is composed of square faces. All pattern classes constructed on a square lattice can thus be considered suitable to repeat around the surface of the cube. Patterning the dodecahedron, composed of regular pentagonal faces, requires a different approach, as the regular pentagon, with five-fold rotational symmetry, cannot tile the plane without gap or overlap (a characteristic known as the *crystallographic restriction*). There are, however, fourteen (known) types of equilateral pentagons that can tessellate the plane [Wells, 1991, pp.177-179]. Probably the best known is the *Cairo tessellation*, formed by convex equilateral pentagons (equal-length sides, but different associated angles). Using knowledge of the Cairo tessellation, the method used by Schattschneider and Walker [1982, p.26] presents a technique by which to tile the dodecahedron. Further solutions to the problem of tiling the dodecahedron using alternative methods have also been developed.

All pattern classes constructable on a hexagonal lattice were systematically applied to the tetrahedron, octahedron and icosahedron. Initial constructions utilised half the hexagonal unit cell (equivalent to an equilateral triangle) to tile each face. All pattern classes based on a square lattice were systematically applied to the cube in a similar manner, utilising an area equal to the whole unit cell. Further constructions involved extracting smaller areas of the unit cell for use as tiles. These smaller areas constituted either a square or equilateral triangle and were capable of creating the full repeating pattern. The smaller the area of the pattern used to tile the polyhedron, the larger the scale of the pattern on the solid. Patterns capable of regularly tiling the Platonic solids are identified in the results below.

## Results

The results of the investigation into the tiling of the Platonic solids are shown in Table 1. All-over pattern classes capable of tiling the regular solids are identified along with their constituent lattice structures and the area of unit cell applied to each face.

Table 1 Summary of the symmetry characteristics exhibited by the regularly tiled Platonic solids

Platonic solid	Pattern class	Lattice structure	Area of unit cell on face	Vertices equivalent	Rotation present on vertices	Rotation present on edges	Rotation present on faces	Reflection present on edges	Reflection present on faces
Tetrahedron	p2	hexagonal	1/2	<input type="checkbox"/>		2-			
	c2mm	hexagonal	1/2	<input type="checkbox"/>		2-		<input type="checkbox"/>	<input type="checkbox"/>
	p6	hexagonal	1/2	<input type="checkbox"/>	3-	2-	3-		
	p6m	hexagonal	1/2	<input type="checkbox"/>	3-	2-	3-	<input type="checkbox"/>	<input type="checkbox"/>
Octahedron	p3	hexagonal	1/2	<input type="checkbox"/>	2-		3-		
	p31m	hexagonal	1/2	<input type="checkbox"/>	2-		3-	<input type="checkbox"/>	
	p3m1	hexagonal	1/2	<input type="checkbox"/>	2-		3-		
	p3m1	hexagonal	1/6		a) 2- b) 2- c) 2-			<input type="checkbox"/>	
	p6	hexagonal	1/2	<input type="checkbox"/>	4-	2-	3-		
	p6	hexagonal	1/6		a) 4- b) 2-	2-			
	p6m	hexagonal	1/2	<input type="checkbox"/>	4-	2-	3-	<input type="checkbox"/>	<input type="checkbox"/>
	p6m	hexagonal	1/6		a) 4- b) 2-	2-		<input type="checkbox"/>	<input type="checkbox"/>

Icosahedron	p6	hexagonal	1/2	□	5-	2-	3-		
	p6mm	hexagonal	1/2	□	5-	2-	3-	□	□
Cube	p4	square	1	□	3-	2-	4-		
	p4mm	square	1	□	3-	2-	4-	□	□
	p4gm	square	1	□	3-	2-	4-		
Dodecahedron	p4	square	1/2	□	3-	2-	5-		

