Bound By Binary:

Experimental textile practice that challenges current binary gender fashion norms.

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ABSTRACT.

Binary gender as a design model in the fashion industry, places limitations on gender expression. Gender is not as simple as the binary system that Western society endorses. Gender and gender expression need room for movement, change and diversity. Since gender is fluid and because a bi-model view of gender restricts this, it can have detrimental side effects on a person's mental health. This research project undertakes an exploration of textile making processes to develop an alternative and imaginative approach to textile design for fashion garments, where the outcomes offer new possibilities for gender fluidity. Even though fashion is a tool for self-expression, current traditional fashion and fashion retail processes tend to enhance and re-enforce binary gender values in society. Shapeshifting textiles offer a potential to drive change. This practice-based research approach results in a textile collection and fashion garment that isn't confined by binary gender limitations. It starts a conversation where people's relationship with gender in New Zealand, and society, in general, can change.

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“Fashion is transformation. It is a promise of becoming, a vessel of shapeshifting, a craft with which we can navigate across the currents of the social. Fashion is a medium of transgression from this world into the Other; from the world of flesh to the world of imagination and desire. We use fashion to become ourselves, more or better than before.”

- Otto Von Busch / 2011

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Attestation of authorship.

“ I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which is substanial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.”

LIST OF FIGURES.

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INTRODUCTION.

For many years, Western fashion culture has dominated New Zealand's mainstream view and interactions with fashion and fashion retail. Western fashion culture takes a binary centric approach in designing, categorising and retailing clothing as either male or female, so that the process of gendering clothing and fabrics is normalised by society. This bi-model approach reflects the traditional view of gender and gender expression that society holds. However, a society built on binary gender assumptions marginalises those who exist and identify outside of it and even restricts those who do not identify as male or female. This restrictive view of binary gender perpetuates the social expectations that men must be masculine, and women must be feminine. Gender is personal and individual, built from culture and experiences. Even though society is slowly shifting its perception of gender away from strict binary to a more fluid space, this has not translated into the mainstream fashion industry.

Influences for a change of attitudes around gender identity can be seen in New Zealand, Stats NZ Tatauranga Aotearoa which is currently in the process of re-working and updating the official "Sex and gender Identity statistical standards" (StatsNZ, 2020) to include a gender option outside of 'male/female' for their next census. New Zealand has long held traditional and religious views of gender and gender expression that can engender fear for expression outside of it. Currently society struggles to cater for non-binary gender because of a social need to categorise everything as either male or female.

Fashion and textiles are key tools of communication used to adorn the body for personal expression. However, an exclusive binary view of gender infers that a person's assumed genitalia dictate their options in clothing garments. Exclusively binary gendered clothing, and spaces, create restrictions and limitations for binary expression outside of this.

As a person with a background in textiles, who does not identify with either of the distinct binaries, I bring personal experiences to this research of limitations in the diversity of fashion and textiles. This research is navigated via a practice-based approach to develop a tangible output. Contextualisation of the work is undertaken through literature analysis, both historic and contemporary, of the relationship between fashion and gender expression. Based on the methodologies of action research the work moves forward through a cyclic approach of planning, action, observation, and reflections. The practice engages with a range of textile processes, skills building and creating methods to curate a refined textile collection that challenges gender binary. Whilst the research is presented as an exegesis and a curation of practice through textiles, the thesis is holistic in nature.

This research aims to explore how textiles can be used to challenge people's perspective in New Zealand as it relates to gender expression. The objectives are to create a physical textile collection and garment that embodies this.

Chapter One.

LITERATURE REVIEW:
BINARY NARRATIVE.

Since the beginning of the 21st century, in the Western world, it is evident that gender and societies' relationship to it is slowly being disrupted and breaking away from the social and cultural boundaries that society has previously been bound to (Barry & Reilly, 2020). The Cambridge Dictionary defines gender broadly as "the physical and/or social condition of being male or female" (2020). McLeod (2014) and Barry & Reilly (2020) discuss how gender experience is deeper than this, referring to the cultural and societal differences enforced on men and women from society and culture by their sex. Sex and gender are separate entities and as terms cannot be interchanged (Fontella, Maretti & Sarra, 2014; McLeod, 2014; World Health Organisation, n.d.). West and Zimmerman suggest "sex is a biological categorization, while gender is socially constructed (1987). Barry and Reilly reiterate this stating "sex is assumed to be a fleshy, corporal, biological corporal essence: people learn masculinity and femininity" (2020, p.2). Gender theorist Judith Butler agrees that gender traits are learnt to give the impression of being a man or women with people acting and dressing in the ways they think society deems that reflects that impression. Butler unpacks gender as "Performative" (2011) in a theatrical sense discussing how "We act and walk and speak and talk in ways that consolidate an impression of being a man or being a woman" (2011). Self-expression, particularly choice of clothing and freedom in being yourself is where a person should find their own gender, whatever that may be, and gender can change.

While West and Zimmerman discuss how differentiating gender from biological sex allows for alternate gender identities (1987), binary gender divides a population into two assumed opposite categories based upon a person's biological sex (Lorber, 2007; Michelle and Morgenroth, 2020). In this way, masculinity and femininity are assumed to be opposite ends of a linear gender scale (Fontella et al., 2014). Although the existence of gender outside of the duality of binary is acknowledged by Western society, it is far less well accepted. Heteronormativity alienates people who exist outside of binary gender, people who stray away from the expected gender behaviour and presentation usually experience a negative reaction (Blair, 2018). Western binary gender roles can be traced back to religious values seen particularly through Christianity which tends to actively promote and practice the binary values of gender, "God created humanity, male and female, in his image for one another" (Genesis 1-2). Gender identities, such as Agender, Bigender, Cisgender, Gender Fluid, Gender Queer, Intersex, Gender Variant, Third Gender, Trans-Gender, Two Spirit exist outside of a binary understanding (Abrams, 2019).

Blair (2018) suggests "Many indigenous cultures around the globe held more fluid and dynamic understandings of gender before encountering Western theories of gender". In fact, some cultures identify and celebrate the existence of a third or other gender, such as Fa'afine: Samoa, Fakaleiti: Tonga, and Mahu: Hawaii (Gender Identity, n.d.). These communities have often been overlooked by anthropologists and historians. Western European culture has traditionally "marginalised, stigmatized and prosecuted" people who exist in this way (Herdt, 2020).

Early European colonisation of New Zealand perpetuated strong gender binaries "policy encouraged women to be mothers and homemakers, and men to be workers and fathers. At school girls and boys were taught subjects to prepare them for these roles" (Macdonald, 2011). In New Zealand, it is believed that "Pre-colonial Māori society was thought to have celebrated sexuality and sexual diversity" (Allen. L, n. d.). Elizabeth Kerekere, a Māori feminist and LGBTQI+ activist believes that it was the British colonial attack on Māori culture and language that created a loss of gender fluidity and sex positivity. She suggests gender diversity was accepted in pre-colonial Māori culture. Kerekere states that "gender and sexuality outside of the duality model within place in society today was something we [Māori] had no problems with" (Kerekere, 2019). This research project embraces gender diversity and presents opportunities for gender expression through the design of innovative textiles.

If gender is perceived as fluid it creates a space that allows people to move freely and identify themselves (Bauman, 2003; Rivas, 2015; Parker, 2016; Gosling, 2018). Gender can be understood as a spectrum and as a multidimensional construct occurring across a continuum of possibilities (Fontella et al, 2014). Parker unpacks what a gender spectrum would mean further by stating "a gender spectrum suggests that everyone is part of this development. Even individuals who identify as the historical categories of "man" and "woman," now called "cisgender" individuals, are simply two options from a more diverse selection of possibilities" (2016, p.166). This research challenges gender as binary and aims to promote gender expression as fluid.

Clothing and Identity.

Dress is a personal tool used to self-express and is a "gendered form of non-verbal communication" (Catalpa & Mcguire, 2020, p.49). Dress can be viewed as an art form, a way of presenting personal expression and self-identity. However, cultural and societal expectations of gender put restrictions and limitations on colour, textiles and silhouettes. This is influenced by an association with binary gender roles. Through this creative textile practice, predominately digital knit, this research challenges societal views around colour, shape, and fabric. Physical barriers do not prevent people from wearing any fabric they choose; rather social rules have created boundaries. Reddy-Best (2020) discusses "while our identities are uncertain, dress can act as a glue connecting the social world, our mind, our identities and our bodies" (p.99). Placing limitations on what a person feels and what they can wear, limits their authenticity. To reconstruct and circulate new ideas of gender expression, more designers and retailers need to gain confidence to breaking binary moulds. If people dress in ways that reflect their true self, without fear of backlash, it disrupts hegemonic ideologies and refuses to affirm the duality of gender (Reddy-Best, 2020). This research, in a contempory New Zealand context, embraces and celebrates the non-traditional relationship to gender, thereby engaging with the message that personal gender-expression cannot be limited by outdated linear binary views. This research aims to challenge societies' view of the traditional binary view of gender and its relationship to clothing, to work towards the concept of a shared rather than a gendered wardrobe (Clarke & Rozzi, 2020).

Enwhistle suggests "Fashion is obsessed with gender" (2015, p.329), whether that be embracing, enforcing or defying it. Enwhistle also discusses how clothing allows us to individually shape and shift how we perform gender (2015). Current fashion principles for design and creation for standard high street apparel is based on stereotypes of binary male and female body shapes and sizes. These principles tend to pre-set and determine the areas of the body that a garment will highlight, expose, or accentuate. Traditionally a fashion designer will research predicted trend forecast magazines, men's and women's forecasts separately, for colour, shapes, material and style inspiration. The assumptions and stereotypes of fashion design in a binary centric society dictates clothing as either male or female. Social boundaries restrict the choice of clothing a person wears by their assumed biological orientation. This is perpetuated even further in a shopping experience, both physical or online, where clothing options are segregated into men's or women's departments. For many years Western fashion culture has dominated mainstream New Zealand's view and interactions with fashion and fashion retail. Gendered clothing stores and clothing with pre-conceived notions on who should be wearing them have been normalised by society. Fashion houses and brands are starting to become more aware of the need for a wider range of consumers. Clothing labelled as "Unisex ", "Gender – Neutral" or "Gender-Less" have been around for a while. Gender neutral collections have been shown at New Zealand Fashion Week (Gleason, 2019). However, there are not many who embrace gender as a fluid space. Gender neutral fashion tends to be plain and simple in both shape and colour. Fashion retailer "ASOS" (2021) in-house genderless sub-label "Collusion" (ASOS, 2021) uses silhouettes and styles that already exist in binary gender fashion, simply dressing men and women using only garments that already exist across both gender fashion wardrobes. People expressing outside of binary gender do not necessarily equate to an absence of a gender. Genderfluidity is not the lack of a gender, rather the ability to move around the gender spectrum. So, in addition to feminine and masculine clothing, there is an increasing need for more diverse accessibility and choice. Retailers and designers also influence gender as an image to younger generations, such as by separating by department, which translates to boys and girls clothing. "We want a high street that is responsible in how it designs and markets for our children.

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Figure 1: Billy Porter wearing Christian Siriano Tuxedo-gown.

That means no more treating girls and boys as though they don't have the same needs and interests. Provide a choice of style and themes and make that choice as wide as possible " (Barry & Reilly, 2020, p.9). Current generic high street fashion retail is not designed for personal gender expression but rather more of a binary gender uniform. This research takes a different approach to fashion and textile design by challenging binary design.

It is important to note that gender-fluid fashion, a break away from binary norms, currently exists in society and is often seen in media outlets presented by designers. This means that representation only exists at a high fashion level, in westernised countries. Gender-fluid fashion features on multiple runways from Dior, Jean Paul Gaultier and Vivienne Westwood (Vogue Runway, 2021). Increasingly fashion houses are exploring the chance to break away from traditional gender norms however the price points often restrict accessibility. Although fashion houses recognise the full range of their customers, many of the brands are inadvertently re-enforcing binary gender stereotypes, simply dressing women in traditional men's clothing, or vice versa (figure 1). This still categorises the item based on gender. Some online companies aim to offer gender inclusive options yet still requires selecting either men's or women's clothing. A brand that has been reasonably successful in creating gender inclusive garments is Gucci (Vogue Runway, 2021). Looking to Gucci's fall 2020 Menswear collection (figure 2), the runway is presented with models dressed in traditionally masculine and traditionally feminine silhouettes as well as new shapes and styles contrasting and clashing with the current binary view of gender through dress. Although the fashion depicted does defy the social rules, Gucci still categorises the collection as men's wear rather than simply just a collection. This research into companies that state the company caters outside of binary gender points out that the options appear limited and usually fall into the gender neutral and plain category. Even though "Loverboy", (Loverboy, 2021) a highly favoured gender fluid fashion company, has one place to shop for all garments, they will sometimes label individual items with a gender listed before the item, as can be seen in figure 3. This demonstrates the importance of this research as there is a lack of clothing retail that truly presents fashion outside of a binary approach, particularly in New Zealand.

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Figure 2: Gucci Fall Mens 2020 Collection

Figure 3: ScreenShot of Lover boy website

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There is evidently interest for binary gender to diversify. In December 2020, Vogue released arguably one of the most iconic and gender defying magazine issues by featuring Harry Styles as the first solo male on the cover in its 127-year run. It sold out immediately. As well as the cover, the issue featured pages of Styles adorned in blends of masculine and feminine garments as seen in figures 4, 5 and 6. Styles promotes the idea of stepping away from binary gender fashion saying, "There's clothes for men" and "there's clothes for women", once you remove any barriers, obviously you open up the arena in which you can play" (Styles as cited in Bowles, 2020).

Styles isn't the first to think and endorse this approach around clothing and its attachment to gender. The likes of David Bowie, Prince, Freddie Mercury, Ezra Miller, and Grace Jones have all appeared in clothing that challenges binary gender. While a reality competition television program, 'Rupaul's Dragrace', was once viewed as unconventional it is now deemed mainstream television (Drag race, 2021). Appearing at a prime time of 6pm on a Saturday, Television New Zealand (TVNZ) broadcasts a show which represents varying gender diversity and expression through binary gender defying clothing. Still, there is a disconnect to whatever happens on pages and screens compared to what is available in mainstream clothing. This research aims to develop textiles that bridge this gap and offer new opportunities for fashion to transcend a binary focus.

The focus and role of clothing became about personal self-expression and style during the twentieth and twenty first century. Akdemir suggests "Clothing is used to create and reveal a cultural and social identity" (2020, para 4). Previously dress represented the social status of a person. This included gender as males and females were not considered equal. To reflect a class system through clothing there were rules and regulations in place that determined the attire, including garments, textiles and colours that could be worn. During the nineteenth century

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Figure 4: Harry Styles Vogue Cover

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Figure 5: Harry Styles Vogue Full Page.

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Figure 6: Harry Styles Vogue Spread.

it was men who popularly sported corsets. "The corset held the body in a rigid position enabling men to perform the physicality of Masculinity" (Mcknight, 2020, p.36) and they often cinched their waists and padded their chests and hips to define the ideal silhouette for men at the time. The high heels that were also worn by men were used to demonstrate class and status (Semmelhack, 2020). While Victorian era women would be "ridiculed and charged with being unwomanly" (Wahl, 2020) for wearing a bifurcated skirt, women today have the freedom to wear trousers. Wahl goes onto explain how people were concerned that women wearing trousers would "put a threat to the natural order of things" (2020). There are such strong parallels between then and now where people dressing outside of binary gender expectations is considered illicit or immoral. This research addresses these issues by exploring scale, colour, imagery and placement based on a collection of textiles.

The way in which people dress can have serious implications. Reilly and Barry (2020) discuss multiple cases of harassment that gender non-conforming people face from traditional binary gender believers because of their self-expression with dress and gender. Dress affects how a person is perceived. In a series of interviews with queer, gender diverse young adults Catalpa and McGuire (2020) uncover the constant worry they have of how people will react to their way of dress. Dress, using clothing and fashion outside current norms can also be a form of political engagement (Reddy-Best, 2020). "Sometimes the very act of dressing requires courage and convocation" (Reddy-Best, 2020, p.102). The fact that for some people dressing authentically is deemed political engagement rather than socially accepted reflects how fashion outside of binary assumptions is ill perceived. Presenting yourself in a way not true to yourself and pretend to be something you are not, can have damaging effects on a persons' mental health. In addition, research suggests that gender conformity experienced at a younger age can have a negative impact on a persons' self-esteem (Carver, Yunger, & Perry, 2003). It has also been noted that if people stray away from binary gender roles, they can feel they are not living up to their gender ideals which can affect their self-esteem and result in a greater self-discrepancy (Good, & Sanchez, 2010; Guerrero-Witt & Wood, 2009). This research takes a stand that counters the assumptions of binary gender roles and affirms the idea that people are able to embrace the art of dress to truly express themselves. Gender fluidly underpins this research practice.

Chapter Two.

METHODOLOGY.

The research explores ways in which textile design, in particular knitted textiles, and the creative use of digital knitting machines can be used to develop an alternative and imaginative approach to design textiles for fashion garments. Mainly it offers more options where the outcomes offer new possibilities for gender fluidity and more than gendered options. The research employs an overarching practice-based methodology Candy (2006) refers to that incorporates cycles of research practice and reflection throughout the design and production phase so that it moves the research forward. As a maker, the research approach is through practical inquiry, textile making and designing. Candy (2006) defines the term distinctly as follows:

> Practice-based Research is an original investigation undertaken in order to gain new knowledge partly by means of practice and the outcomes of that practice. In a doctoral thesis, claims of originality and contribution to knowledge may be demonstrated through creative outcomes in the form of designs, music, digital media, performances and exhibitions. Whilst the significance and context of the claims are described in words, a full understanding can only be obtained with direct reference to the outcomes (2006, p.1).

As the textile collection and fashion garment are the basis of the contribution to knowledge, the research is practice-based. A practice-based approach is successful to this research as the problem is addressed

with a physical output. Nimkulrat (2007) understands the term in a way that is similar to Candy's approach but goes further to discuss how those who undertake practical inquiry must take on two roles throughout the research, that of researcher and practitioner. This is since as a maker you must make, and you must also critically evaluate and reflect. The physicality of the making is just as important to the theoretical side of research. This is because there is a constant internal dialogue between the two as the practitioner and researcher hats are continually switching throughout the design process. The practitioner-researcher will continuously carry on analysing the creative artifact as well as the creative process simultaneously (Nimkulrat, 2007).

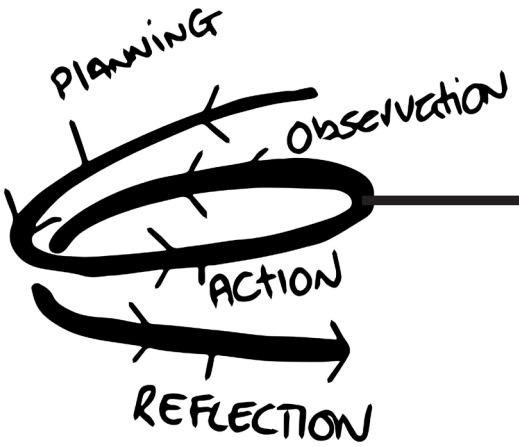
Throughout this practice-based research there was an ongoing conversation I had with myself as practitioner and as researcher. This conversation took place through experimentation and reflection while I was making, creating, and developing the work and throughout the action research and reflection.

In this project, practice-based research is easily distinguishable from that of general design practice (Cross, 1999) in that the goal was to acquire new knowledge (Archer, 1995). Durling and Neidderer describe this interpretation of design practice within research as 'investigative designing' (Durling & Niedderer, 2007, P.16). Frayling (1993) describes design research as encompassing different forms: 'research into design, research through design or research for design'. This research project can be described as research through design, where creative practice was used as an essential part of the research both in conducting the investigation and as a means of expressing the results. The creative practice in this research is understood as an 'interrogative process' while it is also used as a method for reflection on practice (Durling, 2002, P.82). Reflection related to practice was used before, during and after the research. Reflection allowed for thought about what I deemed was successful or unsuccessful and it provided me, as the practitioner, with new understanding and knowledge that I was not aware of previously. Schön defines a reflective practitioner as someone who thinks whilst acting so they can therefore react and respond to any situation that arises within the practice (1987). A maker should be reflecting-in-action, responding to what the artifact is telling them. Being able to change and adapt to the situation whilst in the process of the making was essential to learning and gaining knowledge through the practice. Nigel Cross (1999) suggests people not only hold knowledge of design through principles and processes within themselves the artifacts also hold knowledge to inform the practitioner through form and shape. This is the reason exemplars speak to us because they themselves, as artifacts or experiments, contain knowledge of creation or instruction about how they are to be used (Cross, 1999).

Schön (1987) also discusses reflection-on-action, the process involved with looking back to the practice after the making is carried out. Reflection-on-action allows for post-analysis of the making process, viewing, and reflecting on the work rather than during a particular phase of making.

Creative practice-based research is a form of action research as the practice or methods are emergent throughout the creative process and they do not have predetermined outcomes. Swann (2002) describes "action research" as a practical methodology that usually requires three conditions to be met. The first one involves identifying a problem in a social practice that needs to be addressed. The seond one, that the researcher actively participates in coming up with a solution and can include collaboration in the workings. The third one, that the project moves through a cyclic approach. Ideas and decisions produced using reflection with documentation will inform the research choices moving forward (Swann, 2002). This research draws from all three of Swann's suggested elements of action research. The perceived problem in clothing design, is the lack of diversity in not catering to people outside

7a.



7b.

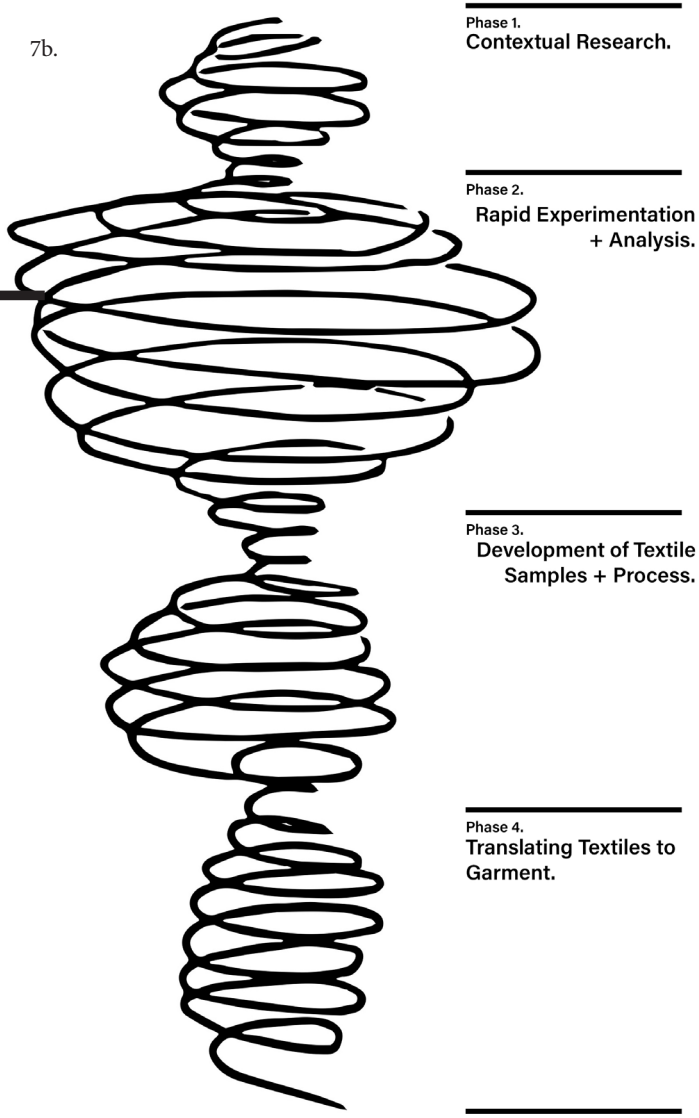


Figure 7a: Research Map and Cyclic Approach – 1 cycle example.
Figure 7b Research Map and Cyclic Approach

binary gender. As a person who would like access to those choices of fashion, who experiences the limitations of binary centric fashion processes, and is also a textile designer and maker, I have actively participated across the whole design process to explore potential new ways of working. Action research is often described as four distinctive cycles of action: planning, action, observation, and reflection (Swann, 2002). Using a cyclic approach, figure 7a and 7b, the design process was navigated, and through the practice, the experimentation and reflection led the research to realise new creative outcomes. A cyclic approach was essential to this research project as it allowed for refinement and reflection across the stages of practical inquiry. In addition, this research approach allowed for many iterations of the ideas that were required until the final outcome was reached.

Although action research originated from the social science disciplines, relevant examples of the designer/researcher approach to design research highlight the relevance of this approach to problem solving in creative practice. Jones (2011) applied an Action Research methodology through her research 'Raincoat: a creative consideration of urban rainwear'. Jones utilises the approach to clearly outline the problem stating, "The primary site of this research constitutes a collection of rainwear that seeks to address, through practice, concerns the designer has with 'design integrity'" (2011. p11). As a designer/researcher Jones participates actively through the design process bringing her previous knowledge and working experiences involved with fashion design to take a hands-on approach to the "creative processes and data gatherings and evaluation" (2011, p. 28) stages of the cyclic design processes until she realised the outcome as a raincoat collection that tackled the problems she originally identified. A similar research approach was taken by Smitheram (2013) in her PhD research 'The superfluous and the ephemeral: consumerism, globalisation and future fashion systems'. Smitheram identified a problem and actively participated with the design process based on her prior textile and fashion knowledge to achieve an outcome by working through a cyclic design process. This project utilises a similar research approach that allows a designer/practitioner/researcher strategy from start to finish, problem to solution, in a design process.

This approach determined how the research moved through four distinct phases. Phase one involved the development of a contextual framework, positioning myself as the researcher and positioning the research. Phase two, included cycles of rapid experimentation and analysis. Phase three, the development of prototypes and textile samples. Phase four, the translation of textiles into the final garment design. This process can be seen in figure 7b, a diagram visualising the cyclic journey of the research. These phases and the methods and tools utilised in each phase are explained below.

Phase 1 – Contextual Research.

During this phase it was essential to develop an understanding of current contexts in relation to gender and fashion design in New Zealand. To do this I explored and critiqued the standard New Zealand fashion experience, writing about my own interaction navigating gendered retail stores. I looked to current fashion and trend magazines using the images in collages to create binary gender defying fashions, a physical mash up of standard feminine and masculine styles constructed with scissors and glue. Research into historical western fashion was also undertaken, looking to shape, form and styles over the centuries to discover the change and progression of fashion as well as the way fashions relate with gender expression.

In addition to this I drew from my own experiences and empirical knowledge as I am a person who does not identify within the traditional binary gender structure. I looked to my own wardrobe and to discussions of social re-actions to gender expression outside of binary expectations. Contextualising the research allowed me to position myself and the work as a counterpoint to the current New Zealand gender fashion climate, which informed a critique of binarism's, and an exploration of gender fluidity through a material discursive practice.

Phase 2 – Rapid Experimentation + Analysis.

Phase two involved rapid experimentation, and exploration engaging with a range of textile creation methods to find a medium to express the narrative of this research. The different methods used during this process are outlined below.

Sketching.

