Fashion, Forward!
A Practice-Led Exploration into the Confluence of Traditional Techniques and Contemporary Technologies in Fashion and Making

by

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Abstract

The current research is a combination of practice-led design research and a phenomenological qualitative study into the incorporation of traditional handcraft techniques such as garment construction and fabric dyeing, with contemporary technologies and materials such as digital printing. Additionally, a previously-made wearable technology artefact was reviewed to glean insights into its process and resultant challenges. The purpose of the research is to address the gap in literature and skill-based knowledge in *making* in the combination of tradition and technology. The objectives of the design research are: to explore the design and *making* processes in the integration of traditional techniques with contemporary technologies, to create artefacts as a means of skill building and technique exploration, to document the processes, and to present all findings to expert artisans for critique and feedback. The objectives of the qualitative phenomenological research are to explore how traditionally-trained artisans incorporate contemporary technologies, techniques, and materials into their practice.

The design research process involved the creation of technique exploration artefacts involving beading, fabric manipulation, dyeing, and digital printing. All steps were recorded through notes, photographs and/or video, and a gallery exhibit conducted for an audience of expert artisans from whom to gain critique and feedback, which was used to create a final process garment in half-scale. A sample of 5 expert artisans who combine both traditional techniques and contemporary technologies in *making* were interviewed to gain insight into their practice, and common themes identified and interpreted.

Design research results were viewed alongside the results of the qualitative research, and the following main conclusions drawn: Artisans raised in an "analog" way who then had to switch to "digital" past the majority of their traditional training (i.e. generations prior to Millenial) may face more difficulty in incorporating contemporary technologies into their practice, as the contemporary technologies and resources may not feel as intuitive. Thus, further research is recommended in this area. Additionally, documentation is a major component of the design process, both as a means of record-keeping and as a knowledge resource, and it is recommended to use a simple and clear method to ensure the widest reach for accessibility. A commonly-used and recognized format is the "step-by-step" tutorial, which involves detailed photographs depicting steps taken and materials needed, accompanied by rich descriptions and explicit detail. As traditionally-trained artisans may already be familiar with the Master-Apprentice model of learning knowledge and skills from a more-experienced other via hands-on training, a contemporary training technique that may be useful is that of a webinar, or a video conference, wherein the more-experienced other is accessed live via the Internet. This opens the pool of knowledge beyond those artisans locally available.

Specific to wearable technology, major challenges lie in both the accessibility of relevant knowledge resources and the materials themselves. In addition to finding the resources, supplies, and equipment needed, inflexibility of materials yield challenges for traditionally-trained artisans including rigidity and weakness of wiring or conductive thread circuitry, and the need for the artisans to adapt existing *making* knowledge to meet the requirements of the different media. As a result of these conclusions, it is recommended that further study be conducted in this area, with the potential to open the research to additional contemporary technologies such as 3D printing and lasercutting.

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> People think that everything I make is 3-D printed, but t**he basis of my work is really craftsmanship**. I think a lot of people try to separate the two. You have traditional houses that focus on craftsmanship, and then you have people who are into technology, **but I don't really see that they have to be apart. I see them as equal, and I actually think that they can complement each other.** Sometimes a texture that I've been developing on a 3-D printer can be an inspiration for a handwork technique, and sometimes it's the other way around.
>
> -Iris Van Herpen, *Vogue,* 2016.

CHAPTER I. INTRODUCTION

Overview

Integrating traditional techniques with contemporary materials and technologies allows for an exploration in a new medium – the confluence of tradition and technology, which holds the future of *craft* (Livingstone, 2002). Technology impacts design methods, increasing possibilities for fashion designers and improving productivity (Fiore & Mullett, 2005), and there is a need for harmony between the level of technology and aesthetics: one should not outweigh the other in seeking a balance of design between the two (Chang, 2005). While each have their benefits, there are areas in which it is important to recognize limitations. Just as a machine cannot complete the handcrafted precision of haute couture (Farnault, 2014), one cannot ignore the speed with which a technological process can substitute for a time-involved, traditional technique such as hand-cutting thousands of flower shapes out of fabric.

Adaptation

Evolutions in materials and technique are a necessary adaptation to advances in industry settings rather than the pigeon-holing of knowledge and tradition that occurs with such careers as

bespoke tailoring (Hoang, 2017). Added to this, the rapid growth of developments in technology creates and fuels a learning curve on the part of the artisan (Wallace, 2014). Tangentially, for craft to endure, perspectives on handcraft, *making*,[1] and design need to evolve (Livingstone, 2002). Cummings (2002) calls for the use of a *common form*, arguing that the recognizable form helps to ground the design, which can further the cause of artistic expression, allowing the artisan to create an artefact to which the audience or public can identify in some way. For example; while a motorized dress that lights up, sings, and changes shape may be considered as "novelty," a dress that incorporates technology in a more subtle way such as the incorporation of lighting amongst beading, or the use of 3D printing to create embellishments, may be received as easier to digest, allowing for the public to adapt to the technology gradually.

Greenhalgh's (2002) argued that "in isolation technology transforms nothing permanently and triggers little into life beyond itself" (p. 203). In conjunction with adaptation on the part of the public towards seeing fashion and technology integrated into design, the interdependence of design and technology can create new artistic forms and media. "I approach digital technologies as an artistic medium, defined by the materials, as well as the methods of production. This approach always pushes me to think of more innovative uses, instead of just making pre-existing processes easier or faster" (Cobb as quoted in Johnston, 2015, p. 42). This discussion of technology-cum-medium differentiates its usage in design from that of fabrication. In the context of the current research, contemporary technologies are viewed as tools with which to aid in the design and creation of realized artefacts.

[1] These and other definitions can be found on page 6.

Design and the Artefact

A conscious design and creation decision must be made to find the point where tradition and technology combine. The artisan communicates with others in the learning of a required skill, and there exists a dialogue of *making* between the artisan and the artefact. Here, too, exists a dialogue: between the artisan and the technology, where a balance is chosen between tradition and technology, informed by the artisan's knowledge of the materials and processes required to successfully produce the artefact. The combination of *tacit* and *experiential* knowledge and skill sets informs the design approach through which the artefact is created. The balance of function and style exists as a dialogue between elements that have a hand in determining the final shape and purpose of the artefact.

The Problem

There exists a gap in the literature regarding the processes taken by traditionally-trained *designer-maker*s (*artisans*, in the current research) in adapting their practice to the demands of contemporary design. While technologies such as three-dimensional (3D) printing and wearable electronics have made waves in the fashion world, there is something to be said of the argument for adaptation, rather than a complete overhaul of technique. Current literature exists that addresses the basics of each world (Hoskins, 2013; Hartman, 2014; Genova & Moriwaki, 2016), but there is little to no information published for artisans with a high skill set in traditional techniques and materials regarding the process of adapting their skills to include these new "technology tools for the toolbox." Through the processes of trial and error, most make their way around the idea by collaborating with other experts in the relevant fields. As the fashion industry evolves to more readily include contemporary technologies such as wearable computers or electronics, 3D printers continue to find their way into the homes of hobbyists, and digital

printing companies lower their cost and minimum order rules to accommodate the needs of smaller designers, so too must the evolution of independent artisans continue.

Research Context

In the Master-Apprentice tradition, information and skills are passed down through generations. As this knowledge-passing method evolves to include new internet collectives, written and visual documentation becomes increasingly important so as to effectively convey instruction and technique. Virtual communities with discussion forums such as Reddit (http://www.reddit.com) or Instructables (http://www.instructables.com) provide a means for independent artisans to ask questions and learn information from others with more expertise. All of the written and visual knowledge, however, does not an experienced artisan make. The *techne*, or skill knowledge, must be developed through the process of "learning by doing." While arguments can certainly be made that knowledge transfer through reading alone is sufficient, the *tacit* and *experiential* knowledge[2] passed on through the *making* process is without compare. Thus, the current research includes a practice-led approach, whereby the researcher engaged in technique exploration via the creation of artefacts. In this way, process adaptation occurred in physically realized forms, and the physical objects made were utilized in an exhibition for expert artisans in fields such as fashion, costume, theatre, industrial design, and others. This exhibition permitted the expert artisans to interpret the work for themselves and render opinions, criticisms, and suggestions for future work. Thus, the tradition of Master-Apprentice carries on (through object interpretation made by more-experienced others), the researcher demonstrated prowess in the adaptation of tradition and technology, and documented knowledge is created, processed, and developed into information that can be used by other artisans and researchers in the field.

[2] *Tacit* and *experiential* knowledge are defined on page 6.

Problem, Purpose and Research Objectives

In summary, *the **problem** to be addressed by the current research is that of a lack of knowledge and literature in the field of adapting traditional fashion techniques to the tools of contemporary technologies such as wearable technology and digital printing*. While basic information exists at the beginner level, little to none is published discussing the implementation of these contemporary technologies to traditional techniques at a highly skilled level. Therefore, *the **purpose** of the research is twofold: **1)** to expand knowledge and literature in this area through meeting the following **objectives**:*

1. To explore the design and *making* processes involved that, through use of a foundation in fashion, integrate traditional techniques and materials with contemporary technologies and materials such as digital printing.
2. To create art objects (artefacts) as a means of skill building and technique exploration.
3. To document and record the steps taken, processes developed, and resultant thoughts/conclusions of the researcher in order to create written, aural, verbal, and visual knowledge for the purpose of expanding tutorial and informational literature in the field.
4. To present all process findings and artefacts to a group of experts in order to ascertain the credibility of the work and discover suggestions and recommendations for process refinement and future research work.

And ***2)*** *to explore how traditionally-trained artisans incorporate contemporary technologies, techniques, and materials into their practice, by way of interviews and the interpretation of emergent themes.*

Definitions

- Artefact: Art objects used in research as a means through which to explore a phenomenon (Thornquist, 2015).
- Craft: The skill-led creation of an item by hand (Frayling, 2011).
- Design intervention - a process utilizing new materials and techniques, and through which products are redesigned or created anew, linking tradition with the contemporary, and introducing tools, materials, and processes to artisans (Kapur & Mittar, 2014).
- Designer-maker: A craftsperson who combines the skills of a designer and an artisan together (Santino, 2002).
- Digital printing – The process of applying color to fabrics via printers and ink (Lu, Mok, & Jin, 2017).
- Episteme: *Knowing what*, or knowledge *of* or *about* technical knowledge and skills (Lehmann, 2012).
- Experiential knowledge: Learned knowledge, gained through the training and practice of a skill (Onians, 2010).
- Making: A process of craft (Pöllänen, 2015) through which materials are manipulated, acting as a link between design and artefact (Cummings, 2002).
- Tacit knowledge: "*Knowing more than we can tell*" (Polyani, 1983, p. 4). In the current research, *tacit* knowledge is the intuitive "feel" for techniques or materials.
- Techne: *Knowing how*, or technical knowledge and skills (Lehmann, 2012).
- Wearable Technology: Worn technological elements or intelligent clothing (Malmivaara, 2009).

CHAPER II. LITERATURE REVIEW

Overview

Published literature was reviewed in detail in an effort to further learn about the topics of study. Due to the in-depth nature of the current research, it was soon evident that a multi-faceted approach would be needed, thus, the concepts explored fall under a few main sections: tradition and background of craft, *making*, and related techniques; background of contemporary technologies and materials including artisans currently practicing; and a dive into the concepts of knowledge and skill in *making*. In this way, the themes were rounded out so as to provide overviews of the fields as they currently stand, and their contexts with the current research. Given the breadth of the coverage, many research questions were developed, and refined to create five main research questions, with the remainder providing directions to explore through design research alone.

Tradition

Traditional techniques, such as those used in fashion design, have changed nominally with the passage of time. Although garment construction books continue to be published year after year, techniques such as those found in *Coats & Clark's Sewing Book: Newest Methods from A to Z* (1967) are still used to this day. This is not to say that techniques have not evolved, rather, it is used as a demonstration that some tried-and-true techniques, such as embroidery, have changed little over time (Marsh, 2012) employing the same tools and techniques today as hundreds of years ago. Regarding the advent of contemporary technologies, Jacobson (2017, para. 4) stated that "thousands of years of refinement have allowed traditional weaving and sewing to produce wearable, durable clothing more efficiently than an upstart method like 3D printing."

