EMBEDDING SURFACE IMAGERY: Exploring a hybrid textile design practice – the Desktop Atelier

A project submitted in fulfilment of the requirements for the degree of Master of Design

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Declaration

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the project is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

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Lisa Carroll
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Fig. 1 Carroll, L. A detail of a textile sample experimenting with techniques, materials, colour and scale, created 2018
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The rise of digital textile printing has dramatically shifted the landscape creating a juncture in textile design between digital and analogue processes for printed textiles. Rather than seeing digital textile printing technology as a threat to my acquired skills and materials intelligence I wanted to understand and investigate how can this technology enhance my creativity.

Through textile sampling and the exploration of serious play and immersive material engagement, the research examines the relationship and impact of the synthesis between traditional textile hand making techniques and new technology in the creative process. How can hand and digital textile design processes work together to create enriched textile surfaces?

Hand and digital textile design processes work together through a hybrid textile design mode – the Desktop Atelier. The Desktop Atelier is a method of making that merges all the advantages of new technologies with traditional textile techniques. It is a self-managed micro-industry of creativity, materially engaged and responsive. Working directly with a meshwork of materials, tools, techniques and processes the Desktop Atelier supports nonlinear non-hierarchical ways of working.

The value of this hybrid textile mode is a deeper understanding of the complex relationship between imagery and the material surface. Through this mode, the imagery and material surface are simultaneously created. This results in the image being embedded into the surface rather than printed onto the surface, reflecting the interconnected and symbiotic nature of the imagery and surface material. I refer to this as surface ‘aura’, as a way to articulate and encapsulate the complexity of the surface, it’s dimensional depth and surrounding atmosphere. This creates a surface that is dynamic, has depth and evokes an emotional response.

KEYWORDS: Textile Design, Surface, Imagery
CHAPTER ONE: INTRODUCTION

Traditionally, in textile design, most of the creative process occurs through the physical processes of making. Specifically, in my past practice, the screen printing process required a linear, step by step way of working to transfer a design successfully from concept to screen onto fabric. The skills and materials intelligence of screen printing are learnt through doing. Textile print designers traditionally work within a complex environment of alchemy combining creativity with a methodical understanding of science, mathematics, problem solving and materials to produce a hand printed textile.

The rise of digital textile printing at the turn of the century has dramatically shifted the landscape creating a juncture in textile design between digital and analogue textile processes. At under graduate level my training in textile design was during a time when all creative work was hand generated. This research allows me to investigate the new digital printing tools and traditional textile embellishment techniques through the lens of analogue printing processes. The digital ascent has led to me begin to reflect, question and expand the skills and knowledge of my practice.
On a superficial level, digital textile printing effectively automates the process I was trained in. The technology has released this once specialised hand skill to almost anyone with basic digital design software skills. No longer is knowledge of textiles required to create a textile print. Now a file can be uploaded to an online print bureau. Onscreen a textile base cloth is selected and within a week the printed textiles arrives at your door. This recent democratisation of my screen printing skills has driven me to question my practice, particularly, what happens to the acquired knowledge of materials, tools and techniques developed through the making of a textile screen print? My skills can’t be automated, as this would ignore my materials intelligence developed through the tacit or embodied knowledge instilled in me through my own direct experience with the physicality of making.

When considering the first generation of commercial digital printing, the surface quality appeared to lack an aura, a term used by philosopher Walter Benjamin to ‘describe the emotive element that is lacking in the machine manufactured product’ (Treadaway 2007). The aura of printed imagery is the unseen; it a feeling, it is an atmosphere produced by the layers of complexity to embed imagery into the cloth. The mechanised perfection of the ink distribution to produce a textile digital print is achieved through one action, rather than the layered processes involved in the screen printing process which may be a component in the lack depth that has been associated with textile digital printing. Automating the textile printing process is faster and cheaper, however this seems to be at the expense of image surface quality and the material experience, revealing an opportunity for me to explore during my research. ‘The lack of hands on crafting in physical space is regarded by some as being detrimental to the printed textile outcome. Many have commented on the digitally printed cloth as being flat and lifeless due to both the effect of colour and the lack of physical intervention in the process’ (Treadaway 2004).

This research is my personal response to the changes I’ve witnessed in textile printing over the past twenty years. As an active practitioner based in Melbourne, Australia this experience informs my understanding of the design of printed textiles.
Rather than seeing digital textile printing technology as a threat to my acquired skills and materials intelligence I wanted to understand and investigate how this technology can enhance my skills and creativity. What opportunities does digital textile printing technology creativity open up for my practice?

Through this practice-based research, I aim to explore how imagery connects with the physicality of material on its surface.

- How can hand and digital textile design processes work together to create enriched textile surfaces?

The objective of this research is to investigate methods of digital printing and traditional textile techniques to master the tools, materials and techniques involved in the process of creating rich, haptic textiles. Through my practice, I investigated the activity of designing and sampling by integrating digital printing with textile embellishment techniques.

I’m aware of sustainability and its relationship to materials, hence my aim to develop materials that evoke an aura which build an evocative response. This masters research doesn’t cover a detailed critique of material selection and choice of textiles processes in detail as it broadens the research beyond the focus.

THINKING THROUGH MAKING

Embedding Surface Imagery references practice-based research by using ‘thinking through making’ as a methodology for its framework. I endeavour to gain a deeper understanding of tools and materials through the exploration of serious play, observation and reflection in textile sampling (Downton, P 2003). Through sampling, the research disseminates a direct and responsive engagement with physical materials, and demonstrates the potential of understanding how design decisions are made and altered through the process of making.

To assist my research, I examined the following theories related to (i) material and making knowledge (ii) new materialism and (iii) surface to better understand my own practice, the processes I work with and how they support the formation on my practice.
The action of making is a state of being, the making and thinking are an intuitive relationship with specific tools and materials. As described by Adamson the ‘experience of thinking through making becomes conceptual of the process and carries more importance than the outcome’ (Adamson 2007). This structure of thinking allowed for an affinity with the tools and materials to develop, and this active making revealed an understanding of the physical materials during the creative process. The critical inquiry into the making of my practice could only be achieved through the activity of making to foster my materials intelligence advancement with new materials, tools and techniques.

Readings on New Materialism: ‘Material Agency: Towards a Non-Anthropocentric Approach’ (2008), ‘New Materialism: Interviews & Cartographies’ (2102) and ‘New Materialism’ (2018) assisted the development of what I have termed ‘making thinking,’ by challenging the relationship between the maker and materials/matter. Making thinking refers to how New Materialism explores how humans and matter interrelate, and how things other than humans (in my case, a tool or technology) can be social ‘agents’, which allow the making to happen (Fox, N and Alldred, P 2018). The human negotiates the sum of all the parts of the matters, as described by anthropologist Tim Ingold as meshwork to realise the obstacles and opportunities of the processes. In terms of my practice the obstacles and opportunities of the processes. In terms of my practice the new materialism ethos of all matter being alive assisted my sampling phase by guiding me to question what can a material do, rather than focusing on what a material is, and exploring the potential of what the material could be as an active matter and not as a passive material. It opened an internal dialogue between the maker and the materials to comprehend their capabilities, producing a renewed focus on the ‘alive’ qualities of the matter through material engagement. Material Agency: Towards a Non-Anthropocentric Approach (2008) demonstrated a perspective in which ‘agency and intentionality are distributed, emergent and interactive phenomena which materials, tools and brains each have their roles, locating the contribution as just one element in a complex web spanning bodies, brain and the world’ (Knappett & Malafouris 2008, pg xiv). The brain negotiates the sum of all the parts of the matters to realise the circumstances and obstacles of the research aims.
The material surface was the site of all activity produced throughout the research. To assist in informing my understanding of the surface I investigated how the surface is defined by other design disciplines; architecture, film, ceramics and as an object. This reading assisted in my understanding of how a textile designer addresses the surface differently from other disciplines. The surface and structure of a fabric appear to have a more interconnected relationship and cannot easily be separated. As this research was concerned with the fabric surface before it was made into an object, the surface was determined to have a different relevance as it did not regard the surface as the exterior to an object’s structure. During the process of making on the flat surface of the cloth, I was constantly reminded of my childhood landscape the Mallee, in Northwest Victoria, which developed the next stage of my literature review of surface investigation. The framework for working with the material surface was based on the notion that the ground is ‘the reference surface for all other surfaces’ combined with the idea that the earth’s surface is active (Ingold, T 2013) which allowed me to use my regional landscape, not as inspiration for imagery, but as a surface informant to further develop my understanding of the material surface, which is discussed in chapter two where I explore the Mallee surface through textile samples.