## Discussion and Conclusions

Only ten of the seventeen all-over pattern classes are applicable to the regular tiling of the Platonic solids. These pattern classes are based only on hexagonal or square structures as determined by the face polygons of the regular solids and therefore the applicable pattern classes. Plane patterns with lower rotational symmetry (for example classes  $p1$ ,  $p1m1$ ,  $p1g1$ ,  $c1m1$ ,  $p2mm$ ,  $p2mg$  and  $p2gg$ ) cannot be applied to regularly tile the Platonic solids. Only the tetrahedron and the octahedron can be regularly tiled by patterns possessing lower rotational symmetry than the polyhedron. The symmetry of the resultant tiled polyhedron is lowered and no rotation is present on the faces. Pattern classes with a higher rotational symmetry than that of the polyhedron will retain the rotational symmetries of the solid, as demonstrated by classes  $p6$  and  $p6mm$  when applied to the tetrahedron, octahedron and icosahedron. The symmetry operation of reflection has less of an influence on a pattern's suitability to tiling a solid and planes are only operational on a regularly tiled solid if reflection is present in the two-dimensional pattern. A plane pattern that exhibits no reflection will disguise the reflection planes of the polyhedron. In the majority of cases, the area of a pattern used to cover each face of a polyhedron is equivalent to half or the whole unit cell. Only the octahedron can be regularly tiled using an area smaller than half the area of the unit cell (equal to one-sixth), creating two types of vertices. In these cases, no rotation is exhibited on the tiled polyhedron faces and two types of rotation axes are present at opposite vertices. It has been shown that an understanding of the symmetry characteristics of patterns and polyhedra can help provide a means by which patterns may be applied to polyhedra in a systematic and complete way, avoiding gaps or overlaps. The results of this enquiry have given rise to the creation of a series of remarkable mathematical solids.

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# **A CONTEMPORARY IRISH TAKE ON 'BLUE PRINTS' INDIGO DYED 'CHINTZES' OF THE EIGHTEENTH CENTURY**

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## **Abstract**

This paper has been inspired by research undertaken for the collaborative project 'Re-inventing Linen' that was made into the Printed Textile Industry that grew up around Belfast in the mid Eighteenth Century.

While there has been a lot of design exploration based upon the Linen Industry and the traditional crafts of Ireland, very little exists on the printed fabrics that were manufactured in this area. Taking inspiration from the processes and dyes of this period, the print technology employed carved wooden blocks and engraved copper plates to produce decorative hand-painted polychrome chintzes in natural dyes and monochrome patterns in Red (Cochineal) and Blue (Indigo).

My aim was to re-invent the printed chintzes of the late 1700's by employing images derived from old Indian carved wooden printing blocks. These were used to create modern day stencils from a linen/resin composites cut using the high technology of a laser that were printed using the ancient technique of starch, gum and wax resists with an Indigo vat dyeing process. In this case the combination of potato starch and seaweed based gum as the resist, both natural products linked to Irish food culture and Indigo, a dye which has the same chemical composition as Woad, an indigenous plant and colour associated with the Celts.

## **Introduction**

Whilst there has been much written about the rise and expansion of the linen and cotton industries of the North of Ireland, very little exists on the history of the printed textile industry of the area although its success over a very short period helped to create prosperity around Belfast. The only research that I have found was undertaken by Ada Longfield dating from proceedings of the Natural History and Philosophical Society 1950/51 – 1954/55 Volume 4, much of which has been collated and documented from advertisements placed in the press of the period.

Inspired by research undertaken for the collaborative project 'Re-inventing Linen' within the Fabric Forward strand of Interface into the growth of a printed textile industries that took place around Belfast in the late Eighteenth Century, I decided to apply some of the traditional methods of period to create a contemporary 'Blue Printed Chintz'.

These fabrics were being produced in Europe, England and Ireland during the later half of the eighteenth century created using resist techniques as direct printing of fast colours onto cotton and linen was almost impossible due to the nature of the natural dye stuffs that were the only colorants available at the time. As a result of the popularity of the 'Exotic Chintz's being imported from India European Craftsmen had evolved their own methods for the virtual mass production of coloured patterns onto linens and cottons. If their output did not equal the beauty and individuality achieved by the laborious Eastern Process, at least it was relatively cheap and consequently could command a large and growing market. [www.grimshaworigin.org] [Longfield, 1955, pp53-68]

The earliest item found concerning the textile printing industry in the north of Ireland is the following advertisement in the *Belfast News-Letter* for March 6th, 1759:-