A *design intervention* is a process utilizing new materials and techniques, and through which products are redesigned or created anew, linking tradition with the contemporary, and introducing tools, materials, and processes to artisans (Kapur & Mittar, 2014). An example of a *design intervention* can be found in a commonly-known garment support material: boning. Inside a garment, unseen structural support is often needed as an under layer. In the case of a gown, for example, a boned bodice can provide support from the waist up over the bust (Sorger & Udale, 2012) so that the weight of the gown does not drag on the shoulders or cause a strapless top to slip down. Boning has been used in garment construction for centuries and while it was traditionally created from whale bones (hence the name), evolutions in materials now see the use of plastic and steel bones (Sorger & Udale, 2012) which can be cut to specific lengths. This is an example of a traditional material evolving with industry advancement, or a *design intervention*.

While considering the knowledge of traditional techniques and materials, the current research involves a *design intervention* of incorporating said knowledge with contemporary technologies and materials such as digital printing in an effort to explore the process and knowledge-making involved. In conducting this exploration, the concepts of *couture, craft, making,* and *artefacts* will be discussed.

Couture

Haute couture is defined as “sewing at a high level” (Shaeffer, 1994). As an industry, it utilizes the talents of skilled artisans who have considerable knowledge and experience in *making* and embellishments (Sorger & Udale, 2012) such as embroidery and beading. Hand technique is prized in couture work (Shaeffer, 1994), and was used as an inspiration for the artefacts created throughout the current research. While couture relies mainly on traditional techniques, the advent of contemporary technologies such as 3D printing enable the pushing of boundaries and use of

evolving techniques (Grumbach, 2014). Farnault (2014) described teamwork between designers and artisans, which is an overarching example of collaboration in couture. In the current research, elements of couture such as handwork embellishment and collaboration were designated as sources of inspiration. It was the intent of the researcher to use *tacit* knowledge of construction and *experiential* knowledge of contemporary technologies to create artefacts of design research in the style of couture pieces.

Craft

The resurgence of designers creating their own items rather than having them mass-produced (McGuirk, 2011) reflects to the importance of *craft*, here defined as the skill-led creation of an item by hand (Frayling, 2011). The tradition and ethos of handcraft typically pervades design due to the artisan's training (Chang, 2005), and although research and technology yield innovation in the field of crafts (Greenhalgh, 2002), not all handcraft techniques are replicable by contemporary machines or technologies (Farnault, 2014). In Wood's (2011) discussion of traditional woodworking techniques, *craft* is distinguished from industry via the amount of hand skill used in the creation of objects. Whereas the fashion industry is grounded on industrial production, independent designers producing one-off designs are considered here in the current research as engaging in *craft.*

According to Bonanni and Parkes (2010), *craft* crosses discipline lines and develops via emerging technologies and methods. Contemporary digital technologies are helping to delineate a new kind of craft, which begets new tools and supplies (Bonanni & Parkes, 2010). Just as hand knitting has evolved with the advent of knitting machines and traditional weaving evolved with the invention of the Jacquard loom (Genova & Moriwaki, 2016), so too are contemporary crafts evolving with the invention of contemporary technologies such as 3D printing, wearable

technology, and digital printing. As these new *digital crafts* are evolving, so too are the means through which to disseminate craft knowledge (Bonanni & Parkes, 2010). The adaptation of handcraft in the context of contemporary technologies occurs, in part, due to the ease with which resources are accessible online.

Making

According to Pöllänen (2015), *making* is a process of craft. Cummings (2002) defined *making* as the process through which materials are manipulated through skill and craft, acting as a link between design and artefact. *Making* as a process can provide knowledge (Mäkeläm, 2007) and involves continual attention (O'Riley, 2011). According to Johnston (2015), an aspect of the "digital-artisan movement" is prowess in the area of *making*. Lehmann (2012) provided support for the exploration of techniques and practices beyond one's specialty due to the potential for *making* knowledge to emerge via innovative approach. The exploration of the current research used the researcher's extensive traditional knowledge as a base, and added the element of the unknown through the incorporation of contemporary technologies such as digital printing.

The Artefact(s)

According to Thornquist (2015), *artefacts*, or art objects, are used in research as a means through which to explore a phenomenon. Multiple types of knowledge can be used in the ideation and creation of artefacts (Onians, 2010), including practice (Mäkeläm, 2007). Many research works have been written describing artefact-based research (Beloff, 2010; Miller, 2011; Beaudette, Sanchez-Botero, Ashdown, Hinestroza, & Park, 2014), providing a grounded foundation on which to base the current research. In fashion, *showpieces* are intricately crafted pieces in a designer's collection created specifically to cause a reaction and garner focus, and are not typically made for the purposes of being sold in stores (Ames, 2008; Sorger & Udale, 2012).

In the current research, the garments and other artefacts are treated as *showpieces* - created using considerable time and expense, and as a means of technique exploration and knowledge-making rather than as prototypes for the mass market.

Design Consideration

Borrowing a phrase from Dreyfus and Dreyfus (1986), the design process can be described as "the evolution from the abstract toward the concrete" (p. 35). In the context of the current work, design research is the ideation and creation of artefacts (Onians, 2010), the process of which is informed by a myriad of influences. The artisan's *tacit* and *experiential* knowledge can be of major influence on the design process. According to O'Riley (2011), design research can follow the lead of the artisan's prior experience and practice, informing a dialogue between what the artisan knows and what they must learn in order to fulfill the needs of the design. The process of designing can yield knowledge about design: learn *by* doing, or learn *through* doing (Mäkeläm, 2007). Cummings (2002) described the process as a dialogic feedback loop between conception and creation: as the process is one of continual knowledge-building and learning, the idea is that it is circular rather than linear. The development of a collection includes an artisan's understanding of their own design identity, and the consideration of basic design elements such as color, silhouette, proportion, and line. Cohesion is essential between garments in order to read as a collection, and close attention to detail can aid in the success of a design's reception (Sorger & Udale, 2012).

Design Direction

Targeted End Use

Traditionally, solo and/or collaborative design aims to keep the end-user in mind (McCann & Bryson, 2009). It is important to consider the target consumer's lifestyle and needs

from the onset (Chang, 2005), which can help to inform aspects from the broad strokes (demographics, product type) to fine detail (need for accessory pockets, zipper color) (Sorger & Udale, 2012). The incorporation of wearable technology especially necessitates end user consideration, as technology can be incorporated in the early stages (such as fiber selection), though it must be intuitive or easy to use (McCann & Bryson, 2009).

Focus on Technology

Conversely, in the case of specialized research, the design can also determine the market to be targeted. In this way, specific knowledge about the artefact can be gleaned for use in future research or design. As described by Malmivaara (2009), in the case of the Reima Cyberia Survival Suit, the end user was selected by first determining the features of the garment. In this way, assumptions could be made about the end-user (skill set, habits, profession, etc.), thereby determining the level of design. After eliminating other target consumers due to restrictions in activity (no snowmobiling), age (no children), or end goal (skiers not likely to benefit drastically from end product), the targeted end user was identified: “a professional person who works alone in arctic conditions” (Malmivaara, 2009, p. 15). This target population was assumed to hold a specific set of skills with adjacent needs that could benefit from intelligent clothing. The selected criteria included the importance of maintaining a normal routine while being monitored in case intervention or action was needed (Malmivaara, 2009). Aesthetics were considered and user-appropriate selections made.

Design Evolution

Evolution of the design process can inform changes in the placement of technology / power sources. As Malmivaara (2009) described in the case of the Reima Cyberia Survival Suit, the size and weight of technological components and/or their power sources can affect the

placement or material needs of the garment. Because of this, physical knowledge of the components themselves and the process of prototyping can reveal challenges or problems necessitating modification to the original creation.

Design Process

According to Kapur and Mittar (2014), research and observation lie at the inception of design. Riegelman (2006), described fashion as harnessing the zeitgeist through clothing, and the industry design process was detailed by Sorger and Udale (2012) as follows: beginning with research, a collection is sketched, refined, and technical drawings made, followed by materials selection and patternmaking / adjustment until the final garment is approved. Brockman (1965) further elaborated that the beginning of the process involves narrowing down design parameters, and Evans (2003) posited that the freedoms explored by designers help to create meanings behind the clothes.

Inspiration

According to Sorger and Udale (2012), research in design is the process through which inspiration occurs. A theme or concept can tie the garments in a collection together in addition to providing the artisan with a focus in which to follow their ideas, inspired by sources including libraries and museum exhibitions. 'Research books' need to contain not only images but also the thought process behind them, including drawings, writing, and collage, which enables the designer to analyze and work through the inspiration images as a way of processing and interpreting the information (Sorger & Udale, 2012).

The Process

According to Sorger and Udale (2012), a *mood board* involves the mounting of collages and inspiration words onto a physical board, which serves as a means of visually displaying the

refinement of ideas. Drawing is used as a means of conveying an idea from the designer's brain to the page (Riegelman, 2006), and a distinction is made between a fashion illustration and a fashion drawing: a quick fashion drawing can be used as a way to capture ideas and the design of the garment, whereas an illustration is used to show the essence or feeling of the clothes (Sorger & Udale, 2012**).** Final design selections are chosen from the fashion sketches, and the garment development process begins (Brockman, 1965).

Garments are developed via draping (manipulating fabric on a form), or by developing and altering existing basic pattern blocks in the development of the new design's shapes (Brockman, 1965). As a skill, the basics must be learned before the artisan can engage in pattern experimentation due to need for holistic knowledge of the design: adjustments to one area of the pattern may impact another area and attention must be paid so that the end result comes out correctly (Sorger & Udale, 2012). The term *toile* is used to refer to a prototype created of basic fabric in a similar hand and weight to the final fabric, and is used to test the fit of the garment prior to final construction. In this way, design issues may be resolved and adjustments made as needed prior to the final garment being made (Sorger & Udale, 2012).

Fabric Preparation

Surface treatments to fabric can include both traditional and contemporary techniques. Hand-painted or dyed fabrics are treated by conferring paint or ink directly to the fabric itself (Dryden, 1993). Silk-screening involves the use of a rigid frame upon which a stencil of the negative space of a design is adhered to a piece of silk, allowing ink to be passed through the silk via squeegee and onto the fabric below, which is then heat set (Sorger & Udale, 2012). The color of fabric or garments can be changed or manipulated via the use of natural or synthetic dyes. It is important to conduct dye tests on the chosen fabrics to properly assess how the dye will absorb,

and considerations must be made as to the fiber content of the selected materials in order to ensure the appropriate dye choice (Dryden, 1993). Additionally, as the dyeing process can involve the use of high heat, it is important to test for fabric shrinkage as well as ensuring that non-fabric elements such as threads or notions are affected as desired (Sorger & Udale, 2012).

Thread marking is a technique frequently used in couture sewing as a means of transferring pattern markings to the fabric through the use of strategic hand stitching (Shaeffer, 1994). Texture can be added to the garment via the application of embellishment techniques such as fabric manipulation, beading, and embroidery, and can incorporate hand or machine techniques (Sorger & Udale, 2012).

Embellishment

Embroidery involves the application of thread to the fabric through the use of decorative stitching, and can include simple or complex patterns. While the foundation of embroidery stems from handwork, specialty machines can also be used to perform the technique (Sorger & Udale, 2012). Beading is a technique used to apply materials such as beads, sequins, or crystals to fabric via stitching with thread. French beading involves the stretching of fabric onto a taut frame and working from the right side of the fabric (Sorger & Udale, 2012). Lunéville, or tambour, is the most well-known of the haute couture techniques (Farnault, 2014) and is traditionally performed by artisans working with couture (Shaeffer, 1994). Tambour beading involves a similar technique of fabric stretched onto a frame, but rather works the back (or wrong) side of the fabric via the use of a hooked needle and the chainstitching of beads to the fabric (Shaeffer, 1994; Marsh, 2012; Sorger & Udale, 2012), typically by following a predetermined pattern. *Fabric manipulation* is the process of altering the visual and tactile texture of cloth via techniques to be

explored such as *furrowing*, the creation of a textured "relief" (Wolff, 1996) and *pleating*, which is used to create or control volume in a garment (Sorger & Udale, 2012).

Design Process Documentation

Nimkulrat (2007) differentiated between practice-led research and artistic practice by way of documentation, describing how, in practice-led research, the design process is documented and reflected upon as a way to track and create knowledge. O'Riley's (2011) statement that "there is a necessary move from a state of immersion to one that creates distance" (p. 3) can be further explained by Høgseth's (2012) "proximity develops the craftsman's skill, while the distance enables reflection" (p. 75). What these researchers discussed is an insight into the design and creation process: while an artisan is immersed in the work, skills are developed. Upon completion of the process, distance from the work can provide perspective and room for reflexive thought, which can be captured via documentation that may be used as research material. Additionally, documentation provides an opportunity through which to contextualize the garment artefacts (Nimkulrat, 2007) in the scope of the design process and the current research.