As a textile designer, sampling is my way of thinking, it allows me the space to play with the capabilities of materials, tools and techniques to elicit their latent qualities and discover the unknown possibilities. The knowledge I acquire can only be experienced through the immersive process of doing, and the sampling activity of the research adopted a nonlinear ‘grasshopper’ tendencies. Valentine describes the grasshopper approach as ‘the idea of jumping from one thing to the next and leaving things unanswered and off on tangents that may appear irrelevant. This important aspect is random movement, this movement is a way of evaluating, it keeps the mind active. It doesn't quest for perfection but quests for activity of thoughts and ideas to balance many ideas together’ (Valentine 2013). This nonlinear approach allowed me the freedom to work intuitively and flexibly open minded to change. As defined by Valentine, the structure of using sampling as an approach for experiential knowledge, experimenting and observing in my practice based work assisted in creating systems for creativity. During the sampling phase I employed the model of reflecting in action and reflecting on action (Schön,
D 1983), which supported me to use my implicit knowledge base to formalise my reflective analysis. ‘It is this entire process of reflection-in-action which is central to the “art” by which practitioners sometimes deal well with situations of uncertainty, instability, uniqueness and value conflict’ (Schön 1983). This ‘action research’ as defined by Denscombe is also one that is relevant ‘as it’s a continual reflective approach that is both responsive and reflective’. As Denscombe highlights, ‘action research strategy’s purpose is to solve a particular problem and produce guidelines for effective practice’ (Denscombe 2010). Reflection in action reflects on behaviour as it happens, and this immediacy permits me to quickly record the activity and move on to the next sample test immediately without losing the momentum of serious play. Post making reflection on action allowed me to review, analyse and evaluate the results. The following questioned were used to reflect on the action:

- What processes were used?
- What has been successful? Why?
- What hasn’t worked? Why?
- What issues have occurred? How can they be solved?
- What ideas have been generated by this sample?

The sampling phase of the research was focused on gaining experiential knowledge of digital tools and traditional textile techniques by establishing methods and the discoveries along the way, rather than final outcomes. The studio based practical investigation into my practice explored stages of design: which includes imagery development, colour, scale, and various making processes such as digital printing, embroidery, sequins and beading. Through practical application the research interrogated how I disseminated all these variables to alter the traditional linear design processes of my practice by adopting the grasshopper non-linear flow which allowed the processes and making jump around to allow for intuitive creativity in making (Valentine, L 2013).

In this phase, I incorporated digital tools into the textile printing-making process and explored the integration with traditional textile techniques to gain a materials intelligence of making.
The new technology tools used during the sampling phase for embedding imagery included;
  o inkjet digital printing
  o sublimation printing
  o etching
  o laser cutting
  o vinyl cutting

The traditional textile techniques trialled were;
  o embroidery
  o beading
  o applique
  o sequin embroidery

The chapter Ideas, techniques and tools; demonstrates the vigorous study pursued to create multi-sensory textiles by embedding surface imagery with the knowledge acquired through the sampling phase of the research.

CONTEXT

As a textile designer, my practice has always been concerned with printing imagery onto fabric, and questioning what is visually the best combination of fabric and design principles to bring the textile design to ‘life’. Before commencing this research, my practice would have been traditionally classified as a textile print designer, specifically, designing and screen printing for fashion. This background was a hands-on experience and began before digital advancements in textiles were readily available, so was based in analogue processes of design and printing. This period strengthened my understanding of the alchemy of screen printing and produced a diverse knowledge of materials, design and tools involved in the screen printing process.

Now in the era of digital textile printing, where a design can be printed onto a fabric by the push of a button, the layered skills of a textile print designer could appear to be redundant. I propose it can be an opportunity to expand and exploit creative possibilities through new ways of making. The accessibility and affordability of
desktop fabrication tools allows for the development of a micro-industry of creativity based on the desktop versions of fabrication tools used in conjunction with my analogue desktops. I refer to this as the Desktop Atelier, not only allowing the designer the freedom and creativity to produce their own materials, but to create in situ as the design unfolds in front of the designer.

Through explorative textile sampling the research will question if the acquired knowledge and skills of a textile screen printer can be transferred to other stages of the textile design process. By using new digital technology in combination with traditional textile techniques does the textile screen printing alchemist have a new set of methods to evoke a multi-sensory material experience?

Historically, textiles have a rich background of producing new design movements originating from the invention of new tools (Clarke, S & Braddock, E 2012 and Brandeis, S 2013). In the late 18th century a new textile design style, Toile de Jouy emerged as a consequence of the invention of copperplate printing. By engraving
lines into the copperplate, the textile artist could produce much finer details than had been previously created using woodblocks. The engraved intricate details gave designers the ability to introduce the effect of light and shade into a design. Today, we are also witnessing new textile design styles emerging as a result of digital fabric printing. The first wave of the trends in 2010 saw the use of oversized blooms, magnified photographs, an abundance of colour and mirror repeats used in celebration of freedom from the printing restrictions of rotary printing and screen printing. These trends had a machine-made perfection making the hand of the designer less visible. The benefits had an immense impact not only on print practices but as the history of textile design has demonstrated, it had a major influence on trends. Alexander McQueen’s 2010 Plato’s Atlantis and Mary Katrantzou’s 2011 Spring/Summer collection were at the forefront of the fashion digital print revolution by using enlarged macro details to enormous scale photographic images which were hyper-real, an effect never quite seen before in printed textiles history.

Digital textile prints became a phenomenon. From the catwalks of the aforementioned designers, digital printing quickly became a tool for the masses and exploded into the fast fashion of the high street. The digital print saturation of the market democratised the digital printer. Establishing new avenues with increased accessibility through online printing bureaus. The bureaus democratised the process of printing onto fabric, it allowed hobbyists, do-it-yourself crafters and designers from other disciplines the ability to affordably transfer a design onto the cloth.
The transition led to an abundance of mirror repeats on the catwalk and high street stores. A mirror repeat is when an image is simply flipped out as a mirror of the original image. Its popularity and saturation in the market was twofold: (i) was because prints could easily be enlarged to any size, and (ii) insufficient skills to formulate the intricacies of the hyper real imagery into an endless repeat. From the perspective of a trained textile designer, the mirror repeat is a cover up, there is no skill involved, all you need to do is push a button in Photoshop to flip the design. While digital tools are an incredible asset to the textile designer, democratisation of digital print has also established a devaluing of textile design principles and processes. The motivation for this research was based on a genuine inquisitiveness of digital tools. But there was an apprehension of using the tools in isolation as the imagery appear ‘flat’ in digital textile prints missing the sense of depth and colour intensity produced through screen printing.

We only need to look back in textile’s history to observe design movements established as rebellions against the machine. Arguably, the most famous faction was The Arts and Craft Movement, of the 19th century, who rebuked the mass-produced standards of the Industrial Revolution to revive and highlight the value of making by hand. The pinnacle of the Industrial Revolution’s accomplishments were showcased at the Great Exhibition, an international exhibit of the New World of mechanical ingenuity. After a visit to the Great Exhibition, art historian Nikolaus Pevsner observed that textiles produced from the machine showed an ‘ignorance of that basic need in creating patterns, the integrity of the surface’ (Pevsner, N 1949 pg 38), and called attention to the historical importance textile designers have long held for the integrity of the material surface and imagery.

Although Mary Katrantzou’s name has become synonymous with digital print, being a trained textile and fashion designer, her recent collections demonstrate an evolution from the digital print boom, creating a visual language extending beyond print to include embroidery (collaborating with Maison Lesage and Hand & Lock), beading and further surface innovations. Katrantzou’s response to the digital print saturation involves craftsmanship and surface interrogation. Although the Arts and Craft Movement rebutted the technology of their day, many contemporary designers like
Katrantzou don’t reject technology but rather use it in conjunction with traditional textile techniques and new materials. Echoing Pevsner’s concerns about textile surface appearance in the 19th century, designers are now looking beyond the technical ingenuity of being able to print anything, and to question how else can this technology be used.