This phase began with sketching for concept initiation and it also became a powerful tool in the refinement of the textile creations as well. Jones (2011) discussed how she applied sketching as a tool for rapid experimentation throughout her practice-based research into the design of contemporary raincoats, to capture and explore ideas that didn't have to be fully realised. Like Jones, sketching in this research initiated and captured starting points to make the physical textile creations. Gully (2010) states that "Drawing helps the designer find unintended consequences". Sketching allows for freedom in design and rapid idea creation with few limits on what can be drawn. Sketching also allows a designer to be creative and plan the potential path they want to take and move through the iterations of design to find a higher level of the idea (Gully, 2010). Sketching allows for instant engagement of the creative process without hesitation or limitations of machinery and materials. Sketching has been discussed as an emerging dialogue between the individual and the drawing (Schön, 1983). Sketching allows for a designer to communicate ideas, moving from mental image to paper. Jones (2011) discussed how sketching was a successful method for idea generation. Small changes and improvements can be made easily, and more technical and aesthetic concerns can be informed. Sketching is a dialogic process and a method of evaluation that enables testing and refinement of ideas (Jones, 2011). As a method sketching was not only pertinent in the rapid experimentation phase, it was important throughout the research project. Sketching became a tool allowing for

conversation between the maker and the practice across the planning, action, observation and reflection cycles. However sketching limits this conversation to certain stages as it cannot truly speak for the material it represents.

Rapid Experimentation.

The rapid experimentation in this phase allowed for exploration of new textile possibilities, this in turn led to new understandings of both the researcher/makers artifact and the researcher/maker's process. "Knowledge and understanding of one's own creative practice are generated whilst the artefact is being formed" (De Freitas et al, 2016). Rapid experimentation was crucial to not only the physical outcome of the research but to the learning and crafting of the processes undertaken. Rapid experimentation allowed for exploration of techniques and processes in the practice and for knowledge to be gained about the artifact, as well as the creative practice and ways of making (Nimkulrat, 2012). In this research rapid experimentation allowed for refinement of a digital knit process. This was achieved through creating swatches. The knit machine's capabilities were explored providing a swatch library of knit techniques that could be referenced later to obtain a specific outcome. Experimentation also involved observation and reflection on the work during the practice stages of research.

Rapid experimentation allows for and embraces failures in the textile creation process. This is where the most learning can be gained. It was through rapid experimentation that I felt comfortable exploring how binary gender clothing options could be critiqued through textiles. A successful swatch from initial experimentation that captured the gender conversation was through rust dyeing calico by using nails that were in place of fabric pins holding in pleats (figure 8). The use of masculine tools to undertake traditionally women's work is a non-traditional way of going about textile creation. Rapid experimentation allows for engagement and testing of numerous ideas so that a huge investment of time or research isn't lost if a creation is a failure. It also allows for re-working of original ideas to find ways of creating successful outputs.

Figure 8: Rust Dyed Calico and Nail Pleats.

Rapid experimentation, as the initial workings and interactions with the textiles and textile making processes, is a chance for the conversation to start between the maker and the artifact. Fabrication and materiality of a physical thing will inform how the practitioner will engage with it through form, shape and touch. In this research project rapid experimentation helped to guide the decisions about which textiles and textile making processes would be best to use, opening a space for conversation between the maker and the making to start. The emergence of this material-discursive practice was also important in understanding materiality and the sense of self interplay, compared with fixed binary positionings (van Midde, 2016).

Documentation.

Documentation was utilised throughout the whole research project and across the different phases the documentation manifested in different ways. During the rapid experimentation phase the documentation involved recording ideas, insights, and information in various forms of visual diaries. Due to the size and diversity of the making processes, both a physical and digital visual diary were created alongside the use of a free-standing pinboard. The visual diaries were a place where documentation could be recorded, and where reflections on practice could be developed, to move the research forwards. Documenting the reflection through the various phases of this project also allowed for communication and sharing of insights and experiences associated with the work. The documentation was utilised as a key tool in the refinement of the designs. Mäkeläand and Nimkulrat (2018) suggest that:

> documentation can function as a research tool for capturing reflection on and in action. When artist-researchers document their practice-led research processes, they consciously reflect on the current experiences during the process (reflection-in-action) and on the documented experiences after the entire process (reflection-on- action) (2018, p.14).

Documentation of the phases came to be a process and a space for reflection of the on and in action. Documentation also served as a reference to making. The digital visual dairy ended up becoming more of a digital swatch library, appendix A, which was pivotal in navigating future makings. The digital swatch library not only had a photograph of each swatch it also held basic information around the fibre, textile process and outcome of the making which could be referenced and referred to at any point. This allowed for replication and refinement of textile creation techniques and outputs.

The process of building a digital swatch library also assisted in capturing experiential knowledge throughout the creative process (Scrivener, 2002; Nimkulrat, 2007). Notes on how and why the textiles were created and were captured rather than just of the resulting physical textile output, allowed for a critique of the creative process. This was more evident in the physical prototypes, where refinements to the process of making could be made. Smitheram notes that practice-based research can be successful in engaging with "recorded knowledge and processes through an internal reflection that is materialised through a series of prototypes and artworks" (Smitheram, 2013, p. 4). Just like the continuous dialogue of researcher to practitioner, reflection in and on action were also in conversation constantly to bring the design process forward.

The pinboard became another form of visual diary (figure 9), a place where the current successful experimentation or swatches could be kept and observed. Even though the physical visual diary allowed for sketches, brainstorming and reflection on the ideas it was too small to store the textile swatches to reflect on. The free-standing pinboard allowed for the swatches to be situated together at full scale. Newbury (2001) notes that the journal is "a self-reflective and media literate chronicle of the researcher's entry into, engagement with and departure from the field" (p. 7). The visual diary, in its various forms, became as important as the tools I used to create the textiles. Frayling discusses how a visual or research diary tells a step-by-step way of a practical experiment in the studios and the way it helps to contextualise it (1999). The visual diary contextualised the process of making into the form of the written.

Without this documentation method vital interaction with the textiles would have been missed or over-looked. Depth perception in the work came about by viewing the textiles at different proximities. The pin board allowed for the textiles to be viewed from a range of distances which would have been missed completely if put straight into a visual diary. It was also through photographs of the making for digital documentation purposes that revealed the textiles perception through a camera lens which gives the ability to capture the visual illusion of the fabric up close. Documentation of the research led to practical knowledge capture as well as discovering new understandings of how to interact with making.

Figure 9: Pin Board as Physical Visual Diary Extension.

Phase 3 – Development of Textile Samples and Process.

Throughout all phases of this research, the continuous cyclic process of planning, action, observation, and reflection was followed. In Phase three the cycles narrowed down; experimentation became more about the refinement of a textile making process to generate a more specific textile outcome rather than a fast array of making.

Digital Knitting became the main avenue for textile creation as the medium was able to successfully capture and illustrate a graphic illusion. Refinement came through yarn experimentation with colour and fibre, programming knit techniques and translating photos of textiles into knit data.

Digital knit became a prominent tool for making in this phase. The Shima Seiki Knit machines and programming software (Apex) digitalise the knitting process working with a front and back needle bed. There is a carriage that pulls the yarn carriers back and forth across the bed to create the knit. These machines require knit code to be created before producing fabric. The machines can use a variety of yarns.

Through working repeatedly with the machinery, I developed a deeper understanding of factors like correct yarn tension, and I was able to produce more successful outcomes. Many unknowns through making with digital knit are not able to be deciphered until the textile has physically been made, alterations are then made digitally to refine for the next iteration. Also, based on the intention of the textile output of the research, as it was going to be clothing worn on the body, it made sense to explore knitting.

It was also within phase three that use of the pin board as a form of visual diary became crucial. In addition to allowing for viewing and interaction with the larger size textile swatches it also provided a place for the textiles to be viewed together for comparisons and evaluations of their cohesion. The pin board allowed for the refinement of the textiles as a group rather than individually.

During this phase of the research there was an opportunity to present the work ‘in process’ in an exhibition for ArcInTex 2021 at Auckland University of Technology. As part of an international future living environments symposium, this exhibition was also used as a trial run for the way the final exhibition could be presented. This was a valuable tool. It allowed seeing the work in the space where it would be exhibited, and it also gave a new perspective to the work. Whether this was due to the new lighting or the physical proximity, the bigger room meant that a greater unobstructed distance could be achieved where one could engage with the work. This led to new understandings in terms of presenting the work physically and the way that can really alter how people interact with it. The first iteration was displayed and staggered on a large clothes horse however this layout obstructed the full view of the individual pieces, and it broke the illusion. New ways of displaying the work to achieve maximum impact were developed as a result of reflecting on this experience.

Phase 4 – Translating Textile to Garment.

Phase four took a similar cyclic approach as in previous stages but becomes more concerned with the exploration of transitioning the textiles into fashion garments and moving from flat fabrics to garments worn on the body. This was by considering how the textiles would fit into fashion shapes through scale and placement. Also, the textiles brought knowledge with them into this phase of the process. Through their inherent form and shape, the textiles informed me how they could be used within the garment. Working with the textiles through drape, pattern and colour is usually more successful than working against them. This stage allowed for a strong conversational engagement between the textiles and me as the maker which was vital to navigating design outside of binary. It extended this material discursive practice through the design and production of garments that disrupt the notion that the social body is layered on top of the biological body (Vaccaro 2010).

Summary.

Through an action research approach this research was contextualised within a current New Zealand context by analysing the current relationship between fashion and gender expression. This research embraced a practice-based methodology engaging in critical reflections within a cyclic approach enabling the researching of a problem with a tangible output. The tools engaged with through all phases of this work resulted in development of the textile creation process allowing for a curated textile collection and garment that critiques the binary hold of gender expression in New Zealand. This research engaged with these material-discursive practices to develop an alternative and imaginative approach to textile design for fashion where the outcomes offer new expressive possibilities for gender fluid clothing and gender fluid clothing options.

Chapter Three.

CREATIVE PRACTICE.

Using the previous chapters methodological framework this chapter discusses the approach and actions of the research practice through the four key phases of the inquiry: phase one, contextual research; phase two, rapid experimentation and analysis; phase three, development of textile samples and process and phase four, translating the textiles into a garment. The phases are discussed in a linear order and demonstrate how at each stage of the research the designer engaged with the cyclic design approach of planning, action, observation, reflection (Swann, 2002) to move the research forward. Refer to figure 10 to visualise how the research project moved through the different phases.

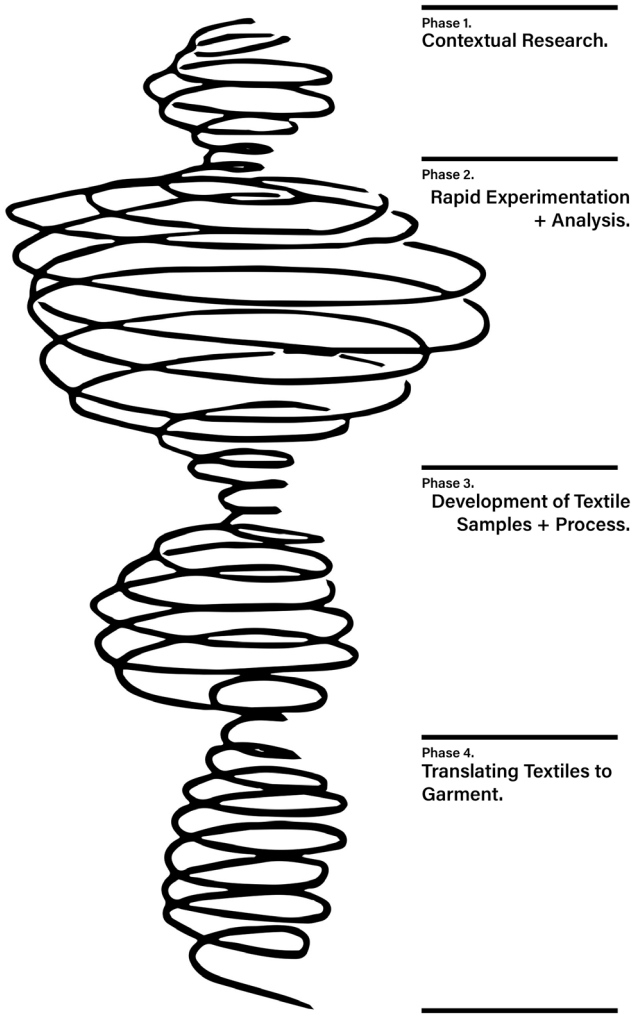


Figure 10: Research Map and Cyclic Approach

Phase 1 – Contextual Research.

Textile interaction is key for critical analysis and observation. Navigating a physical starting point for making from a social problem was challenging. Translating thoughts into tangible textiles was daunting. The sheer scope that was associated with both the problem and the range of textile creation techniques available felt limitless. Although there was uncertainty in terms of what the textiles could look like, from personal experience with the standard New Zealand binary fashion and textiles industry I was confident in knowing where I could make some changes. The design practice aims to challenge the homogenised, over produced mainstream products the current New Zealand fashion system finds it is entrenched in. These deep-seated, gender biased norms offer minimal diversity.

One aspect of the contextual research began with collaging current fashion magazines. As a starting point I took to my stockpiled trend magazines that I had previously collected for fashion research and explored ways to visually deconstruct and disrupt traditional binary gender expression and expectations of binary gender visual cues. As shown in figure 11, these collages disrupted the original gender associations with the image. It was during this process, the physical mashing of masculine and feminine together, that I realised I needed to draw from both men and women's fashions. This was in a way, aiming to embrace the limitations of the current fashion system rather than rejecting it.

Collaging of magazines quickly transitioned into the collaging of my own textiles as it allowed more creative control over the composition of the images. The magazines limited the research to whatever was on the pages, whereas creating and using my own textiles allowed for editing the textile creation and textile application. In addition, the textiles were

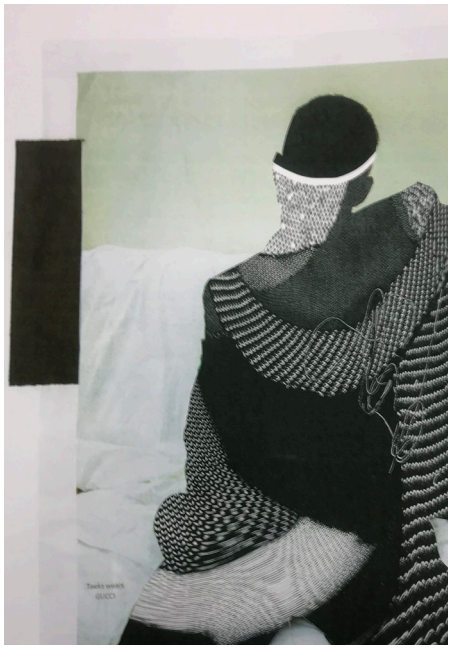
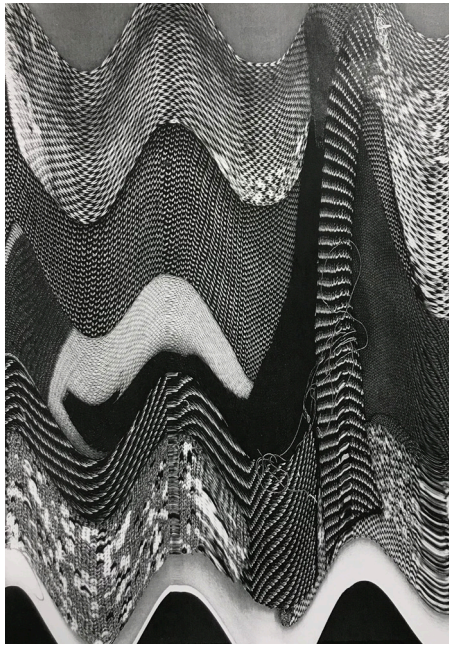
Figure 11: Examples of Collage with Fashion Magazines.

more malleable than paper which meant I could manipulate the collages using folding, rolling and scrunching techniques. Furthermore, I was able to reuse them and develop more collages. Interestingly, the collages became more textile based rather than flooded with images of the human body (figure 12). This technique of scanning my own textiles to collage with, inspired a new cycle of creating realistic graphics while I was going through the textiles. Moving through cycles of planning, action, observing, and reflection allowed form moving from this technique to exploration of borrowing from that which is traditionally viewed as masculine and feminine textiles to present them from a new gender-fluid perspective. This is further discussed throughout the practice.

In addition to this quite literal collaging of gendered fashion I also conducted a contextual review of current fashion designers and labels. The context of this review was discussed earlier in the literature review (p.19). During this initial framing of the research, I used the contextual review of other designers and design labels to form a point of view and an informed way of thinking about the current context of gendered fashion. I documented the review images and reflective notes in my visual diary. These along with my own experiences motivated this research.

During this phase I was exploring ways to position the research and I was also positioning myself as the researcher in the research study. From my own experience, I often find garments I like and choose to wear from across both binary gendered sections in fashion retail stores. I know my own style. I do not look to present as super feminine or super masculine, I want the ability to mix and match these styles in one outfit. I like to have a choice, the shape of women's pants often fit my body type better as not being somebody of the binary ideal muscular male physique. Based on my experience, women's departments will usually offer a wider variety of garments. More options are available in terms of cut, fit, colour and texture than in men's wear. Walking into a clothing store, I now see it as a space where I can interact with the clothing and have free range over how I could pull together the masculine and feminine to present my own outfit. I was not always confident to shop in any section of the store and still while shopping, especially by myself, will be informed "oh the men's section is over there" or "do you realise you've picked up women's pants?". There is physically nothing that stops a person from buying clothing outside the boundaries that binary centric society deems appropriate, it is the assumed prejudice that stifles personal gender expression outside of binary. These personal experiences and anecdotal findings also inform my creative practice.



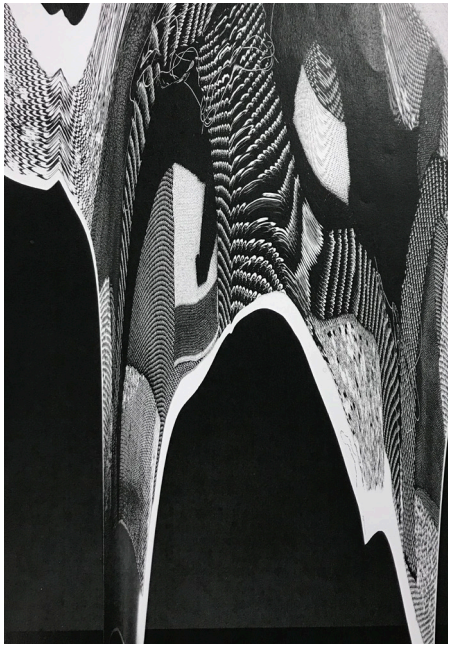


Figure 12: Examples of Collage with my own textiles.

Phase 2 – Rapid Experimentation and Analysis.

Sketching was used as a tool throughout all phases of the research. However, sketching was particularly beneficial to the start of the rapid textile experimentation. Sketches were used to explore potential textile swatch development in order to plan how and what to make. Before making I would plan which materials, tools and techniques would be required. I was using both the sketch and my own assumptions and tacit knowledge to realise the textile design (refer to figure 13). Sketching was also used in the analysis of the work and practice both during the making stages and after (refer to figure 14). In this way, refinement, changes, and adjustments could be made at any point allowing the development of ideas and processes to start a dialogue between myself as a maker and the actual making (Jones, 2011).

Rapid experimentation enabled a trial-and-error approach which was helpful in navigating a realm of textile making possibilities. As previously mentioned in the methodology chapter (p.31) a swatch library was developed as a way of documenting my textile experimentation. As each textile was developed, I would record them in the library noting information, such as the textile making technique, materials, and colours. This also included some qualitative notes around aesthetic, and touch and handle of fabric if relevant (Refer to appendix A, digital swatch library). A broad range of traditional and non-traditional forms of textile making were involved in this phase, ranging from hand knitting, quilting and rust dyeing to digital knitting, digital printing, and fabric manipulation (refer to figure 15). Rapid physical experimentation enabled me as a design practitioner to interact with the swatches to keep the dialogue between maker and the making moving forward. Documenting this process, creating a digital swatch library allowed reflection of the research to happen throughout the research process. It was through this process that an innovative textiles practice was established.

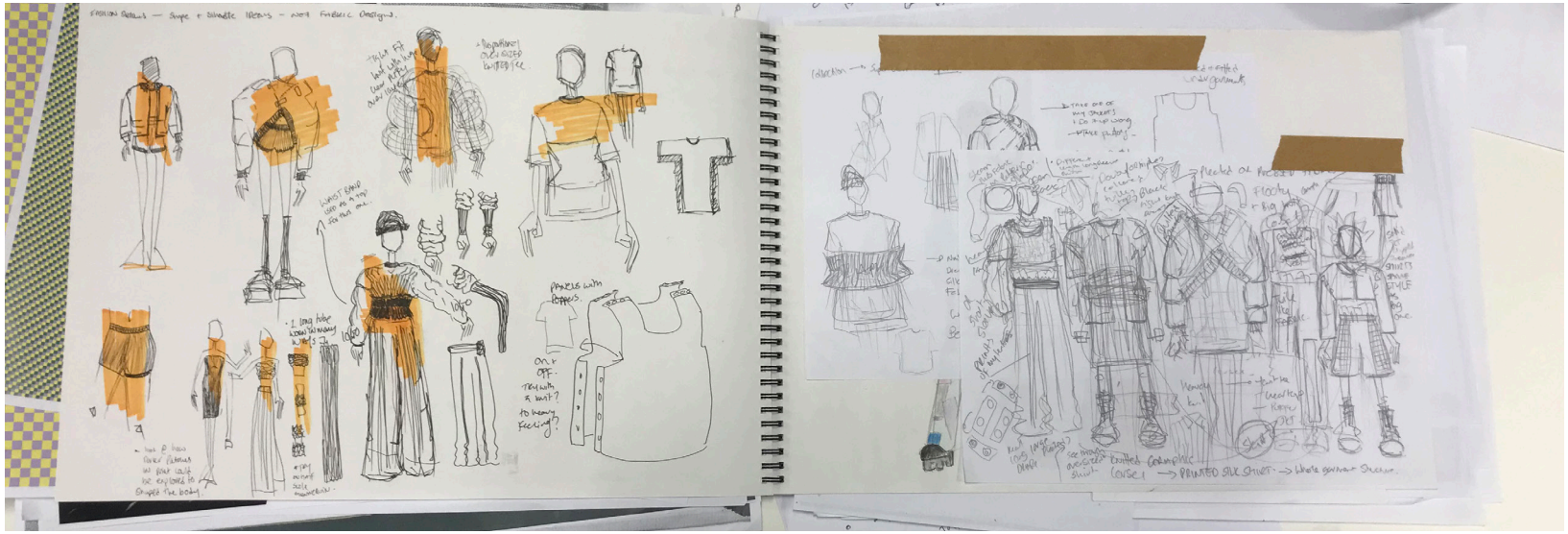


Figure 13: Sketches of planning.

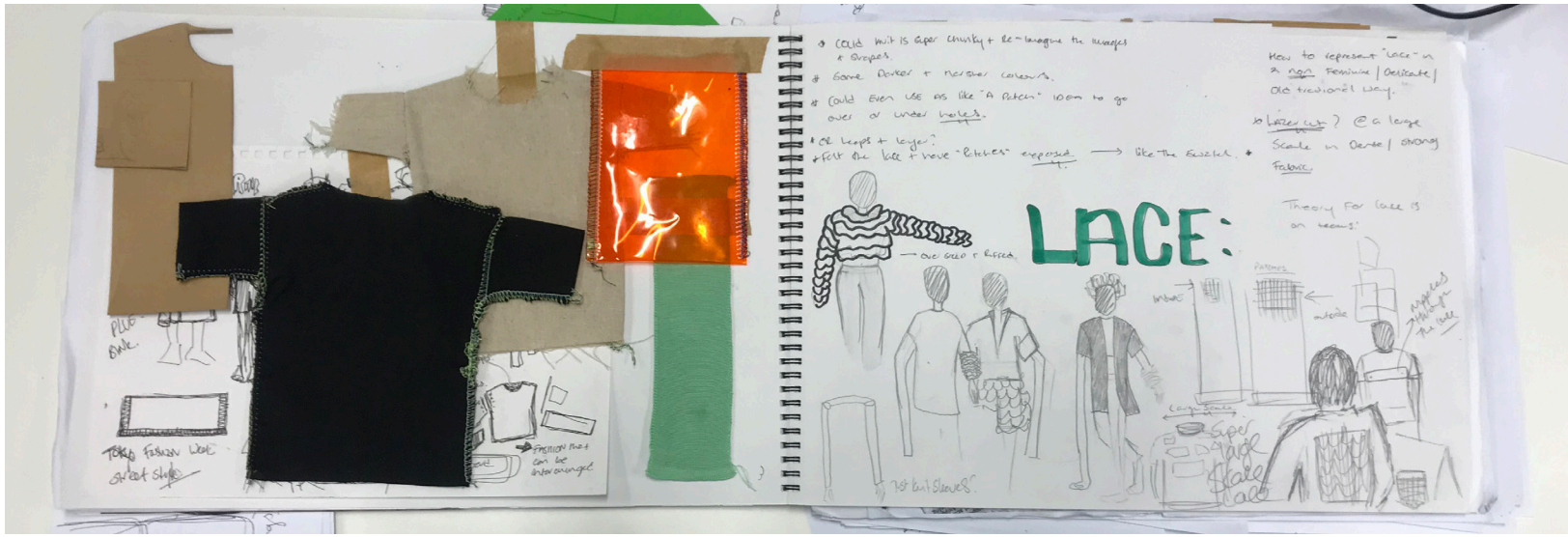


Figure 14: Sketches of refinement.

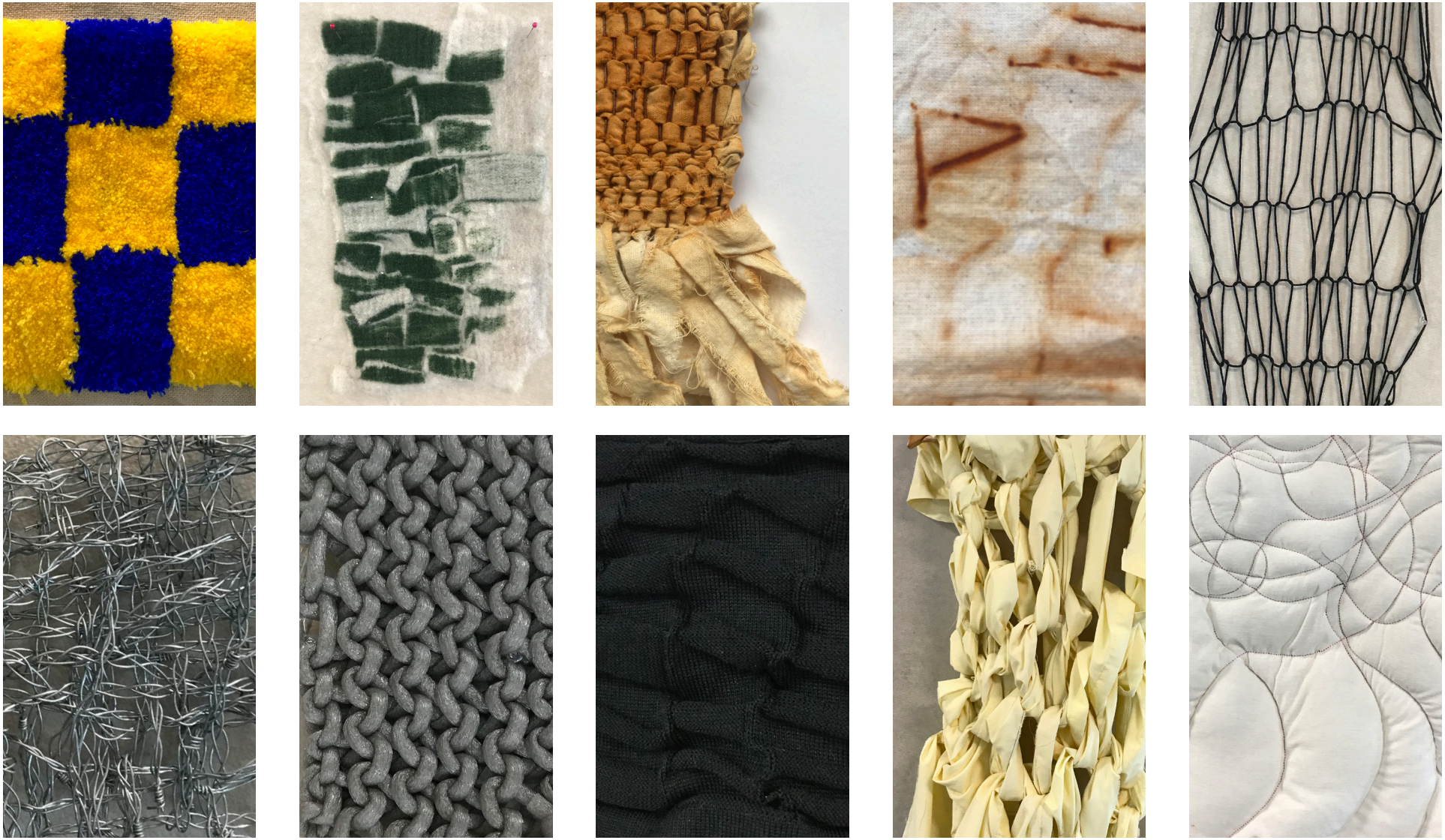


Figure 15: Examples of experimentation.