According to O'Riley (2011), reflections of decision-making, progress reports, techniques, and studio environments are important. In reference to haute couture work studios, known as *ateliers*, Farnault (2014) described archives maintained of past work, allowing for research and replication of techniques or patterns. These archives, in combination with artisans' knowledge of traditional and evolving technique practices, ensure the continuation of the crafts (Farnault, 2014). Dryden (1993) emphasized the necessity of proper documentation so as to capture the processes taken in fabric dyeing, thus enabling others to recreate colors and techniques in future work. Published literature discussing documentation in *craft* and design

research includes such methods as reflective journaling (Shumack, 2010), audio/video recordings, photographs, and sketches (Nimkulrat, 2007; Noel, 2015). Butson and Thomson (2011) recommended the use of audio/video recording equipment that streamlines the device-to-computer data transfer process.

Designer-maker

While it is not the goal of the current research to dive too deeply into the greater discussion of the designer/maker, it would be remiss to ignore the topic completely. Thus, in the interest of rounding out relevant knowledge related to the confluence of tradition and technology, here is a brief background. The worlds of design and *making* have been seen as disparate since the first Industrial Revolution, whereupon advances in industry and technology brought about the rise in rapid manufacturing, relegating the designer to the field of art and the maker to that of fabricator (McGuirk, 2011; Johnston, 2015). As industry has since evolved, so too have these two disciplines towards a re-integration into one entity, that of *designer-maker*.

Confluence of Disciplines

The etymology associated with the term *designer-maker* has a difficult history. A larger discussion of the implied meanings of the terms *craft, artist,* and *designer* reveals strong opinions in a multitude of artistic fields. Livingstone (2002), described *designer-makers* in fashion as utilizing innovations in goods and technology to produce the artefacts of haute couture. Sandino (2002) defined a craftsperson as combining the skills of a designer and an artisan together, while Dryden (1993) presented a differentiation between an artist's knowledge *about* dyeing and a craftsman's practice *of* dyeing. Cummings (2002), took issue with the term *designer-maker* due to its implication that *designing* and *making* are two separate entities rather than a true combination of the skills of both. Thus, in the interest of brevity, and for the purposes

of the current research, *designer-maker* describes an artisan who both designs and creates (Cummings, 2002) their artefacts, combining skills in art and handcraft to produce their work. Moving forward, the term *artisan* is used as a nod to both the art of design and the art of creation.

Sorger and Udale (2012) described the importance of garment construction knowledge to the design process – it is difficult to effectively design a garment without knowing the construction rules before breaking them. Again, this speaks to a larger conversation across disciplines, but in the interest of brevity, suffice it to say that the researcher holds high regard for competence in both design and *making*. Hoang (2017) provided support for the need of designers to have a more well-rounded knowledge of technology and production. Without access to the tools or knowledge of advances in the field, fashion designers are at a disadvantage in integrating technological innovations into their work.

Collaboration

Interdisciplinary Nature

Contemporary technologies present the opportunity for collaboration across disciplines. Much as the *designer-maker* role has again become commonplace, so too is there a need for consultation or collaboration with alternative disciplines. There exists a much deeper conversation about the role of the *designer-maker*-engineer in the applications of contemporary technologies such as wearable technology and digital printing, but as that conversation is not the topic of this thesis, it will remain as a talking point alone, here for frame of reference of a larger picture. For example, in the case of wearable electronics, the integration between the two fields of fashion and technology first occurred when a need was identified by the technicians for functional design to be incorporated (Malmivaara, 2009).

Function remains an important aspect of designing with contemporary technologies: beyond the need to consider the function of the artefact itself, one must bring into consideration the function of the included technology or material. With this consideration comes a need for knowledge. Just as an improper fabric choice would render a silk chiffon coat useless against a winter storm, incorrect choices in contemporary materials or techniques could render an innovative design unusable. Thus, proper fabric choice is important for both the function and aesthetics of the garment, and includes the "hand" (or feel) and weight of the garment (Sorger & Udale, 2012).

Diversity in disciplines provides a focus on and knowledge of materials and creation (Livingstone, 2002), which in turn opens the door for greater possibilities in design. Because these disciplines have each their own purposes and objectives (O'Riley, 2011), understanding of each selected discipline provides the artisan with the ability to see the design problem from multiple sides and select the best approach.

The learning curve of blending traditional techniques with contemporary technologies involves an equilibrium being achieved in *tacit* and *experiential* knowledge, whether on one's own or amongst a collaborative team. Lack of knowledge in a specific but necessary area can be supplemented by others on a team (Schindler, 2015), or, in the case of solo work, must be resolved by consulting with experts, the artisan learning the needed skills themselves, or shopping the work out to external sources, such as companies specializing in specific disciplines. In haute couture, designers and artisans depend upon one another to produce the art of couture fashion (Farnault, 2014). With the added pressure of the fashion timeline, collaboration and communication between designers and artisans is essential (de Givenchy, 2014). Thus, for independent, traditionally-trained *designer-maker*s (artisans) working with contemporary

technologies, it is important to not only gain knowledge in the disciplines required for the successful creation of an artefact, but also to gain the requisite skills needed to enact said knowledge within a reasonable timeframe.

Common Vocabulary

Part of the requisite knowledge involved is that of a common working vocabulary (Kapur & Mittar, 2014; Schindler, 2015), incorporating industry terms with creative parlance (Johnston, 2015). This dialogue between disciplines enables clear communication among collaborators and removes a barrier (McCann & Bryson, 2009) to the successful integration of contemporary technologies with traditional techniques. Akin to this common vocabulary is the "dialogue between maker and material" (Cummings, 2002, p. 80), which references the interaction between the maker and the artefact. The expression of a crafted artefact relies heavily on this interaction (Cummings, 2002). This ties back to the discussion of interest in handcraft and quality over quantity (McGuirk, 2011): a common vocabulary between disciplines begets greater understanding, and an understanding of materials and techniques begets expressive artefacts.

4th Fashion Industrial Revolution

The rise in manufacturing brought about by the first Industrial Revolution aided in the change of the artisan role from that of *designer-maker* to separate entities, with the craftsperson fabricating the designs of another (McGuirk, 2011; Johnston, 2015). This separation between design and fabrication maintained the status quo until the Recession, since when the two have been steadily recombining, aided by similar paradigm shifts in the rise of the "slow-food" and "slow-fashion" movements (Johnston, 2015). A resurgence of interest in handcrafted items, and the valuing of quality over quantity (McGuirk, 2011), accompanied by advances in digital

technology (Johnston, 2015), dovetail with the current "4th Industrial Revolution" (Abnett, 2016).

Accompanying a resurgence in (and adaptation of) the role of craft due to advances in digital technology, the 4th Industrial Revolution echoes previous iterations in its impact on fashion, providing advances in the technology of the field (Abnett, 2016). Advances made in the chemical industry during the twentieth century led to the development of new kinds of synthetic fibers and materials (Sorger & Udale, 2012). Further, textile advances have been made including the development of "smart" fabrics with properties such as the ability to react to environmental stimuli (Sorger & Udale, 2012).

With a freedom not previously attainable due to restrictions in materials or tools, these and other advances allow for a confluence of technology and tradition that enable artisans to apply handcraft skills to the new digital medium (Johnston, 2015). Because of the possibility to reconsider the manner in which a form can be created, and the ability to implement changes to the design and creation process, the new aesthetic of the "digital handmade" allows for a unique shift in the concept of the *designer-maker* (Johnston, 2015).

Miller (2011) is an example of a researcher who took advantage of 3D digital technology, using computer software to manipulate 3D renderings of millinery designs. In this way, she was able to eliminate wasted time in the creation of traditionally-made physical mockups. As digital technologies advance the progress of what is possible in handcraft, adaptations to the processes of integration/interaction between clothing and wearer must be made. As with the introduction of other new technologies, so too must designers, makers, and users adapt to the challenges and nuances of interacting with the objects themselves (Abnett, 2016). The current research takes

advantage of contemporary technologies in the design exploration of the confluence of tradition and technology through utilization of such avenues as wearable technology and digital printing.

Contemporary Techniques / Technologies

The advent of such contemporary technologies as wearable technology and digital printing have served to expand the worldview of some traditional fashion designers. In the greater discussion of these technologies, it is easy to be swept up into detailed conversations of function, technical specifications, and arguments for the best applications of each. In the current research, contemporary technologies are viewed as something to be combined with traditional methods, “another tool for the toolbox”, as it were. The exploration of these technologies in conjunction with traditional techniques was used as a means through which to explore the phenomena, but also as a way to investigate the knowledge-making that comes along with the learning of new skills.

Examples in Design and Research

Contemporary technologies such as wearable electronics (electroluminescent aka EL wire and tape) have been used in research by such authors as Beaudette et al. (2014), who showed that lighting can be added to highlight the human body. Seymour (2008) extensively presented examples of designers utilizing contemporary technologies: CuteCircuit is a company focused on wearable technology that has partnered with the likes of celebrities such as Katy Perry (see Figure 1); Leah Buechley created bracelets out of conductive thread, beads, and LEDs (see Figure 2); and Elena Corchero, whose *Solar Vintage* collection incorporates technology into the physical design itself (see Figure 3).

Figure 1. Katy Perry CuteCircuit Catsuit for E.T. Live at the American Idol 2011. Adapted from Katy Perry Catsuit, in *CuteCircuit*, Retrieved December 5, 2017, from http://cutecircuit.com/media/katy-perry-catsuit/. Copyright by katy-perry.net

Figure 2. LED Bracelet. Adapted from *Leah Buechley,* by L. Buechley, n. d., Retrieved December 5, 2017, from http://leahbuechley.com. Copyright by Leah Buechley.

Figure 3. A Fan with Solar Panels. Adapted from Solar Vintage by Spanish Fashion Designer Elena Corchero, in *designboom*, by L.Choi, March 30, 2009,. Retrieved December 5, 2017, from https://www.designboom.com/design/solar-vintage-by-spanish-fashion-designer-elena-corchero/. Copyright 2009, by designbloom.

Benefits and Drawbacks

Some of the benefits of contemporary technologies include their use in fashion to aid in achieving more well-fitting garments (Beaudette et al., 2014) and the ability for digital tools to allow for precision (Johnston, 2015). Added to this are the considerations of expansion in design possibilities and time saved through the rapid fabrication of 3D printed elements versus the execution of the same design via handcrafted techniques. There are, however, some drawbacks. Instructions (and tutorials) may be written with an assumption of a certain level of technical

proficiency, leading to a need to understand both the hardware (the printer) and the software (to create the design) (Vance, 2011).

Wearable Technology

According to Beloff (2010), *wearable technology* exists primarily to aid in the functions of the people who wear them. Current products in the field of "wearables" include commonly-accessible activity-tracking accessories, light-up bicyclist jackets, and sound-reactive tee-shirts. These primarily act on a "passive" system, collecting data rather than requiring direct interaction with the user to perform their tasks (Frayling, 2011). The first wearable computers resulted from a "curiosity of how things work and a joy of tinkering" (Malmivaara, 2009, p. 6) and have since evolved into the aforementioned devices available today. Due in part to engineers (rather than designers) having led the field of wearable technology products, the focus has been primarily on the function rather than form or style (Wallace, 2014). Thus, there is a need to remember the importance of style in technological innovation (Cappetta, Cillo, & Ponti, 2006). Chang (2005) raised the question of how to join together the function of wearable technology with fashion, focusing on the traditional fashion market and how best to get the technology to consumers in an aesthetic way.

Etymology

Before delving further into the subject, it is important to specifically delineate the wearable technology examined in the current research, and to provide definitions for adjacent terms used in the industry. Seymour referred to the phrases *fashionable technology* and *fashionable wearables* in her 2008 work: *fashionable technology* refers to "the intersection of design, fashion, science, and technology" and *fashionable wearables* refers to "designed garments, accessories, or jewelry that combine aesthetics and style with functional technology"

(p. 12). Malmivaara (2009) described *intelligent clothing* as enhancing the garment through non-traditional means without impacting its standard features, and *wearable electronics* as specifically designed to accommodate a target market. For the purposes of the current research, the term *wearable electronics* refers to the LED technology incorporated into the artefact, with *fashionable wearables* used to describe the artefact itself, and *wearable technology* used to describe the general field.

Integration with Fashion

There exists, still, a disconnect between the potential of wearable technology and its integration into fashion artefacts. While the conversation between fashion and technology is ongoing, one thing that can be agreed upon is that wearable technology is subject to the zeitgeist of the populace, following fads and trends much as fashion does (Meyer, 2015). As fashion evolves, so too does wearable technology design. Along these lines, it is important to consider the "why" of the research (Beloff, 2010). Just as the end-use context informs the levels of function, expression, and aesthetics of a fashion garment, so too does it impact the direction of a fashionable wearable (Seymour, 2008). Frayling (2011) proposed that products intended for consumers should show a range of options in order to accommodate for needs and tastes, further positing that just as clothing and accessories have each their own functions and therefore specifications in design; so too should wearable technology. Other design considerations include the broader concepts of ergonomics and sustainability, and the more specific focus of garment care, technology placement, and user interfacing (Seymour, 2008).