*"These are to give notice, that James Peters of Coleraine, Printer and Dyer, is now begun to print field colours, such as purples and white, reds and white, and black and white, on cotton and linen for women's gowns; and has lately brought from Dublin some patterns of the best and newest kinds, both of the Drumcondra and other kinds; likewise for handkerchiefs, red and white, claret colour and white, and blue and white. Likewise on fustians, golden olive, green olive, and good black; likewise on woollen goods, scarlet in grain, cherry colour ditto, pink ditto, purple in grain, golden olive, claret colour, snuff colour, London browns, black, blue, green, French yellow and common ditto. All these he does to as good perfection as any in this Kingdom, and a great variety of other things, too tedious here to mention; and will, if demanded, find security for any of the above performances. Dealers or those who have large parcels to do, may meet with proper encouragement. He will give all reasonable encouragement to any who are pleased to favour him with their commands. Dated at Coleraine, this 1st of March, 1759. N.B. As the proper season for laying down field colours is now come, persons who intend having any cotton or linen printed this season would do well to send them as soon as convenient. And as my work is spread through the counties of Antrim and Derry, I appeal to its proprietors for a character"*

The significant features of this advertisement are that the patterns from Dublin may have included wood-blocks (the "other kinds") as well as the newer metal plate types which were a special feature of the Drumcondra factory. Indeed in 1752 the proprietors there claimed to be the *inventors* of the idea, and though this has not been absolutely authenticated, Drumcondra was undoubtedly amongst the *earliest* centres in Europe to use metal plates. Furthermore, later evidence shows that the proprietors - Theophilus Thompson and Francis Nixon - were induced to take their methods "to another Kingdom" (i.e. England), and as they were in the process of selling up in 1757, it would have been easy for Peters to acquire some of their stock. [www.grimshaworigin.org] [Longfield, 1955, pp53-68]

The great advantage of metal plates - as compared with wood-blocks - was that designs could be larger, and the reproduction of lines and details sharper and finer, and this helped more ambitious kinds of patterns suitable for furnishing purposes. But at first it was possible to print *in only one colour* from them, and polychrome effects had still to be done by a series of wood-blocks or by hand painting or "pencilling". Hence the choice of single colours and whites that Peters gives; hence, too, his anxiety to get his orders in soon as May to September was the "proper season" for carrying out the many processes that were essential in those days before the rapid bleaching qualities of chlorine<sup>8</sup>, and the use of other chemicals had been discovered.

#### History

**Paste resists developed throughout the world as effective method of patterning cloth but their existence was little known in Europe. In 1680, a delegation from Siam visiting the French court of Louis XIV had a great influence upon European fashion at the time. Among the gifts brought from Siam were some magnificent indigo printed fabrics, the influence of which resulted in 'blue prints' becoming immediately popular.**

**Legislation was brought in rapidly, to protect the European cotton trade from indigo patterned Indian calicos but within a few years the production of blue resists was introduced commercially into Europe. [Piroch, 1998, pp68]**

**Popularity of these fabrics was so great that in 1717, the French prohibited the importation of such cloths with the penalty of the galleys, which in 1726 was changed to pain of death. As a result of this ban, some printers of France started to experiment with other ways of patterning cloth using metal**

engravings, this in turn brought about a great revival in direct printing techniques.[Robinson, 19, pp76]

The first of these resist printed prints were block printed in Holland onto imported Indian cotton but the procedures quickly spread to parts of Germany, where they evolved into a specialist technique known as *Blaudruck*. A recipe dating from 1780 describes a resist using pipe clay and turpentine as the main ingredients. This was printed with pear-wood blocks onto linen; the print was then sprinkled with fine sand before it was dyed in Woad [Storey, 1974, pp123]. Originally the majority of patterns produced were of a religious nature but these motifs were superseded by stripes and all over patterns of plants. The warm Woad baths employed to dye these fabrics were eventually replaced with imported indigo dye. Although many of the techniques used were controlled by various guilds, the processes and methods soon spread to Berlin, Cologne, Hamburg, Saxony, Prussia and many other centres, but by the 19th century resist printing had declined and was only produced in a few rural areas, where it became established as a folk craft.

Over the later half of the Twentieth Century and this century, the majority of resist processes have been discontinued since they were considered too complex and time-consuming to be of commercial interest, but they do illustrate the wide scope of the style, with the proviso that they have little application to synthetic fabrics.

#### Techniques

The 'reserve' or 'resist' style is the most recognised form of resist dyeing technique.