Establishing and developing a making process.

During the phases of textile collaging and rapidly making textile samples a new approach to my practice was emerging. In combining the two I had designed a textile using one of my collages (refer to figure 16). The results were unexpected. The effect was striking. The new textile that combined the two processes had unintentionally developed a digital knit that was a graphic image of my own collage. The realistic image created a visual precept that rendered the original object in a three-dimensional form. The forced perspective was comparable to an optical illusion. From here, I started to use the imagery of my own textiles and garments along with hand crafted, digital prints and knits as well as WholeGarment® knits to put back into the graphics of the work. As a starting point I created a few basic knitwear items, using WholeGarment® knit technology and a traditional fashion design process including the measurements and expectations of both a traditional male and female body. It is important to note that the Shima software I was using provides only traditional men's or women's sizing guides and blocks. This is where the textile creation process of the physical to digital and then back into the physical took shape (Refer to figure 17).

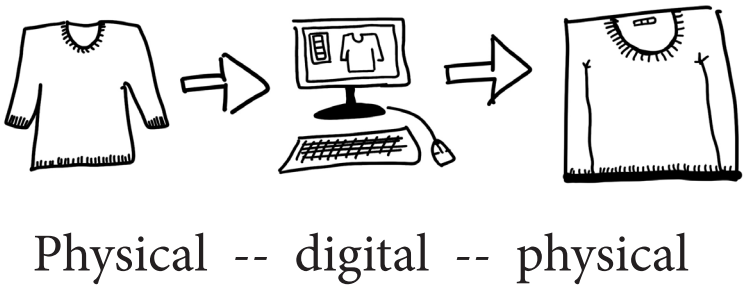


Figure 17: Physical to digital to physical diagram.

Figure 16: Collage into knit.

Figure 18: Jumper coming off knit machine

Figure 19: Jumper on form.

Figure 20: Two and three colour knit of a safety pin in fabric.

An example of this process can be seen through the development of a digitally knitted textile. The first step was to knit a ribbed woollen jumper which I programmed and knitted on the 14-gauge WholeGarment® knit machine (refer to figure 18 and 19).

The second step involved styling the garment in different positions to capture the different nuances of either the human body or the way in which the clothing drapes. The third step was photographing the arranged garment. The fourth step involved breaking down the image into four colours. The final step was to then digitally program the image in the knit software and knit out on the Jacquard knitting machine.

Only using four colours in the work came about because of a limitation in the knit process. This barrier was embraced, celebrated and incorporated to work with the design process. Initially even though two and three colour jacquard knitted swatches were explored, they were not as successful in fabricating an optical illusion as shown in figure 20.

The conversion of photograph to four colour image that the Shima Seiki Apex knit coding software could understand was produced through Adobe Photoshop. As shown in figure 21 through 24 the photo was taken and then filtered into black and white; this step is necessary as if left in colour you have less control over how many colours appear in an image after posterizing. The process of posterizing converts an images' continuous gradation of tone into fewer tones. Through the posterizing process in Adobe Photoshop the photo is modified into a grey tonal four colour image.

Figure 21: Colour Jumper Sleeve Knot.

Figure 22: Black and White Jumper Sleeve

Figure 23: Four Colour Digitally Processed Image.

Figure 24: Close up of Four Colour Digitally Processed Image.

To capture the texture needed in the knitted textile, the original textile had to be photographed and contain enough texture to be successful in creating depth perception. Originally, the textile was photographed with a professional DSLR camera. This camera could capture the fine details of the textiles. As a process, my original thought was the more detail that was captured in the image, the more detail that would be able to be picked up and translated from the image back into the four colour digital knits. However, this was not the case, the high detail hindered the process as there was too much detail for the image to be broken down into four colours and still successfully be viewed as the original fabric. The camera also focused so well on the focal points of the textile in the image to obtain detail it resulted in blurring parts of the images so they were out of focus in comparison. The unfocused sections of the photos became a problem once they were translated into the four colour images for the knit programming system. It perceived them as large blocks of single colour. Large sections of a single colour knit reduced the impact of the graphic as it drew away from the believability of the new textile. In addition, big sections of single colour on the front bed of the knit caused the fabric to pucker and warp (refer to image 25).

At this stage in the research in addition to working with garments I had created myself through knit technology, I began to experiment with existing garments. Initially this was using garments from my own wardrobe. Using the same process, I wanted to explore other textile textures to challenge stereotypes associated with existing clothing. I started by using leather, denim, and lace as well as accessories such as belts and handbags.

Finding a solution to the textile photography issue came about as an accidental discovery, while taking photos of a section of a leather jacket at home as I only had my personal mobile device, with a low-quality camera. The camera was unable to pick up the finer details like the DSLR camera. This meant the photo was able to be broken down into a four-colour image and still have the similar graphic impact the original colour photo. This is evident in figure 26 and 27 which portrays a photo of a knitted jumper taken on a DSLR camera and put through the four-colour process compared to the leather jacket photo taken on my phone.

Figure 25: Warped Knit.

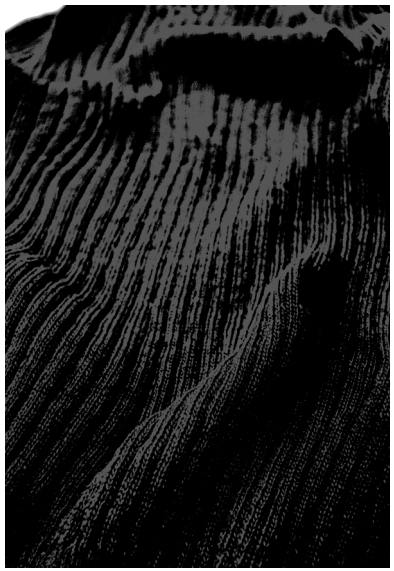


Figure 26: Examples of Unsuccessful Photo to knit translation.

Figure 27: Examples of Successful Photo to Knit translation.

Lighting was also a significant factor in capturing the photo. Photographing a textile or garment, hung up in natural light placed shadows in the photo where they are expected to be while viewed vertically. In the final textile the shadows contributed towards the believability of a 3-dimensional fabric rather than the 2-dimensioanl flat knit as it added depth to the knit which again can be seen in the leather jacket knit swatch (refer to image 27).

During this stage of the research cycles of planning, creating, observation and reflection were repeated. Comparing and analysing the creative process became as important as the comparing and analysing the textile outcomes (Nimkulrat, 2012). For example, the environment created, and the technology used to capture the textile texture was vital to creating a realistic illusion in the output. Images of flat smooth fabrics, like a soft hoodie, produced final knits that looked flat, and did not capture an anamorphic feel (refer to figure 28). Understanding the possibilities of my practice came from making and learning from what I was creating. In doing so my own textile process was discovered (De Freitas et al., 2016). During this phase I used both a visual diary (physical and digital) and a concept wall to document my making (Refer to figure 29 and 30). This became very important to the process and also to reflecting upon the 'in and on action' (Schon, 1987). In part, the initial discoveries around the way the textiles changed if viewed from a particular point of view or if different angles came from documenting and displaying the textile development.

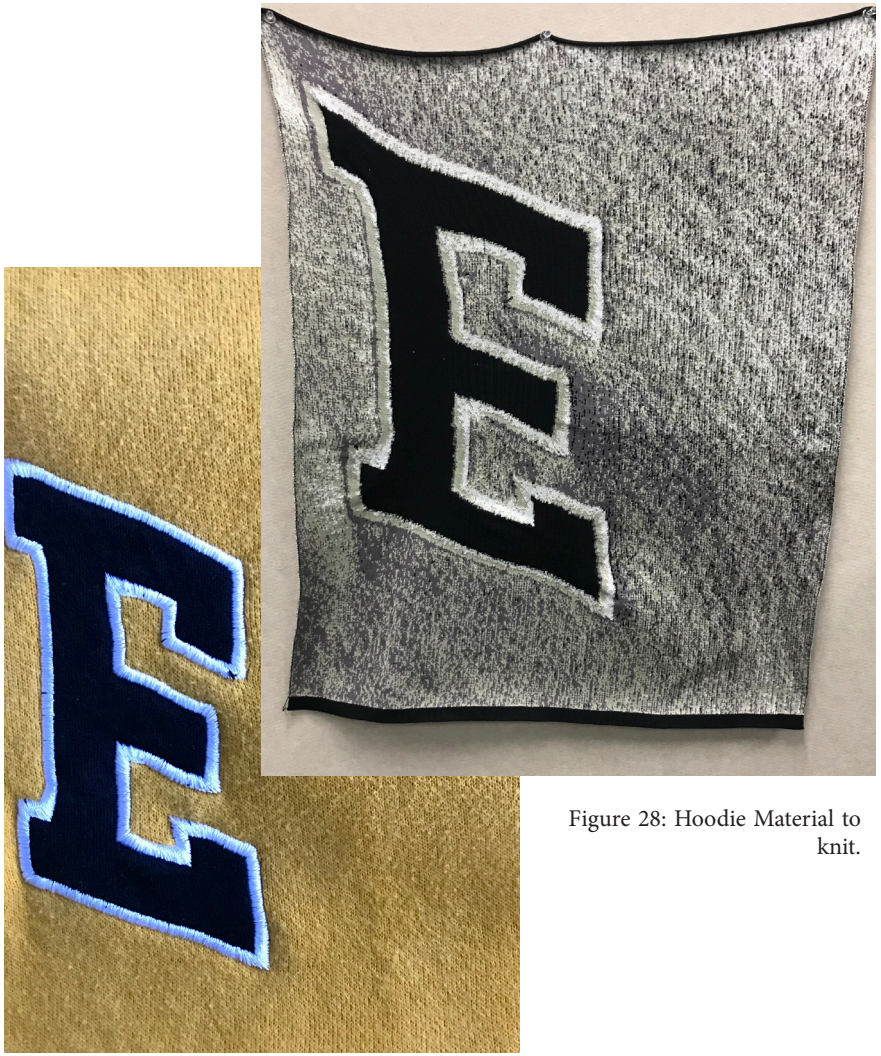


Figure 28: Hoodie Material to knit.

Figure 29: Concept wall for documentation.

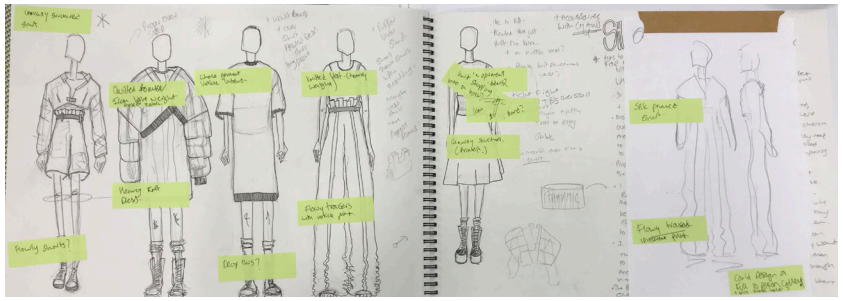


Figure 30: Visual Diary for documentation.

Phase 3 – The development of Textile Samples and Process.

This phase discusses how digital knitting became the main avenue for textile creation. It also illustrates the refinement of the knitting medium through yarn experimentation with colour and fibre, programming knit techniques and translating photos of textiles into knit data. The knitting machines at AUT's Textile Design Lab became the prominent tools for making. The Shima Seiki Knit machines and programming software (Apex) were used to digitalise the knitting process working with a front and back needle bed. There is a carriage that pulls the yarn carriers back and forth across the bed to create the knit. These machines require knit code to be created before producing fabric.

While conducting research on graphic knits, Elsa Schiaparelli, and her work with trompe l'oeil in textiles came about. Trompe l'oeil attempts to create the impression of a surface that has a different three-dimensional structure on a flat form (Huges & Wade, 1999). It is an illusion of a flat surface that appears to be three dimensional. Schiaparelli came across a refugee Armenian hand knitter who used a traditional Armenian stitch technique which allowed for a graphic to be formed on the front of the fabric whilst tucking the other yarn onto the back bed with a third needle (White, 1986). Schiaparelli hired the refugee to knit for her, using the traditional knit technique with her knowledge of fashion to create garments modern to the time and she wanted people to interact and start a conversation (figure 31). Much like Schiaparelli's approach, this knit practice has created new ways of making using the existing forms to produce a graphic outcome. Creating visual illusion knitted textiles is exciting as it allowed for the development of audience engagement and interaction points through my perception of the work.

Playing with perception this research project also explored anamorphic art. Anamorphic images tend not to be clear or allow you to see the

full picture until you know how to view the work (Melnikova, 2011). The graphics of the knit, depending on proximity, provide a different viewing experience which the research uses to communicate.

Navigation of the Knit Software.

In creating the process of translating tangible textiles/garments into flat data for the knit programme (figure 32), new understandings allowed me to refine my skills on the digital knit machines. Early swatches looked flat and did not create an illusion (Refer to figures 33, 34 and 35). Through making, documenting, and refining the methods I was able to find a process of almost tricking the knit machine to knit solid colours with pockets that did not distort the shape of the fabric. This process used well placed colour and perspective to trick the eye into perceiving the textile as another fabric. This was much like the Trompe l'oeil designs by Elsa Schiaparelli that were discussed earlier. The different perspectives of the work provided a different viewing experience. This was an exciting moment in the research as the new Trompe l'oeil textiles created an opportunity to develop textiles with a forced perspective that could challenge the existing gender norms of clothes.

This content has been removed for copyright reasons.

Figure 31: Elsa Schiaparelli wearing her innovative butterfly bow trompe-l'oeil sweater (1927).

Figure 32: Example of unsuccessful illusion in knit 1.

Figure 33: Example of unsuccessful illusion in knit 2.

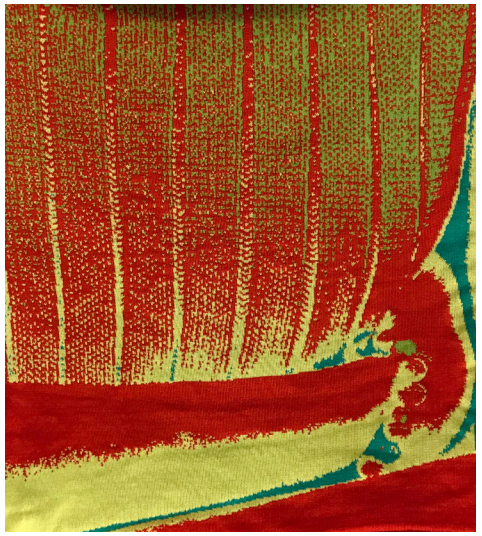


Figure 34: Example of unsuccessful illusion in knit 3.

To create the graphic images in knit I used a technique called Jacquard knitting. Jacquard knitting can be achieved using 'all needle' or 'tubular' knitting techniques. The terms refer to the different stitch structures in the creation of the fabric between linking the front and back beds of the knit together. The 'all needle' knit structure meant that the yarn that was not being knitted on the front would be knitted on the back bed, and the beds of the fabric were looped together continuously creating one singular piece of fabric. The 'Tubular' knit structure occurs while yarn that was not being knitted on the front bed was knitted on the back bed with the only connection of the two beds forming if there was a colour change of yarn on the front bed. As the front and back bed were not linked together constantly in the knit process, rather only at certain points, pockets formed in the fabric. If there was a yarn carrier change, the existing yarn on the front changed to the back bed, the pocket was closed and a new one created, in turn connecting the front and back beds of the fabric at these points. This is shown in figure 35 which illustrates this, using digital renderings of a digital knitting machine needle bed. It demonstrates how the yarn moved between the beds. This process is quite rapid.

Whilst I was knitting four colour jacquards, if there were multiple stitches of one colour in a row on the front bed the other three yarns knitted on the back bed. Those other colours only came to the front bed if the design required them. In the meantime, little pockets or tubes were made in the patches where there was a single colour on the front. This is shown in figure 36. Different rows of colour represent the single block colours of the front bed and all the others can be seen on the back. Stitches moved between the front and back bed as required opening and closing the pockets.

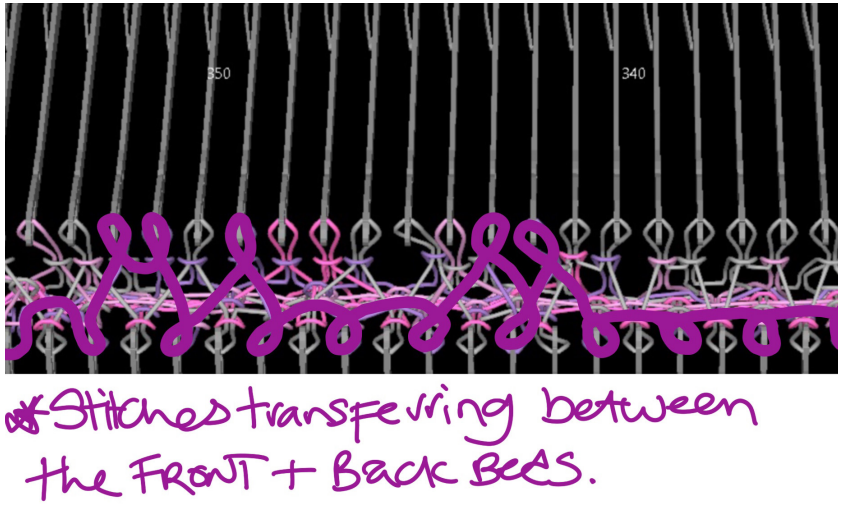


Figure 35: Digital Visualisation of Knit machine needle bed - top view.

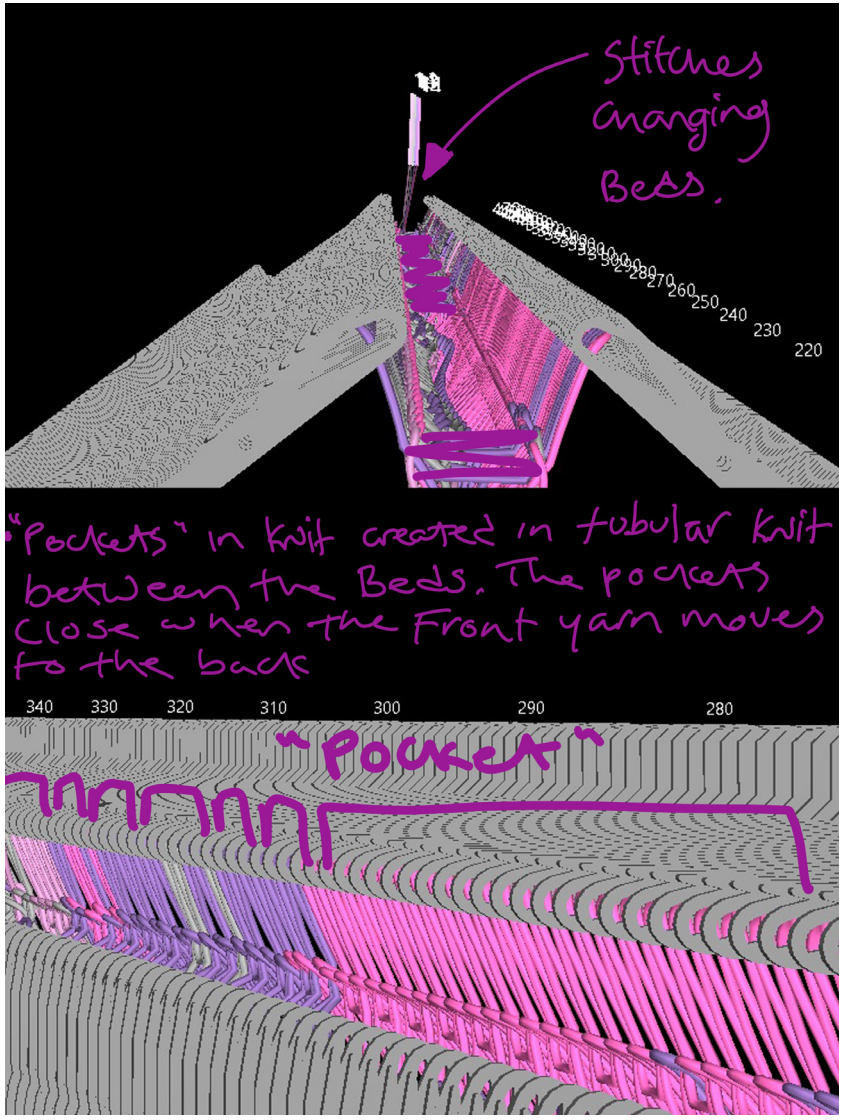


Figure 36: Digital Visualisation of knit machine needle bed – side view.

An imbalance of fabric between the front and back beds was an issue that arose while knitting. 'Tubular back all' is a back bed knit structure that is engaged while knitting in jacquard. 'Tubular back all' knits everything on the back needle bed on every needle that isn't being used on the front bed. So, during a four-colour knit, as shown in figure 37, for every row of stitches of the yarn on the front there were three on the back, which distorted the fabric (figure 38). To overcome the issue, with the excess fabric on the back of the knit, I applied the structuring technique of 'tubular knit back 1X1'. Unlike the back all knit technique, instead of every single yarn being knitted on every single stitch creating triple or double the amount of fabric on the back bed, 'back 1X1' stitches meant the yarn quite literally knitted "one-by-one". The back bed stitches then alternated while they were stitched balancing the fabric as shown in figure 39. Comparing the images of 'tubular back all' and 'tubular 1x1' it is evident that the balanced fabric sits flatter. The fabric was still not completely balanced as the extra yarn knitted on the back bed was tucked in behind the stitches. This was more obvious in large single colour sections on the front of the knit.

Figure 37: Four colour knit swatch.

Figure 38: Example of Back all knit technique.

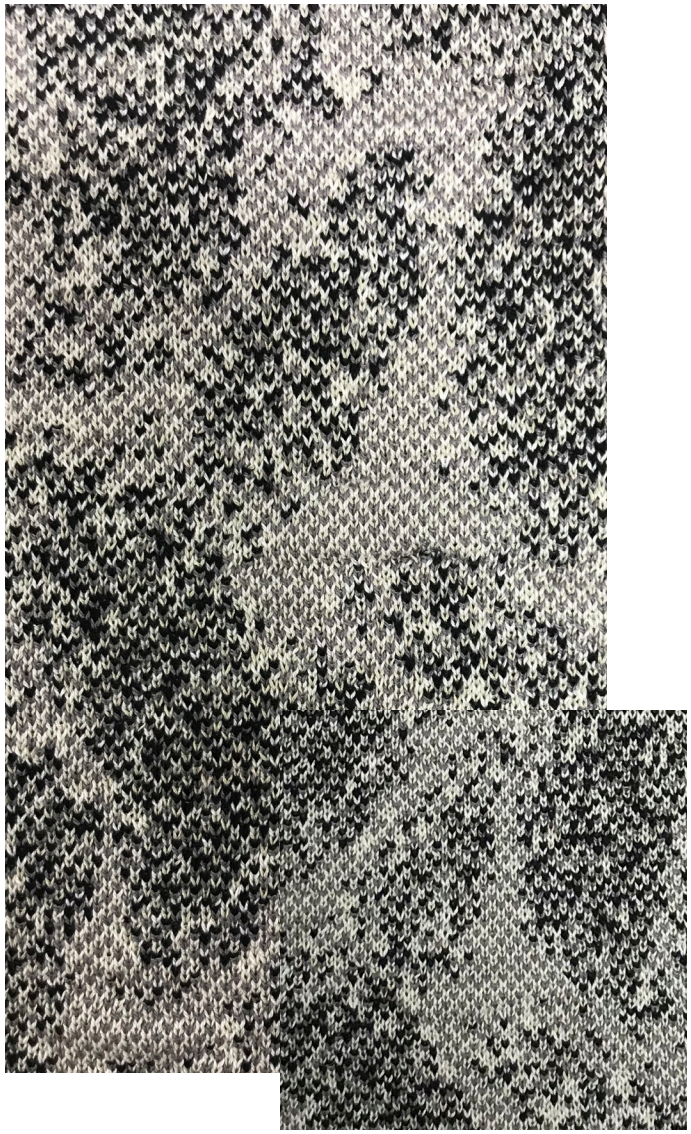


Figure 39: Example of Back 1X1 knit technique.

For this project it was crucial to ensure that the shadows in the graphic were reflected in knit as dark and the highlighted areas were bright, to achieve the visual depth in a flat fabric. The four colours in the knits had to hold their own solid tonal colour. Tubular knit was beneficial to this research as the method of knitting held block and solid colours with a lot of depth. Whereas with an all needle knit fabric "grin through," if knitted fabrics are not knit tightly enough, small amounts of the colour will occur and show through from the layer beneath. This is shown in figures 40 and 41 of the same graphics of this research knitted with all needle vs tubular knit. The back bed colours of the knit in the all-needle break through the front bed and wash out the colour which tends to lessen the impact of the depth.

Elsa Schiaparelli's work, that was produced by hand, had the limitation of grin-through, taking away from the effective deception of the illusion (refer to figure 42). Working with the modern knit technology available and experimenting with knit techniques allowed for the refinement of a knit process that could produce and reproduce a successful trompe l'oeil illusion.

This content has been removed for copyright reasons.

Figure 42: Elsa Schiaparelli grin through in sweater.

Figure 40: All Needle knit example demonstrating Grin through.

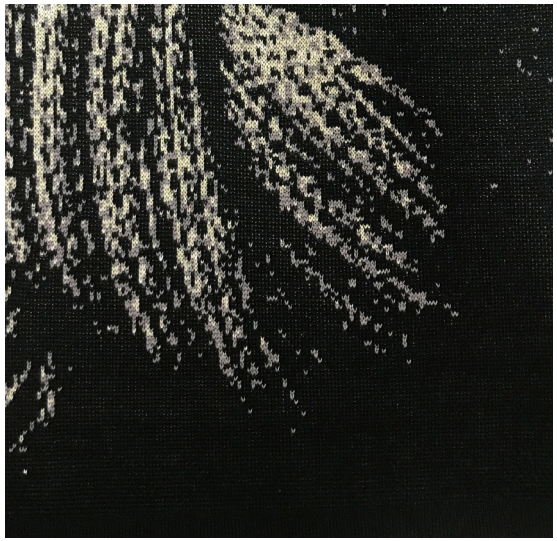


Figure 41: Tubular knit example demonstrating solid colour.