Adaptation

As with any new technology, wearable technology requires adaptation on the part of the user (Beloff, 2010). With this in mind, it is important to consider the physical technology being

integrated into the design, such as its “modularity” (battery size, power pack location, ease of access for removal, etc.) (Seymour, 2008) must be considered in the garment design from an early stage so as to more easily integrate it with the design process, rather than leaving it until the end phase wherein the technology is treated as an afterthought.

Drawbacks

The unknown effects of powered-on electronics actively worn have yet to be fully studied, though concern exists over “electro smog,” or microwave radiation, emitted by electronic appliances (Malmivaara, 2009) and electromagnetic frequency (Seymour, 2008). Additional limitations include the differences in production cycles of fashion and technology (Seymour, 2008; Malmivaara, 2009), the environmental impact of the materials used (Seymour, 2008; Qiu & Yue, 2014), and even the logistics of selling, such as cost (Qiu & Yue, 2014), will the garments be sold in an electronics store or clothing store, and what kinds of training will be required by the sales staff? (Malmivaara, 2009).

All of these concerns, however important to consider, are much farther into the future than the concerns of the current research, which focuses on the comparatively more rudimentary step of exploring *how* to incorporate the wearable electronics with the fashionable wearable artefacts in the first place, and further, how the garment’s wearable electronics have held up over the course of time.

Digital Printing

CAD, or computer-aided design, is defined by Johnston (2015) as the use of computer programs to digitally sketch and alter two or three-dimensional ideas and can be used to create and share designs replicable by anyone with the file and access to fabrication tools (Bonanni & Parkes, 2010). Digital printing, the process of applying color to fabrics via printers and ink (Lu,

Mok, & Jin, 2017) has evolved since the 1967 work of Eddie Squires for Warner and Sons, whose printed fabrics were among the first to harness the computational zeitgeist (Clarke and Harris, 2012). The early 1990s saw an increase in the use of digital textile printing, and as technologies and equipment have improved, so too have the possibilities for designers (Lu et al. 2017). Designers are now able to take advantage of resources such as Spoonflower (https://www.spoonflower.com/), a web-based resource specializing in the digital printing of custom designs onto fabrics which increases the ways in which artisans can personalize their work. Paired with its traditional brethren of hand painting and dyeing, it is important to the current research in order to demonstrate tradition and technology as a small part of the holistic design processes.

Knowledge

The *process* of designing can yield *knowledge* about design - learn by doing, or learn through doing (Mäkeläm, 2007). Another related concept is described by Høgseth (2012) as *knowing how*, or the physical or technical skill of an artisan, and *knowing what*, or the knowledge of said skills, both of which are integral to the artisan's practice: "Before a craftsman knows what he shall communicate, he has to know how" (Høgseth, 2012, p. 63). Lehmann (2012) delved deeper into this concept in his description of *techne* and *episteme*, which are *knowing how*, and *knowing what*, respectively. Lehmann's (2012) work presented *techne* as *craft*, and *episteme* as *knowledge*. Thus, in combining the ideas of Høgseth (2012) and Lehmann (2012) for the worldview of the current research, it is logical to simplify down to *techne* as the skills and techniques of *craft*, and *episteme* as the knowledge *of* or *about* those skills.

Knowledge building through design research was simultaneously a goal and a byproduct of the current research. The *experiential* knowledge gained through *making* was a part of the goal

of the research, and the *tacit* knowledge gained and exercised along the way is the byproduct. Lehmann (2012) argued that the production of an artefact resulted in the production of material and technical knowledge. Skills, along with *tacit knowledge*, enable the artisan to create artefacts (Høgseth, 2012; Vartiainen, 2015). Pöllänen (2015) concluded that the activity of craft aided in skill development and Sorger and Udale (2012) provided support for the idea that practice and repetition can serve as a means through which to improve design skill and knowledge. Sorger and Udale (2012) emphasized that the special skills and knowledge possessed by haute couture artisans would be lost without couture, demonstrating that the knowledge of *making* (especially at a high level) is sometimes dependent on another. The artisans of the ateliers work together with the design heads of couture just as wearable technologists work together with designers, both in pursuit of a realized artefact created through the use of art and skill.

The Five Stages of Skill Acquisition

Dreyfus and Dreyfus (1986) presented a framework for skill building called "The Five Stages of Skill Acquisition." In this framework, levels of expertise are laid out with descriptions of each: Novice, Advanced Beginner, Competent, Proficient, and Expert. The following are descriptions of the five levels through the lens of the current research. The Novice level is that of beginner, gaining basic knowledge about the techniques and materials used in the various skill sets engaged in the current design research. The Advanced Beginner is a step above, with a better grasp on the knowledge. There may still be some trial and error but the improvement is steady. Competent occurs next, with the experience needed to know how to make a plan in order to execute a task. At this stage, the competent person can recognize certain situations and know how to respond or react. Proficiency follows. Intuition plays a role in their understanding of the materials and/or techniques needed, yet it still may be necessary to step back and plan out their

approach. Expertise is the final stage. In this, the expert knows intuitively what needs to occur, and instinctively reacts. As Dreyfus and Dreyfus state: “An expert’s skill has become so much a part of him that he need be no more aware of it than he is of his own body” (1986, p. 30).

Dorst and Reymen (2004) expanded upon the Dreyfus & Dreyfus (1986) model by adding two additional steps beyond the Expert level: Master and Visionary, which add elements of detail-attention and innovation, respectively. In the current research, the Dreyfus and Dreyfus (1986) model will provide a framework through which the researcher can analyze her written journaling process and audio/visual documentation so as to reflexively investigate where each of the skills used in the course of the design research lie. Because the work is self-reflexive, the researcher will omit consideration of Dorst and Reymen’s (2004) additional steps of Master and Visionary and instead focus on working towards expertise in skill.

Tacit Knowledge

“To make a thing involves constant thinking that is sometimes overt but frequently *tacit*” (O’Riley, 2011, p. 7). In the performance of activities, a person does certain things that they may not be able to explain, due to the intuitive nature of their knowing how (Polyani, 1958; Frayling, 2011; Schindler, 2015). This is the *tacit* knowledge. Polyani (1983) discussed *tacit* knowledge as knowing “*more than we can tell*” (p. 4, emphasis his). An artisan may have an intuitive feel for techniques or materials, without knowing *why* they know. The intuition of expertise gained through previous work and experience (Berliner, 1994) informs the design researcher’s reliance on *tacit* knowledge of supplies, techniques, and aesthetics. (Niedderer & Reilly, 2010). In the current work, the researcher’s *tacit* knowledge lies heavily in the field of *making*, based upon decades of experience in the arts. As a part of the process, video and written journals were used for the purpose of documentation in an effort to record this *tacit* knowledge. The onus of

concisely articulating *tacit* knowledge is incumbent upon the researcher and requires competence in execution (Schindler, 2015).

Experiential Knowledge

Another type of knowledge, *experiential*, is learned. Onians (2010) elaborated on a further distinction between *intuitive* and *learned experiential* knowledge in this way: the experiences of a person's life can inform their design aesthetics. This more *intuitive experiential* knowledge differs from the *learned experiential* knowledge gained through the training and practice of a skill (Onians, 2010). For the purposes of the current research, however, the focus remained on the larger umbrella of *experiential* research, pairing intuition and learning together.

The *experiential* knowledge gained through exposure to various materials and techniques can serve as baselines for an artisan in future practice, as their prior experiences with said materials can impact such aspects of design as time spent on trial and error (Schindler, 2015). *Experiential* and *tacit* knowledge are important to design researchers (Mäkeläm, 2007), due in part to the ensuing ability to provide data and corroborate observations (Niedderer & Reilly, 2010). These types of knowledge may not be as readily linked to traditional research methods, thus, additional justification as to the rigor of the research may be necessary (Niedderer & Reilly, 2010).

Knowledge in Craft

Apprenticing

In the traditional craft model, knowledge is passed down from generation to generation via master-apprentice relationships (Bonanni & Parkes, 2010; Høgseth, 2012; Farnault, 2014; Vartiainen, 2015) wherein beginners learn skilled trades or techniques from those in their "cultural community" (Høgseth, 2012) with greater experience. This is the basic form of the

traditional hierarchical collective of a craft *guild*, or associations of craft artisans within a specific trade or medium (such as weavers, carpenters, etc.) (Bonanni & Parkes, 2010).

Virtual Guilds

The traditional guild structure is evolving to include a model that takes place via the internet, where contemporary artisans are able to gain access to similar-minded makers through internet resources such as web forums (Vartiainen, 2015). These new *virtual guild* collectives, which build upon the traditional guild model of master-apprentice knowledge passing, have the added benefit of access to the wealth of information and resources and the ability to easily share knowledge via the internet (Bonanni & Parkes, 2010). An example of a *virtual guild* is the website *Instructables*, which is a social networking site where users share step-by-step tutorials of their projects through photographs, video, and/or written instruction (Bonanni & Parkes, 2010).

Adaptation of Knowledge Practice

Høgseth (2012) discussed how an apprentice's knowledge is gleaned through interaction with more-experienced others in the field. In the current research, the apprentice-master model is translated into the idea of knowledge-building in a specific craft or medium through interaction with more-experienced others in the same field by way of engagement in *virtual guilds* or similar avenues. Lehmann (2012) cautioned that the techniques and information passed down through these traditional means only truly becomes *knowledge* when innovation is explored, rather than a rote practice of skills. This is akin to Kapur and Mittar's (2014) discussion of the *design intervention*.

Knowledge Management

The recording of techniques has been used by researchers as a way to preserve artistic cultural knowledge. While the traditional model of knowledge passing (the master-apprentice system) has lasted for centuries, it can also serve as a cautionary tale, as seen in the recently well-publicized example of Stein's (2017) story about the woman believed to be the last in the world who spins sea silk into fiber. In the interview, it was revealed that the practice and tradition have been passed down in written and oral form for hundreds of years (Stein, 2017), however, the silk seamstress featured in the interview is the last in her practice and the oral knowledge she holds will die with her. Noel's (2015) work focused on the documentation of wire-bending for the creation of costumes and sculptures used in Carnival celebrations and events, providing not only a needed service to the cultural community through enabling the continuation of a dying craft but also creating knowledge through a visual and written record.

Artefact Knowledge

In order to avoid the loss of valuable skill-based knowledge, documentation methods are used under the umbrella of *knowledge management*, which aims to retain the knowledge passed down through the master-apprentice training system (Bonanni & Parkes, 2010). Through the design research process, created artefacts are used to amass and retain knowledge, yet are incapable of transferring that knowledge without interpretation in an appropriate context (Mäkeläm, 2007). When all artefacts have been completed, it is important to engage in a display of the created works so as to gather response from experts in their respective creative fields. In this way, artefact interpretation occurs through the eyes of experts, thereby helping to uncover meanings previously unaddressed by the artisan and aiding in the processing of the work. Kholina (2015) described experts' knowledge in judgment as *tacit*, which suggests that the

experience of their respective fields lends itself to an intuitive *knowing*. According to O'Riley (2011), the experience of the viewer informs their perspective of the work's implications and context. Additionally:

> Where one talks of an adequate reading of a text, one might equally speak of a *competent regard* for an artwork. That is, just because an artwork might be visual, does not mean that its meaning is plain to see. A meaning might appear to be available but the work's effectiveness is due to how it marshals debate, engages thought, or provokes imagination. A work's significance resides in how it offers itself to be read, in what thinking or associations it enables, or in how it functions. In this sense, activating the work and retrieving possible meanings requires a competent regard. (O'Riley, 2011, p. 5)

Thus, it was the intent of the researcher to create a display and research study exhibition wherein the expertise of the study participants could enable their interpretation of the artefacts in a way that would provide rich discussion and feedback.

Main Research Questions

Given the objectives of the current research and the queries raised through the literature review, it was the intent of the researcher to address the following main research questions:

RQ 1: What are some of the challenges facing traditionally-trained artisans in the incorporation of contemporary technologies, techniques, or materials into their practice?

RQ2: What documentation methods are employed by traditionally-trained artisans in the incorporation of contemporary technologies, techniques, or materials into their practice?

RQ3: How do traditionally-trained artisans acquire knowledge when learning contemporary technologies, techniques, or materials?