The aim of which is to produce a pattern on a coloured ground by applying to the un-dyed cloth some substance that will prevent the fixation of the colouring matter, which is afterwards dyed, padded or overprinted. [Storey, 1974, pp123]

This process can be sub-divided into mechanical and chemical resist processes; I will only be dealing with mechanical resist patterning within the context of this paper although the printing of different mordant's (chemicals) created the polychrome chintzes that were popular during the mid eighteenth century.

A mechanical resist relies upon the formation of a physical mask to stop the penetration of dye to the fabric beneath. The mask is normally removed after dyeing, returning the patterned cloth to its original pliable state, the best known being the process of wax batik.

Often a starch, gum or even mud paste has been applied to cloth to create a physical barrier. The application of such materials instead of wax has flourished throughout the world but it reached its aesthetic height as a patterning technique in Japan.

This technique is thought to have originated in China and until recently was still employed by the peasant population there. [Robinson, 1969, pp74]

The resists used were made from a mixture of soya-bean cheese and lime, which they stenciled onto the cloth through lacquered stencil papers.

These techniques are thought to have been adopted by the Japanese around the 12th century BC.

Paste resists are applied in four main ways, the first and simplest is by trailing the substance by hand onto the surface of the cloth from a stick, feather or

tube. This simple technique is employed by the Yoruba tribes of Nigeria, the Japanese and the Javanese.

The second makes use of stencils where the paste is forced through the spaces of a stencil onto the surface of the fabric to create a pattern. This has been the main technique practised in areas of China, Java, Nigeria and Japan, where it flourished reaching its aesthetic height. Using a combination of glutinous rice and its bran, mixed with a little lime, they boiled and kneaded this mixture until it was pliable enough to use as a resist. The Japanese perfected the techniques of stencil cutting and finely patterned cloths were produced using this paste as a resist, the process became known as *kata-zome*. [Sandburg, 1989, pp74] An alternative technique known as *Yuzen* employs a similar paste which is then applied directly onto the surface of the cloth with a sliver of wood or trailed from a paper tube. Once dry, the fabric was dyed in indigo or occasionally painted or sprayed in areas with different colours.

The third alternative patterning method is employed by the Soninke tribes of Senegal. This involves totally covering the fabric with a rice paste, the surface of which is then furrowed with a small comb in patterns of straight lines or zig-zags and, rarely, circular and other pattern units.

A fourth makes use of wood blocks, the paste being printed onto the surface of the fabric. This is carried out in northern areas of India by employing mud and in Europe with starches and clays. [Larson, 1976, pp82][Robinson, 1969, pp73]

In India and Pakistan, mud and starch resists are applied via a block printing process. Carved wooden blocks made from the wood of indigenous trees such as *Acacia farnesiana*, *Acacia arabica wildd* and *Dalbergia sissoo* are used to apply areas of the resist to the surface of the cloth. [Bilgrami, 1990, pp84] [Mohanty, 1987, pp181] In the regions of Rajasthan, Gujarat and the Sindh valley of Pakistan, the resist is known as *Dabu*, it is made from *kali mitti* (black clay), *bidhan* (spoilt) wheat flour and *Dhaaori gondh*, a gum extracted from the stem of *woodfordia fuiticosa kurz*, this is thoroughly mixed by trampling underfoot for about two hours. The paste is finally strained through a cloth to remove undissolved grit. The recipe alters slightly between India and Pakistan where they may also employ fullers earth, alum, fennel, sugar and rice flour in the paste. As soon as this paste has been printed it is covered with a fine layer of powdered camel dung or rice husk, this helps dry the cloth before dyeing with indigo or madder.

Starch and clay pastes were also employed in Europe during the eighteenth century. These were block printed onto cotton, the technique became known as 'blue printing'. Initially Kaolin (china clay) with turpentine was employed for the paste, printed onto linen with wooden blocks made from pear-wood. The sticky impressions were later sprinkled with sand before drying. These printed resists were then dyed in fermented dye baths of Woad, but with the importation of indigo into Europe cold indigo vats superseded the warm vats of Woad. These clay based resist pastes slowly developed into chemical resists as various metal salts were added that improved the protective properties of the paste. Few paste resists are employed commercially today, but many artists and crafts people employ mixtures of starches, clays, gutta and gums to create interesting effects.