At this stage taking the initial photo with good texture needed to be balanced by designing the digital knits' colour, placement, scale, and knit structure. It was the experimentation around these unknowns that allowed for the refinement of the textile creation.

The knitting had to be undertaken in tubular knit techniques as this allowed the colour in the knit to stand strong and not be washed out by the other yarns coming through from the back bed, grin-through. However, while using the tubular technique I also had to be careful the pockets did not become too big as they flattened the look of the image. Large sections of single colour knit on the front also puckered the knit on the front bed. This was because more fabric was being created on the back rather than the front. A constant changing of yarn and stitches on the front bed enabled the details to be captured and produced tiny pockets, so the colour held strong. This needed to be balanced so the detail of the original image was not lost. The scale of the knit also affected the outcome as the larger the size the bigger the tubular pockets of the knit were.

There were drawbacks to using the tubular knit technique as too much of one block colour intensified the depth of image and started to make the knit appear flat (refer to figure 43). You can see the knitted graphic of a stripey Dior Shirt, where the block colour stripes of the photo lack the texture needed and have not translated into a Trompe l'oeil style illusion. The physical experimentation of knitted swatches was extremely important to understand how different images translated into knit and to understand what was involved in creating an effective illusion.

Interacting with the knitted swatches became incredibly important. Even though a digital version of the knit could be displayed on screen before being knitted out, it was not until touching and interacting with the swatch that dialogue between the maker and making could take

Figure 43: Green Dior Shirt graphic knit.

place. Only once they are knitted can the handle and tension of these fabrics be gauged. Even though both can be assumed before knitting, I could not determine the feel of the fabric. Applying different stitch structures and sizes, different yarns and different machines produced different results. The handle of the cloth was something learned from touching, moving and observing the knits. This generated new experiential knowledge and understandings of the new textile's behaviours (Scrivener, 2002; Nimkulrat, 2007).

With a limited colour palette, the placement of the colours and the amount of a colour placement in a knit had to be carefully considered. At the beginning of the rapid experimentation phase there was little thought behind the colour in the swatches as they were created. While trying to portray realistic graphics into the knit, a black, charcoal, grey and white tonal colour palette was adopted as this colour palette would be used to produce the photos in the process of rendering them down into only four colours (refer to figure 44). The tonal colourway was successful in creating depth and emulating textures in the flat knit. The black and white yarn created the shadows and highlights that added depth to the graphical knit. Experimenting with non-tonal colour palettes reduced the impact of perception and illusion (refer to figure 45). The non-tonal colourways tended not to let your eyes blend the colours together if viewed from a distance. Colours with an obvious contrast made the illusion easier to comprehend. Whereas the tonal pieces tricked the eye into thinking it was seeing naturally shaded and highlighted areas of one piece of fabric. In saying this there were a few successful pieces developed using navy instead of black with contrasting yellow and orange yarns. The navy was so dark the depth and shadows were still obvious in the knitting (refer to figure 46).

Figure 44: Grey Tonal Jumper Sleeve Knot four colour image to knit swatch.

Figure 45: Colour way of knit sample.

Figure 46: Colour way of knit sample.

Yarn choices.

The majority of the knitted sampling was developed using cotton yarn. During the timeframe of this research the COVID19 pandemic affected the availability of yarn choices in New Zealand. Due to border restrictions shipping yarn was slow and unreliable. A decision was made to use a local supplier with a large range of cotton yarn. In addition, cotton was an affordable choice for the large quantity needed for the experimentation.

Distance and perspective.

An emerging aspect of the research was the angle or distance in which you viewed the textiles and how this changed the perspective of the image. If you looked at the textile closely, the textile appeared to be a collection of individual knitted stitches in different colours (refer to figure 47). However, if you moved just a few steps away, the impression of the textile was a pixelated image. The graphic on the knit could still be understood but it was clear it was created through a series of individual stitches (refer to figure 48). From more than two meters away the graphic revealed its three-dimensional nature (refer to figure 49). This stage in the research process was fundamental to a shift in my practice in which I began to explore the potential of these new textiles to shift perceptions. There were new possibilities for altering the way people viewed the textiles depending on their proximity to the textile. In addition, the garment, and the garment detail, such as buttons or the weight of the textile that was photographed became part of the new narrative the textile illusions could have.

Figure 47: Denim Knit Perspective 1.

Figure 48: Denim Knit Perspective 2.

Figure 49: Denim Knit Perspective 3.

Scale

Experimenting with the scale of the image and the scale of the textile had the capability to change people's perceptions of the textile and the imagery. In this way I could divert the viewers' gaze to different details of interest or even shift the perception of size and distance.

A technical aspect of creating the visual in a larger scale often resulted in block colours, which as discussed previously, can distort the fabric. The scale is about balance as it needs to be big enough so the textile can be perceived as another fabric and pick up the texture yet not too big as it created large patches of block colour ruining the illusion. Playing with this proportional relationship meant I could draw attention to specific parts of the graphic therefore highlighting areas of garments that are often overlooked or taken for granted.

Nuances of gender were explored within the clothing portrayed on the knit. Straight leg Levis denim 501 jeans (figure 50 and 51) were synonymous with 1970's and 80's gay culture (Hill, 2018). The way in which the jeans were worn could project different meanings. "A more direct signal of sexual availability was the single open button on the fly front" (Hill, 2018, p.79). In addition, a tied over the shoulder sweater, is also visually associated with gay culture, it is viewed as quite a feminine look. Stines (2017) discusses how common it was to see a "herd of gay men" (p. 141) sporting their "sweaters wrapped over the shoulders and tied faux-casually in front" (p. 141).

Nuances within the graphics bring whole new understandings and communication with the work. Even down to small cues, such as the directions in which the buttons or belt is facing on a garment tie back to binary fashion. Rangel (2020) discusses how women's shirts were

Figure 50: 501 Levis Knitted Scale Swatch.

designed intentionally to have key differences to men's in the early 1900's as there was no tolerance for gender-fashion cross overs. Shirts were seen as masculine and powerful. Rangel notes "in contrast to the loose, unfitted style of men's shirts, women's shirts were closely tailored to the body to emphasize their curvaceousness and often featured short sleeves or sleeveless styles that were designed to draw the eye to the exposed arms and the bust. Shirts for women were also fastened right-over-left while those for men were fastened left-over-right" (p.170).

The work began to challenge the gender expression norms through the way clothing was worn or rather highlighting key areas of a garment that could unwittingly or unwillingly be overlooked. RMIT university's Dr Alexandra Sherlock, a specialist in fashion theory, as cited in Bradley (2020) explains that fashion, with the mix of celebrity representation, a politically motivated Gen Z and social media, is helping to form a cultural shift of gender identity and expression. Sherlock states "Traditionally, gender has been defined as masculine and feminine – two poles – whereas it's a spectrum. Gender-fluid fashion gives expression to every nuance on that spectrum" (2020, para 20). The graphics in this research are a nod to that.

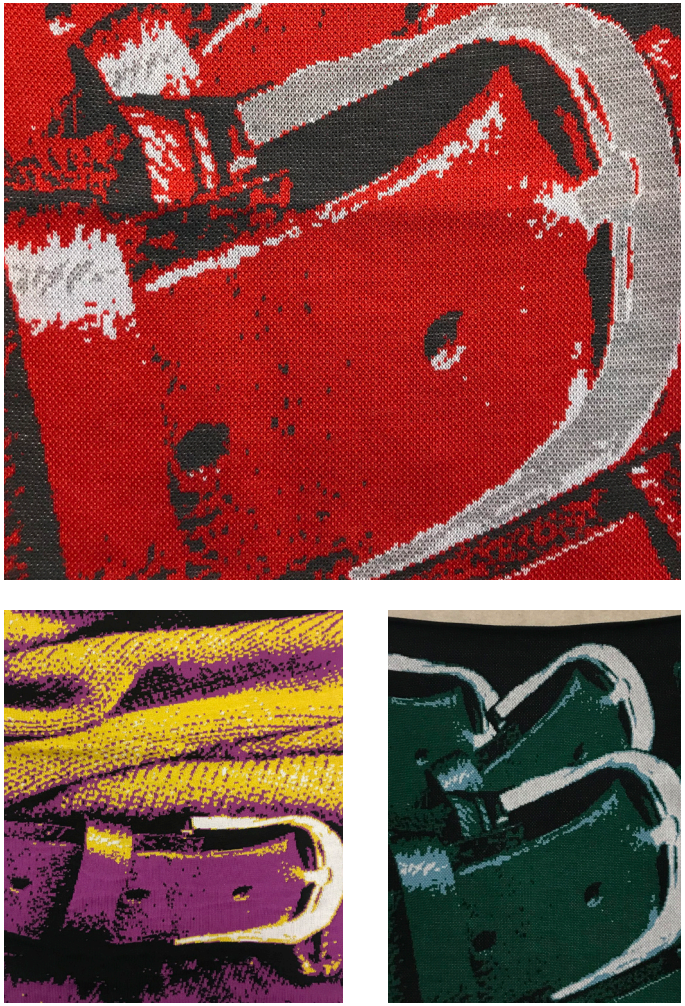


Figure 51: Knitted Belt swatches.

During this stage of the creative practice documenting my practice was essential and became a way to reflect on my making. Using a visual diary and a large pin board (figure 52), as an extension of the visual diary, allowed me to see how the textiles could be viewed and how they related to one another. In this way the visual diary and wall did more than provide a structured approach to collecting and documenting my creative practice. It also allowed me to visualise my thinking and reflect on the textile experimentation. This approach to documenting my work enabled me to capture the "real inner drama" of the research (Newbury, 2001). The pinboard wall was a larger scale of my visual diary where I pinned up samples, materials and written notes. I used it to reflect on which materials and textiles were working, which images translated into knit and reflect on the process itself (Schon, 1987). For example, a looser knit could be used in a different way than a sturdier knit. This informed which changes could be made and allowed me to discover unexpected results. This space facilitated a conversation or dialogue between myself and the textiles.

Digital Prints.

The textile technique of digital print was also explored to capture the same approach to creating textile illusions. The same steps were used to develop the same graphic application of a four-colour image, then instead of knitting the image, they were digitally printed onto light weight fabrics, such as silk (Refer to figure 53). The results were interesting as the fabric had a lot of movement. In one example I printed a graphic of a heavy weight chunky fabric onto the silk which gave the fabric an unexpected amount of flow and movement (Refer to figure 54). In addition, some of the very early textile techniques, such as rusting and handknitting were now used in developing prints.

Figure 52: Pin Board as Visual Diary in use.

Figure 53: Digital Prints on silk.

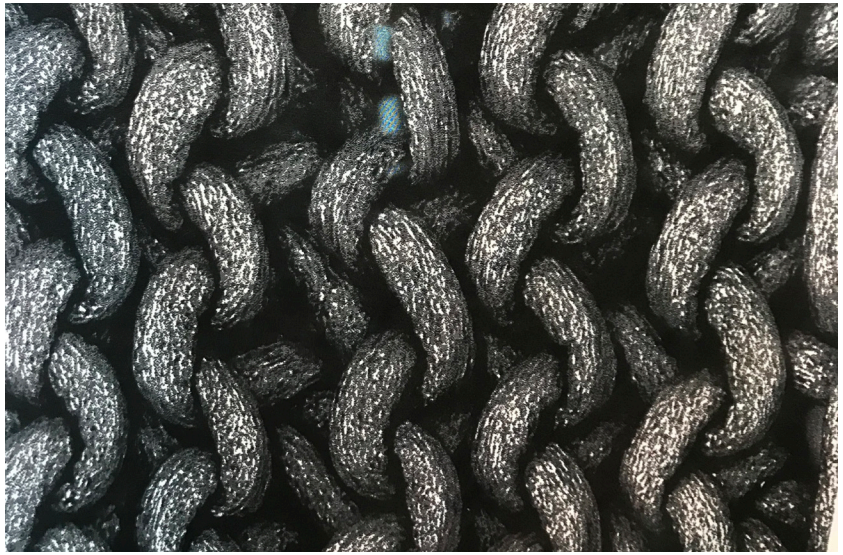


Figure 54: Large scale digital print of a chunky hand knit.

Using the process of digitally printing there were no limitations around colour. Real photographs of fabric were printed directly onto the fabric, as well as ones which had been posterized to achieve a realistic illusion. Although the work translated into digital print well because it went through the same established processes, while comparing the knits and prints, there was a disconnect in the process of making. While digital printing could be used to develop lightweight materials, the knitted textiles undoubtedly challenged the expected fashion norms. At this point a decision was made to concentrate on the development of the knitted textiles and develop the prints in further research once there was more time.

At this point in the research, I had an opportunity to exhibit my work in progress at the ArcInTex Future Living Environments symposium and exhibition hosted by Auckland University of Technology. The exhibition is documented in appendix B. Aggregating and curating my textile development for the exhibition gave me the opportunity to rehearse my work, at a point in the research, prior to my final exhibition of practice for this thesis (Figure 55). This offered a unique opportunity to see people interact with the textiles and see how the textiles worked in a physical space. It became clear through this process that the way I displayed the process and resulting textiles influenced both the narrative of the work and what it communicated. The work was presented on the wooden frame to give the illusion of a clothes horse. It was only through physically exhibiting that I noticed layering the fabrics took away from their depth and impact. Leaving space around the textiles facilitated the believability of the fabric graphic. Layering the swatches also meant that the full knit could not be seen which reduced the impact of the illusion. The frame provided the work some height and meant the work could be seen from a distance. However, it was critical to be able to see the work from different distances and perspectives. Possibly due to a lack of information or to a presentation of the work that was not cohesive enough, the result was that people were not fully sure how to interact with the fabrics. I needed to explore different ways of displaying the textiles that would allow the fabric to be seen in full without obstruction. Through discussions with people at the gallery space I was able to reflect on my aim of challenging expected textile and fashion norms and it became evident that the way I put the fabrics together changed the impact of the work.

Figure 55: ArcInTex Display Set Up.

Phase 4: Development of the final textile collection and garment.

Phase four of the research journey started by building on what I knew about the process of creating the textiles, combined with thoughts around how colour, scale, cohesion and potential garment application could be developed.

On reflection, what was in the background of the work became quite distracting, the busy background was something I had not thought about while I was setting up the work in the exhibition. Until that point, I had looked at the textiles against a plain coloured pinboard. More space behind the display of the textiles made the textiles appear flatter. Laying out the textiles against various coloured backdrops it was evident that the illusion worked best against a plain white backdrop. A black backdrop was too dark, so the image disappeared into the darkness. Since the swatches were not all the same colour using a coloured back did not work. White, however made the work more comprehendible and enhanced the white in the textile. This made the highlights in the graphic stand out and remained the focus of the viewing experience.

This intended research outcome was a collection of textiles that challenged gender norms within a fashion context. Up until this point the textile images had reflected nuances of the wear and drape of the clothing on the body (mannequin and fit models) and of the details of the clothing and accessories, such as lapels, domes, zips, belts and bags. It was through putting together the first iteration of the textile collection that it became evident there needed to be a balance of fabric weights. People wear a range of textiles in their clothing, light weight, heavy weight, textured and smooth fabrics. Finding a balance in a textiles collection for fashion would usually involve a range of fabric weights to be used for different applications in various garments. I wanted to explore ways to develop the illusion of lighter weight and softer textiles.

Figure 56: Lightweight fabric swatch trial – Lace.

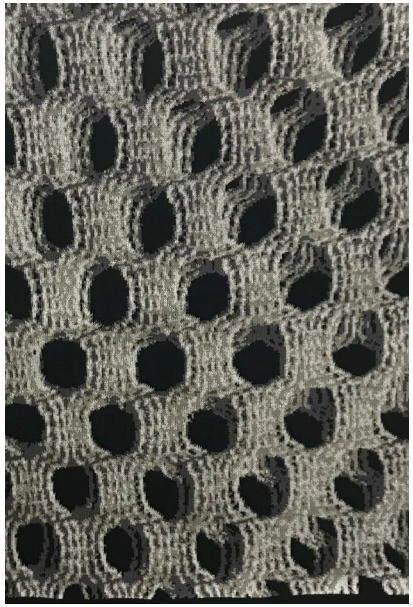


Figure 57: Lightweight fabric swatch trial – Mesh.

Figure 58: Lightweight fabric swatch trial – Linen.

Figure 59: Lightweight fabric swatch trial – Satin.

At this point I worked on ways to interpret this aesthetic using the established physical to digital to physical process. I was able to go back to my own wardrobe and find pieces of linens, mesh and satin that appeared floaty and delicate to contrast the heavy leathers, denims and ribbed knit to provide options in the collection. Refer to figures 56 through 59 to see the outcomes.

The process of capturing the essence of the delicate fabrics was more difficult to achieve. In moving through the process of photographing the physical fabric to digital images to digital knit the lightweight fabrics tended to be smooth in texture which resulted in flat looking graphics. Even while using photos of a linen shirt the scale had to be increased to pick up the detail of the linen, such as the warp and weft. However, it still did not translate into knit very clearly (refer to figure 58). The unexpected results with satin were surprising. A red satin shirt, which was smooth and shiny, translated well. Comparing the photos before processing into the knit data, it appeared to be the ability the satin had to reflect light, that produced a texture on the otherwise smooth surfaced material. It was challenging to find light weight fabrics that translated into a knitted graphic and still could be perceived as their original fabric. While using a patterned lightweight fabric, as can be seen in figure 60, a striped cotton shirt, the stripes translated into block colours in the knit. There is some illusion but not as impactful as with the heavier weight fabrics. A learning outcome was that texture was key to creating an illusion in the knit. These were limited results, and it would be an interesting extension of the research to develop this further in future research.

Through the final phase of this research, I intend to curate a garment through collaging the created knits that reflects, as with the textiles, how a change in perception can be beneficial to new understandings of someone or something. In this case a change in societies' perception of gender, as only binary to embracing it as a fluid space. There should be no restrictions on how people use textiles and garments for their own personal gender expression as we are all human underneath. The garment will also be a first go at using graphic knits to visually shape the body using illusion textiles to create a garment that is moving beyond gender. The textiles will be translated into a garment as this work was undertaken because of a lack of access to non-binary catered fashions. Moving from flat fabric to onto the body will hopefully carry the message further.

Figure 60: Knit of a striped cotton shirt.

Figure 61. Colour way comparison to trompe l'oeil illusion.

Exploration of colour ways in the fabric.

As part of building the final textile collection I revised the colour process and exploration to show what the human eye can perceive as the 'original fabric'. Up to this point the knitting had been undertaken in a colourway associated with the graphic process. This was to improve the image quality and credibility. However, through exploring alternative colour options it became evident that these initial boundaries surrounding the colour could be extended (figure 61).

Even though using accurate colours of the graphic was more comprehensible, if the contrast between the tones was realistic, the image could still be understood. In figure 62 both samples are the same file, just knitted with one different yarn colour. The knit with the bigger contrast in yarn colour had the most impact.

Sizing and limitations of the knit machine.

Digital knit does not guarantee the same result every time a swatch is created. There are many variables in the process that need to be considered. For example, knitting the same file with different yarns, has varying results. This unfortunately is a limitation of the knit machine, as can be seen in figure 63 the variance in the way the yarn had been dyed affected the swatch size once it was knitted. All the swatches created used cotton yarns in the weights of 2/20 or 2/60. It is important to note that one end of a 2/20 weight yarn is equivalent to three ends of a 2/60 yarn after knitting to keep the fabric balanced. The black swatch uses four single ends of 2/20 weight yarns, one on each of the four carriers in use on the knit machine. Whereas the blue/green and yellow/orange swatches use three single ends of 2/20 weight yarn, the fourth yarn is a 2/60 weight. As obvious in figure 63 this has resulted in smaller swatches.

Figure 62: Side by Side Colour way comparison.

Figure 63: Size Comparison Leather Jacket Swatch.

There are a few reasons for this, the main being although three ends of 2/60 are technically the same weight as one end of a 2/20, having three ends together results in less stretch. Less stretch in the yarn results in less stretch in the knit overall so once the knit machine rollers press out the fabric there is more resistance hence a smaller swatch. Even between the 2/60 weight yarns there is a difference and that will be a smaller scale due to the way different yarns have been bleached or dyed. Additionally, a smoother yarn will have less friction after it is knitted compared to a coarse yarn, resulting in a tension difference that affects the size of the swatch.

Final development of the collection and garment.

During the final stage of the research the textile samples were developed into a cohesive textile collection comprising exemplar garment designs.All these findings were presented at "The Materiality of What" Exhibition (refer to appendix 3) where visitors had the chance to view and interact with the textiles and the garments.

Throughout the project a vast number of fabrics and translations of those fabrics into digital knit was explored. Deciding which textile samples to include in the final collection was chosen using two creative processes. Each textile swatch was viewed and engaged with individually against a plain back drop.

This made it easier to assess the effect of the visual elements of each piece. If the trompe l'oeil illusion was successful, the piece was then viewed within the scope of the collection in its entirety to see if it was complimentary and balanced with the other works.

Establishing a colour palette was initially quite challenging. A colour's connotations or associations within the traditional binary gender system influenced my decisions. The most obvious were pinks or blues which can be perceived as colours that are linked to gender.

However, this led to a lack of colour diversity in the work, creating a lot of neutral tones. In addition, during the making process establishing successful textile translation and trompe l'oeil illusions was determined by the way different colours or tones worked with the images and the knit structure. It became apparent that avoiding certain colours because of the connotations with binary gender was antithetical to the research aims. An escape from binary should not be limited by binary gender influences, people should be able to wear whatever colours they want. The connotations of colour were used and embraced to help contrast the expectations while constructing the garments.

The final colour palette of the work resulted from a lot of the original textile colours before being translated into knitted textiles. Although the original colour palette does not show the only colours that can produce a successful illusion, as discussed earlier, it does render the visual more believable. The colour palette of the collection was impacted by the vast array of textile visuals. As the collection was very busy through the pattern it benefitted from restricting the colour palette slightly as it helped provide cohesiveness in the pieces. Since the illusions produced were favourable in one colour with shade variations of that same colour, introducing different colours resulted in an additional textile. This was successful as the different colours of a textile had a different visual impact and provided a spectrum of ways that people can use and style the textile as they perceive it and allow for playing with masculine and feminine references through styling, visuals and construction.

Figure 64: Knit Swatches on the floor.

Figure 65: Final Yarn Colours.

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As previously discussed, the knitted textiles were chosen through their ability to produce a successful textile illusion and how they fit within the collection to create balance. Although physically the same, the textiles appear to be ranging from heavy, bulky fabric to light weight, some more feminine and some more masculine visuals. The swatches also ranged on the composition of the visual in the knit. Some creating movement (figure 66) while others suggested body parts and shapes that would be under the material (figure 67). Although it was intended to have a large range of fabric options in the collection, there still needed to be a balance of imagery within the textile range. This new way of approaching fashion design processes resulted in an alternative collection.

Figure 66: Blue Silk Knit Graphic.

Figure 67: Blue Knit Dress Knit Graphic.

For the collection to develop an alternative approach to textile design for fashion garments, where the outcomes offer new possibilities for gender fluidity the visuals of the trompe l'oeil illusion had to be successful to allow for the collaging of masculine and feminine together. It works to break down the idea that masculinity and femininity are opposite ends of a linear system that society currently holds.

Garment Creation.

The original concept and aim for this research project involved designing a textile collection with one garment as an example of the way the textiles could be translated into a gender-fluid approach to fashion. However, with such a range of textiles created it became obvious that more than one garment would be beneficial to illustrate the work. A small capsule collection was developed to highlight the different ways the textiles could be translated into garments exploring historic gendered nuances of clothing.

Like the original art works, the masculine and feminine binary presentation, stereotypes, and expectations were collaged together through the visual textile elements and of the garments.

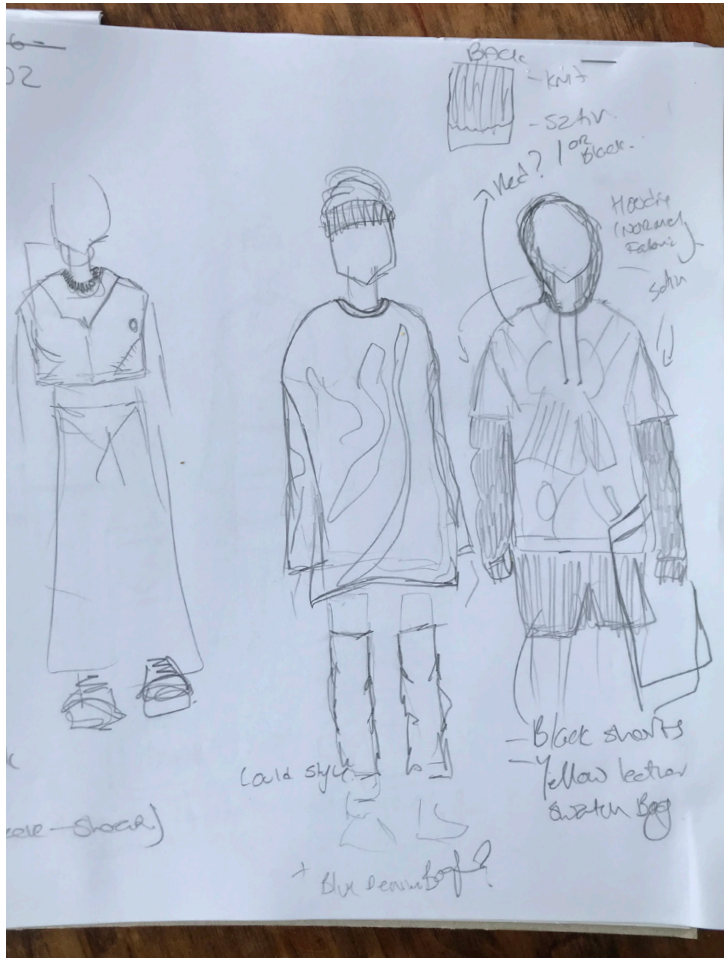

Figure 68: Fashion Sketch.

Capsule Collection Digital Mock Up.

Figure 69: Fashion Sketch Rough.

It was important while designing the garments to be able to capture a wide range of gender nuances and experiences in the pieces. The work this research undertook was not the same as many designers looked at previously in the work, simply one binary traditional gender wearing the clothes associated and expected with the other gender. With figure 70, the Clothing is not just a "man" in a skirt, there are many more layers exploring the complexity of gender being more than the binary one or the other. There is a visually quite loud traditional hypermasculine crotch shot of denim jeans on a traditional modest feminine A-line skirt. This takes the two opposites, as perceived in binary gender, and mashes them together to present as masculine and feminine, both very much present. The work is also a nod to queer culture with the coded cruising culture connotations of the undone fly buttons connoting sexually suggestive significance communicating specific wants or desires. Pulling references from gender experiences both in and outside of binary reflects the purpose behind this work, to collage gender identities and experiences into fashion promoting gender as fluid. This garment challenges the expected notion of neutralising gender to produce unisex garments.