RQ3a: What kinds of knowledge resources are used by traditionally-trained artisans in the incorporation of contemporary technologies, techniques, or materials into their practice?

RQ4: How do traditionally-trained artisans use *tacit* and *experiential* knowledge to acquire and implement skills used in the incorporation of traditional techniques with contemporary technologies in fashion and *making*?

Design and Research

> The central methodological question of this emerging field of research is: how can art or design practice interact with research in such a manner that they will together produce new knowledge, create a new point of view or form new, creative ways of doing research? (Mäkeläm, 2007, p. 157)

O'Riley (2011) described *practice* as an active search outside of one's norm, inclusive of the *process* through which the seeking is performed and with the rigor of research and its associated quest for inquiry. The practice of the current research involved design, and the creation of artefacts through which to gain knowledge and explore the work's research questions. O'Riley (2011) also called for the practice of art to extend beyond solely a visual regard, rather, that it should encompass other avenues such as through text, verbal, or aural performance.

Practice-Led Research

The terms practice-led and practice-based are used in the literature to describe design research, and just as scientific research can involve intuition, so too can design research (O'Riley, 2011). Also, scientific and design research both include querying established norms and assumptions (Schindler, 2015) which, in the case of the current work, occured through exploration of the research questions. Mäkeläm (2007) described practice-led research as a

process of inquiry explored through the *making* of artefacts, thus, the praxis of practice-led research involves *making* as the impetus behind the research. The artefacts themselves can act as a physically manifested bridge between tangible, process-created knowledge and an abstract idea. In this way, knowledge occurs through process.

Practice-led research is inherently subjective, due to the artisan's knowledge development within the process itself (Mäkeläm, 2007). According to O'Riley (2011), design research involves consideration, execution, and reflection, as it is a means through which to learn. Schindler (2015) supports the idea of design research as a reflexive practice, owing to the interdisciplinary status of the work. In this, *tacit* and *experiential* knowledge involved in design research present the opportunity to explore further the artisan's process (Schindler, 2015), as said process is in itself a form of research. According to O'Riley (2011):

> Research is an operating structure for the process and production of...art. It is regarded as integral to the processes of thinking, making, and reflecting, and it is important to note that curiosity, creative enquiry, and critical reflection underpin much that is considered research in various fields. (p. 1)

The current design research translates to exploring the possibilities of using traditional garment construction and embellishment techniques in combination with contemporary technologies. This curiosity stems from a desire to engage with both the tradition of *tacit* knowledge and the utilization of learned skills. Additionally, handcrafted artefacts serve as appropriate research vehicles (Beloff, 2010) due to the inherent knowledge-making that results from their creation and their ability to elicit responses from an audience, garnering a different dimension of data through which to draw conclusions about the phenomenon under study.

Design Research Questions

In addition to the main research questions presented for exploration in the current work, other, more specific questions were raised over the course of the researcher's preliminary literature review. These more specific questions were reviewed and deemed to be relevant to the researcher's practice-led design explorations rather than overarching questions for the field of knowledge, and are thus presented below with the intention of consideration through process and to act as a guide for the researcher. To further differentiate between these specific questions and the main research questions, these below are referred to as Design Research Questions, or DRQ.

DRQ1: How does a practice-led methodology inform the knowledge-making process in the incorporation of traditional materials and techniques with contemporary technologies?

DRQ2: What are the design and fabrication considerations needed when incorporating contemporary technologies, techniques, or materials into a traditional fashion practice?

DRQ3: What are the limitations and implications of incorporating traditional techniques with contemporary technologies, techniques, or materials?

DRQ4: What design interventions emerge as a result of the research?

DRQ5: What is the knowledge gleaned from a practice-led methodology in the exploration of incorporating traditional materials and techniques with contemporary technologies and materials?

DRQ6: What are the recommendations for future research?

CHAPTER III. METHODS

Research Design

The current research incorporated both practice-led and phenomenological qualitative methodology. The intention of the research was to tie traditional fashion-related handcraft techniques such as hand-dyeing and fabric manipulation with contemporary technologies such as digital printing, in addition to examining artefacts previously made by the researcher which incorporated traditional tailoring and beading embellishment with wearable electronics. In this way, the researcher explored ways in which tradition and technology could be combined.

Practice-led research guided the conception and creation of artefacts leading to the end result of process garments and technique samples. Said garments and artefacts were used in a gallery-like exhibition and qualitative data regarding the phenomena of *making* and *knowledge* was studied through semi-structured interviews and one-on-one conversations with expert artisans (see Appendix A for IRB information). The expertise of these professionals enabled them to interpret the artefacts in an informed way, aiding in their understanding of the information revealed.

Practice-Led Methodology: Design Research

The Artefacts

To conduct practice-led design research into the exploration of combining traditional techniques with contemporary technologies and materials, it was the goal of the researcher to follow the fashion design process from start to finish in the conception and creation of garment artefacts and technique samples. In the scope of the current research, the garments retained a *common form*: dresses with a basic shape, featuring a fitted bodice and A-line skirt. This *common form* style provided a base of familiarity for the study participants, rather than forcing

them to consider an unusual shape or silhouette in addition to the elements of the garments they were to instead focus upon. In this way, the researcher was able to provide a standard and commonly-accepted base upon which to explore the design research.

Due to the researcher's extensive background as a maker of fashion and costume artefacts, *tacit* knowledge in the process of design informed the design and creation processes. While the objective of the current research was to explore the integration of traditional techniques with contemporary technologies and materials, the theme or concept of the garments was be determined after the processing of inspiration, and explored through the use of images, sounds, songs, words, and physical textures.

The Design Process

The design process began with an internet search of inspirational images, conducted via Google Image search and Pinterest. When inspirational images had been identified, they were uploaded to a Pinterest board so that the researcher could aggregate the visuals into one place and sort through them easily. Final inspiration images were selected and mood boards created via Microsoft Office's Publisher software (see Figure 4, and Appendix B). In this way, all mood boards and inspiration images were selected and created virtually, eliminating the traditional method of combing through periodicals for physical images that would then be cut out and pasted to boards for final mood board presentation. Pinterest became an easy-to-use, time-saving resource for the researcher and enabled the quick search and retrieval of needed imagery. Publisher acted as a way to reconfigure images until the final arrangement was selected and printed. In the design research journal, selected mood board images were re-sketched as basic lines and patterns, which acted as a way for the researcher to explore proportion, line, and visual interest. Once comfortable with the inspirational shapes decided upon via the previously-

mentioned sketches, the researcher moved on to what would become the two foundations of the traditional research: color and fabric manipulation.

Figure 4. Condensed mood board comprised of Pinterest images.

Fabric Manipulation. The researcher engaged in fabric manipulation technique exploration, drawing upon *tacit* and *experiential* knowledge in addition to *The Art of Manipulating Fabric* (Wolff, 1996) and internet searches. Using a previously-made sample as the main inspiration, the researcher tested the cutting of various shapes and hand-sewed them to fabric mounted on embroidery hoops. This action permitted the work to cross from a 2-dimensional to 3-dimensional plane and allowed the researcher to envision the techniques to be used on a larger scale. All tested shapes were also added to the design journal, which will allow the researcher access to previously-tested techniques in the future. This is especially important due to the discovery that traditional paper-cutting techniques commonly used in the creation of paper snowflake decorations yielded interesting shapes that may be explored in future design research;

thus, it was essential to document the knowledge. The final result ended up taking the form of a four-leafed clover (see Figures[3] 5-8) which, when folded in a specific way, takes the shape of "flower petals" that flutter with motion. It was decided that this clover shape would not only create the most visually-appealing result, but would also be simple enough that viewers of the finished garments and artefacts would not be distracted by their form.

Figure 5. Dyed fabric yardage.

Figure 6. Cut to square.

Figure 7. Folded in quarters and cut.

Figure 8. Final four-leafed clover shape.

Scale was explored once the preliminary shape was decided upon with proportionate sizes created on a 1:5 ratio (see Figure 9). Further samples were created with multiple sizes to determine preferred distribution and spacing placement.

[3] All Figures from page 41 through end of thesis are copyright of the researcher, Jenny Leigh DuPuis.

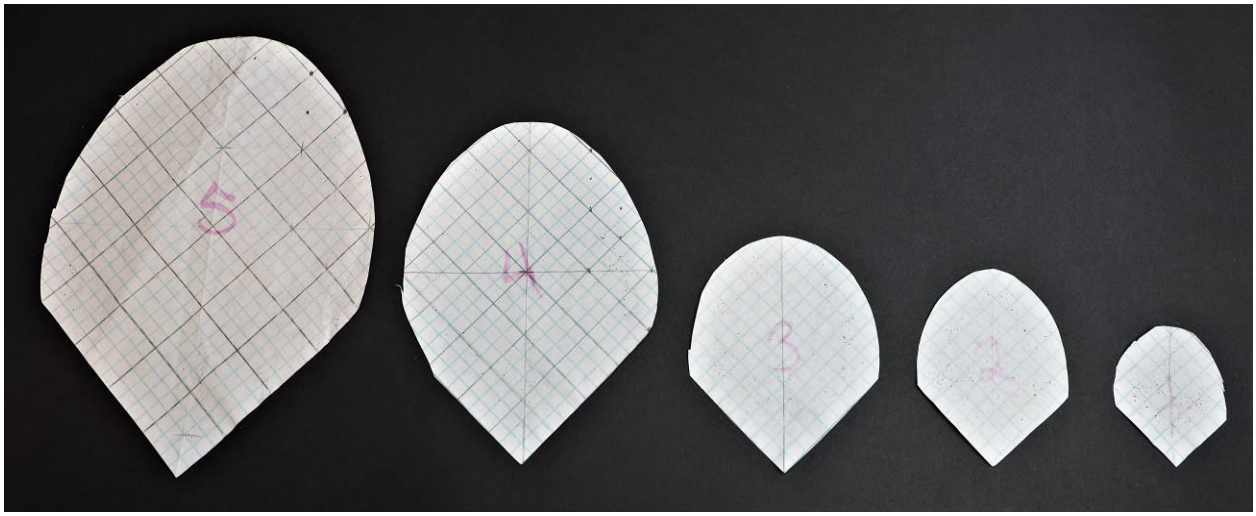

Figure 9. Scale petal patterns.

Fabric selection. The exploratory technique artefacts were based on an original sample created by the researcher in the past, using synthetic organza with a metallic finish (see Figure 10). Using the original "petal" shapes and distribution as an example, a second sample was created using polyester chiffon. The choice to use this fabric was based in the *tacit* knowledge possessed by the researcher that the fabric "petals" would flutter with motion and lay in an aesthetically-pleasing way (see Figure 11).

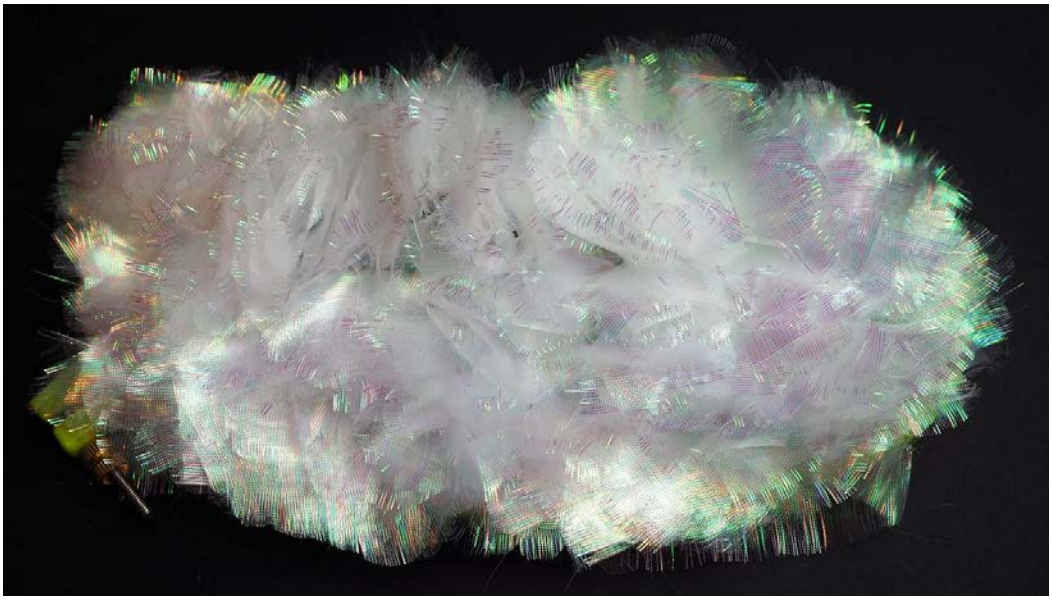

Figure 10. Preliminary exploratory synthetic organza technique sample.