Throughout textile history we have witnessed a discourse between the hand and the machine. It is not a new argument what it illustrates is the handling and knowledge of the tools and materials has been an integral part of the textile processes throughout the centuries. Although the tools and materials have advanced, the textiles designer-maker ethos for empathy towards tools and materials has been long held.
Image 6: McKechnie, K (photographer), ‘Sampling collection 1’, development samples exploring the integration of digital printing and the traditional textile techniques of embroidery, sequins and beading, created 2016.
CHAPTER TWO: IDEAS, TECHNIQUES AND TOOLS

THE SAMPLE, SAMPLER & SWATCH

Historically in textile design the sample, sampler or swatch is commonplace language, these terms, are used by designer-makers to manufacturers. It is the behind the scenes testing, no textile goes from concept to lengths of fabric. The name, sample, is commonly used by textile makers as a description for small fabric tests of a concept, it is in this space that a textile designer ideates a concept from their mind to a computer screen or drawing to a textile by testing design decisions; from colour, material, scale, technique and other explorations. The sample offers the designer the space to correct and to innovate. The sampler offers the maker the space to perfect technique through repetition. The swatch, usually refers to an off-cut of a fully produced textile, often a swatch offers an alternative colourway, but it is preserved as a record of design history which becomes a source of inspiration, companies such as Liberty have an expansive swatch archive spanning decades. The origins of the word and the preservation of the swatch go back to the 16th century, over the centuries the textile industry has procured a rich history of social commentary through textile swatches demonstrating the cultural shifts in society through cloth. The sample and the swatch represent the strong historical ties to traditions upheld in textiles.
As the fabric bases of this research are pre-existing, my role as a textile designer involves adding imagery to the fabric. The pre-existing sampling fabric is much like a sheet of paper, it is 3-dimensional; it can be touched, picked up, manipulated to create its new appearance. It is studied in this flat state rather than as a form it produces on the body or as an object. Final outcomes as a product isn’t a concern of the sample phase, the focus is on combining new technology with traditional textile techniques to produce a new creative approach to embedding surface imagery onto the substrate. The study will investigate what is happening during the processes of embedding the imagery onto the fabric surface to ascertain the points in the process that can be exploited to create a visually and sensory rich fabric.

TOOLS

This research focuses on the digital printing aspect of new technology available to textile printers, and excludes the developments of software such as Photoshop and Illustrator from the primary focus as it extends this research into a much larger field. Although digital software has been used as part of the design process throughout the research my main concern is the appearance of the digitally printed image on the fabric surface. Thus software is employed as another creative tool, similar to using drawing, painting and photography to manifest the potential of textile print imagery. This research intends to include laser and vinyl cutting under the collective of digital textile printing technology as I suggest that any digital tool that produces imagery is a printing tool. Both laser and vinyl cutters cut and etch yet unlike inkjet and sublimation digital printers, they do not disperse colour onto the material to produce imagery. Instead they cut, shape and etch the imagery.

For the purpose of this research the digital printing investigated is done at a local level. It does not cover large volume print production, as the printers available at this level require large meterage or sampling, committing to larger volume production. As this research focused on sampling (refer chapter two) it didn’t sit within my parameters to examine off-shore digital printing. The research has been carried out using RMIT university digital printers, my own desktop versions of cutters and heat press and a limited amount of outsourcing to a local print bureau, Next State, to extend my digital
printing experience. I wanted to limit the amount of outsourcing as a main concern of my research was concentrated on exploiting the digital printing tools and investigating stages of the design and making process that could be intervened by the hand to embed the imagery to the surface.

There are three main types of ink jet digital printers used for transferring images onto cloth: acid dye digital printing, pigment digital printing and sublimation digital printing. Initially my research investigated the printing capabilities of pigment digital printing and sublimation digital printing because these printers were available at RMIT. At the initial stage of the research acid dye digital printing was not examined as it would require outsourcing to print and at this point of the research I was wanting to examine how I could exploit the printing process; it was important that I witness the printing process as it occurred, which would not be possible if I had outsourced the digital printing. After some initial sampling trials pigment digital printing was dismissed as the printed pigment sits on the fabric surface, it doesn’t absorb into the fibre of the fabric. The pigment printing became limited in its potential and was only used sparingly at the start of the sampling research. Through sampling and observing the digital tools in-situ I quickly ascertained that sublimation printing would allow for the most intervention for this research.

Sublimation printing is a printing process where the design is printed onto a non-porous paper with disperse dyes. Through the application of heat and pressure the paper is sandwiched to the material substrate. During this stage the heat converts the printed paper design to a gas, which turns back to a solid when transferred onto the substrate. The chemical process of sublimation printing can only achieve maximum colour fastness when the substrate used is a polyester or nylon, which has led to sublimation printing being traditionally used in the fashion industry for sporting uniforms and fast fashion. The basics of sublimation printing are not new, however significant improvements with the introduction of inkjet printing have in recent years permitted a more refined print imagery quality and cost effective approach. Previously the electrostatic method of sublimation printing depended on large volume printing whereas now inkjet printer versions have led to a resurgence of this form of digital printing. This raised the question, what if this digital printing tool made for rapid-
speed printing could be used for its creative capabilities and be applied to textile techniques?

The process of sublimation printing has exposure points where it can be interrupted by the hand to manipulate the image quality and/or character before and during the processes of embedding the imagery onto the cloth. Before the contact between the sublimation paper (the imagery) and the substrate is the opportunity to exploit the contact to create new methods of using the digitally printed image. It is the discovery of these points of intervention that excited me as a textile designer; these are the moments of curiosity and intrigue. Because of my understanding and knowledge of tools and processes I can create opportunities to alter the original commercial purpose of the printer and the printed sublimation paper. With my acquired knowledge, it is exciting to ask, how can I creatively use these points of exploitation?
TECHNIQUES

In contrast to the local scale of the digital tool investigation, in 2017, I travelled to Paris
to study embroidery at Ecole Lesage, the embroidery school attached to Maison
Lesage, a couture embroidery atelier with over 200 years of creating prestigious
embroidery for international high end fashion. As a textile designer, I am keenly aware
of the historical significance of retaining traditional techniques that have existed for
centuries, therefore it was vital to gain the technical skills from the masters to adopt
traditional techniques into my own practice and truly understand how the materials
and tools perform.

Like many craft forms embroidery has many skill levels: I first learned to thread a
needle and embroider at a very early age. The stitches learnt at primary school age
aren’t too dissimilar to the stitches learnt at Lesage but it is how to use these stitches
expertly, in consideration to the tools and the materials to produce technical
perfection, that makes the difference. The study at Lesage was purely technical, you
were given predetermined designs to embroider, and the threads, beads, sequins and
colours were decided for you, eliminating design decisions that create individuality to
ensure the focus was on the stitches. Before studying at Lesage I was self-taught and
didn’t mind breaking the rules, but I was breaking the rules before I knew the rules.
The technical knowledge gained through studying at Lesage gave me a greater
understanding of why and how to use stitches. It allowed me to make design and
material decisions based on an acquired knowledge. Sometimes I subvert the
traditional embroidery stitching techniques but now I am making educated decisions.
One such company disrupting the traditions of embroidery within a contemporary context is French embroidery atelier, Atelier Montex, with the introduction of their offshoot company, Studio MTX (http://davidgiroire.com/en/mtx.php). They embroider using wires instead of delicate thread and often pliers replace needles to embroider and connect hard materials. This produces architectural structural qualities which allow the work to bend, stand and be sculpted. With almost 100 hundred years involved in the fashion industry Atelier Montex readdressed how embroidery and beading techniques have been used as surface embellishment, and have dispersed this acquired knowledge in large scale installations for interior spaces, taking the time-honoured intricacy of embroidery and establishing a new platform that demonstrates the ability for textiles to be used across disciplines. Studio MTX demonstrates the
knowledge acquired through traditional textile techniques like embroidery can be transferrable to a contemporary architectural context, which is not dissimilar to the relocation of my practice and knowledge from traditional processes and techniques of screen printing into the current textile print landscape.