The red-colourway oversized tee (shown in figure 71-72), the garment is portraying a traditionally feminine visual of a knitted sweater draped over the shoulders with knotted sleeves. It is placed over a satin shirt. The visuals are both oversized and in a different scale than is traditionally expected. This was intentional to reflect how the balance of masculinity and femininity does not need to be clear since gender identity is fluid. Gender as a spectrum allows the levels of masculinity and femininity felt and expressed to continuously change. The expected fit of the clothing in the visuals is to be more tailored. Usually quite a smart attire now represented through a casual baggy and oversized silhouette speaks to gender expression and the idea that it does not need to be conforming. These different textiles were collaged digitally in the knitting stages of the process to create a layered look.

Figure 70: Green Denim Graphic Knit Skirt.

Figure 71: Red Satin and Knit Knot Graphic Top Front.

Figure 72: Red Satin and Knit Knot Graphic Top Back.

Figure 73: Graphic Jumper.

The oversized jumper as shown in figure 73, as a garment in this capsule collection, was to represent the exciting ways body shape and silhouette could be altered visually through the illusion textiles. Placement of the folds in the oversized knit start to guide the eye in unexpected ways, creating the illusion of depth in places where it is not usually present. This was an unexpected success of the garment design and could be further explored to create an optical illusion in the textiles and transform body shape.

The knitted crop top as seen in figure 74 is again an example of collaging produced digitally in the knit creation process rather than physically in order to get a clean manipulation and illusion of the graphics being layered. This piece looks to the feminine suggestive breast shaping in the knit paired with the expected form fitting a leather biker jacket that traditionally has masculine connotations attached. The narrative in this piece balancing the masculine and feminine parts of the clothing whilst also referencing queer culture finding a balance of who you are and who the world expects you to be. This way of making and viewing gender existence allows for all expressions to thrive. The jacket usually worn to cover up or for protection is now represented as a flowy and some-what exposing crop top.

These are some of my own personal interpretations of the way textiles could be used to create clothing not bound by binary gender norms and expectations. It involves collaging and using existing fashion notions without limitations to mash gender together creating a spectrum of representation within one outfit or garment, not removing any gender identifying markers or eliminating gender, rather celebrating all parts and how much femininity and masculinity a person wants to express or present is up to them and can change consistently.

Figure 74: Leather and Knit Knit Crop with Knit Denim Skirt.

If gender and gender expression is a personal experience, then how can there be rules on how to experience it? There is no wrong way to experience your own gender identity, but certain unspoken rules and social expectations restrict a person's ability to fully embrace and explore their true selves. These fashion garments aim to start conversations about how people's relationship with gender and gender expression in New Zealand, and society's relationship with gender in New Zealand, in general, can change and diversify.

About The Exhibition

Bound By Binary, the textile collection and fashion garments outcomes were displayed as part of the "Materiality of What?" Masters of Creative Technologies graduate showcase. The collection of knitted graphic textiles and supporting garments were created through a practice-based research approach that isn't confined by binary gender limitations and it starts a conversation where people's relationship with gender in New Zealand, and society's relationship with gender in New Zealand, in general, can change.

The exhibition of the textile collection and garments was intentionally designed to allow for a haptic engagement with the work. The aims were for people to be able to interact with the textiles easily, pick them up, hold and play with the placement of the fabrics against their body. The collection was organised and displayed via colour grouping rather than the visuals of the graphics. This was an active choice to allow people to explore the textile options in their own way. The swatches were hung on 'S' hooks which enabled an easy interaction point, so the work could be picked up, held against the body, or hung on the display wall to be viewed layered with other textiles. As shown in figures 75-80 the textile racks were placed with a larger than two-meter distance from the mirror so a person could see the trompe l'oeil illusion in the knit immediately whilst experiencing the other perspectives close-up of the textiles. The space was designed as an opportunity for people to refigure themselves with the textile designs and garments. Creating an intimate experience of placing garments or textiles in relation to a person's own body encouraging them to negotiate their own gender expression experience.

The exhibition set up is designed to look like a textile show room where fashion designers could come and visually experience the textiles, to view them together from different perspectives, and to look at the way they work together using the display wall. Placement and position of the body is also equally as important to engage with these textiles and the mirror allows for playing around with this. The garments on the end rack are there as examples, or rather suggestions about how these fabrics could be transformed into garments.

The table displays examples showing how the graphics were created and put through the 4-colour process and put back into the knit programming software. It also shows swatches demonstrating comparisons explaining why various knitting techniques were chosen. Documentation of working and processes were displayed through visual diaries. And some key swatches from the start to the end of this research project were included to demonstrate the project and the journey, as well as examples of textiles that were not brought forward to the final textile collection.

This work is an example of the way a fashion designer could pick up the experience of these graphic textiles and take them further into the fashion design process.

Figure 75: Exhibition Layout.

Figure 76: Textiles hung with S Hooks.

Figure 77: Interaction with Textiles and Table.

Figure 78: Interaction with Display Wall and Mirror.

Figure 79: Textiles Racks.

Figure 80: Garment Rack.

Figure 81: Final Textile Collection Flatlay 1.

Figure 82: Final Textile Collection Flatlay 2.

CONCLUSION.

Western fashion culture guided by binary gender ideals monopolises New Zealand fashion culture. Diverse gender expression has not been able to thrive due to a somewhat narrow societal view of gender and the way it is expressed in clothing. Even though gender diverse people are represented in the population in New Zealand and there are gender diverse people who reside here in New Zealand, a safe space and access to resources is not readily available for people to be able to dress to reflect themselves. The body of work undertaken so far in this research project engaged with a practice-based approach to challenge the perspectives of gender expression. The curated textile making process of physical to digital to physical is unique to this research. It enables successful translation of garments into Trompe l'oeil style illusion textiles. It involves digital knit that appears to be another fabric from a certain distance where the illusion fades upon a closer look at the work. The perception shift in the textiles is utilised to capture various

nuances and clothing details to challenge preconceived gender binary in contemporary New Zealand society.

Critical and contextual research was undertaken throughout this research drawing on a range of queer theorists and contemporary textile and fashion designers. Judith Bulter's queer theory was considered in relation to fashion where gender is performed every day. It is noted that there are some fashion brands that are moving forward, whether it is to offer diversity for the consumer or as it is seen as a commercial opportunity. Even so, through a study of brands it is clear that not many brands are creating a truly gender-fluid space for a wider gender expression to exist. Promotion of fashion outside of binary expectations is usually seen in garments that already exist across both gender wardrobes or to offer one of the binary gender's clothing to the other. This innovative research, although not a fully formed fashion collection, creates textiles that visually disrupt binary expectations on the body.

It is intended that people interacting with the textiles will at first glance make assumptions and attach societal gender stereotypes to each piece, although a change of perspective and a closer inspection of the work, will reveal that all the textiles in the range are physically constructed the same way using four colour digital knitting. The graphics in the knit have also started to touch on nuances to show how clothing can be worn to communicate other meanings outside of binary expectations for the garment offering shape shifting options and possibilities.

This research engaged with methodologies enabling the research to output tangible results to address the necessity for a change to adapt to a social issue. Action research progressed the work through a cyclic approach of planning, action, observation and reflection. All steps of the cycle were integral for navigation of textile creation and refinement of a textile process. A practice-based approach allowed for me, as practitioner, to carry on a continuous dialogue with the making and the making process. A hands-on approach in the making was key to understanding and shaping the textiles. Reflection-in-action allowed for adjustments to the work and accidental discoveries were able to be embraced. It was through practice that fundamental learnings were understood about both textile processes and outcomes. A pivotal example of this was seen through the decision not to use a DSLR camera to capture the fabrics prior to digitally knitting them.

This action, going against a designer's natural instincts to capture the clearest image resulted in many successful image translations into digital knit and it furthered the course of the research. Rapid experimentation engaged with a wide range of making techniques to form a successful visual illusion in a textile with different perspectives. Iterative and reflective making refined the textile creation process by highlighting successes and failures. Collage as a key method allowed for a playful and imaginative reworking of gendered imagery. The interplay of photographic imagery and digital knitting was essential in capturing nuances to place into the final garments. Documentation captured this knowledge and new understandings of the textile creations process and the textiles themselves which was used to inform the future making process.

This practiced-based research project explored and expanded approaches to textile design, so it is inclusive for all genders. The work responded to the common place narrative where binary gender is reinforced through repeating stereotypical fashion for cis men and cis women. Working with photographic imagery and digital knit software this research project developed an alternative approach to textile design and its application within the fashion industry. The outcome of digitally knitted textiles into garments is successful as the garments allow for a space to collage gender together into one spectrum for expression. Celebrating all gender identity has been achieved via incorporating and embracing existing gender expression markers to create new ways of expression, more fluidly. Nuances to various gender experiences and queer communities

hrough the work allow for layering in the imagery providing different perception points for different people.

The final textile range repositions coded queer culture through editing and scaling the details of queer fashion to create a textile range that refigures the body and enhances a more fluid gendering of clothing providing a critical commentary on gender, sexuality, knitwear, and fashion. It is intended this research may be used to inform new fashion collections. Fashion designers could use the innovative textiles to develop gender fluid fashion for mainstream consumers, to assert a more non-binary way of being and dressing to move away from heteronormative static culture.

Additionally, this research and textile development could be further developed in future research projects to explore ways to develop the textiles and placement of the graphics to potentially use illusion to shape the body. To further this research a thorough investigation of digital printing and the way it could translate into this process would extend the possibility of colours and fabrics that could be created. A refinement of this process was not conducted in this project as the development of the knit became so large.

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APPENDICES.

Digital Swatch Library.

Fashion Magazine collages

Collaging of male and female fashion magaines.
(Twisted, Tied.)


COVER STORY


Teeks wears GUCCI

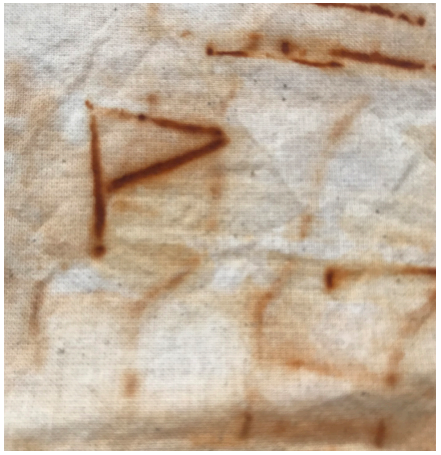
Exploration of using Traditionally “ Mens “ Tools to carry out “ Womens ” work.

Rust Dyed Calico.
(Full Submurged Solution.)

Rust Dyed Calico.
(Twisted, Tied and Dyed.)

Rust Dyed Calico.
(Nails Wrapped in Cloth.)

Rust Dyed Calico.
(Nails Peircing Cloth.)

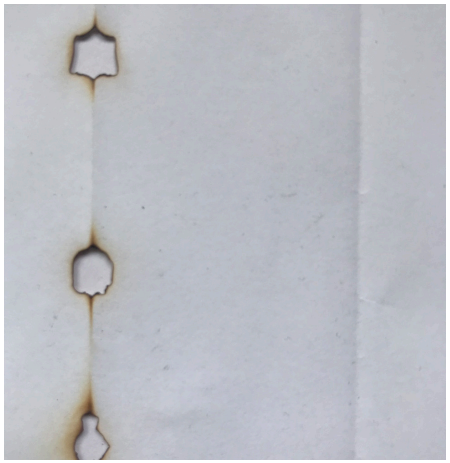


Rust Dyed Acrylic Yarn.

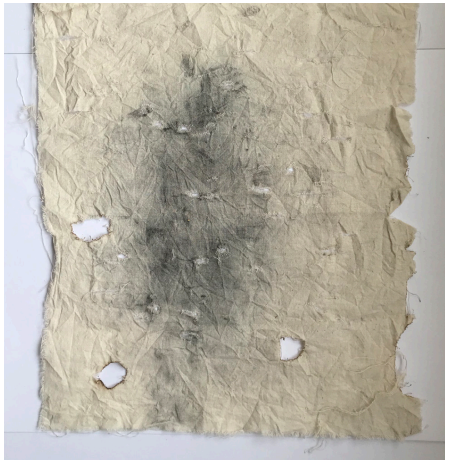
Dip Rust Dyed Acrylic Yarn + Crochet.

Nails Holding Pleats in Calico then Put the through the rust Dyeing Process.

Steel Wire used as the warp threads with varing widths of calico as the weft thread with calico tassles, then put through the rust dye process. The warp threads of this weave are what change the colour of the swatch the longer left damp the darker and richer the swatch would become.

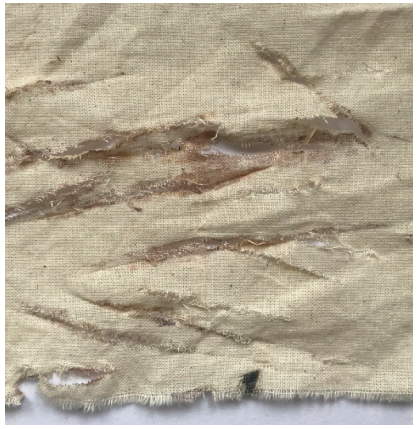


Paper Burnt by flame to create texture and patterns.



Axed Chopped + Burn
+ Ash Dyed Calico.

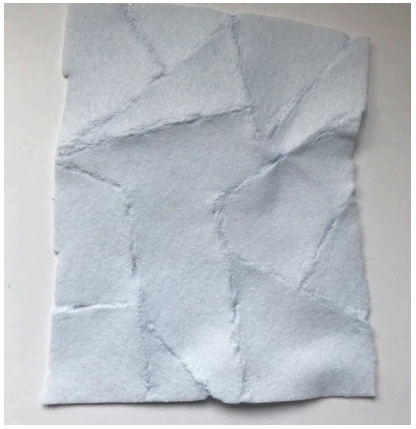
Axed Calico + Wood markings.



Axed Calico + Wood markings.

Soldering Iron Manipulated Synthetic Fabric.

Soldering Iron held above fabric.



Soldering Iron Manipulated Synthetic Fabric.

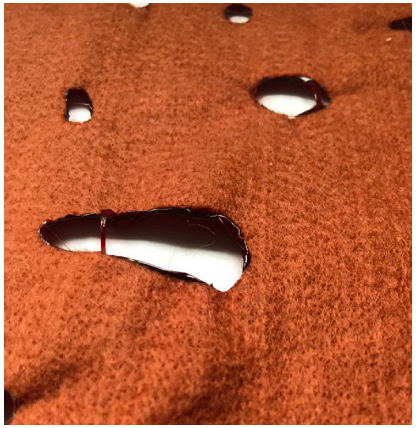
Soldering Iron held above fabric.

Soldering Iron Manipulated Synthetic Fabric.
Using the Soldering Iron as an adhesive to join Fabrics.

Soldering Iron touch Fabric.

Soldering Iron Manipulated Felt.

Soldering Iron touching Fabric.



Soldering Iron Manipulated Felt.

Soldering Iron touching Fabric.

Painted Glass Beer Bottles.

Spray paint and Acrylic.

Painted Cigarette Packet.

Spray paint and Acrylic.

Experimentation.

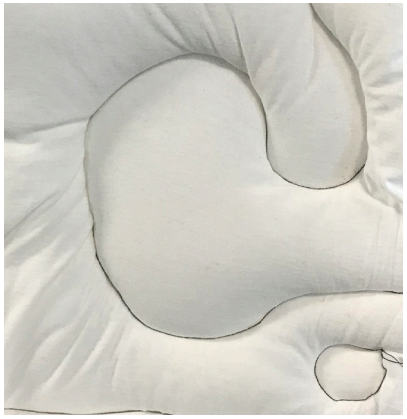
Quilted White Cotton. / Hobby fill in side a white stretch fabric.

Exploration to bring depth and dimension into fabrics. Dirrection here was for abstract and chaotic lines - not looking like there is any pattern being follow - which I think was successful but would be better on a printed fabric - could explore having different weights through out the fabric.

Grided Check Quilted Fabric.
White Stretch Cotton with Hobby Filled insides.

The same as previous swatch but exploring controlled and expected patterns.

I am a fan of how quilting fabric really brings it to life and creates depth to look / touch / interact with. Would love to try over laying with a printed fabric.



Quilted White Stretch Fabric - Hobby Fill Inside

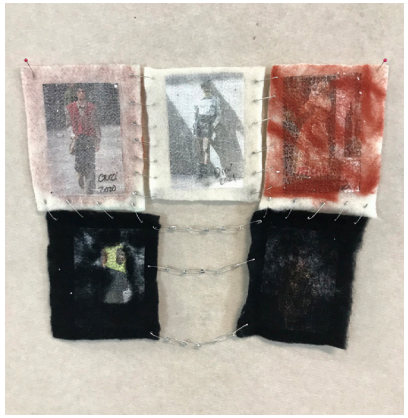
Tried to have different sections of the quilted fabric different densities of stuffed! Which actually had a textured result however achieving this a little difficult in the sew machine process as the wadding gets pushed flat. But this swatch definatly has more built areas and empty pockets.

Quilted Check pattern over checkered Tubular JQ bk Knit. (Blue and Black). Hobby Filled.

Quilting over the pattern was super successful. It gives the flat fabric depth and diamension. I think this on a larger scale and maybe with even more stuffing would be even more inviting for people to iterct with. Cotton yarn makes this super soft to touch. A more ellaborate quilting pattern and or printed/ knit pattern would be great to explore so it is not so expected looking.

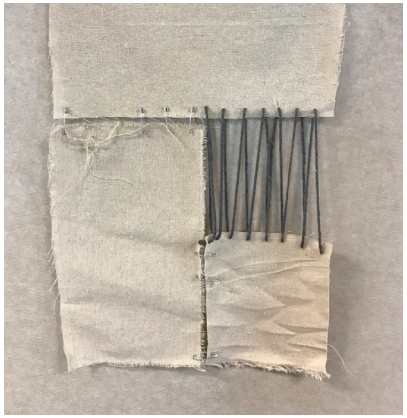
Machine Felted Pieces felted to back felted backing.

Felted Green and white batts together then chopped and refelted on to a pre-felted white batt. I placed the green on like bricks but as it went through the felt machine the pieces shifted and got pushed and flipped which I actually enjoy. The randomness and the textures created provide for an interesting and unsual textile.

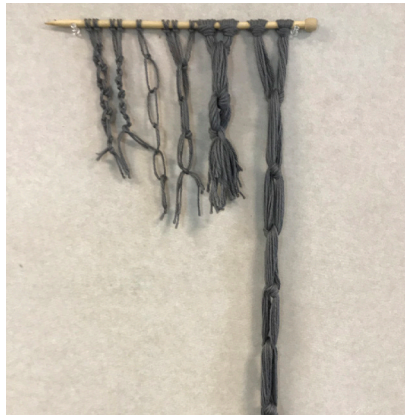


Printed paper felted into Square with various colour overlays constructed together with safety pins. It is really difficult to get a consistancy to a light layer of felt. Paper isn't very usualable for felting as it breaks down flakes apart - so should try with printed fabrics next.

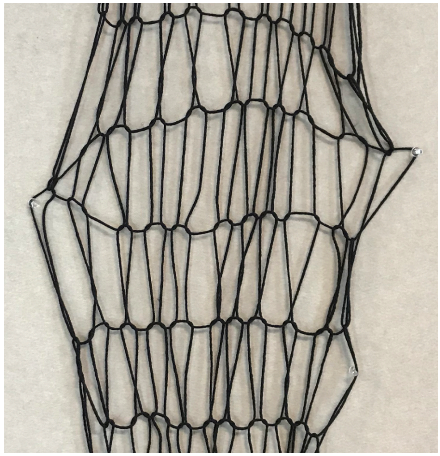
The safety pins could be an interesting way to alllow for people to construct and edit the clothing when wearing it?



Looking at joining techniques.
This calico has been safety pinned together and a quick corset style system. This would allow for the garment to fit lose / tight and expose or cover up more of the body. I think this collection is important to give the user alot of options in how things can be worn. As this garments aren't aimed for the stereotyped masculine or feminine model.



Exploring ways or re-creating a chain look for yarn rather than a metal. Turning an expected hard looking textile to soft. This image has various sizes and scale. The bigger oes are definately the most successful as the swatch needs to be weighty to pull it's self down and hang like a chain. However ! This requires ALOT of yarn to achieve!



Hand knitting with Heavy Yarn.

Exploring the expected size and weights seen in traditional textiling of garments. What does the oversized look like? This to me would be more successful with a bigger yarn as it just looks flimsy - not like giant knitting!

Hand Knitted Swatch.

This is a yellow ripped up sheet that was hand/arm knitted together this definately is closer to the fuller look of the knit I was after - But the sheet is super floppy. Need to find something that is more cylinderical knit with like a giant yarn. The size between each stitch does allow for it to be worn however the user intends which is an exciting interaction point! Any hole can be the head . arm holes.

Green 3 ends 2/60 Yarn,

Extremely long knitted tube made with the intension to stuff and create the arm knitted fabric again however it proved impossible to stuff as was so long and skinny! So instead Crotcheted X 3 times on itself. Not really wanting to explore this further but actually made a very weighty looking chain!

Close up of previous swatch.

Pleates!

Exploration of a range of traditional pleates found across clothing of both genders. Unstanding the basics before moving on to playing and pushing passed how the pleates could be used in a non-traditional way. Already here box pleates with 4 or 5 layers in each pleate were made rather than the standard 1 or 2 to be more dramatic.

Calico and Draw String.

Exploring how manipulation of certain parts of fabric could work. This uses a draw cord and tubing. A simple technique that could be used in any parts of the clothing - mainly for editing of length? Would be amazing to see how it distorts a printed fabric.

Tubular JQ BK Graphic Knit. (2 Colour).

Just experimenting with a reversable knit. The graphics here are a rough hand sketch of the graphics found in a traditional welsh tapestry blanket.

2 colour JQ bk All Graphic Knit.

Hand drawn knitted graphics.

Digital Knit Transfer / Mis-Knit Structures.

Knitting pre-loaded knit structures loaded into the Shima Sieki Knit software as I haven't explored or seen this knitted out before. The mesh knit is very sporty looking - however would be much better with a stretch yarn as cotton kept bursting in high tension places. These structures would be great to scan in and blow up scale then re-knit.

The green swatches are pattern mis-knits but they look like doilies and very old lady fabric.

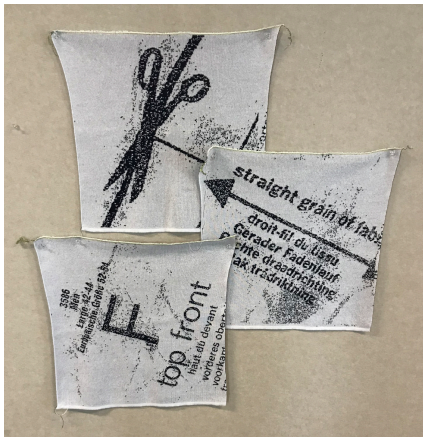
Swatch of sea green front / back bed knitted fabric.

Swatch to see what the yarn colour is knitted and the weight of fabric. This is double bed knitted so slightly heavier. Have found difficult to create the right handle for the knit as it blows out / stretches with out not much retaining of shape.

Unbalance tubular graphic knit.

Red + Black.

Creating texture over pattern.



Graphic JQ all Needle JQBK 1 by 1.

Graphics are taken from paper pattern pieces for making fashion clothing. Scanned and blown up. I think from a textiles piint of view these fabrics a graphically interesting and successful - but is it a bit to lliteral and on the nose touse Patterns pieces of traditional fashion pieces to makes the pattern.

Example of how Linen weight yarn knits.

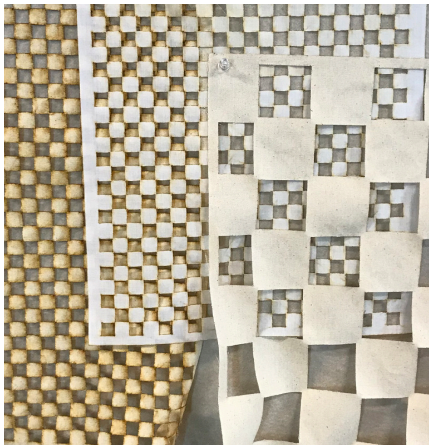
This yarn is only knitable in the whole garment machine in the TDL.

Example of how Denim Weight Yarn Knits.

This Yarn is only knitable on the wholegarment machine in the TDL as too thick for the other machines. Examples here are all needle then half gauge. All needle is way to tight to knit on! However the denim look through knit has a very different feel and drape to the expected wool or cotton -more structurual.

Example of Block Colour Green 2/20 Yarn.

Just seeing what a block colour swatch looks like n yarn. Knits very nicely.



Laser Cutting Patterns.

To add depth and layers to pattern and fabric layers. Work on finding the right settings so NO burn marks are left! Also should move this into unexpected patterns - things that are not so unform - how could that work ? Move on to layering these over other fabrics aswell. How many can be stacked?

Laser Cutting Patterns.

Exploring how laser cutting flat repeat patterns can be used to create 3D sculpting. Next step is to place larger scale and place on to the body. These shapes fall really interestingly could create bigger shapes on the body - and fuller shoulder or extending the waist. Also would be great to use as larger scale - like the over sized knits the user could put / and or wear how ever they want.

Tufted Fabric.

Exploring the capabilities of tufting. This quick prototype is Blue and Yellow Acrylic Yarn Tufted into a recycled coffee sack. The textures are really dynamic and have a lot of depth however I think these textiles would be far to bulky to be worn in a garment definatley more of an upholstery fabric.

Tufted Fabric.

Close up of the textures of the Tufted Coffee sack sample.

Graphic JQ BK All knits.

Warped Graphics
Distressed.

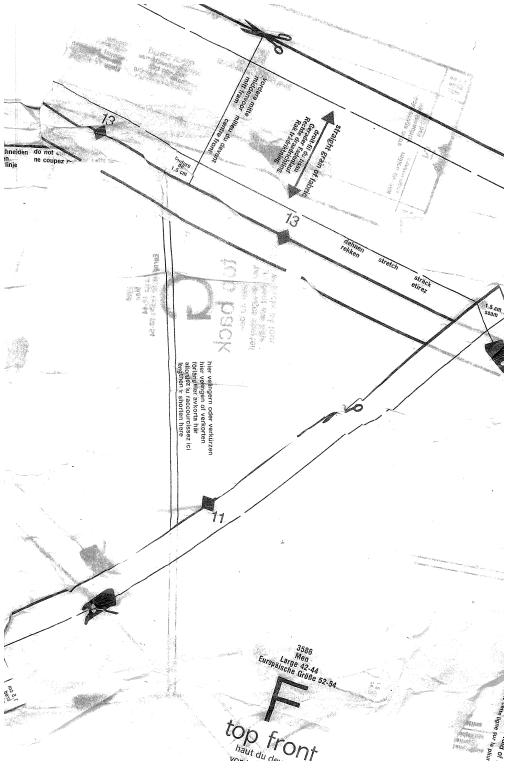
The ripped and laddered knits are extremely interactive but are not stable so would be amazing to scan and try and knit again as a solid fabric that looks ripped. / Distresssed.