The pastes are not very waterproof with the result that the majority of fabrics patterned with pastes tended to be dyed with indigo, creating a white design on

a blue background but occasionally a cold solution of madder has been employed and multi coloured cloths can be created by using the Yuzen<sup>20</sup> patterning technique developed in Japan.

### **Contemporary Design Research**

By looking at possible resists that could have been employed in Ireland I decided to experiment with a modern wax emulsion, potato starch and an alginate (seaweed based) gum. These were block printed onto a linen base employing old India woodblocks but it was difficult to obtain the required definition to the glutinous nature of the potato resist. So an alternative form of application was derived taking inspiration from the Japanese and Yorba tribe of Nigeria. Contemporary stencils were created from a composite that had been created from linen fabric layers that had been laminated together with resin into a fine strong sheet that could be laser cut to the desired design. The potato starch then applied to the fabric with a stiff brush through the cut areas of the linen composite. The fabric was allowed to dry over night then dyed in an Indigo Vat to create a modern version of the 'Blue Prints' of the Eighteenth Century.

The original Indian blocks were employed using the Alginate gum and a modern alternative of a wax resist emulsion that had been developed for the ceramics Industry. These could be applied to the surface of the linen via the blocks and a saturated pad system.

### **Results**

The resulting fabric which was printed with the wax resist and stencilled with the potato starch proved to be very successful, but the prints obtained using the Alginate gum were not as successful as the indigo tended to penetrate through the resist.

### **Future Exploration**

Further experimentation is proposed through the creation of Contemporary blocks, plates and stencils created through laser cutting and engraving ply woods and alternative materials such as Perspex which can be employed with alternative resists pastes that may contain chemical additions to create a better resists and the application of alternative natural dye colours such as madder.

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<sup>20</sup> The term *Yuzen* is used to describe a patterning technique that originated in the colourful Genroku period (1688-1704). It is taken from the designer Yuzensai Miyazaki who produced multi coloured patterns on silk by drawing with a small stick dipped in rice paste. The fine lines produced served as boundaries between different colours of water resistant dyes.

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# CONTEMPORARY YUZEN DYEING: A CASE STUDY

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## Abstract

Yuzen dyeing is a Japanese textile process. The technique is still practised in Japan particularly at the high end of the kimono market where kimonos are commissioned by individuals as works of art.

This paper describes a case study with a practising yuzen dyer based in Tokyo by the author based at Manchester Metropolitan University (MMU). Results were disseminated to undergraduates and colleagues via video and slide presentations.

## Introduction

I was invited to Japan in September 2003 by my colleague, in Tokyo, Sheila Cliffe. This was one of the outcomes of a collaborative event she and I organised, during the Japan 2001 celebrations whereby an exhibition of kimono was held at MMU. During the visit I was introduced to Nasu Sachio, a yuzen dyer working in Tokyo. I learnt later that the key factor here was that I was introduced by a trusted colleague. In many situations in Japan a person from 'outside' cannot simply introduce themselves, they must have a go-between. This was my first lesson in learning the ways of Japanese social/business interaction. A reflection of an ancient culture, not forgotten, and one which places a heavy responsibility on the go-between.

## Project Development

I made several visits to Japan but the first visit to collaborate with Nasu san was in July 2004. At this stage we had both developed a view that we could work together, and attempt to communicate despite language barriers. Aims developed gradually. It was clear that Nasu san's aim was to share his craft with students abroad, and mine was to study more closely the yuzen technique. Several aims were developed as follows:

- To study and record processes used in the yuzen technique.
- To examine the value of tracing within yuzen teaching.
- To consider the changing world of kimono decoration.
- To communicate the yuzen technique to undergraduates studying textiles at MMU.

## Method

A number of research methods were considered but ultimately electronic methods were chosen in the main because of their immediacy and ability to communicate via images (mostly) and allow analysis visually.

These included:

- Low resolution video.
- Photography.
- Sketches and drawings by traditional means and computer.
- Verbal communication via a translator.

## A basic definition of yuzen dyeing

Yuzen dyeing carries on a tradition founded approximately three hundred years ago. The term yuzen is thought to have been abbreviated from the name of Yuzensai Miyazaki<sup>21</sup>.