Textile Designer, Tzuri Gueta, creates contemporary lace using complex technological processes. A multi-disciplinary designer working across fashion, art, jewellery, costume and interior installation. His work is enhanced by science and the advanced new materials created by the integration of silicone polymer to textiles to produce unexpected surface qualities. He works with his own invented Lace Silicon© which he injects by hand into polymeric materials; they pass through the fabric, creating a type of painting. Gueta’s ingenuity and meticulous detailing of a new material simultaneously interrupts and responds to the lace surface of his textiles to create an otherworldly appearance which look shiny and hard but are in fact soft and pliable to touch. Using his Lace Silicon© techniques he has designed for many of the world’s leading fashion houses as Chanel, Issey Miyake, Christian Lacroix, Dior and Louis Vuitton.
As a result of the introduction of digital printers and the liberation from previous textile design print restrictions, new design and printing parameters have altered how we communicate within the discipline. In this research, the word ‘imagery’ is used to describe any form of line produced in the design and printing processes. Previously artwork produced for textiles has typically been classified as a motif; a singular figure, or as pattern; which represents a singular or series of motifs repeated over a fabric. Commercially, motif and pattern are still relevant terms, but in the creative explorations of this research the term imagery encapsulates the various layered processes and methods used across the digital and the analogue. I contend that from cutting a material to a designed shape, to embroidering stitches looping through a fabric, to a hand painted flower directly printed onto cloth, these methods all produce imagery.

In this research, I have used the terms digital printing and digital printers to extend to all tools that produce imagery onto a fabric. Printing can be defined as a mechanical process involving the transfer of a design, which allows laser and vinyl cutting to fit into the printing vernacular as tools of printed imagery. Although colour is part of the printing process I have argued that the processes of cutting and etching to produce imagery, are new forms of printing fabrications.

The sampling phase developed my understanding of imagery through the process of making. As discussed, imagery can be produced using various tools to convey an ‘enduring mark’ onto the surface. Through making, I have concluded that imagery is produced on the surface by (i) adding the imagery to the fabric surface or (ii) by reducing the material surface to create the imagery. For example, a digital printed fabric directly transfers the image onto the fabric, literally adding the dyes into the fibre to form the imagery, whilst etching imagery into a material surface reduces the makeup of the material surface. The additive and reductive methods of producing the imagery demonstrates the direct relationship between the image and the surface, as the imagery cannot exist without the fabric surface.
EMBEDDING

The techniques and processes employed to transfer the imagery onto the surface has varied throughout the research, it has been: printed, fused, bonded, cut, etched, stitched and embossed. The term, embedding, permeates the different versions of transference of imagery by: dyes absorbing into the material fibre, melding materials together on the surface, threads looping through the surface to form embroidery stitches to a laser melting the fibre to produce the image. Although there are many terms for embedding an image onto fabric, embedding best imbues the nature of the experience of making and the complexities involved in the processes.

Image 10: McKechnie, K (photographer). 'Sample collection 2' series of swatches exploring techniques embedding surface imagery, work created in 2016
SURFACE

Why is the surface important to textile design? ‘The surface is where the action is’ (Amato, J 2013, pg1), it is not just the site of the physical act of making, it is ‘the intersection where senses and/or materialities meet’ (Coleman R & Oakley-Brown L, 2017, pg 22); it is tactile and is the entry point to the textile.

Print textile designers are often referred to as surface designers. (Steed, J & Stevenson, F 2012 and Brandeis, S 2013) It is a term used to define what a print textile designer does, they apply imagery to a pre-existing material surface.

The word surface has historical undertones as cosmetic and superficial. Clichés litter our vocabulary: to scratch the surface, surface is only skin deep, to look beyond the surface; these adages dismiss the surface as a veneer concealing what lies beneath. Previously this line of thinking has been associated with textile printing as the application of imagery to the surface is a secondary consideration. It provides no obvious physical function, the cloth can operate alone, and the surface image is supplementary. However, the issue of surface and imagery integrity is more complex than just supplementary embellishment, embedding imagery requires a myriad of interchangeable layers between craft, technology, science, materials and processes. These layers produce a new form of alchemy that builds on my previous practice. In terms of printed textiles the surface is the site for embedding imagery and it is the impressions of the captured imagery that create a sensory experience.

To advance my understanding of how I embed imagery to generate an aura by finding the intersection where the senses and materialities meet on the surface, I wanted to investigate the site of the surface. Breaking down the word surface in Old French, sur means above; ‘above-face’ can be interpreted to encompass more than sitting on the material top, above-face includes the atmosphere or space situated over the material surface. The material surface incorporates the visibly unseen, this above-face space encompasses where the imagery’s perceived depth or the aura presides. With this in mind and within the act of making I was constantly drawn back to comparing how I worked the material’s surface to the earth’s surface of my childhood environment of
Northwest Victoria. Much like the ‘pliable plane’ of fabric, the horizon of this situated landscape is incredibly flat.

Unlike the adages mentioned previously, the sample phase explored not what the surface is concealing rather what the surface reveals. The surface becomes the point of engagement where the imagery is embedded. The surface of the material has been worked by heat, print, folds, needle and thread. Imagery can hover on the surface, it can absorb into the surface, it can mould the surface, it can break through the surface, the relationship between imagery and surface can take on many forms. Through print, embroidery and embellishment the surface has become the site that reveals the imagery, it doesn’t take on the notion of ‘look beyond the surface’ rather the surface is the meeting of the textile methods.
Image 11: Top left: Carroll, L. ‘Lake Tyrell in the afternoon’ the flat horizon of the salt pan in Northwest Victoria, photographed in the late afternoon, 2016.

Image 12: Bottom left: Carroll, L. ‘Preparing the embroidery frame’, reminds me of the flat landscape of Lake Tyrell, an area close to my childhood home, 2016.
Image 13: Top right: Hughes, J (photographer) ‘Sunset at Lake Tyrell’, the light from the sky reflects onto the salt pan surface, 2016.

Image 14: Bottom right: ‘Naturgemälde work in progress’ demonstrates the development of embedding imagery onto the fabric surface to create an aura reminiscent of the temporal light of dusk at Lake Tyrell, created 201
The following photographic and textile series were produced with the sole intention of using the Mallee landscape as a surface informant. I’m informed by the character of the landscape; surface, light and atmosphere and the changing qualities to a surface rather than a literal representation of that landscape. The sample series developed a connection between the Mallee landscape and its atmosphere as having agency, which assisted my sampling phase by guiding what a material can do and exploring the potential of the material as an active matter. The use of the landscape as a surface informant is based on my personal experience of the growing up and working on the land in the Mallee. I endeavour to translate my relationship with the landscape with textile materials to give ‘life’ to the textile surface to create an elusive quality, the aura. In the publication, ‘Textile Future: fashion, design and technology’ Quinn compares the attributes of a textile to a landscape as ‘the surface constitutes a shifting topology of natural processes and superficial forces’ (Quinn, B 2010).

This series of work is about evoking these landscape qualities through the interdependence of material surface and embedded imagery.
Expansion.
During my childhood the Mallee landscape suffered through droughts, the searing heat evaporating the moisture from the ground. The cracked land holds a strong memory of how superficial forces can alter a surface. It has informed my understanding of how the ground can expand, crack and contract in the harsh conditions of extreme heat. The textile sample investigates that through the similar conditions of extreme heat the material surface can share the similar abilities to expand and contract.
Impression.
The dirt tracks and endless paddocks are left with traces of evidence of what has travelled on the surface of the land previously. The malleable quality of the earth form indentations of proof. Superficial elements leave an indelible impression on the appearance of the surface, moulding the flat surface into altered state.
Growth.
Random matter grows out of the surface, breaking through the surface to augment depth and hover between the above-face. The growth reveals a new surface and conceals the ground surface that it is sprouting from. ‘Embroidery growth’ focused on the sporadic growth of nature, each colour thread was stitched through the surface until the thread run out so the design could only grow as far as the material allowed. The new surface created by the embroidery holds similar qualities to the ‘Landscape growth’ by merging the hovering above-face surface with the act of randomness.
Directional Growth.

The Mallee region is a major supplier of Australia’s wheat growth. The growth of the sown wheat creates a patterned surface with a corrugated appearance which stretches on for endless kilometres. The surface ascends and descends in an ordered pattern. When travelling in the Mallee the endless pattern of the harvest is hypnotic. When the wheat is growing it transforms the landscape into a variegated pattern of order. The pleating imitates the harvest’s patterned growth.
Gleam.
A surface has the ability, to reflect and absorb light. The surface of the salt pans in Northwest Victoria reflects the temporal light from the sky as the sun rises and sets altering the perception of the surface. When I began exploring the capabilities of the sequin material I hadn’t worked with such a reflective material before and looked at the reflective and elusive qualities of the salt pans to inform my design decisions.
From the start of this research sampling was used as my entry point into creative investigation, it provided the space to gain a better understanding of digital tools I hadn’t used before; laser cutter, digital vinyl cutter, sublimation printing and inkjet digital printing. Initially screen printing was explored but was eliminated from the research at a relatively early stage as other traditional textile techniques; embroidery, beading and sequinning produced results which advanced my activity into the study of the surface imagery.