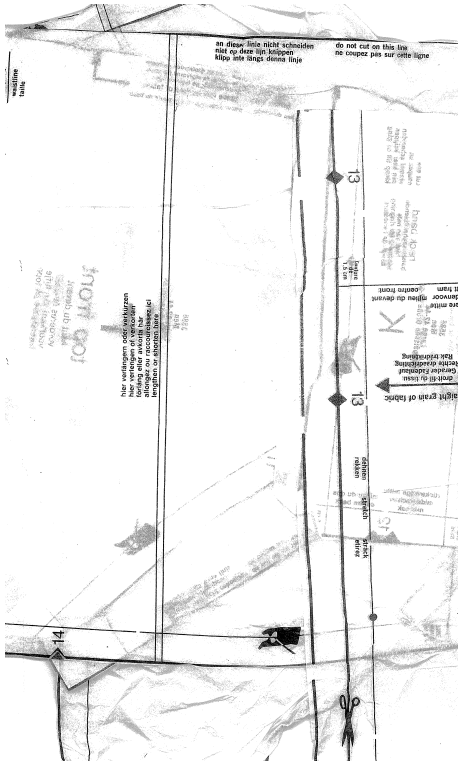
Tubular stuffed and striped knit.

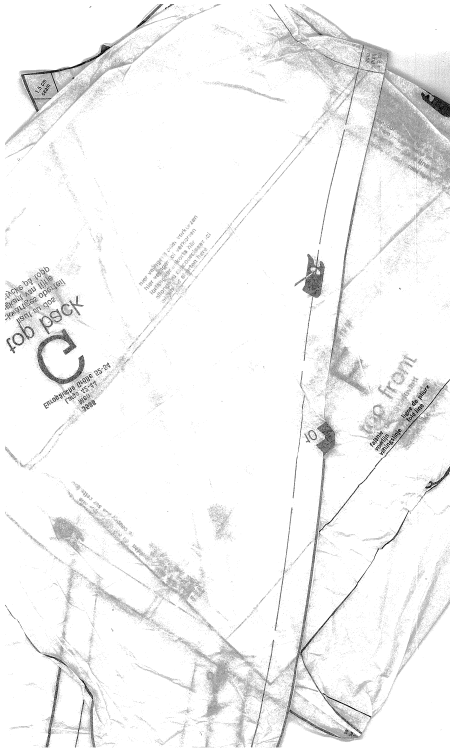
Looking into how different parts of the knit could be stuffed and manipulated. If being worn on body I do not think that hobby fill allows for easy stuffing - Can look frumpy. BUt the tubing is fun and playful - could look at key areas on clothing wear this could be explored further.

Woven Metal Wire.

This piece explores using traditional weaving techniques qith an untraditional material. A play on using traditional mens tools todo traditional womens work. Then a scan to get the piece in a digital format to be possibly repeated or printed digitally.







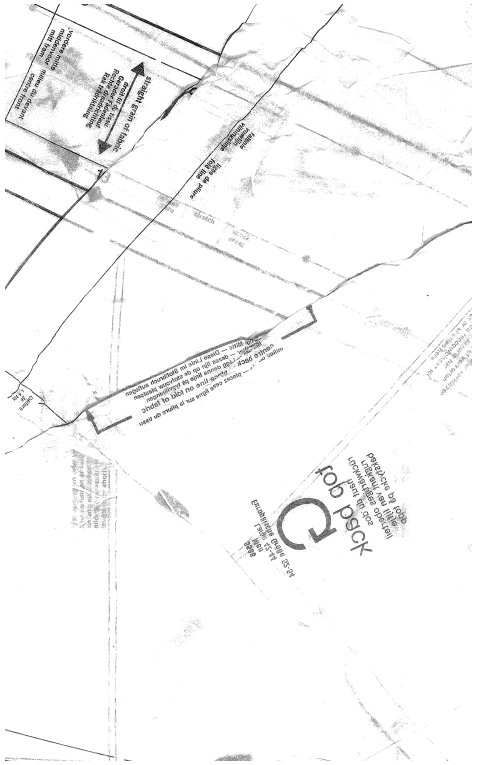


Photo Copies / Scans.

Paper Pattern pieces used through collage to create a pattern to then put on to fabric.

(Small selection of a larger range).

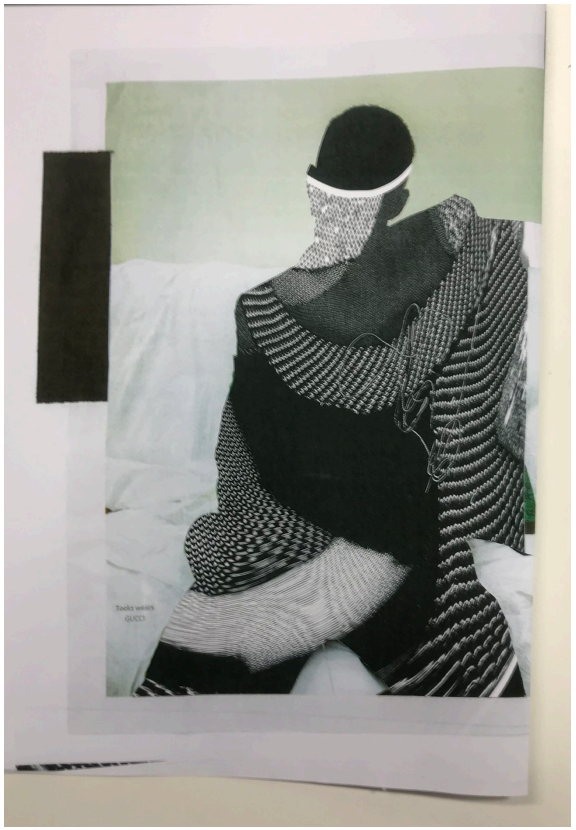
THE WALL
DEC 2020

Textiles were starting to form at this point in my making. I had definately found it hard to get started so went back and created art through collaging processed which can be seen on the wall.

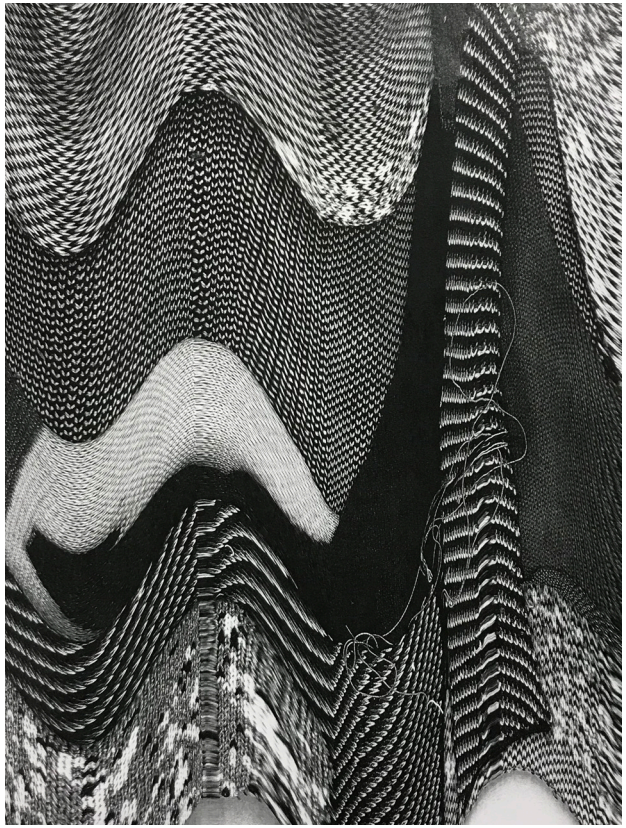
The collaging process was successful in allowing me to blend traditional male and female imagery together into prints. I had a lot of fun with this process and will be bringing it forwards into my textiles creation process.

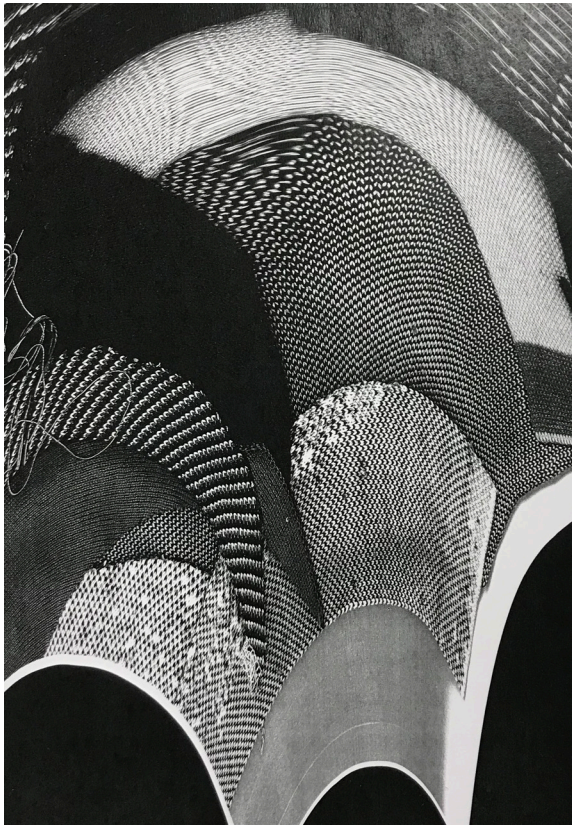
Some experimental quick / rapid prototypes of textile techniques can be seen to see whether or not I could play with scale. These samples on the wall are all over sized arm knitted swatches using various materials including rope, a bed sheet and TDL Yarn.

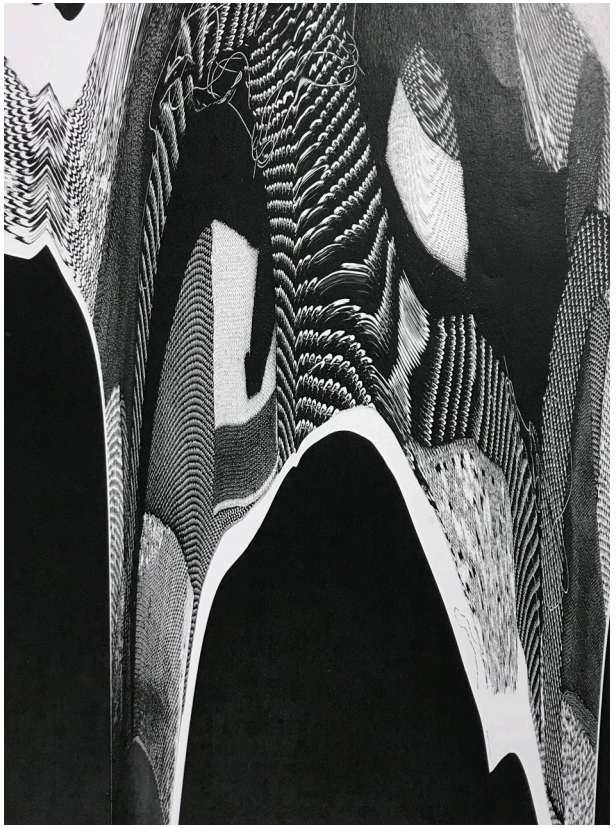
Collaging + Scanning with my own Textile Swatches.



Movement Scanning of Textile collages.







Exploration of Whole Garment knitting / knit techniques.

WHOLE GARMENT.

Ribbed Vest with a 2 X 1 ribbed hem, V neck and ribbed neckline. Drop underarm. 6x2 Main body Rib.

WHOLE GARMENT.

Crew Neck Single bed roll finish. On both the neck and the seems.

WHOLE GARMENT.

Same as previous top but a pearled neckline.

Whole Garment.

2 x 1 Ripped Dress - Would be super form fitting.

WHOLE GARMENT.

Wide Crew Neck. Rip start, plain knit body and diagonally back dropped shoulder seems. These seams arent successfull on a garment with out sleeves as it makes the back of the garment on the shoulders stand wider than the front section.

WHOLE GARMENT.

Example of where the different feeder knits the other section!

Also example of cardigan neck start.

WHOLE GARMENT.

Example of V-Neck Ribbed Neckline.

Flat Lays of Whole Garment Knits.

WHOLE GARMENT.

Marled Yarn and crew Neck. No Shaping to arm - straight drop form shoulder.

WHOLE GARMENT.

2x6 Ribbed Body. V Neck 2x1 Rib neck.

WholeGarment longsleeve Full Ribbed course wool jumper.

Graphic Knitting.

Graphic Knit - All Needle JQ Bk 1x1.
3 Colour.

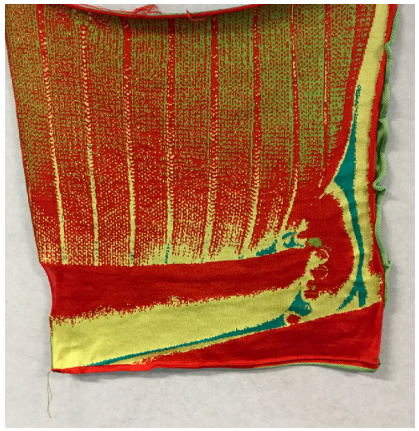
Trying to create Realistic Images through knit. These are scans of the safety pins from thefelting swatches knitted in 2 and 3 colour JQ knits. However blown up they actually loose their detail. Also in trying to re-create real looking graphics the placement of the light yarn so the object looks like it is reflecting light is super important! These currently are looking super flat.

Graphic Knit - All Needle JQ Bk 1x1.
3 Colour

This is the image of the ripped knit - and is actually super unsuccessful in a knit as through the process of photo to knit program the quality and readability of the image has been lost.

Graphic Knit - All Needle JQ Bk 1x1.
3 Colour

This is the image of the Rusted Nails and Pleates - and is actually super unsuccessful in a knit as through the process of photo to knit program the quality and readability of the image has been lost.



Tubular JQ BK 1x1.

The colours here are not intentionally, have just been using left over yarns at the TDL to rapid prototype with. Image of a person with arms crossed - but too much detail has been lost from the image for it to be understood and interpreted correctly.

Graphic Knit of a photo.
All Needle JQ BK 1x1
3 Colour

These are great knit graphics to capture the lines on the garment and to think about how these lines could be used in tricking the eye and creating shape that isn't there on garments.

Graphic Knit and Plain Knit Split.
All Needle JQ Bk 1x1 / 3 colour.

It is more evident here how the lines from existing worn garments can be put into flat knit to give the piece the illusion of shape.

Graphic Knit.
Tubular JQ Bk 1x1 / 4 colour.

Four colours and a tubular knit structure really allows for the colours to pop.

Graphic Knit.
All Needle - JQ Bk 1x1 / 3 colour.

Colour variation of previous swatch.

Knit's of scanned hand knitted grey foam. The scanned picked up the texture of the foam material in an interesting way which has resulted in a really interesting way of knitting the image. Because it is so pixally and grainy the red and green colours from a distance actually blend together and give the illusion thatthe work is brown. This upscale view of knit also looks like metal chains. The black as the base background really maks the graphic look 3D and almost like it is moving.

Exploring textured yarns and other colour yarns would push this further.

Smaller scales repeat graphic as previous knit - this swatch really does seem like it is moving when viewed from a distace inreal life. Then you get up close and realise it is flat knit fabric.

Grey Scale Colour way.

Would be good to try with a black back colouring?

4 Colour Tubular JQ bk 1x1 Knit.

Flat fabric designed to look like layered bunched up fabric.

I think this technique successfully creates the realistic graphic. The white on the metal belt head is particularly effected. Next would be to re-knit in other colours ways to challenge the technique and also to place this textile on to the body. And see where scale is and isn't working.

Mesh structure Knit.

This laddered knit techniques allows to create shape lines when stretched over a shape.

Single BEd Knit
Frt / Bk bed alternating structure swatch in a random checkered pattern repeat.

Super textual ! and structurally pretty sound. Naturally bunches on to it'self.

THE WALL
JAN 2021

Alot more Textiles have been created and can be seen on this wall. The green and the red colours arent neccisserily the colour pallette I want to use but rather are the only yarns I have access to rapid prototype in. They have given off a 3D effect to the textiles which is a process I want to explore further. Also pushing what other colour pallettes / colour ways to try this effect out on. The knit swatches are graphic and over sized. Have pulled out some of the collages that I started earlier to put on the wall to look at how that process could be translated into the textile process as well.

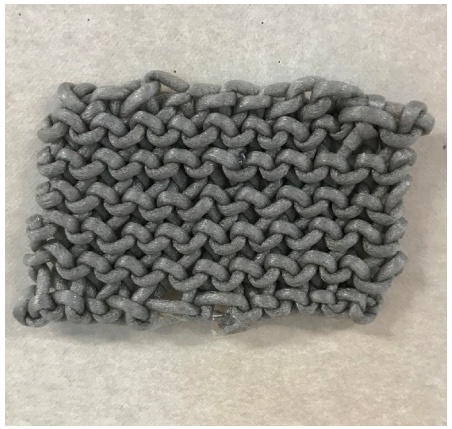
Also through this wall I was exploring the idea of using tradionally " Mens Tools " to do traditionally "Womens Work". This can be seen with the rust dying of the pleates from the nails and using electical foam stuff to knit with. As well as scans of hand woven metal - This metal needs to be turned into a repeat attern digitally nd sent for digital printing. Would be good to see woven metal on to a woven fabric but could also sample on some silks.

ON this wall I have started a mood board just to start gauging some shape ideas however I think I will let the textiles I create inform the shape. As I do not need to stick to any predetermined silhouettes from current gender shapes. I need to make a list of what I want the garments to achieve and work out the shape from there. Start to think about how these textiles could be placed and manipulated onto the body.

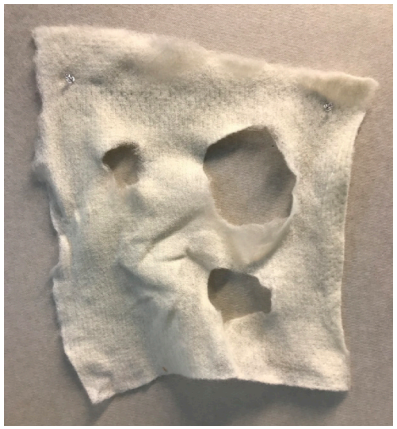
Really interesting how different the textiles look up close compared to further away....

research - Trompe L'oeil meaning.

Also interesting how the green an dred being dotted together through single knit stitches makes the textiles appear to be brown rather than red and green. IT does definately gove the work a pixally look but could be interesting to see what colours can be created through this same process - try pairing colours from my colour way and knit out.



The hand Needle Knitted Grey foam tubing.



Machine Felted wool with controlled holes. The holes were made during the felting process to make them look finshed and organic and that it looks like it was made into the textile rather than simply cutting out and leaving clean shape lines in the material. This first swatch is a thicker layer of felt using 1 whole Batt rather than the second that was trying to achieve a less rigid fabric that could drape and be worn. However that proved unsuccessful as the fabric can be pulled apart with slight pressure which would make it unsuitable for everyday wear. I do like how structured the 1st sample is and maybe this could played with in laying through outfits?

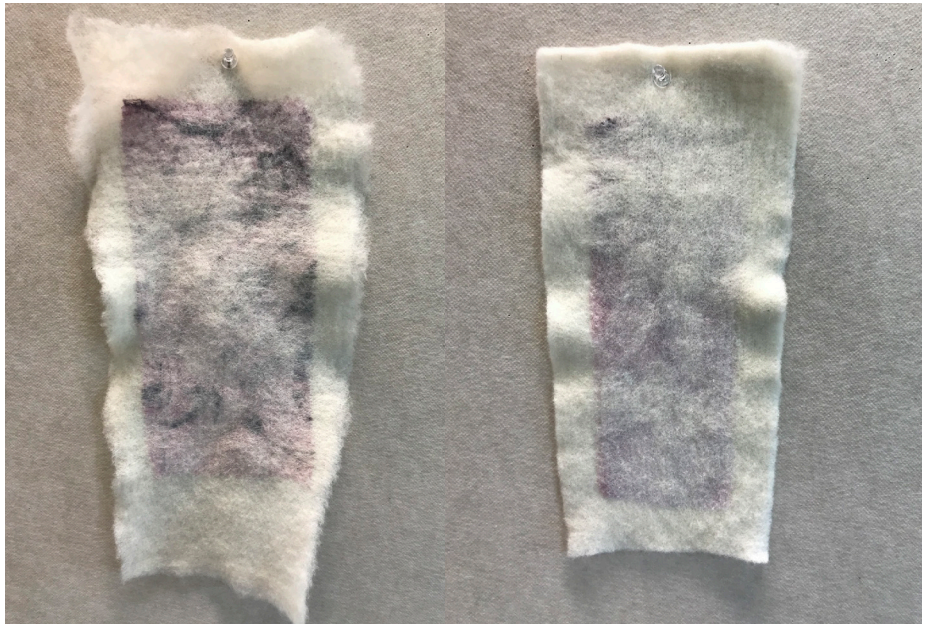
Machine Felted Laddered Knitted Swatch Sample.

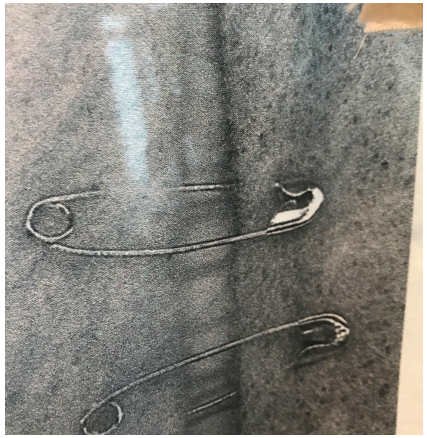
1 Batt underneath with a thin layer of felt on top.

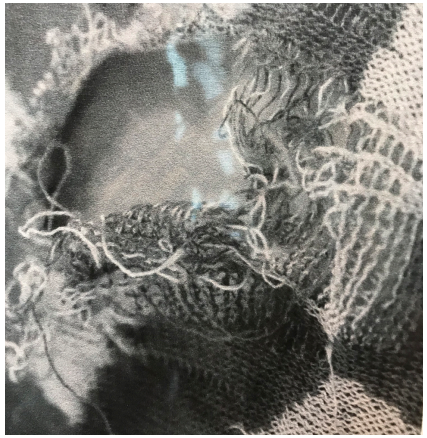
X2 Examle of digitally printed silk.

1 - felted in 2 thin layers of felt on the front and back.

2 - has a thick layer on the back of swatch with a thin layer over the top of the image.

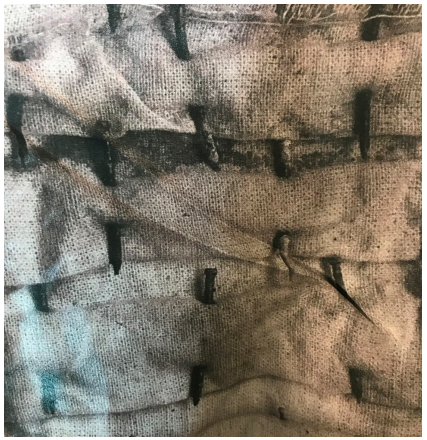


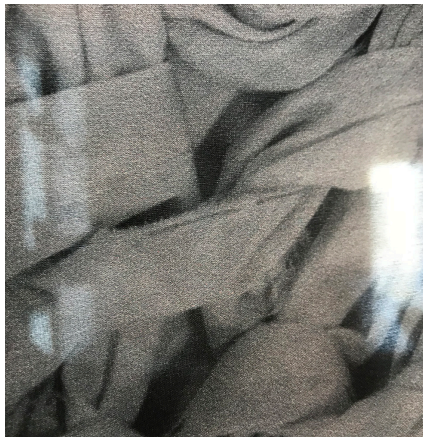


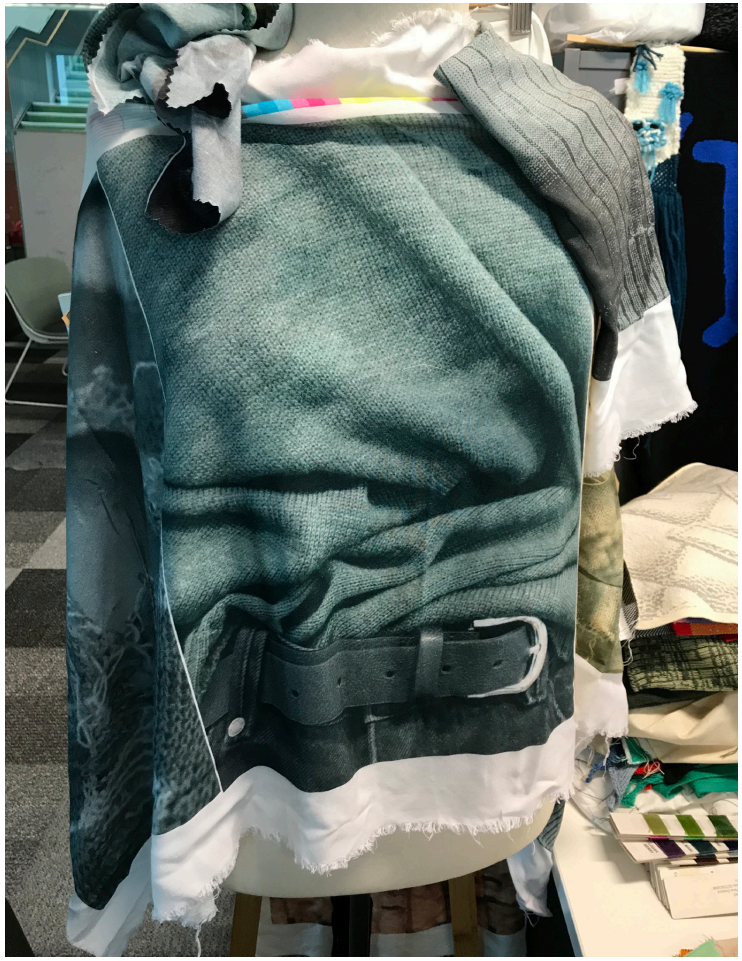


All of these swatches are digitally printed scans of my previous samples of textiles on to silk. Silk was chosen to be the complete oppisite of what the image makes the fabric look to be (e.g. like metal or really sturdy and structured) These swatches all proved to be successul especially when seen from a distance - they really looklike they are made of the graphic rather silk. However photos of the swatches is needed as a process as the scanning provides to much of a low quality image. The larger scale size silk prints have blurry patches ruining the illusion!

I also think that the rust as a colour way isn't my favourite. I think it just tells a whole other story to what I am trying to communicate. And the dark rust colours also can give the fabric an illusion of looking like they are made form wood.







Digital Prints of Digitally knitted knits.

I think these have all been successful and I think playing with the scrunching and rolling of the fabric before the photo and have a few more options will really allow for me to add the illusion of shape to garment // body.

These are successful as you can see the individual stitches but again a much higher quality of image is needed to make these really work.

I do like the grey scale colour pallete but would be good to try and print some coloured knitts and maybe change up the scale?

The second swatch is printed on Viscoes not silk so does have a stronger pigment in the colours.but not as flowy in the fabric.

DIGITALLY KNITTED Collages from FAshion Magazines.

I really think the knitted and printed versions of the collaging of fashion male/female stereotyes can be successful however due to lack of yarn these images are not as clear as they could be! If the red yarn was black. The red is meant to leather and also represents the darkest part of the graphic. So visually even if it isn't in the correct colours the red section should have been knitted in the darkest shade of the colour pallette.

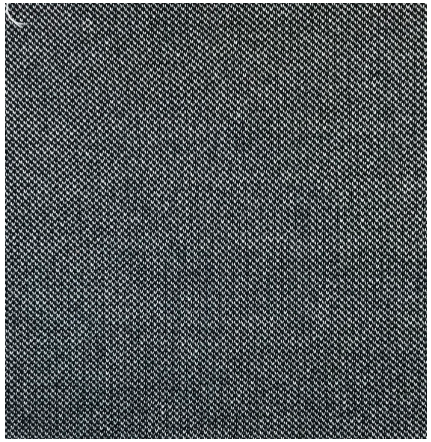
Left is the 3 layer colage - Right is a belt colage.