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<sup>21</sup> Literature suggests that Yuzensai, working in Kyoto, was a fan painter of great skill who turned his hand to kimono painting during the late 17 century.



Literature suggests that the technique began as paint or ink applied to textiles and gradually developed into a resist technique using rice paste and dyes. Usually the paste is applied free-hand but may include stencil<sup>22</sup> work. The process of painting and resisting can be repeated over and over. In all cases this means that considerable planning is necessary to calculate the order of outlining, laying paste and colouring. The artist has to have an overall vision of how the ordered layering of resist paste and colours will complete the design.

The quality of line and its unhesitating confidence was often referred to by Nasu san during my research. One other defining characteristic referred to was the use of shading (bokashi) carefully applied using a soft brush. Shading may also be utilised in the final background colour which is also applied with a brush. Authors such as Stinchecum (1984) also mention the free flowing style of the designs as an important characteristic.

### **The tradition of master and apprentice**

The images and symbols used to decorate cloth in Japan are handed down from master to pupil. This is a direct result of the way art is taught in Japan. Many Japanese arts and crafts still try to follow the 'old ways' of a long apprenticeship, where the apprentice<sup>23</sup> learns from the teacher<sup>24</sup> who will usually be a master of the art. Often the apprentice lives in his teacher's house which in effect means there is no 'working day' as might be defined in the West and is very much a close relationship involving much 'one to one' teaching and demonstrating. The apprenticeship takes many years of study where the apprentice spends years making tracings of the teacher's drawings and studying Japanese art through books and exhibitions. In the case of yuzen dyeing when the apprentice develops an acceptable level of skill he will be expected to complete work begun by the teacher and may also be permitted to work on his own designs using cloth. In practice, there is no set time limit for attaining sufficient skills; it depends on the level of expertise demonstrated by the apprentice's work as judged by the teacher. The goal is to build on the foundation of skills taught by the master and to eventually surpass one's teacher. Nasu san studied for nine years as an apprentice to Terutero Arai.

### **Nasu san working**

Watching Nasu san work it was clear that the skill lay in the strength of his arm and wrist and years of training and practise. He established a firm foundation before beginning to work i.e he used his left arm and hand as a solid base often placing it firmly on the table. The idea of foundation or 'kihon' is used in many aspects of Japanese learning and training. Nasu san also demonstrated the use of counting or breathing when painting. For example, a traditional image is that of grass and dew. The dew drops are usually grouped in threes and in Nasu san's case he uses different rhythms when painting these. He explained this by using ichi, ni, san, one two three in Japanese. He demonstrated ichi, ni, pause, san. Then ichi, pause, ni, san.

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According to Minnich (1963):

The real secret of Yuzen's fame lay in the fact that he answered the needs of his day: the need for colour after the drabness imposed by the laws of Tenna and the need for a new way to have colour without infringing these laws. How much or how little is known of his life is, after all, immaterial. Even less is known of many much greater than he. Whether he was born in Kaga or in Kyoto makes no real difference, since we do know that to the women of Kyoto he became "king of the dyeing world." He and his art belong forever to the many treasures of that imperial city. P.275

<sup>22</sup> See 'katazome'

<sup>23</sup> termed 'deshi' in Japanese.

<sup>24</sup> 'sensei'.

## Visit to MMU

Nasu san visited MMU during February 2007. Much preparation had taken place before hand. The aim of his visit was to give 'formal' lectures and conduct master classes for students studying textiles at MMU. All staff and alumni were invited to the lectures. Workshops of three days were arranged and repeated over two weeks. Undergraduates who volunteered to participate were taken through the process of starting with tracing designs, provided by Nasu san, tracings which he had copied from his own teacher, to producing a yuzen coloured silk handkerchief. This process was completed over three days. Student feedback about the classes was very positive, and many students went on to develop styles related to what they had experienced during Nasu san's classes.

## Conclusions

Yuzen dyeing is a technique which embodies many skills and traditions which are part of traditional Japanese culture. Long hours of study, apprenticeship to a master, respect for the level of skill displayed and the adherence to tracing drawings which go back decades are all part of this tradition. The workshops which Nasu san gave were very special opportunities for students studying textile design at MMU and I hope that in the future we might repeat the event.

Graham Worth 2007.

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