Each day of sampling began with a hypothesis, typically led by a material, this phase of the research appears a daunting task, understanding the potential of the new, is delving into the unknown. A typical hypothesis of the sampling phase was; how does this fabric perform? What can it do? The research is led by the material but I use the tools and techniques to understand the capabilities of the fabric. To comprehend the characteristic of the fabric I experiment with the following leading questions;

- How does it digitally print?
- Does it laser cut well?
- Can it be etched? Can it be bonded? Melted? Fused?
- How does it perform when pleated? Folded? Creased? Manipulated?
- How does the fabric hold embroidery, beading and sequins?
- How does the fabric perform? Does it drape? How does the weave or knit of the fabric perform?

The questions are answered through a series of tests; some answers may be known but through testing other questions emerge, often leading the sampling onto another path. This is the moment where the chaos and control of sampling occurs. I have the control of my leading questions however it is just as important to respond to what is happening in the moment that could not be recognised outside the parameters of the serious play of sampling; the chaos is the unknown, taking the path that wasn’t predetermined. In ‘Textiles: The Art of Mankind’ by Mary Schoeser I was introduced to the term (textile parkour) where Schoeser compares the physical activity of parkour jumping to the practice of making textiles through the concept of using ‘critical-
thinking skills to overcome obstacles’. The introduction of the term encapsulates the feeling and the rush of the unknown of discovery involved in sampling; my mind races and so many variables present themselves, I go into a zone. It is a literal and figurative metaphor as I leap between each tool investigating the sequence and technique at each point. The sampling requires an understanding of the tools and techniques and how to use them within the exploratory space, yet taking leaps of faith on a hunch, informed on previous experience and knowledge. Just as a traceur, one who participates in parkour, moves around the urban landscape, I can quickly change steps of the processes to respond to the material, surmise what is happening to the fabric in the space, and quickly make design decisions in the moment. For me, now, sampling has become a non-linear process. Like parkour the sampling process doesn’t travel a single route; by leaping between tools, materials and techniques I become unconstrained by process and allow myself the freedom to create. It becomes an intuitive process that can only come through making and the experience of making which enables the creative process.

REFLECTING IN AND ON ACTION

During the sampling phase I used experiential learning to assist the framework of my practice, by reflecting in and on action (Schön, D 1983). Methods of practice vary but one consistent factor has been the notebook. All exploration was executed with the notebook by the side of the experimentation taking place. During technical sampling the notebook records all the settings, materials, timings and reflection in action of the results. This method of recording is an immediate response to the activity while it takes place, this immediacy permits me to quickly record the activity and move on to the next sample test immediately without losing the momentum of serious play. At, the conclusion of the play the series produced within that timeframe is analysed in further detail by responding to a structured set of questions which allowed me to reflect on the action of the sampling after it had occurred. The following questioned were used to reflect on the action;

- What processes were used?
- What has been successful? Why?
The reflecting in and on action assisted the textile parkour leaps, jumping between tools and processes of sampling as it allowed me to quickly reflect in action and advance in the field of serious play without losing my balance of thought and spontaneity. Reflecting in action is like hitting the pause button to reflect and analyse the situation without losing my balance in the momentum of building creativity, it is crucial that it occurs in action as there is technical data that cannot be recorded later and must be recorded in the action.

A parkour participant trains to be able to understand their body (tool) and techniques, which is combined to perform in an unknown environment of the urban setting. Which is the same in textile sampling, with my built-up knowledge I’m equipped with the tools and techniques and how I use them changes to work with the substrate. A matte cotton organdie with its tightly woven gauze-like appearance has a completely different textile makeup to a high sheen polyester satin and how I use the tools and techniques to approach each type of substrate requires an understanding of how the cloth may respond to tools and techniques. Even fabrics with the same weave structure require different negotiation, a polyester satin and a silk satin appear to have the same qualities as they are woven in the same manner. Both produce a shiny, lustrous appearance one of side and dull on the other, they drape similarly but by touch I can feel the difference between the fibres and require a different set of tools and techniques to embed the imagery. By changing the landscape of the substrate, the method is altered each time, the results change, one set of rules doesn’t apply as the relationship between the surface and the imagery becomes unique. This understanding demonstrates an empathy towards the methods in the process to successfully connect cloth and image to create embedded surface imagery.

To assist in the merging of the machine and the hand this research endeavoured to study the idea of empathy towards tools and materials. I determined that a deeper knowledge and understanding of tools and materials develops a more meaningful textile, that contains that missing aura. As a textile designer, I don’t always have the
control over the tools or material, often my role is to observe and feel the material to anticipate how it will behave and to discover what might emerge. Over time when I stitch the needle becomes curved to fit the shape formed between my forefinger and thumb, to some this may appear the stage to use a new needle but I see this as the embodiment of the tool it is bending to accommodate the pressures of my fingertips, the needle becomes bespoke to my fingers.

Bauhaus designer, weaver and thinker, Anni Albers (2000), describes creating a textile as a journey of response; enquiring and sensing how a fabric surface can be exploited through textile processes, this research has been led by the curiosity and creativity of possibilities. Ideas begin with the material. When I touch a material, I imagine concepts, the touch informs my curiosity, the touch immediately has me questioning what is possible. Touch becomes the gateway to potentiality. The cloth is not only the site for the image, it is the engagement point; it is where the fabric surface forms with the imagery during the making processes that create the possibilities for a new textile realm.

ANALYSIS

For the 2nd milestone of the research I presented a booklet summarising my sampling research to date, at this stage the exploration of the embedded printed surface was divided into five categories; applied, layered, formed, subtractive and transformative. Here the discussion focuses on the ‘applied’ and ‘formed’ categories as they were the most informative results from this phase of my research. The categories were dismantled after the 2nd milestone as the classifications became too restrictive to the research, the layers of thinking and making in each sample were too simplified. The benefit of the classifications allowed me to identify what activity was happening on the surface of the fabric.

The category ‘Applied’ from the 2nd milestone presented sampling using traditional direct applications of screen printing and digital printing onto the surface. Samples in the applied category used screen printing techniques not available by digital printing such as foil, flock, puff and pearl lustre metallic. Initially the sample was hand screen printed then digitally printed to embed the imagery onto the screen printed and fabric
surface. Typically, the hand printing embellishments are added to the digital print but at this phase I was concerned with how the appearance of the surface can be visually altered by hand printing before the digital print was applied. During this phase, the surface was questioned as the site of activity as textile fabric it has the unique quality of offering two surfaces – the front and the back. It is dual faced. I experimented with the visual appearance of printing on both sides of the surface, often screen printing on one side while the reverse side was digitally printed. The printing occurred on separate surfaces of the fabric, yet visually the imagery merges to produce one image.

My first embroidery sample was also created in the applied category. It involves very crude stitching and was overlaid with a digital print; this moment became the first major turning point in my practice-based research. Even in its crudity, it displayed evocative potential. Each strand of embroidery glistened with the detailed imagery of the digital print. Also the movement of light fragmented off the sample in different directions causing perception of the imagery to alter in the light.

The ‘formed’ classification studied how the flat fabric surface can be cut, moulded and fused to form imagery. The transformation from a flat fabric to a 3-dimensional form challenges the relationship between the surface and the structure of the fabric in textiles, unlike in other design disciplines, the surface and the structure are intertwined. By laser cutting into the cloth but not cutting the lines completely out the cloth, the fabric not only forms a different structural quality, it presents a new surface. At the same time, the series questioned what represents imagery. Traditionally we think of imagery as pictorial using colour and traces of lines to form the imagery, yet laser cutting into the cloth created petals that formed a pattern.

No colour was printed yet the laser cut lines produced the shapes that form the imagery. Photographing the work while reflecting on action I uncovered the transference of the surface imagery into shadows created by light and space, casting a patterned shadow of the fabric imagery. By cutting imagery into the material and forming a new surface the negative space performs like a new lace which causes the imagery shadow.