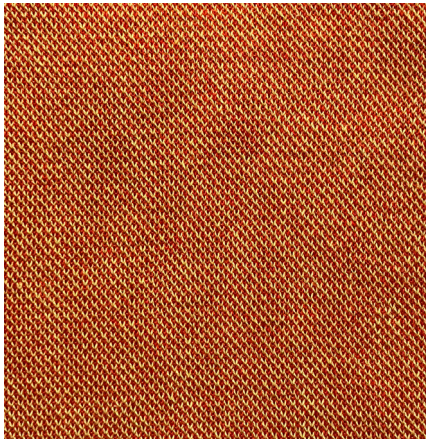
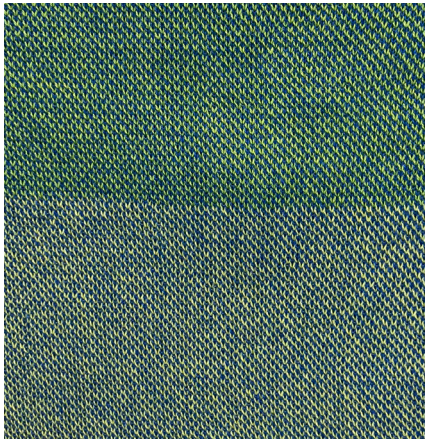
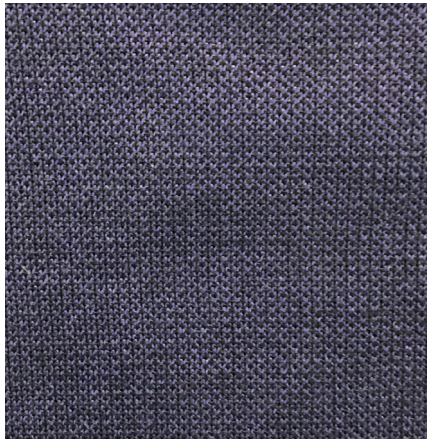
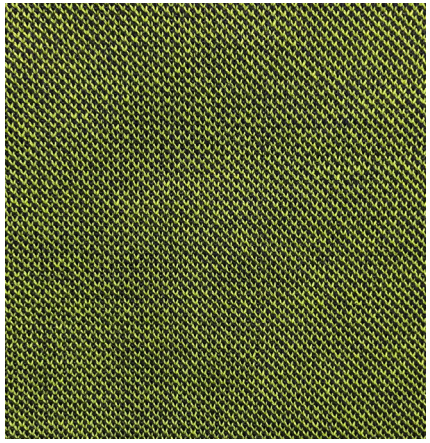
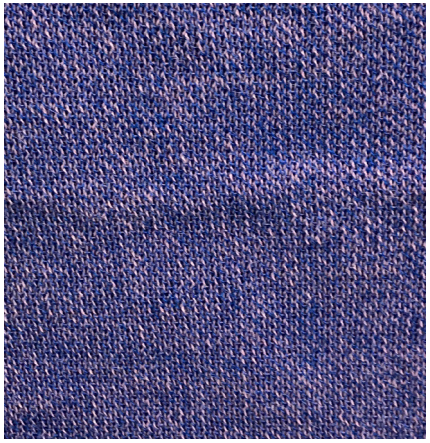
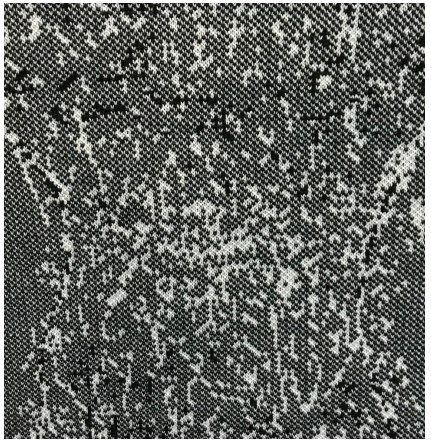
2 Pixal Colour Experimentation.

These swatches are alternating 2 colour knits. I wanted to see what colour the swatched looked like when the yarns were mixed. As upclose they will be 2 different colours alternating stitches.

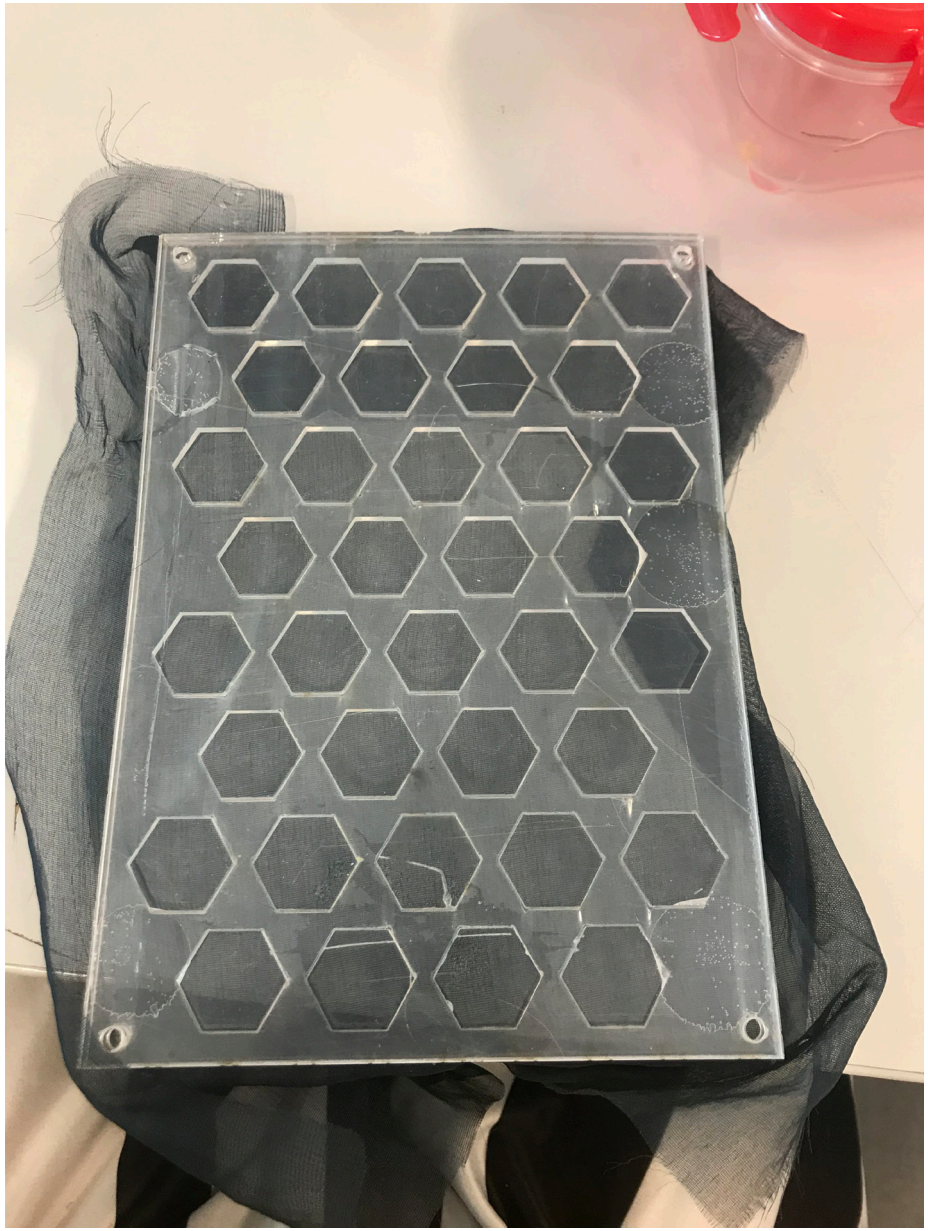
This process is successfull and unsuccessful.
I think this provides a really good way to add more shades and tone into a collection with out having to add a whole other colour. It can also help with transitioning to different colours in the textiles as well as being used strategicallly to shape or the illusion of shapng in a garment.

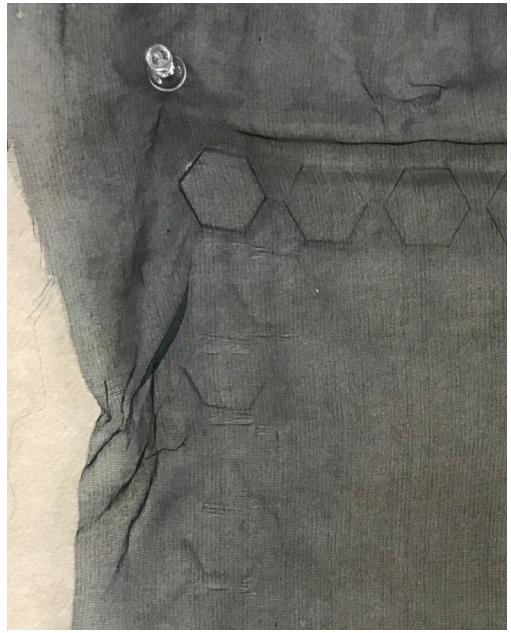
This process and design can look quite chaotic especially if paired with a print or pattern or design. As can be seen n the last few swatches on the wall using any more that one and one alternating stitch colours takes the illusion of the new colour away. Alos pairing back with a dark colour does make the swatch just look black from a distance. If used this will have to be thought through quite carefully to give a successful result.



Closer look at the previous swatches so the 2 colour single side by side stitching can be seen.





Pressed / molded Pattern into fabric. Here you can see the hexigons have been stamped into the fabric. They are missing in the middle as the mold fell apart in the middle of the swatch in the steaming process. BUT in the part where the mold stayed tgether the pattern was super effective. The hexigons stand out and sit up on top of the fabric. Like previous swatches it would be great to do this more randomly on fabric so the print wasnt so expected.

To further this using the fold sections of the fabric that has then been knitted out put those shapes in to mould and crinkle fabric to reflect. There would be rolls in fabric where you do not expect to see fabric rolling.

Photo to the left is of the fabric clampped between the Perspex.

3 Colour JQ Knit. (All Needle).

Was wanting to explore the possibility of creating a textile that looks like a bag or other accessories of garments are being worn but they are actually just in the fabric. This graphic has depth from a distance and upclose is flat. Which i think does work well. This particular image has just been taken from the Internet but could work to take y own photos and then imprint or use a colage I have made.

This knit would be more successfull in a different colour way. (Which can be seen in the next image.)

A black instead of a charcoal would have made this more effective. However currently run out of black yarn.

Creating 3D Texture on Flat knit is all about the scale as well as the placement of the colours. This last knit is far more impactful than the first 2 colour ways and looks more like crumpling leather than the whole bag shots in the above knits . Pushing this concept further could allow for crazy textiles. Full leather looking garments that are actually knitted?

Make a repeat of this and do with out the channel Logo.

My Digitally Printed Silks - Colour corrected to look grey not green - But same images as previously in this document.

THE WALL.
FEB 2021.

Adding the recently explored knit techniques to the previous textiles explored. From here simple knitting the knit garment onto a textile as graphic is being left behind. Can produce much more interesting graphics than those. But can use them to reference shape. Like how bust outlines can be seen because of the rib in the knit stretching.

The non-Binary Flag as a colour pallette has been put on there to use as a potential colur pallette starter. More research is needed into this. I.e. where did this flag come from - what do the colours mean? Do they / do they need to relate to current colour trend research?

Refinement of this board and idea is definately needed. This will be done through starting to put these textiles onto a dress form to see how they hang and let them inform me if they are going to work as a garment collection or not. Also ordering yarns and creating graphics in my intial colour way to start making the process and swatches look a little more co-hesive.

Had the thought of potentially knitting wholegarment waist bands - the idea is that they are kind of like a corset that can be worn as an accessory to an ofit to shape or hide certain parts of the body. These are image of the rough knit belt over a loose fitting shirt to give a waist.

Looking at placement and scale of the graphic - this is something to rember as if i am wanting the image to look realistic I probably do not want to knit larger that these swatches as the bag is already over sized but not easy to see detail!

Would be good to get some more leather looking knit swatches as the leather has great creases and lines that really give the fabric depth through shadowing that can be immulated really successfully through the digital knit machines.

Pairing Swatches that are technically the same knit and finish in knit techniques but appear to be much different finishes because of the visual graphics. (Both swatches are completely flat with no texture).

Dirrection of digital Prints and the scale. What can and can't be seen once wrapped around the body.

Does the silk and the graphic on the silk pair cohesively with the felt or does having actually texture with printed-texture make the digital print appear flat? I think so far as long as there is a good quality graphic used in the digital print then mixing the textured and not textured works well. One doesn't seem to wash the other one out or make look flat.

Playing with how some of the textiles could be layered.

Layering different textile Swatches to look at the balance between them in weight and flow.

gitally created texture and where this could be placed on the ıdy. Digitally creating the texture will allow for uncommon ıcement of texture as there is no worry for the structure to ıld up the texture or be uncomfable for the wearer.

Example of what the Graphic 4 colour knits look like from a distance both front and back. Ft Kate.

FLAT .

SHAPED.

LAYERED.

This gives a really good reference point as to scale. For example the graphic knitted belt is super effective when flat and hung on the wall but on here is less impactful as it wraps around body so alot of the graphic can not be seen. Maybe a smaller scale would be better?

WHOLE GARMENT KNITTING!

Using White Cotton Yarn these are some whole garment vests. They are looking at the placement of structure to show off and hide certain parts of the body.

This is just the first prototypes but this idea can be pushed alot further - could really get creative on how the body is shaped through placement of structure and blocked knits. Could have a really great collection of whole garment items to go with the collection even moving the technique across arange of garmnets not just tops!

Each down the sides of pant legs?

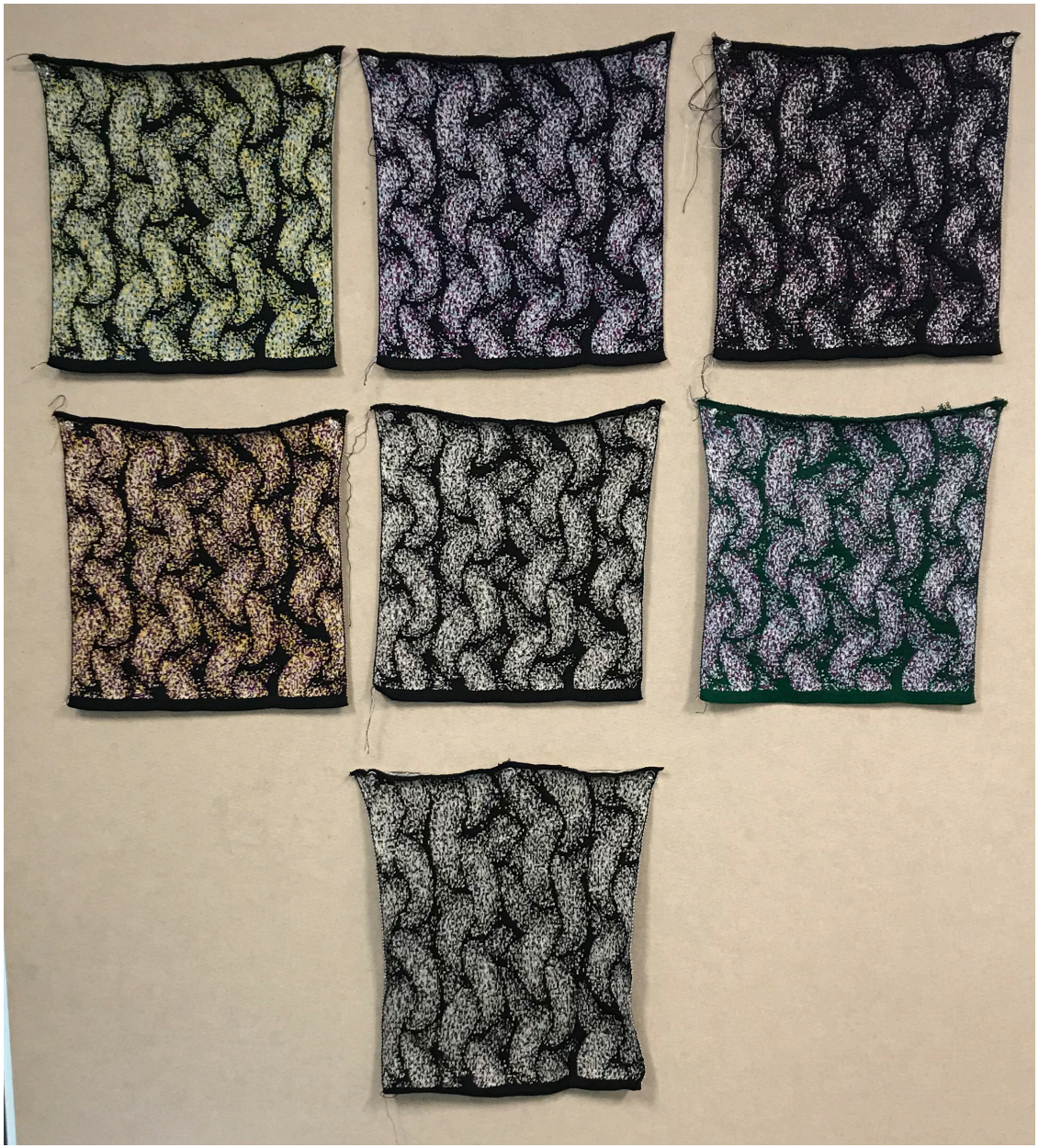
Look at how the structure finishes around the Neck lines shoudl be a lot cleaner and tidier.

Trial with a masculine body sizing VS a feminine body sizing and compare and contrast what is shown and highlighted. Also try with a black layer and maybe no layer underneath ?

Also Try Knit In an ELASTIC YARN for Body Contouring ??

Fake Pleates - Printed on Paper.

Paper with Pleates to be used digitally.



Graphic Knit.
Tubular JQ BK 1x1.

Reworked Colour ways of enlarged hand knitted tube design.

Graphic Knit.
Tubular JQ BK 101.
4 Colour.

Patched work together 1 knit design.

Graphic Knit.
Tubular JQ BK 101.
4 Colour.

Negative Space Design.

Graphic Knit.
Tubular JQ BK 101.
4 Colour.

Patched work together plus added drawn detail 1 knit design.

Graphic Large Scale Knit.
Tubular JQ BK 101.
4 Colour.

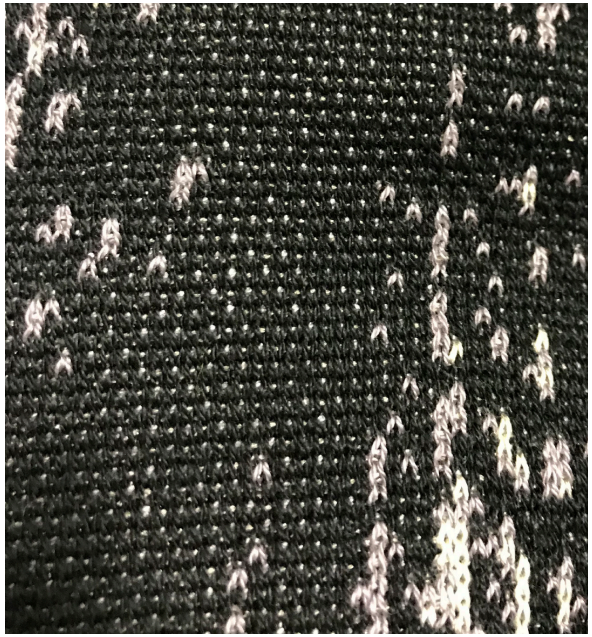
This is an image of a WholeGarment Knitted Jumper I had designed previously layed flat and tied then taken a picture and reprocessed through the knitting software to knit out as flat fabric that looks 3 dimensional.





Graphic Knit.
Tubular JQ BK 101.
4 Colour.

Various Colour ways to explore colour vs Depth.

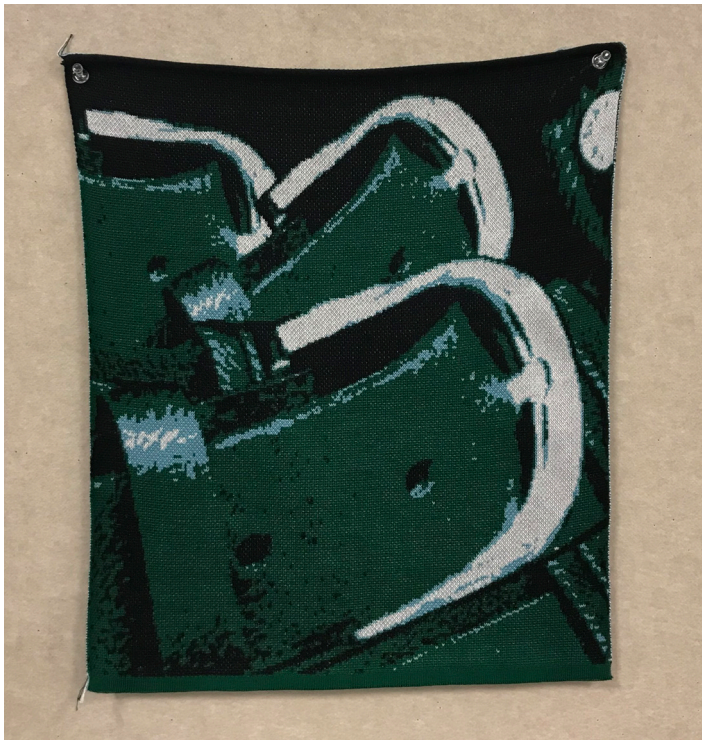


Graphic Knit.
All Needle JQ BK 101.
4 Colour.

An example of this design processed with an all needle knit finish rather than tubular. The impact of the colour is lost as you can see the back of the knit coming through the front as they are attached as one fabric - rather than creating pockets like tubular knit allows.

Graphic Knit.
Tubular JQ BK 101.
4 Colour.

Colour Exploration of quilted leather knit design.



Graphic Knit.
All Needle JQ BK 101.
4 Colour.

Stacked Blets in Green Tonal colour way.

Graphic Knit.
Tubular JQ BK 101.
4 Colour.

Ribbed knit graphic.

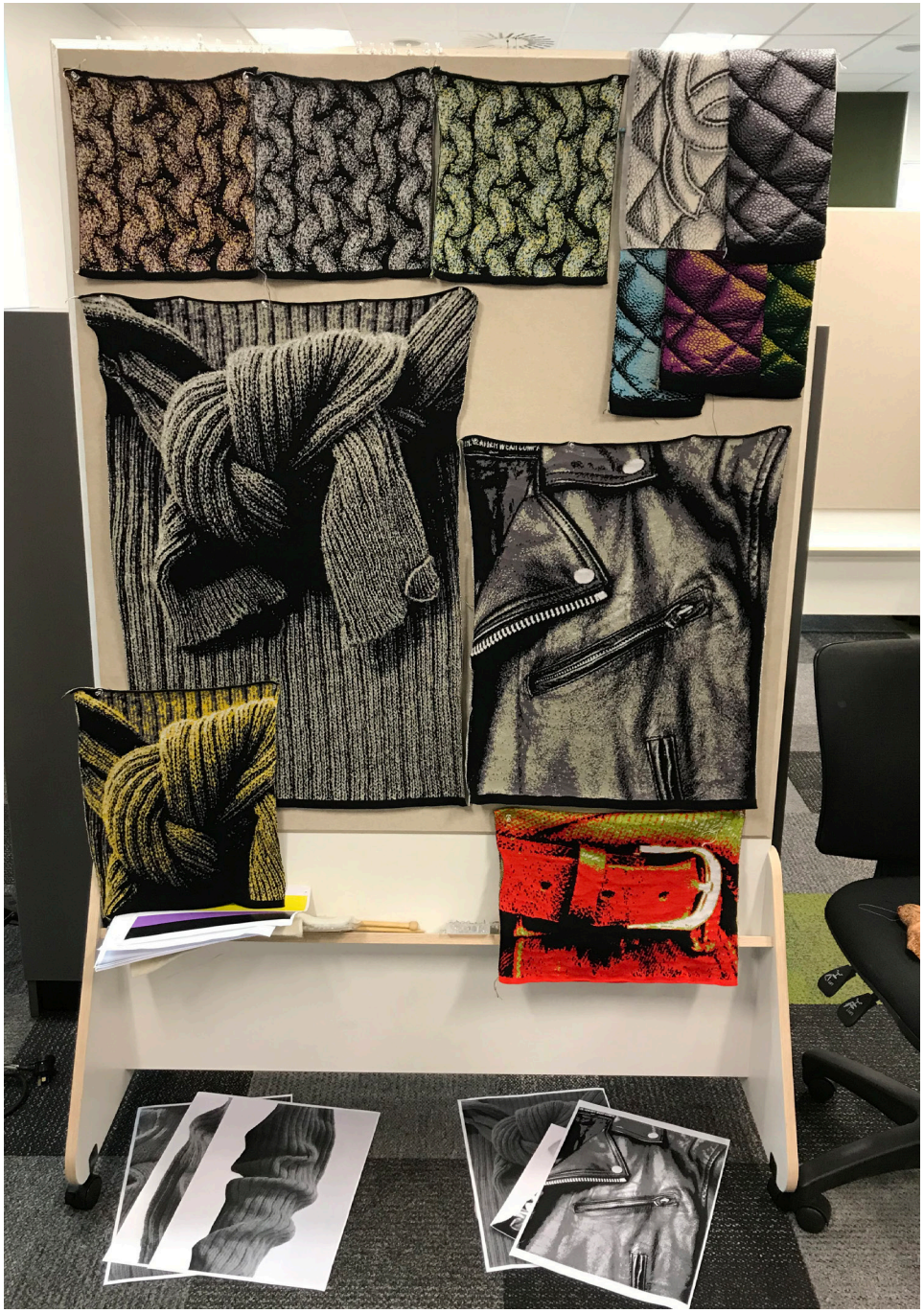
Graphic Knit.
Tubular JQ BK 101.
4 Colour.

Ribbed knit graphic + Glitch in knit machine.

Graphic Large Scale Knit.
Tubular JQ BK 101.
4 Colour.

This is an image of a leather jacket. It has been processed through knit software and knitted out to look like like a piece of leather - the goal was to make a flat piece of knit look three diamensional. To give the appearance of something else.

47.



THE WALL
MARCH (1) 2021.

Refinement of treatment of textiles and knit technique honed in on. Turning my focus to break down of real images into 4 colours and processing those through knit to create a graphic that from a distance appears to a different textile than what it is whne you interact with it up close.

Still exploring colour and how and where and in what capacity it will fit into this project. Working with tonal, especially black, greys and whites seem to be the most effective to creating textiles with graphic perceptions.

Digital print has taken a back seat currently As I didn't feel was fitting the same feel as the knits and where the project was heading.

48.

Graphic Large Scale Knit.
Tubular JQ BK 101.
4 Colour.

Another version of the previous knotted sleeve image I had created. This is an image of a WholeGarment Knitted Jumper I had designed previously layed flat and crossed the sleeves then taken a picture and reprocessed through the knitting software to knit out as flat fabric that looks 3 dimensional.

49.

Graphic Large Scale Knit.
Tubular JQ BK 101.
4 Colour.

All 4 of these swatches were designed to be realistic looking leather knits. However the saturation of colour in the 4 colour break down hasn't worked as well. It was through this process I realised the darkest colour, in this case black, has an extremely important role as it adds depth but it needs to be used sparingly. The black and white is used to create deoth and highlight where as the middle 2 tones will build the image.