Figure 11. Secondary exploratory polyester chiffon technique sample.

With the success of the polyester chiffon sample, the researcher began to consider color and dyeing techniques. *Experiential* knowledge informed the choice to switch from polyester fabric to silk, going from a synthetic to a natural fiber which would allow for easier dyeing. Because of the fabric switch, it was necessary to test multiple types of fabric to find the textile most suited to the researcher's end vision. Yardage of silk organza and silk chiffon were ordered and technique samples were created using the four-leaf clover "petal" technique in a 1:3 size ratio (see Figures 12 and 13).

Figure 12. Silk chiffon petal technique sample.

Figure 13. Silk organza petal technique sample.

This fabric exploration yielded important results due to the researcher's decision to utilize silk organza rather than silk chiffon in the forthcoming design research. This decision was reached mainly due to the 3-dimensional sample of silk chiffon laying in a different manner than anticipated; giving a limp appearance that would not "flutter" with motion and would instead "flop". The silk organza, however, provided a pleasant surprise with its structural appearance and movement. Thus, it was decided to move forward with silk organza.

Fabric Dyeing. As soon as that fabric selection was made, it was time to explore fabric dyeing techniques. *Tacit* and *experiential* knowledge on the part of the researcher led to the decision to try out two main dyeing techniques: vat (or stovetop dyeing) and hand-painting techniques. This was due in part to prior experience with vat dyeing which created a relatively safe backup in case hand-painted dyeing went terribly awry. Based on the researcher's prior experience using Rit and Jacquard brand dyes, it was decided to use both in the technique exploration.

Vat dyeing. Rit dyes were selected for vat dyeing and an online color library from the Rit website (Rit dye, n.d.) was consulted for proper dye formulae. Based on *experiential* knowledge from working with artists who specialized in dyeing and painting, it was the researcher's understanding that pre-existing dye formulae would create an established base upon which to explore color variations. Thus, dye formulae were selected in the chosen color family of the process (a French blue) and appropriate bottles of dye purchased. Though the researcher had already determined to use silk organza for the end result, it was decided to color test both silk organza and silk chiffon to see how the dyes would react to the different textiles.

Vat dyeing was conducted on the stovetop of the researcher's home oven in a large aluminum stockpot. Four different dye formulae were employed with immersion times of 5 minutes, 3 minutes, and 1 minute, and in the final iteration, a "quick dip" which equated to full immersion of the fabric followed by immediate removal. Immediately after timed immersion was finished, the dyed fabrics were plunged into a dye-set bath for approximately 30 seconds to chemically set the colors (see Figure 14), then immediately rinsed in water, hand washed with ALL brand laundry detergent in warm water, rinsed again until the water ran clear (see Figure 15), toweled to remove excess liquid and hung on a clothesline indoors to air dry under ceiling

fans (see Figure 16). Once dry, all fabric samples were ironed to smooth out wrinkles and set the color.

Figure 14. Vat dyeing stovetop dye bath next to dye set tub.

Figure 15. Dye set bath, center; ALL brand laundry detergent washing tub, right; water rinsing tub, left.

Figure 16. Vat-dyed fabrics hanging on indoor clothesline to air dry under a ceiling fan.

Swatches were cut and mounted in the researcher's design journal, whereupon a final color was decided with the following formula: ½ teaspoon Royal Blue, ¼ teaspoon Black, 2 cups water; immersion times of 3 minutes, 2 minutes, 1 minute, and a quick dip (see Figure 17).

Figure 17. Swatches, Rit dye formulae, color samples, and immersion times.

With the decision of the final vat-dyed color, samples of white silk organza were dyed in the appropriate formula for the appropriate time period, color-set, washed, toweled, hung dry, and ironed. Although the dye formula was followed, the end result differed slightly in color tone, reaching a slightly more periwinkle color rather than the desired French blue (see Figure 18).

Figure 18. Periwinkle vat dyeing on left, desired French blue on right.

This vat-dyed fabric was cut out and used in technique sampling on a toile garment, though it was decided to move forward with hand-painting techniques so as to more closely control the end color in addition to testing out visual pattern variations, as the vat-dyed fabric manipulation sample was determined by the researcher to lack visual interest due to its one-dimensional color tonality.

Hand-painted dyeing. Preliminary hand-painting dye techniques occurred on small embroidery hoops until it was determined to be an ineffective method for large scale exploration. Drawing upon *experiential* knowledge of fabric beading techniques, the researcher knew of and searched for a large wooden frame upon which to mount and stretch the silk fabric for dyeing. A preliminary search for a completed frame to purchase resulted in disappointing findings: the available frames would not accommodate the yardage necessary for the thesis research and were

determined (in the researcher's opinion) to be too expensive for the materials and construction methods used. Rather than see this as a setback, the researcher determined that it would be possible to build her own frame to suit the needs of the research and set about looking for existing plans that would include a list of materials, dimensions, and instructions to build.

Wooden frame. An exhaustive internet search yielded few results of consequence and it was determined that the researcher would need to "just figure it out." YouTube videos of tambour beading techniques were consulted to view the frames upon which the beaded fabrics were mounted and Pinterest searches were conducted to find still images of the same frames. The resulting design was based on a "slate frame", which is a frame traditionally used in needlework whereupon fabric is mounted with tension to create a smooth working surface (de la Bere, 2007). Lifelong knowledge of basic carpentry and skill in the use of power tools enabled the researcher to build her own adjustable frame with final measurements of 6'x4' down to 3'x2' (see Figures 19-22). Following the visual images found in the researcher's search for frame plans, 1/4" holes were drilled for adjustability, and 1" twill tape stapled to the longer lengths of wood to act as a base to which the mounted fabrics could easily attach and be removed. Pine wood 1"x3" lumber was selected for cost and familiarity, which was a *tacit* decision based on lifelong experience with the materials and the knowledge that the researcher would be easily able to manipulate them into the needed shapes for the frame.

Figure 19. 1”x3” lumber cut to 6’ and 4’ lengths, with 1/4” holes drilled and 1” twill tape stapled.

Figure 20. Wooden frame bolted together at a sample measurement.

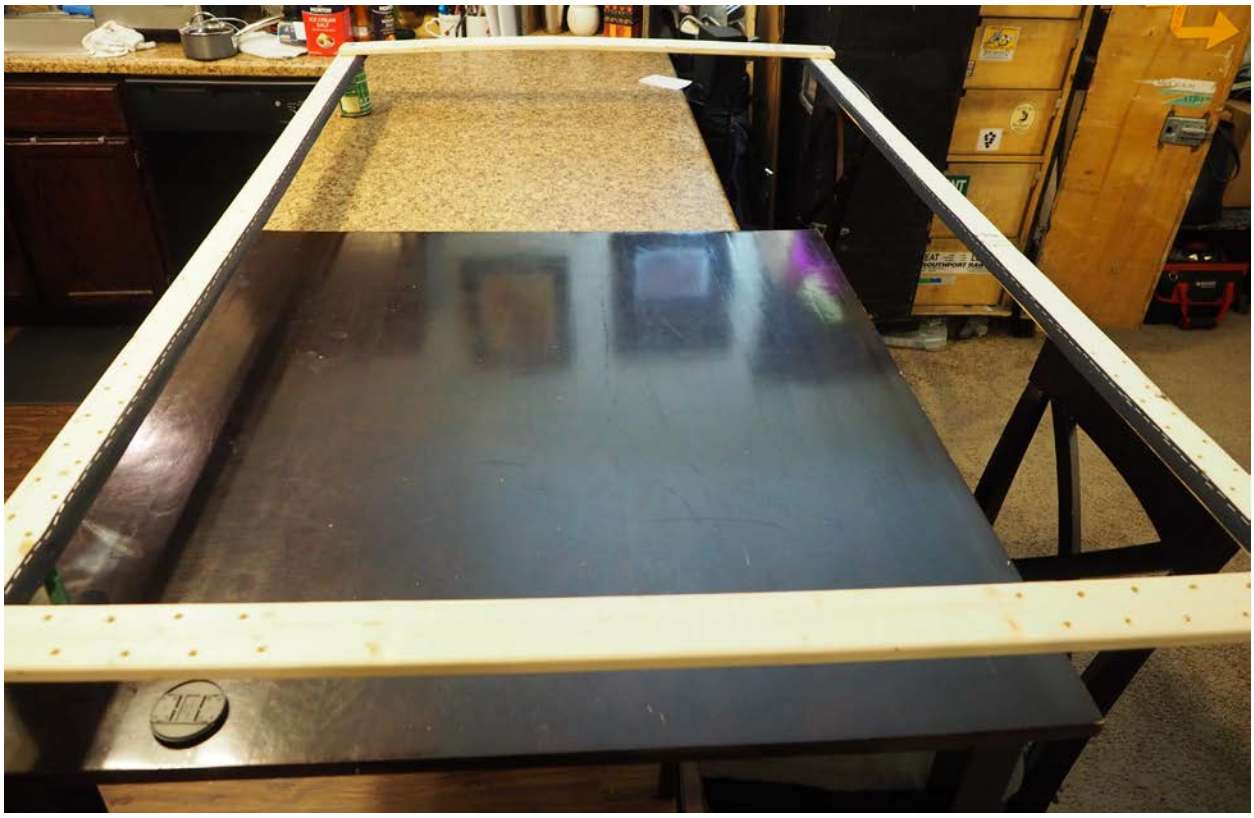

Figure 21. Wooden frame adjusted to full 6’x4’ measurements and set up.

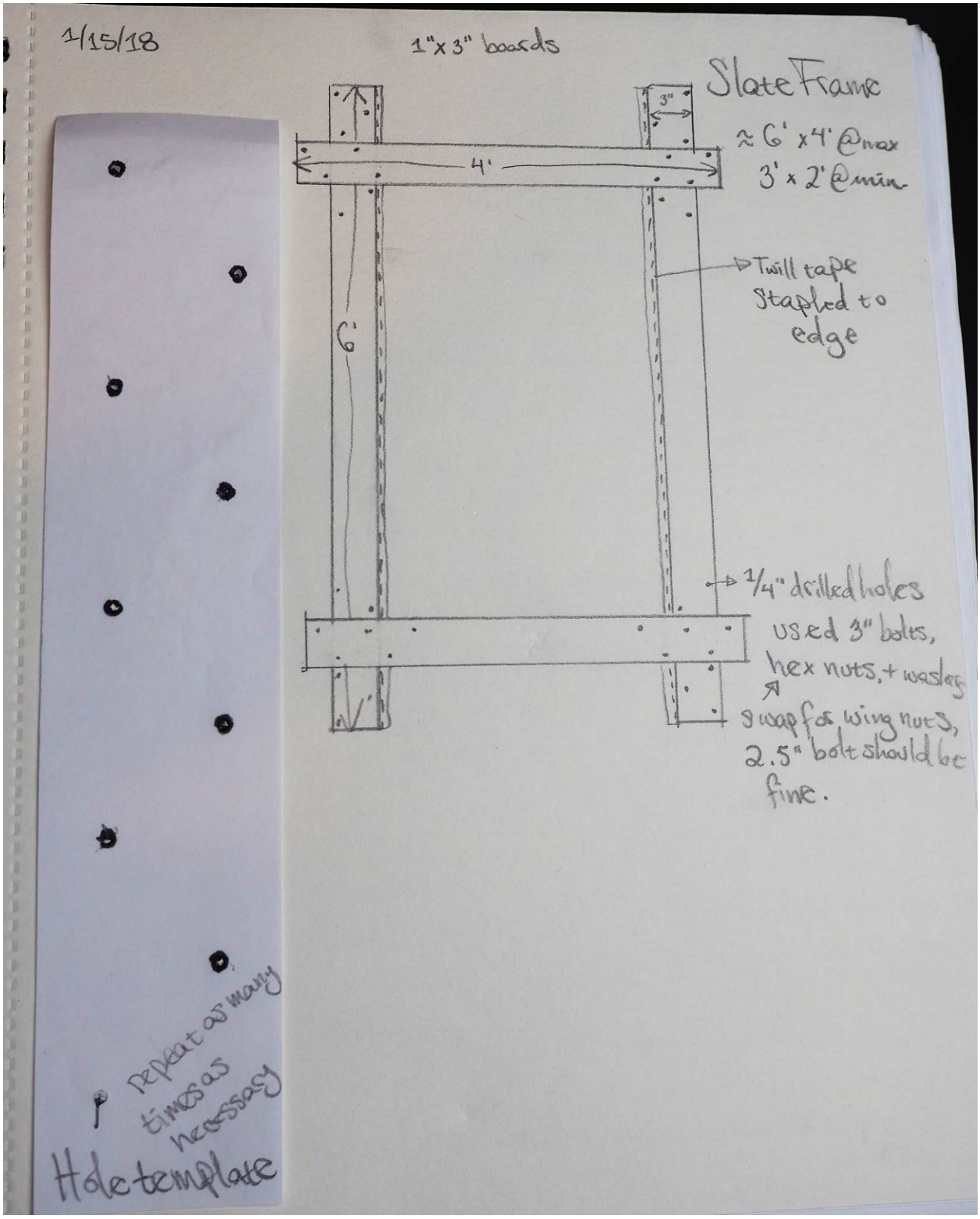

Figure 22. Wooden frame sketch, plans, and hole-placement template.