The samples (images 27-30) demonstrate the progression of my understanding of embedding surface imagery during the timeframe of the sampling phase. Image 30, ‘Reef’ is the final sample produced in the series and has become the core of the response of my review of the sampling phase. Visually it is easy to see the progression of the research but there is also a great amount of unseen experience that took place through the development from the first to last sample. Image 27, ‘Sublimation print sample 1’ established my understanding of the transference and embedding of imagery by using digital technology as a tool. Image 28, ‘Dual printed sample’ identifies very early in the experimental playground of sampling that I began exploring a nonlinear method to textile design processes, by flipping the printing sequence. By digitally printing onto the screen printed imagery I began to discover that by changing up the process sequences there was the opportunity to synthesise the imagery and the surface. However, it wasn’t until I produced image 29, ‘Morning glory beading’ that I understood I could use the same principles from sample two and apply this to embroidery, beading and sequins. ‘Morning glory beading’ used beading and embroidery on top of the digitally printed design in a more traditional method. It displays a disconnect between the embellishment and the print as the processes are clearly separated. Using the process principles employed from ‘Dual printed sample’ onto embroidery and sequins in ‘Reef’ creates a synthesis between (i) the printing and the embellishment, (ii) the imagery and the surface, evoking a sensory materials-experience.

Through my methodology and sampling I quickly realised that it was possible to flip the sequence of printing and embellishment order to develop a different mode of textile design making. Traditionally concepts are created, printed and then embellished. The embellishment being used in the true sense of its definition, as an additive, a ‘flurry’ adding adornment to the printed imagery or fabric surface. Whereas by flipping the sequence of design by adding the print to the embellishment materials of sequins and embroidery, the embellishment becomes more than an additive, it becomes an integral part of the design and encapsulates the multi-sensory in a more evocative manner. The change of the sequence assisted my research in producing an aura to the digital, and identifying that the aura seems to lay in a combination of the materiality. In ‘Reef’, the aura or the evocative response is created through a series of
methods and not just a singular method. Within my research, it is the layers of methods and the use of contrasts that build the sensory feeling into the textile.

Contrasts have become a recurring process in my sampling as I have begun to understand through making that it is the contrasts in materials, finish, layers, colour and texture that create the emotional response as the textile has subtle differences occurring constantly. The textile is active, at each angle the textile is viewed it takes on different light, altering its appearance, it is the layers of contrasts that make the
sensory possible. In this sample, there are many contrasts occurring; the use of contrast of the finishes of matte and shine have become integral to my work as I have discovered it can be used in varying degrees to create effect. By using metallic thread and matte white thread to embroider starburst-like imagery, the print on the embroidery absorbs differently on the matte as opposed to the metallic. The intermingling of the metallic between the matte embroidery emit slivers of radiance, resulting in each starburst having its own qualities of uniqueness. The metallic starbursts visually advance from the cloth, whilst the matte starbursts sit on the fabric surface. Even though the matte and metallic starburst were embroidered by the same method, it is the reflective appearance of the metallic thread that makes the metallic starburst appear to sit higher on the cloth. As previously mentioned it is almost like the metallic starbursts hover above the surface. The sample also has a section of matte French knot embroidery combined with flat shiny sequins, a combination which isn’t quite as successful. The knots stand as gnarled twists of thread above the surface while the shiny discs of sequins sit flat over the surface, and the combination of these particular materials, with these specific techniques, seem almost to be arguing on the cloth. As the matte finish of the thread wants to recede into the surface while the 3-dimensional nature of the knot sits obviously on the surface, it is as described by Albers (2000) the materials are trying to converse with me and in this section I haven’t quite listened to what the materials and technique could do.

The idea of knots receding and advancing from the surface negates its possibilities, it is doing neither successfully. The materials and techniques are at odds with themselves. That alone becomes counterintuitive to my ideas of creating an aura and a sensorial materials-experience. This element of the swatch demonstrates that there are such fine lines in the decision making process between a sample working or not. By simply altering the colour and thread finish of the knots or by using a matte sequin the fusion of the knots and sequins could sit together to evoke a greater impact. These subtle choices are constantly at play while making samples. I deliberately do not ‘undo’ or unpick a sample an error or less successful combination teaches me just as much if not more than a completely successful sample.

The contrast of scale is also employed in this sample. The scale changes are minor but visually alter the impact of the sample. By mixing three different sized beads the
sample appears to grow, like a moss growing from the earth’s surface, these growths don’t increase at an uniformed degree. Again, studying how nature grows from the surface acts as an informant to my design decisions, which in turn has assisted my understanding not just how nature informs the fabric surface, but also how to augment depth and create an evocative tactile response to the material experience. By building the material surface through embedding the image, a richer deeper surface is achieved.

Much like how a fabric exists before it is printed, the print can be seen as a decorative accompaniment, in previous incarnations the print could exist without the embellishment. However, by flipping the sequence the print doesn’t produce the multi-sensory evocation without the embellishment, thus making the interaction between materials and techniques critical to create a multi-sensory materials experience where the print and the embellishment are co-dependent on each other. Whilst the sequins and embroidery do create an adornment, as previously established, the definition of embellishment has altered as it includes the surface imagery (patterning) of the print and the surface imagery of the embroidery or sequin shape. There are two sources of surface imagery occurring on the fabric and this layered combination becoming integral to the sense of the haptic. The layering of surface imagery also brings into play the textural quality of the surface by experimenting with contrasts: glossy and matte, flat and risen, additive and reductive, compact and loose, big and small. It is these contrasts combined with the ‘two-pronged’ layered surface imagery that reveals the evocative nature of the alchemy between design, tools, materials and techniques.

Part of flipping the sequence allowed me to alter the perfection of the digital. Technology is a tool and by nature mechanical, so by integrating hand embroidery with digital processes the embodied experience of the stitches produced created its own personality unique to me. This technique subverts the machine to create an expressive idiosyncratic textile. Embroidery has its own pace and rhythms, tension and stitches which produce its own attributes, not easily replicated, whereas the digital printer duplicates the imagery. By using a dark natural fabric base the digital print is only visually evident on the polyester stitch which eliminates the perfection of the digital and machine.
The sampling methodology steered the research to be open to discoveries along the way by intuitively working with tools, techniques and materials. Although these methods are available widely and aren’t new, it is the empathy of materials and tools, built up knowledge and creative freedom to understand how to combine these methods that makes the textile truly unique and can showcase the textile designer’s expertise across these areas.
The sampling methodology steered the research to be open to discoveries along the path of...
CHAPTER THREE: APPLIED
NATURGEMÄLDE

Through the course of this research I have endeavoured to examine how incorporating digital printing technology can enhance my practice by synthesising the machine with traditional textile techniques. This exploration has cumulated in the work, titled Naturgemälde, exhibited as part of the Slow Fashion Lab, RMIT Gallery, in response to issues across fast fashion. Naturgemälde demonstrated the refinement of my experiential knowledge and practice acquired through the experimental playground of sampling. The pursuit of this work was to fully realise how the interdependence of embedded imagery and the material surface is developed through integrating digital and hand tools, and techniques.

The title of the work, ‘Naturgemälde’, is based on a German word coined by natural scientist, Alexander von Humboldt, to describe the notion of ‘nature is a living whole’, (Wulf, A 2016) it is an untranslatable term loosely translating in English to painting nature. ‘Naturgemälde’ responds to the issues of fast fashion by introducing the concept of the Desktop Atelier and considering the thinking of making less with more value.
Naturgemälde was my first venture to produce a larger piece of work building upon knowledge developed through the sampling phase. Unlike the ‘typical’ textile print design processes Naturgemälde wasn’t a larger representation of a sample, the work was born from the knowledge acquired from a number of samples during the explorative sampling process. By combining samples my aim was to focus on how to create a visual depth and multi-sensory experience on the material surface.