Also through this process I realised that there needs to be a minimal amount of block colour section as it actually makes the graphic appear flat the depth sseems to get lost. The image like the first section of the leather jacket previously needs to have stitches dispersed and scattering through each other to achieve the visual cue of the texture needed to created the illusion.

Graphic Large Scale Knit.
Tubular JQ BK 101.
4 Colour.

Leather Jacket knit swatches patched together to provide an example of how the deconstructed leather jacketed knitched pieces could actually be patched together and worn. Scale and shape can really be played with.

51.

Graphic Large Scale Knit.
Tubular JQ BK 101.
4 Colour.

Colour Exploration - however as not a tonal colour scheme the trompe-l'oeil
Effect is lessoned.

WHOLE GARMEMT Knit.
White Cotton Yarn.

A tighter stitch size in hem of the vest aimed to keep the end of the garment from blowing out. - Unsuccessful.

WHOLE GARMEMT Knit.
White Cotton Yarn.

A tighter stitch size and 1 end of elastine knitted into in waist band aimed to keep the end of the garment from blowing out. - Slightly better.

WHOLE GARMEMT Knit.
White Cotton Yarn.

A tighter stitch size and 1 end of elastine knitted into in waist band and ribb structure put into the bottom half of the garment aimed to keep the end of the garment from blowing out. - Getting better but warps the body shape / silhouette - could possibly embrace this?

WHOLE GARMEMT Knitting.

White Cotton Yarn run with 1 end of elastine per carrier. This was down to give the garment “stretch” all over. The idea being that the top would have no shape until whoever was wearing put it on then it takes the form of the body it is on.

As elastine shrinks when steamed this swatch was way to small.

WHOLE GARMEMT Knitting.

White Cotton Yarn run with 1 end of elastine per carrier. This was down to give the garment “stretch” all over. The idea being that the top would have no shape until whoever was wearing put it on then it takes the form of the body it is on.

Knited at a larger size to counter act the shrinkage rate.

THE WALL.
MARCH (2) 2021.

Refinement of process - feel as though I have found the process I want to push for the textile creation. Following the idea of the decieving textiles that appear to be something esle form a distance compared to what they actually are up close. The focus is to break down of real images into 4 colours and processing those through knit to create a graphic that from a distance appears to a different textile than what it is whne you interact with it up close.

Have currently left the thoughts of colour behind and am just embracing the exploration with in the knit process and techniques and seeing how far I can push these graphics and outcomes. And maybe colour success might come through accidently? Already though I am seeing that tonal colour ways do seem to be he more visually impactful and successful in creating the trompe-lioell images.

I am wanting to bring digital print back into the textile mix. I think it is needed as just knits does not provide much textile variation for a collection. However, I want to put the graphics on the digital knit through the same processes as the graphics for the digital knits. This means 4 colours. As anybody could take a photo of a real textile and get printed on fabric. I want the processes to tie this collection together.

Also now able to plan knit and print outcomes through digital image manipulation so do that have to knit every image to check if successful. This is also a cost saver too. Next step is to compile a list of images and take them and translate them through the process to see what would work.

Have also come to realise that these textiles will be a textile collection with maybe 1 outfit made up for display with a fashion collection digitally made. The workload is just too much and the placement of these textiles into garmentary really needs thought and consideration which as a whole other process is something I unfortunately do not currently have time for.

Really pushing this last stage of experimentaions!

Graphic Large Scale Knit.
Tubular JQ BK 1X1.
4 Colour.

Crumpled Fabric Illusion Experimentation - Graphic is of a single bed knitted top. This is reasonably successful in illusion but because of lack of texture in photographed fabric large sections of single colour flatten the image.

Graphic Large Scale Knit.
Tubular JQ BK 1X1.
4 Colour.

Crumpled Fabric Illusion Experimentation - Graphic is of a 2x1 ribbed knitted dress. The texture of the knit has translated well to capture a successful illusion, interestingly barely any black was used in the knit.

Denim Graphic Knit.
Tubular JQ BK 1X1.
4 Colour.

Putting an image of a pair of jeans I myself own into through the 4 colour knit pocess produced a really successful result. The texture of the denim was able to be translated well into knit. The colour scheme of tonal bues works as it depicts the denim looking knit in the colours expected to see with denim.

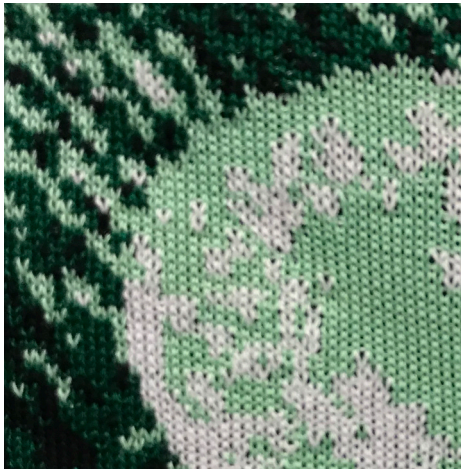
Denim Graphic Knit.
Tubular JQ BK 1X1.
4 Colour.

This is a colour variation of the previous swatch. This is denim knitted in a grey tonal colour way - the graphic is still extremely successful in producing the trompe l'oeil illusion. The white in this swatch for the highlight and shine of the button really brings the graphic to life.

Demin Graphic Large Scale Knit.
Tubular JQ BK 1X1.
4 Colour.

This swatch captures a much larger section of the graphic of denim jeans. This has been knitted at the same imagery scale as the previous two denim swatches. This sample however uses a green tonal colour pallette. Although the green produces a successful trompe l'oeil illusion when viewed next to the blue swatch this one does appear become slightly flater looking. Maybe it is because it is not in the expected / associated colours of denim jeans?

The different perspectives of the knit illusion can be seen with a close up and extreme close up of the work.



59.

Striped Cotton Shirt Knit.
Tubular JQ BK 1X1.
4 Colour.

Experimentation into trying to replicate a lightweight fabric through the 4 colour graphic knit process.

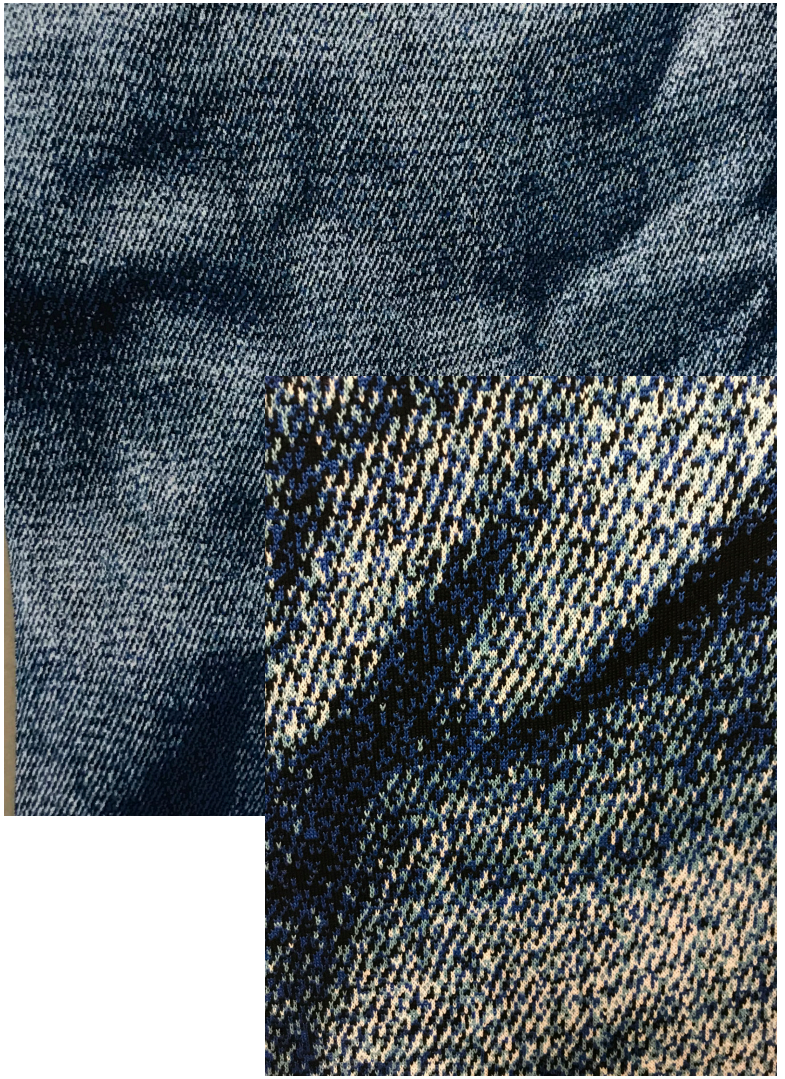
The original trials were in a grey tonal colour scheme and the scale had to be reduced to make the image more believable. Because the cotton lacks a texture there isn't much for the knit machine to pick up, the stripes of the original garment does help to create depth but the lack of texture results in the knitting of stripes of block colour. Texture in the original garment / fabric seems to be a key eliment in a successful textile trompe l'oeil illusion.

Hoodie Graphic Large Scale Knit.
Tubular JQ BK 1X1.
4 Colour.

Grey Tonal Colour way capturing a close up of a varsity style embroidered letter on a hoodie. The large section of plain black knit of the 'E' shrinks that section of the knit andpuckers the fabric around it. Also the hoodie texture is smoth fabric which was not really successfully translated into this swatch.

Close Up Creased Denim Knit.
Tubular JQ BK 1X1.
4 Colour.

This swatch was exploration into capturing the illusion of denim - rather than a denim garment.

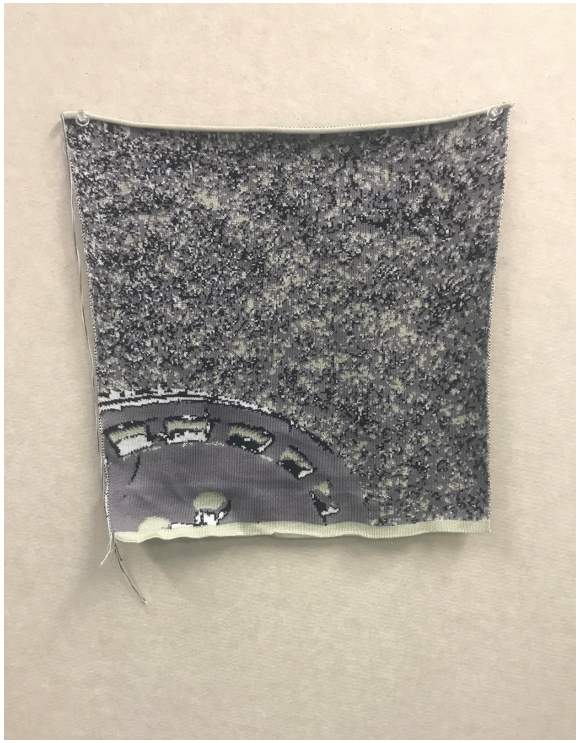


Creased Denim Fabric Graphic Knit.
Tubular JQ BK 1X1.
4 Colour.

A re-vised take on the previous swatch putting this swatch into the expected denim colour way really brought the swatch to life. This swatch is an extreme close up of denim fabric and the knit process was successful as the texture of the denim was picked up.

Graphic Mesh Knit.
Tubular JQ BK 1X1.
4 Colour.

Exploration into lightweight fabric graphics into the 4 colour knit process. Mesh.



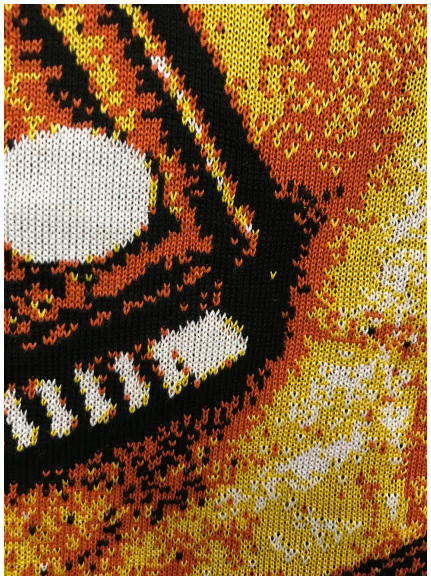
Felt Jkt + Button on Knit.
Tubular JQ BK 1X1.
4 Colour.

Translation of a felt coat + button was extremely unsuccessful. This could be because it was too much of an extreme close up. However, a smaller scale doesn't pick up the texture of the felt and creates 1 block colour in the knit.

Lace Fabric Knit.
Tubular JQ BK 1X1.
4 Colour.

This swatch does produce a really interesting effect. As I do not own any lace this is a graphic taken from the internet. The quality of the original photo was poor so the image is more pixalated than normal in the translation to the knit. The fabric also looks to be more household rather than fashion based.

64.
160.



Color Exploration In Knit.
Tubular JQ BK 1X1.
4 Colour.

All these swatches are the same knit data files re-knitted in various colour schemes. The goal was to discover whether the graphic on the knit could still be intpretted as the original textile even when knitted in an unexpected colour way. Looking through the outputs all still read as a leather jacket quite obviously. However there are also the visual ques of the garments features such as the zippers. Although the outputs were all reasonably successful the black, charcoal, grey and white colour pallette definately does stand stronger than the rest, this is because leather / leather jacket is most commonly found and expected in these colours.

Tonal Colour Comparison.
Tubular JQ BK 1X1.
4 Colour.

4 colour swatches all contain a black and white yarn then 2 yarns in a tonal colour pallette. However as evident in the above leather jacket swatches the coloured yarns needs to actually have quite a large difference in tone to create enough contrast to add the much needed depth to the graphic for the successful trompe l'oeil illusion.

Scale of Knit.
Tubular JQ BK 1X1.
4 Colour.

All of these swatches are the same knit file. The only difference is in the yarns used. Different yarns will result in different size swatches. All of these swatches use 100% cotton yarns but even the colour difference, the way a yarn has been dyed, can effect how it knits. Something to be mindful of.

Linen Shirt in Knit.
Tubular JQ BK 1X1.
4 Colour.

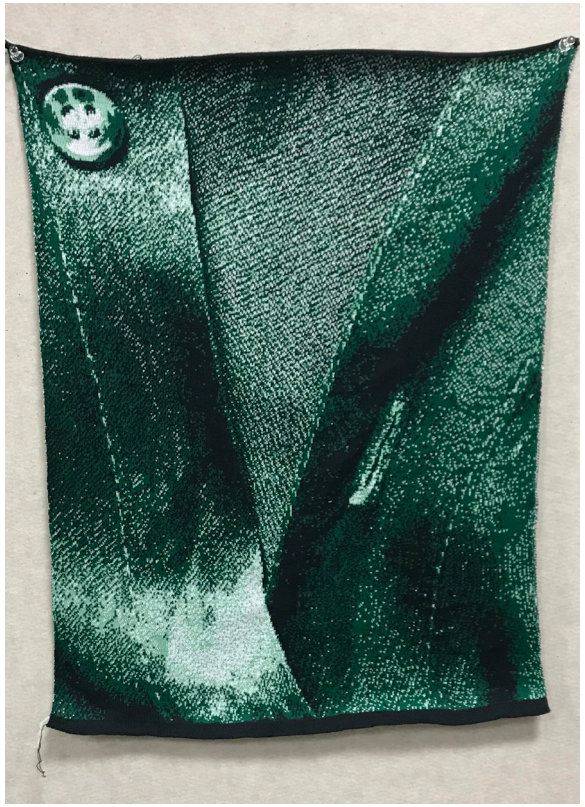
Further exploration of trying to translate lightweight fabrics into the 4 colour knit process. This is a photo of a linen shirt I had taken, I thought the texture of the linen would be what is needed for the knit process to capture the fabric. However, as is evident in both colour ways of the swatch linen doesn't translate into knit. Really big sections of single colour knit are coming through which flattens in the 3 dimensional illusion.

Satin Shirt Graphic Knit.
Tubular JQ BK 1X1.
4 Colour.

First swatch at translating satin into knit. Even though satinis such a smooth fabric the light reflecting of the shiny fabric actually creates the illusion of texture that is picked up by the knit machine, rather than knitting block colour. The button in this swatch is too large though, the patches of block colour need to be reduced.

Satin Shirt Graphic Knit.
Tubular JQ BK 1X1.
4 Colour.

Large swatch of the satin shirt knitted at a smaller graphic scale. Again the light reflecting from the fabric in the original photo seems to be what help creates the depth of the image, instead of relying on the texture like in the other swatches. The details of the stitching down the front of the shirt have come out particularly well here.



Graphic Large Scale Knit.
Tubular JQ BK 1X1.
4 Colour.

Experimentation of colour into the satin knits as satin shirts can be any colour.

Graphic Large Scale Knit.
Tubular JQ BK 1X1.
4 Colour.

Experimentation of colour into the satin knits as satin shirts can be any colour.

WholeGarment V-Neck Dress Graphic Knit.
Tubular JQ BK 1X1.
4 Colour.

Further experimentation into creating the illusion of textured and rolling fabric through digital knit.

Cotton Pants Graphic Knit.
Tubular JQ BK 1X1.
4 Colour.

Further experimentation into creating the illusion of textured and rolling fabric through digital knit using a lightweight fabric. The graphicis an up close image of cotton trousers. The depth is in the image but the graphic reads more as a canvas that a lightweight cotton.

Graphic Large Scale Knit.
Tubular JQ BK 1X1.
4 Colour.

Green Colour way of a previous knitted swatch.

THE WALL.
MAY 2021.

This wall although still slightly chaotic reflects a solid direction for the final output of the research. This is starting to curate the final collection and looking at what the colours for the final of the iterations of the swatches would be. After many colour variations of swatches it has become evident to myself that these swatches should be in a tonal colour way that is semi-expected of the fabric that it is portraying in the graphic. Some of the visually different graphics can be knitted in the same tonal palette as the graphic is strong enough to tell the difference between for example knit and denim could easily both be blue.

Looking over this refinement the creation process and method has been clearly defined however there is a need for more variety of graphics on the fabrics in the knit. A few more key pieces, maybe photos of other sections of the garments, like a back pocket of the denim will make the collection more co-hesive to the message. I think the textiles here represent the traditional " male wardrobe" as the traditional "female" wardrobe pieces are hard to see clearly what they are from the knits (i.e. the knitted dress).

As the swatch with the knotted ribbed knit sleeves on it will be used to demonstrate the making process of physical to digital to physical way of making the final outcome (the flat knit) should be the same colour as the jumper it was made from. So ordering Red tonal yarns.

I think the collection does need a bit more variety in terms of graphics - would be good to get some more lighterweight looking graphics in there as well as maybe another new colourway.

The blue V neck ribbed knit is actually the top third of the original graphic so could beworth knitting the full length to privide a bigger variety in actual swatch size. As well as this it would be good to look at putting in a smaller scale (graphically) to balance out the collection.

Unsure of using the colour blue or pink in final outcomes with somuch stereotyping to gender.

Start planning how these swatches could be incorporated into 1 colour way for a garment?

Yarn to Order.

- Red Tonal
- Yellow Tonal
- Purple Tonal

Graphic Knits.
Tubular JQ BK 1X1.
4 Colour.

Green Tonal Colour Way. Experimentation of successful knit illusion swatches into the same colour palette for exploration of how the swatches sit together. If these swatches went into a garment could the different textures be enough to create different looking fabrics through out the garments. Or does there need to be a bigger contrast through the colour of each texture as well.

Graphic Knits.
Tubular JQ BK 1X1.
4 Colour.

Blue Tonal Colour Way. Experimentation of successful knit illusion swatches into the same colour palette for exploration of how the swatches sit together. If these swatches went into a garment could the different textures be enough to create different looking fabrics through out the garments. Or does there need to be a bigger contrast through the colour of each texture as well.

Graphic Knits.
Tubular JQ BK 1X1.
4 Colour.

Grey Tonal COlour Way. Experimentation of successful knit illusion swatches into the same colour palette for exploration of how the swatches sit together. If these swatches went into a garment could the different textures be enough to create different looking fabrics through out the garments. Or does there need to be a bigger contrast through the colour of each texture as well.

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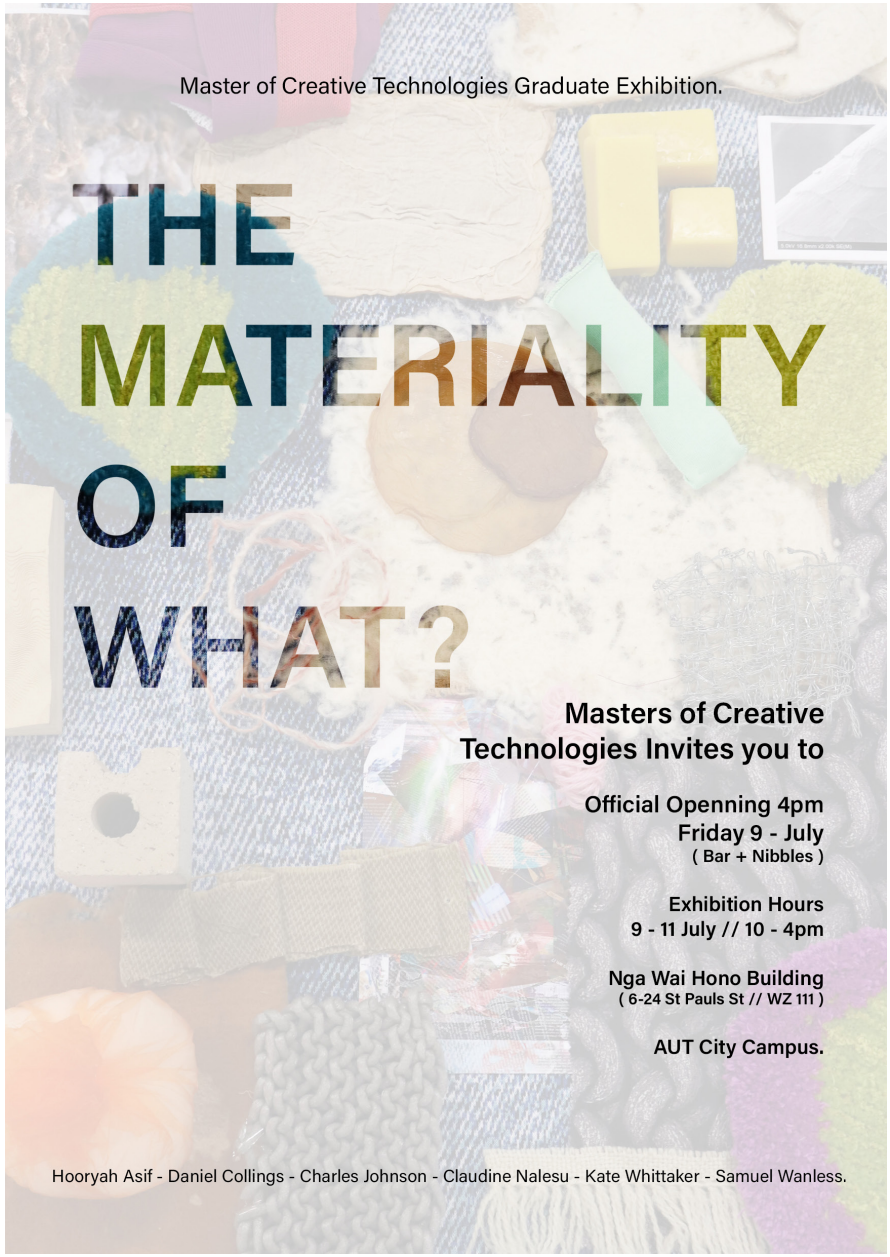
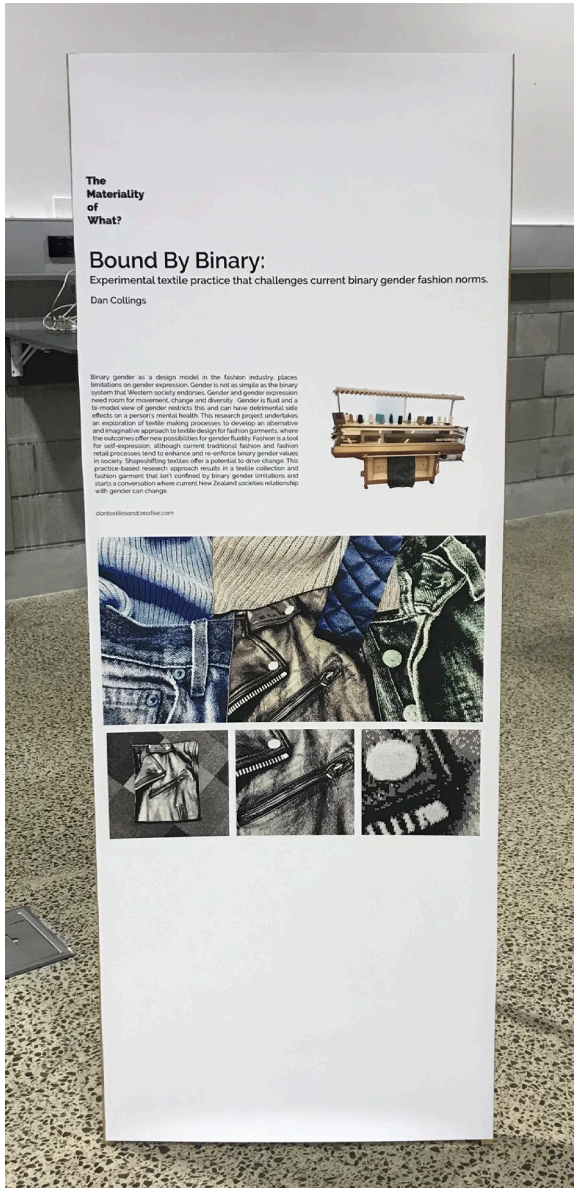
B - ArcInTex 2021.

The ArcInTex 2021 Symposium hosted by Auckland University of Technology aimed to bring together researchers, academics and postgraduate students from across the global ArcInTex Network to discuss current issues, research and opportunities for collaboration around the theme of Future Living Environments. The program included three live discussion panels; an online exhibition with an associated live forum to discuss work in the exhibition; and a PhD student colloquium (live) with as associated register of PhD projects and abstracts. Link to the event website: https://www.futurelivingenvironments.org/.

C - Materiality of What Exhibition 2021.

Bound By Binary, the textile collection and fashion garment series was displayed at “The Materiality of What?” exhibition. The exhibition took place July 9th - 11th 2021 within the Nga Wai Hono Building, St Pauls Street, in the Auckland University of Technologies city campus. The work was set up to encourage interaction with the textiles and give a person the ability to play with the perspective shifts in the visual of the textiles themselves.




The
Materiality
of
What?
Bound By Binary:
Experimental textile practice that challenges current binary gender fashion norms.
Dan Collings
Binary gender as a design model in the fashion industry, places limitations on gender expression. Gender is not as simple as the binary system that Western society endorses. Gender and gender expression need room for movement, change and diversity. Gender is fluid and a bi-model view of gender restricts this and can have detrimental safe effects on a person's mental health. This research project undertakes an exploration of textile making processes to develop an alternative and imaginative approach to textile design for fashion garments, where the outcomes offer new possibilities for gender fluidity. Fashion is a tool for self-expression, although current traditional fashion and fashion retail processes tend to enhance and re-enforce binary gender values in society. Shapeshifting textiles offer a potential to drive change. This practice-based research approach results in a textile collection and fashion garment that isn't confined by binary gender limitations and starts a conversation where current New Zealand societies relationship with gender can change.
dantextilesandcreative.com