Preliminary tests of the frame determined that it was necessary to add short legs (see Figure 23) so that the frame could sit on the work surface and allow reach underneath – this also allowed for more security of materials, as the first iteration involved balancing the frame on soup cans on a countertop, coupled with the constant concern of knocking the frame onto the floor and ruining both the sample and the carpet in the researcher's rental apartment. The addition of legs to the frame eliminated this concern and enabled the researcher to remain focused on the primary task, which was to explore dyeing techniques.

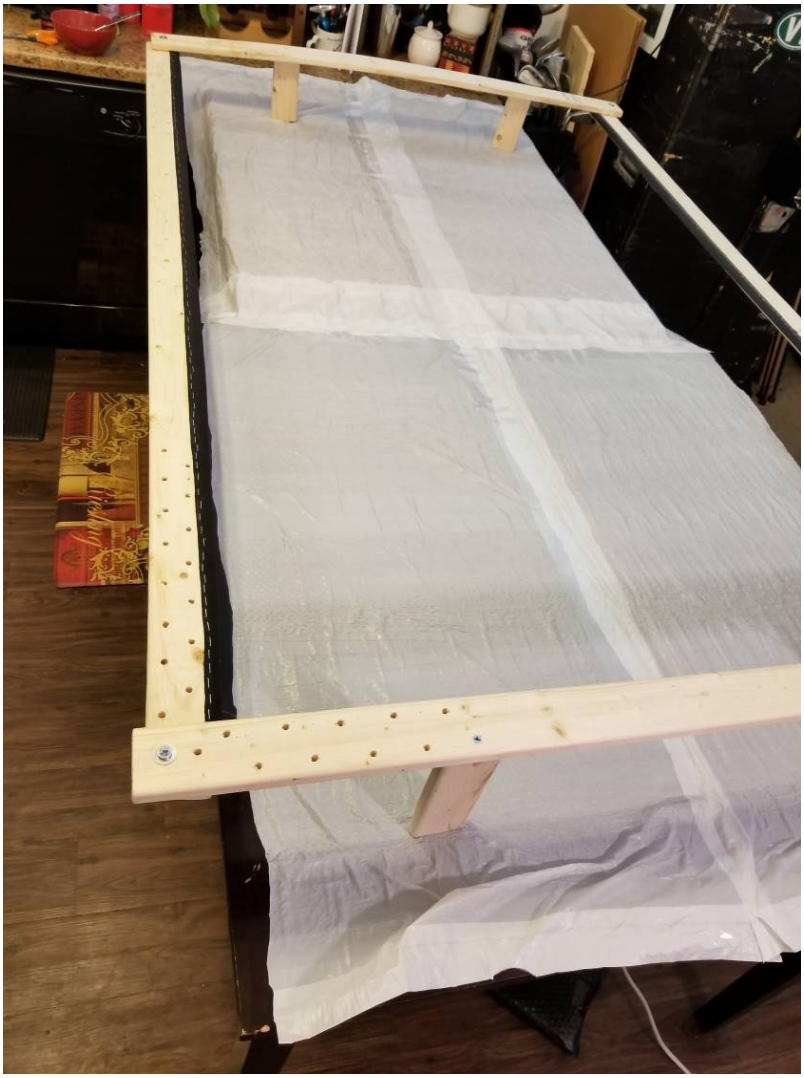

Figure 23. Wooden frame with added legs.

Hand-painted dye tests. When the frame was fully assembled, it was again determined to be beneficial to test dye both silk chiffon and silk organza. Thus, one yard of each fabric was stitched to each other and mounted onto the frame so as to conduct dye tests on each fabric simultaneously (see Figure 24).

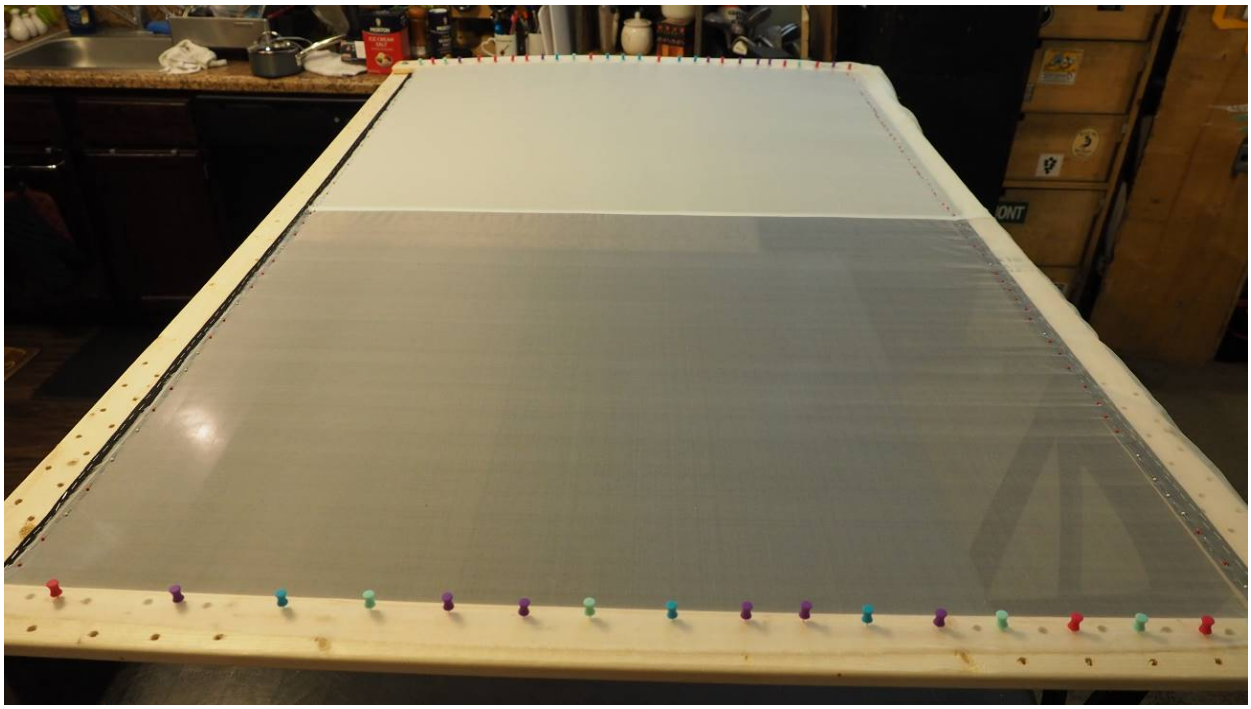

Figure 24. Wooden frame stretched with silk organza (lower) and silk chiffon (upper).

Tacit and *experiential* knowledge also informed this process and determined that the plain white fabrics needed to be washed and dried to eliminate the possibility of future shrinkage and the removal of any finishes that might prevent the fabric dyes from absorbing into the textiles. Prior experience with preparing large quantities of fabrics for dyeing projects determined the use of a home washing machine and dryer so as to quickly and effectively remove extra fabric finishes and shrink the fabrics as much as possible. Shrinkage is an important consideration in dyeing as the end fabrics may end up considerably smaller than originally intended. Thus, preshrinking fabric prior to garment construction can eliminate

unfortunate laundering effects in the future. Once washed and dried, the organza-chiffon combo fabrics were ironed to eliminate wrinkles and create a smooth work surface then stretched onto the frame. Beginning at the center seam where both fabrics combined and working to the outer ends, the researcher used straight pins to attach the selvedge edges of the fabrics to the long arms of the wooden frame. The fabric was pulled taut to create a tight work surface but not stretched so far as to pull the grain of the fabric out of alignment. The short ends of the fabric were secured to the short arms of the wooden frame with push pins tacked every few inches (see Figure 25).

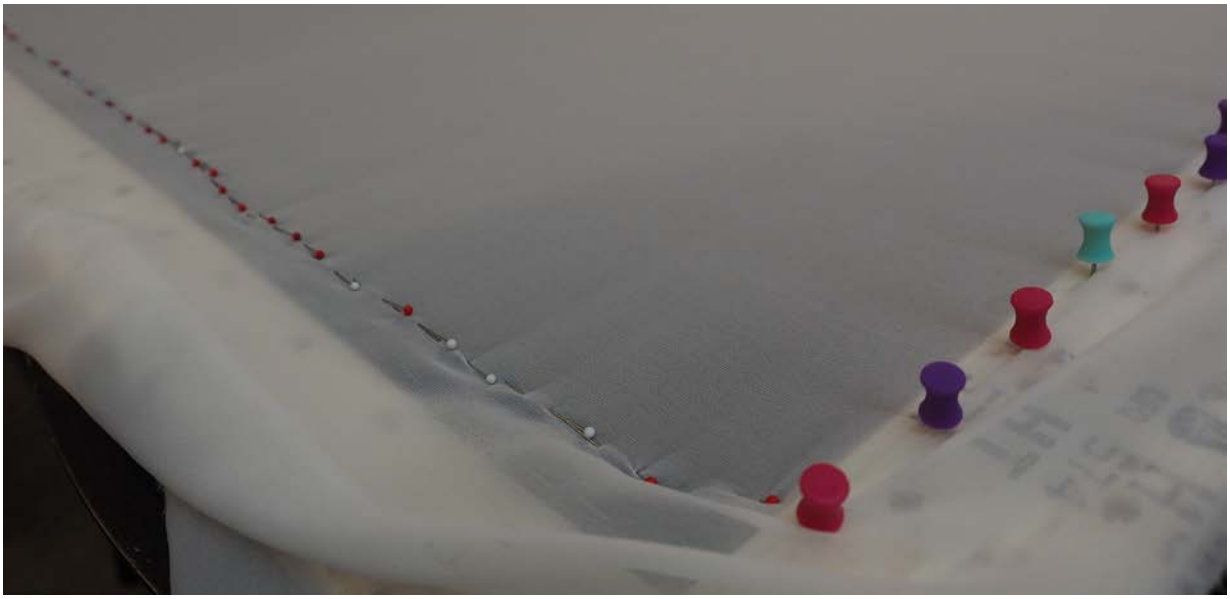

Figure 25. Straight pins and thumbtacks securing fabric.

With the fabrics prepared on the newly-created frame, attention was turned to the dye formulae process. *Experiential* knowledge with basic silk painting techniques informed the choice of Jacquard brand Green Label dyes. A basic dye kit was purchased containing gutta resist, a brush, a small applicator bottle, chemical dye set, and dyes in magenta, cyan, yellow, and black. This basic kit yielded use instructions and the Jacquard website (Jacquard products, n.d.) produced further details for techniques. Based on the vat-dyeing formulae, the researcher developed color combinations in plastic cups, using measuring spoons and water, and

documenting each formula on the outside of the cups for easier documentation later. The dyes were applied to the stretched fabric via paintbrush with formulae written in pencil below.

Through a conversation with a fellow artisan, salt was introduced as a dyeing technique to attain interesting visual effects. After viewing YouTube videos of the basic technique, rock salt was used to explore its impact on the solid dyes and time of exposure documented on the fabric next to each sample (see Figures 26-29).

Figure 26. Salt dye samples.