The fabric length for making the work was stretched onto an embroidery frame. While the full width of the fabric is stretched and pinned to the frame, the length is scrolled, which can only be worked on in increments, to keep the fabric taut. Once an increment was completed the fabric was scrolled over the frame so the overall design is concealed to only the increment of the design I was working on. To unscroll and take the whole fabric off the frame to see the progression takes a minimum of an hour. The time to unscroll and scroll the work back on was too counterproductive, so I had to depend on my acquired knowledge built upon in the sampling phase to work instinctively. I had a rough sketch of a template but it only assisted in working out the scale, proportion and design balance before I started the work, as I wanted to respond to the work as it developed. As I was working to a deadline I also had to acknowledge time and not only design decisions in responding to the evolution of the work. This required continual in-situ designing, observing the work as it unfolded in front of me. Although I worked intuitively throughout the making process, there were points where a plan was required. All the white embroidery which was going to be digitally printed had to completed first for technical reasons, and at this stage no other components could be embedded onto the fabric until the print was completed. There was no room to forget a section of embroidery as I had to digitally print the embroidery in one process. The embroidery was stitched in a white polyester fibre onto a natural fibre so the imagery can only reveal itself at full colour capacity on the polyester fibre. This is because the disperse dyes on the sublimation paper cannot perform the same chemical reaction of converting into a gas to a solid on natural fibres. This allows me
the ‘room for error’ so if the design doesn’t align fully with the embroidered polyester thread the ‘overflow’ of image doesn’t transfer onto the natural fibre. This understanding of the potential and knowledge of the tools and materials was discovered in the sampling phase of the research. The next phase of the making occurred away from the surface of the fabric. The sequins are designed, printed and individually crafted. Sequin material has thermoplastic properties allowing it to soften when heated and harden when cooled. If the sequin material is heated for too long or too high a temperature they melt to a liquid and if not heated enough or too low a temperature the design will not transfer onto the sequin material at its truest colour. A focussed series of tests were undertaken in the sampling phase to understand the creative and technical capabilities of the sequin material: it could be embossed; it could create a matte finish; it could produce a varnish-like gloss surface. From the testing, I acquired the knowledge of the material which allowed me to guide the textural quality and visual appearance of the sequin material. The textural qualities of the surface of the sequins offer different qualities in the transience of light, the indentations of the embossed sequins produced a dappled gleam, the matte a dull
glow while the varnish-like gloss generated a high luminosity, and when the sequins with their various textural characteristics are stitched together they produce a sensory haptic quality.

The hypothesis of a fabric’s ‘above face’ surface became a central focus of how I worked into the fabric to create the imagery, like it was growing from its surface. Embroidery was employed using different stitching techniques and tensions to produce varying line effects on the surface. Some stitches tightly rest on the material surface while larger, looser controlled stitches hover between their anchor points, which are stitched through the fabric. By playing with the tension I controlled how the new surface evolved and revealed itself. When the imagery was digital printed onto the embroidery, the lines became lyrical and the aura began to reveal itself. The digital print created a mysterious depth of colour and atmosphere by conversing with the embroidered surface, by rejecting the base cloth surface. Through material, colour, fibre and printing selections I could ascertain where the print would be visible and just as importantly, deliberately creating space where the print could not embed the surface. It was through layers of processes that the immersive materials-experience developed and the above face of the surface was realised.
Fast Fashion unveils a dark side of the fashion industry that lurks behind the wardrobes fuelled by mass consumerism. In response, the Slow Fashion Lab by the RMIT School of Fashion and Textiles explores new fashion practices and experiences to bring about positive change.
Image 38: Carroll, L. ‘Moodboard’ created as inspiration for the State of Wonder work using photographs from museums and travels. The imagery explores the beauty of the repetition of patterns and interconnected whole of nature, created 2018.
In March 2018, I entered the Hand & Lock international embroidery competition. This year’s entrants were required to respond to their brief of ‘Material Alchemy meets Modern Morality’. Like Lesage, Hand & Lock has a long history of traditional textile embroidery with over 250 years of experience working with the Royal family, the military and fashion houses including Dior, Hermes and Louis Vuitton. These relationships with some of the finest embroidery and embellishment masters in the world has allowed me the opportunity to learn traditional analogue techniques in an environment steeped in textile history. It became important to receive feedback on
how I translated these techniques in combination with new technology to create embroidery within a contemporary context. The competition thus provided a forum to test the reception of my work by my community of practice.

The work responded to the brief as follows;
‘State of Wonder’ is inspired by the pattern interconnections of the natural world. The cosmos appears vast in its diversity and complexity, however, there are commonalities of shapes seen throughout; from the spot on a leopard or a butterfly’s wing to the blade shape of a bird’s feather or a leaf, the patterns of nature are consistently replicated. State of Wonder explores the beauty and artistry behind nature’s awe inspiring patterns; blurring the lines of the repeated forms seen in flora, fauna and ocean beds to create the ‘otherworldly’ that morphs these replications into a new form of nature by combining the use of embroidery, embossing, digital printing and cutting technologies.

The mood board produced for the award became the genesis for the work. Using original photography from travels and museums, the images were the shapes and patterns from nature that I wanted to replicate through material. Instead of sketching out a plan or template of the design concept I worked immediately into the fabric to form the dimensionality and textural surface that couldn’t be realised through drawing. The photographic images worked as the sketches, they were the preliminary ideations of the project and the direct inspiration for the making.

This work best reflects the materials experience and expertise I gained through the serious play of making in the sampling phase of the research. ‘State of Wonder’ could not have been produced by anyone else, it is a result of my embodied knowledge and materials intelligence developed through the research. It has a phenomenal level of intervention of the hand combined with digital technology. My DNA is imprinted on each thread that runs through the surface of the material. Hundreds of sequins were designed, printed, cut, embossed and sorted to construct a bespoke collection. In its natural state sequin material has a smooth flat finish as discovered during the sampling phase this material has a series of unique capabilities. Through heat I can alter the shine from brilliance to matte and I can alter its original appearance by embossing texture into the material, leaving indentations that light reads at different
levels. I can also print colour and imagery to alter its visual appearance. The work took hundreds of hours to produce as each stitch, sequin and bead is individually designed and selected in response to the work as it unfolds and reveals itself on the site of the surface. Along with the award brief I endeavoured to produce a piece of work that combined contributing factors of my research. This work combined new technology with traditional textile techniques to create a new hybrid alchemy, and to synthesise the material surface with imagery, to realise a texturally enriched sensory textile.

During my sampling research, I had worked in quite a solitary manner and felt it was necessary to show my work and ideas to a wider audience. I had been working on material experimentation swatches and wanted to challenge myself to create a form for the body as this was the next step to see how the skills and knowledge developed during this research translated from sampling to form.

Before starting the intended work for the competition, I created a larger sized sample (1 x 0.6mt) where I worked intuitively to produce concepts that I was considering for the competition. The sample used techniques that had been developed during the sampling phase of my research and I experimented further with scale, colour and texture addressing how these elements would drape and sit on the body. I wanted to keep the design process as intuitive as possible on the final piece. I had learnt through the sampling phase that by engaging with the materials in-situ it keeps the mind open to develop the textile as it reveals itself in the moments of creating. If I had worked on a precise 2-dimensional design template and traced this onto the fabric surface the design would have changed during the process of making as the 2-dimensionality wouldn’t reflect the sensory elements that I engage with, such as light reflection and texture, as much as designing ‘live’. To design ‘live’ allows me to make design decisions by responding and engaging immediately with the imagery being created onto the fabric surface, which aligns itself with my research methodology.

On reflection, this was the first time I produced a textile for the body since the shift in my practice. The biggest obstacle was working on the flat horizon of the embroidery frame to execute the techniques, as during the process of making I was not able to drape onto the body to critique how the piece was evolving. The base surface was worked upon by attaching hard (sequins and beads) and soft materials (cotton
organdie and silk) and I had to rely on my experience through previous sampling and my knowledge in how the materials perform to execute how this mix of hard and soft materials would sit on the body. This experience taught me how to translate my sample concepts into a completed object and resolving how to finish the garment, which hadn’t been a concern in sampling.

The finished results of the State of Wonder work reflected the change to my practice. The synthesis of digital technology and traditional textile techniques are employed in layered processes of transformation to alter the material’s original state to create a new sense of alchemy. As opposed to the screen printing alchemy elements mentioned in the introduction of this research, this new alchemy reveals itself through the site of the surface.
CHAPTER FOUR: DISCUSSION AND CONCLUSION

Through this practice-based research, I aimed to investigate how imagery connects with the physicality of material on its surface. I explored the question: How can hand and digital textile design processes work together to create enriched textile surfaces?

I have incorporated a variety of digital tools to augment my practice of textile hand printing-making process. This involved the development of an extensive knowledge of digital tools, achieved by combining new technology with traditional textile techniques to create a hybrid textile mode. Through this hybrid textile mode, I have been opened to a new form of creativity by using a nonlinear approach to processes and techniques. The nonlinear flow has repositioned my practice to work outside the hierarchical textile design print processes and to meld processes together. Central to my practice now, is a meshwork of the tools, techniques and materials that co-support each other. This allows me to transfer quickly between the hand and the digital.

Within the research, I have differentiated between the analogue and the digital as originally, I saw these as two very different models of making. However, over the
course of sampling, the layers of synthesis between the hand and digital blurred when a sample successfully evoked a sensory experience when embedding surface imagery. The hand and digital textile design processes support each other as the work couldn’t exist without both. It would not be possible to create the imagery without the digital tools and it would be impossible to evoke the emotional and sensorial qualities produced by the hand. Currently, a machine couldn’t mimic the qualities of my embodied making experience whilst the hand couldn’t embed the surface imagery of the materials how the digital technology can. The digital technology can remove the designer from the fabric and materials, but I have formed a more empathetic exchange with the tools, techniques and the materials. As digital printers are a machine, they can be exploited by the maker to their determination, yet materials have their own distinctive characteristics which means the maker needs to reply to the materiality, not the other way around. Producing textiles requires a broad knowledge of complex systems of dyes, tools, materials, techniques to evoke an emotional response; the alchemy is created by the synthesis of these systems.

It is the physical and multi-sensory qualities of the surface imagery produced that is exciting. Through the integration of analogue and digital I have developed a series of processes to create my textiles. This evocation has been created through visible contrasts: hand/digital, matt/lustre, soft/hard, sheer/opaque, dull/reflective and the unseen tensions; the balance of chaos/control in discovering the abilities of a material; the tension between the convergence of new technology/old techniques; and the tension between embedding the concept of the imagery with the physicality of the fabric. It is the points of contrasts and tensions that excite. This tension I describe, should not be understood as being in competition with each or a rivalry. Rather than ‘either/or’, I see infinite creative possibilities of ‘and/and’.

In the Introduction I posed the question; what opportunities does digital textile printing technology creativity open up for my practice? Through my Master’s research I have developed the notion of the Desktop Atelier, a method of making that merges all the advantages of new technologies with traditional textile techniques. The term is derived from how I work; from the affordability and accessibility of desktop versions of manufacturing tools; digital printers, die cutters and laser cutters to the traditional textile design perspective where I draw and paint at a desk top and embroider on a
desk top frame. The analogue desk top and the digital desktop is a thread that runs through all my work.

The Desktop Atelier introduces the scope for materials creation and a mode of making for the 21st century. It is a self-managed micro-industry of creativity. It is materially local and globally connected. This way of working requires me to be materially engaged and responsive, to work directly with the materials, tools, techniques and processes of my practice.

The value of my hybrid textile mode – the Desktop Atelier – is that it has led me to a deeper understanding of the complex relationship between imagery and the material surface. As a textile print designer, my practice has always been concerned with printing imagery onto fabric. However, I have come to realise the Desktop Atelier approach opens up a freedom I did not have before. Prior to my Masters I created imagery first and then translated the imagery onto an existing surface material (a textile substrate). Now I create the surface and imagery simultaneously. I don’t print imagery onto a surface. Instead the surface imagery evolves through the processes of realising the material surface. The resultant image is embedded into the surface, reflecting the interconnected and symbiotic nature of the imagery and surface material. Consequently, I seek to create textile designs that are dynamic, have depth and evoke an emotional response. I refer to this as surface ‘aura’ as a way to articulate and encapsulate the complexity of the surface, it’s dimensional depth and surrounding atmosphere.

My final piece ‘State of Wonder’ suggests where my practice might lead me next. My research has opened up many questions and potential future directions. As my understanding of embedding surface imagery evolves, I have become more interested in the 3d form building possibilities of my practice. I also see the potential for technology to extend my practice, such as the use of 3d printing and robotics to develop a hybrid form of embroidery, beading and sequins. For example, the potential to work in cross-disciplinary team to creativity explore what a robotic arm could do to create 3d embroidered surface forms.
I am also increasingly aware of the material choices that I make. While this research has not focused on sustainability, I see the potential that the Desktop Atelier offers to expand my concept of material alchemy. I intuitively work across design, art, technology and science to bring my material surfaces alive. Taking my practice into the field of bio-design, I can see the potential for extend my practice to develop and work with bio-materials and bio-plastics. To create surfaces that might be co-designed with the materials themselves and that can grow and change in response to their surroundings, as well as to create materials as part of a truly circular system of design.
NOTES:

1 In Treadaway’s paper ‘Digital Crafting and crafting the Digital’ I was introduced to the ‘aura’ as a descriptive term used to explain the missing essence produced by a mechanical and now digital production. Treadaway credits Walter Benjamin (1973), ‘The Work of Art in the Age of Mechanical Reproduction’. Benjamin discusses the missing aura in photographic reproductions of art. The term captures the same missing essence I feel in the production of digital textile printing.

2 Glenn Adamson discusses on the History of Philosophy podcast episode, ‘Glenn Adamson on Material Intelligence’, this notion of the loss of material intelligence in society because of a reliance on technology. He advocates that the understanding of how things are made creates a ‘societal connection tissue’ which binds us. The idea of material intelligence builds within ourselves an adaptability and a capability to understand through the knowledge acquired through making.

3 The notion of ‘meshwork’ is taken from Tim Ingold, Chapter 11, ‘When ANT meets SPIDER: Social theory for arthropods’ in Material Agency: Towards a Non-Anthropocentric Approach. Ingold imagines a conversation between the New Materialism acronym, of an ANT (Actor-Network Theory) and his developed acronym of the SPIDER (Skilled Practice Involves Developmentally Embodied Responsiveness). The SPIDER proclaims ‘... is that action is not so much the result of an agency that is distributed around the network, but emerges from the interplay of forces that are conducted along the lines of the meshwork’. (Ingold, T 2008, pg 212)

4 Tim Ingold discusses the theories of visual perception by ecologist psychologist James J Gibson in his paper, ‘Surface Textures: The Ground and the Page’ (2018). Gibson theorises that the earth’s surface is made up of three components: surface, medium and substances, he concludes the idea that all objects carry these components but it is the ground that all objects rest upon, making it ‘the reference surface for all other surfaces’.

5 Ingold discusses the enduring mark in reference to traces of lines in his paper, ‘Transformations of the Line: Traces, Threads and Surface’. He classifies lines into two categories: traces and threads, within traces he suggests that there are two types of traces: additive and reductive. This idea solidified my thinking as within printing onto the surface I can add to the surface through print, embroidery, sequinning and beading. Like the Mallee landscape used as a surface informant the additive traces reflect the landscape surface growth while the reductive traces reveal superficial forces created by the path of humans and animals breaking down into the surface to leave the impression of a trace. Laser cutting and etching lines break down the surface of the fabric to create reductive traces of line through digital printing tools.

6 In ‘Anni Albers: Selected Writings on Design’ Bauhaus artist, weaver, teacher and writer, Anni Albers writes a chapter, ‘The Pliable Plane: textiles of Architecture’ where she compares the processes of textiles and architecture. The title of the chapter interested me in relation to my study of the Mallee and the textile surface as the term pliable plane connects the fabric to the landscape.

7 From the thousands of entries for the Hand & Lock competition my work, ‘State of Wonder’, was shortlisted as a finalist for the Textile Hand Embroidery category. As part of being a finalist I received an embroidery mentor, who became a support and advisor while I completed the work. I attended the ceremony in London and was awarded ‘runner up’ in the Hand Embroidery category.
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LIST OF IMAGES:
1. Carroll, L. A detail of a textile sample experimenting with techniques, materials, colour and scale, created 2018
7. Carroll, L. ‘Technique overview’, a collage of techniques, tools and materials used in the sampling process, created 2018


11. Carroll, L. ‘Lake Tyrell in the afternoon’ the flat horizon of the salt pan in Northwest Victoria, photographed in the late afternoon, 2016.


13. Hughes, J (photographer) ‘Sunset at Lake Tyrell’, the light from the sky reflects onto the salt pan surface, 2016.

14. ‘Natugemälde work in progress’ demonstrates the development of embedding imagery onto the fabric surface to create an aura reminiscent of the temporal light of dusk at Lake Tyrell, 2017.


29. Carroll, L. ‘Sublimation print sample 1’, digital print sample based on hand drawing, developed during the first phase of the research, created 2015.


31. Carroll, L. ‘Morning glory beading’, beading and embroidery embellishment added to digital print sample based on hand drawing after it is printed, created 2016.

32. Carroll, L. ‘Reef’, last sample in the research produced utilising knowledge and skills acquired to establish a new hybrid textile mode, created 2018.


38. Carroll, L. ‘Moodboard’ created as inspiration for the State of Wonder work using photographs from museums and travels. The imagery explores the beauty of the repetition of patterns and interconnected whole of nature, created 2018.