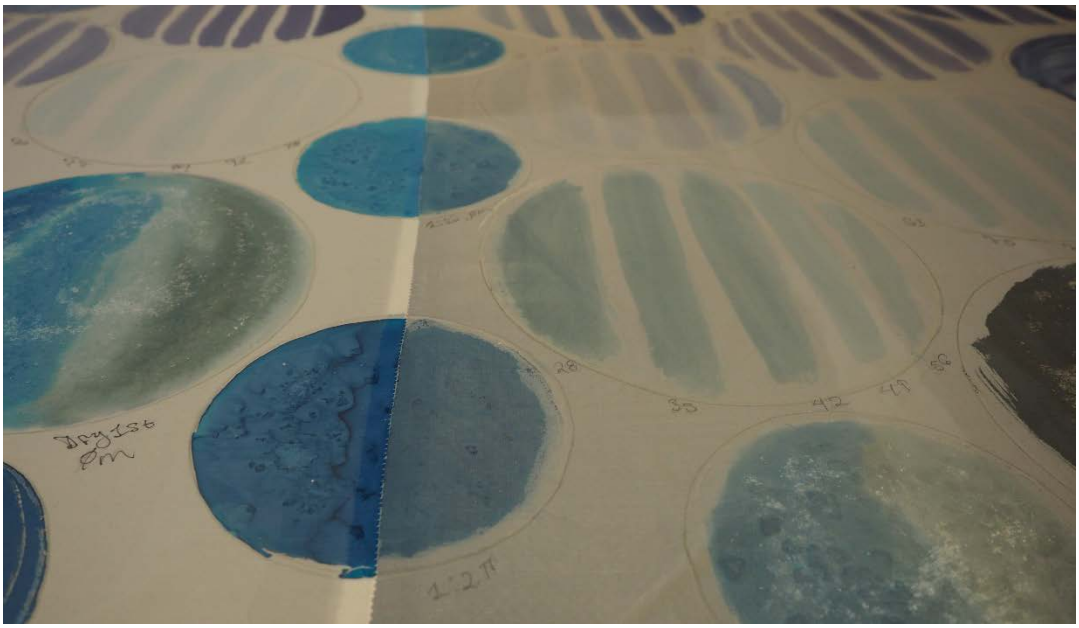

Figure 27. Salt dye tests on frame, prewashing.

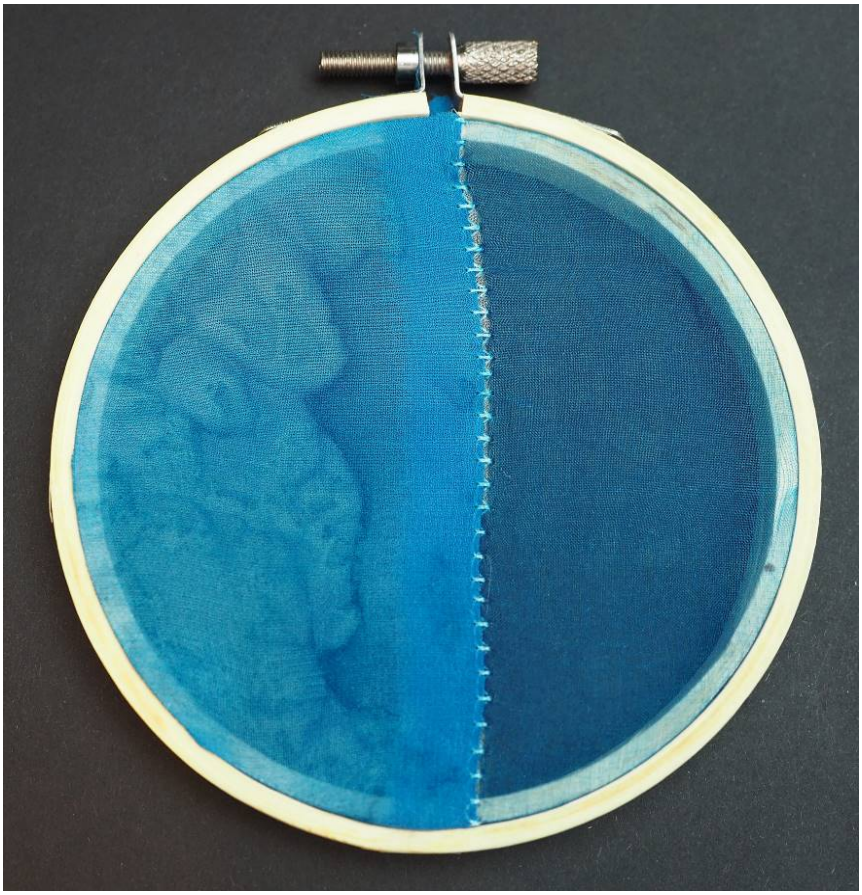

Figure 28. Salt dye sample results: silk organza on right, silk chiffon on left.

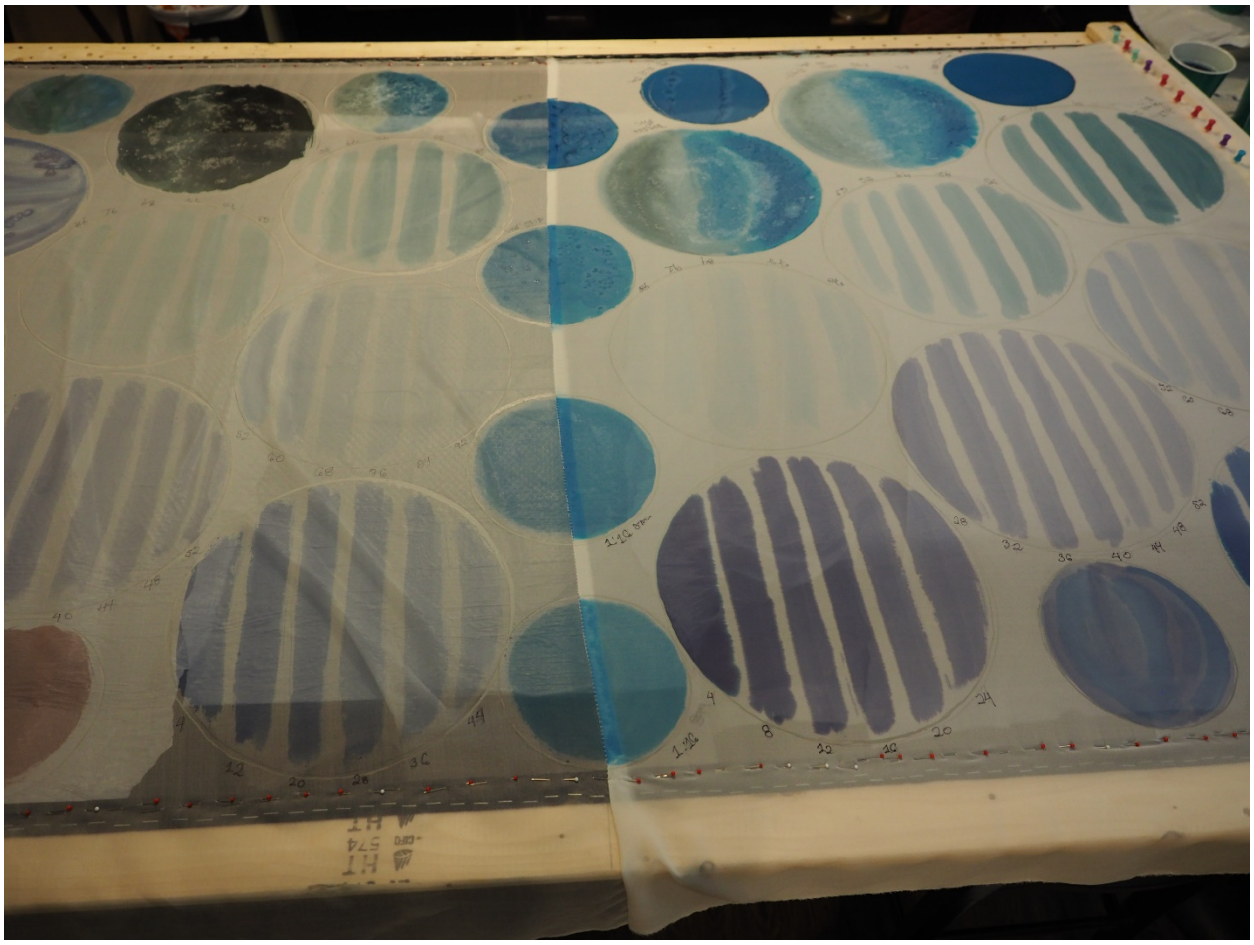

Figure 29. Dye color and salt tests. Silk organza on left, silk chiffon on right

After extensive tests, color formulae were determined and it was decided that although the rock salt yielded interesting visual patterns in the dye, it would be best to save the technique for future design explorations. The dyes were left to dry for 24 hours, then the fabric removed from the frame and colorset according to the manufacturer's chemical dyeset instructions; after which, the fabric was hand washed with ALL detergent, toweled, and hung on a clothesline indoors to airdry. Once dry, the fabric was ironed to eliminate creases and wrinkles in the fabric and set the final color(s). The previously decided-upon formulae were checked to make a final determination of color selection, with the resultant formula and backup selection documented in the design journal (see Figure 30).

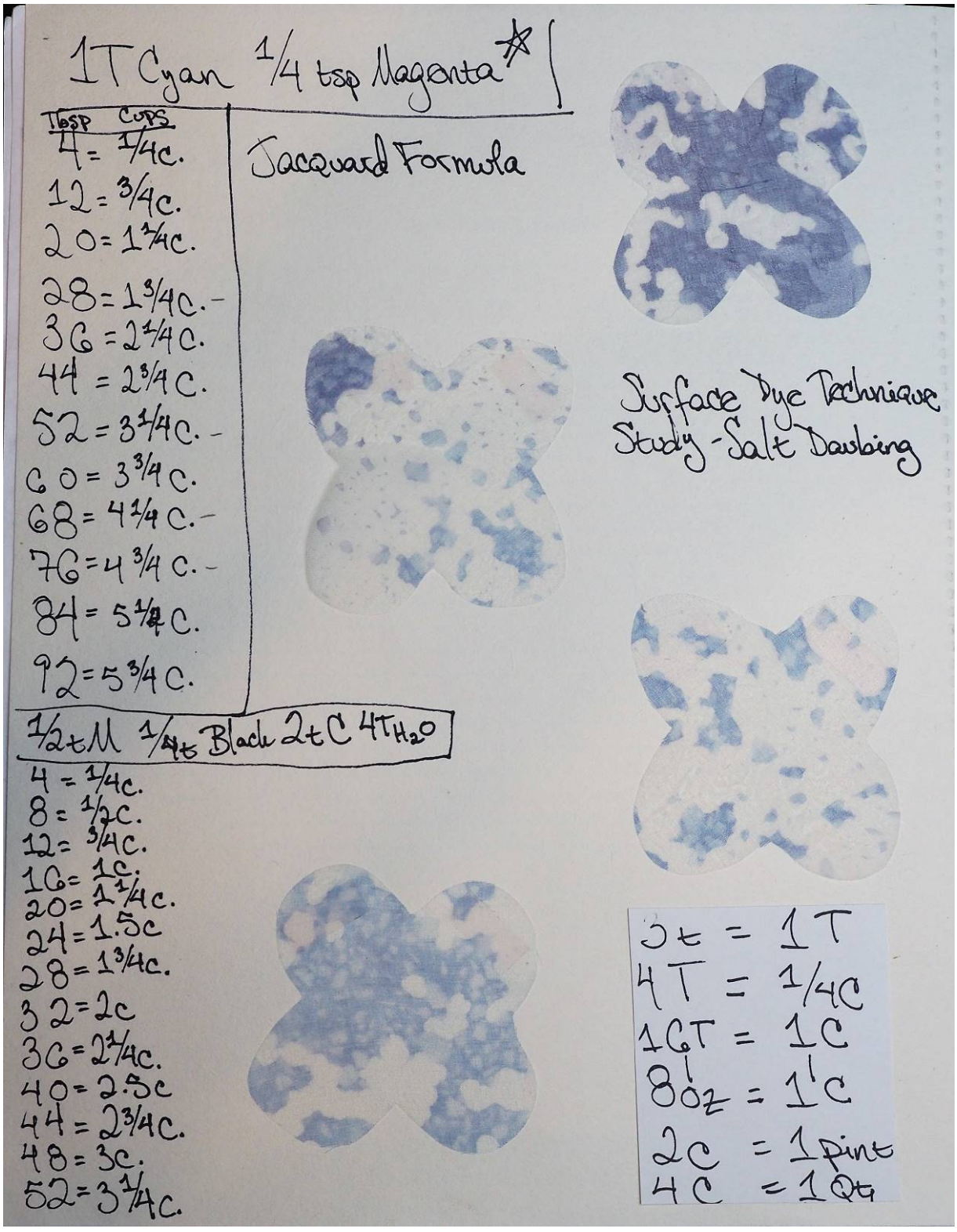

Figure 30. Jacquard Green Label dye formulae combinations with tablespoon to cup conversions.

Dye test results. Based on the vat-dye results of single-colored fabric lacking visual interest, it was determined that different painting techniques would need to be tested to determine a final technique that would yield not only the desired color but also depth and variation. Thus, several techniques were explored, including subtle blended-stripe washes, ombré, and the painting of a large plaid pattern (see Figure 31).

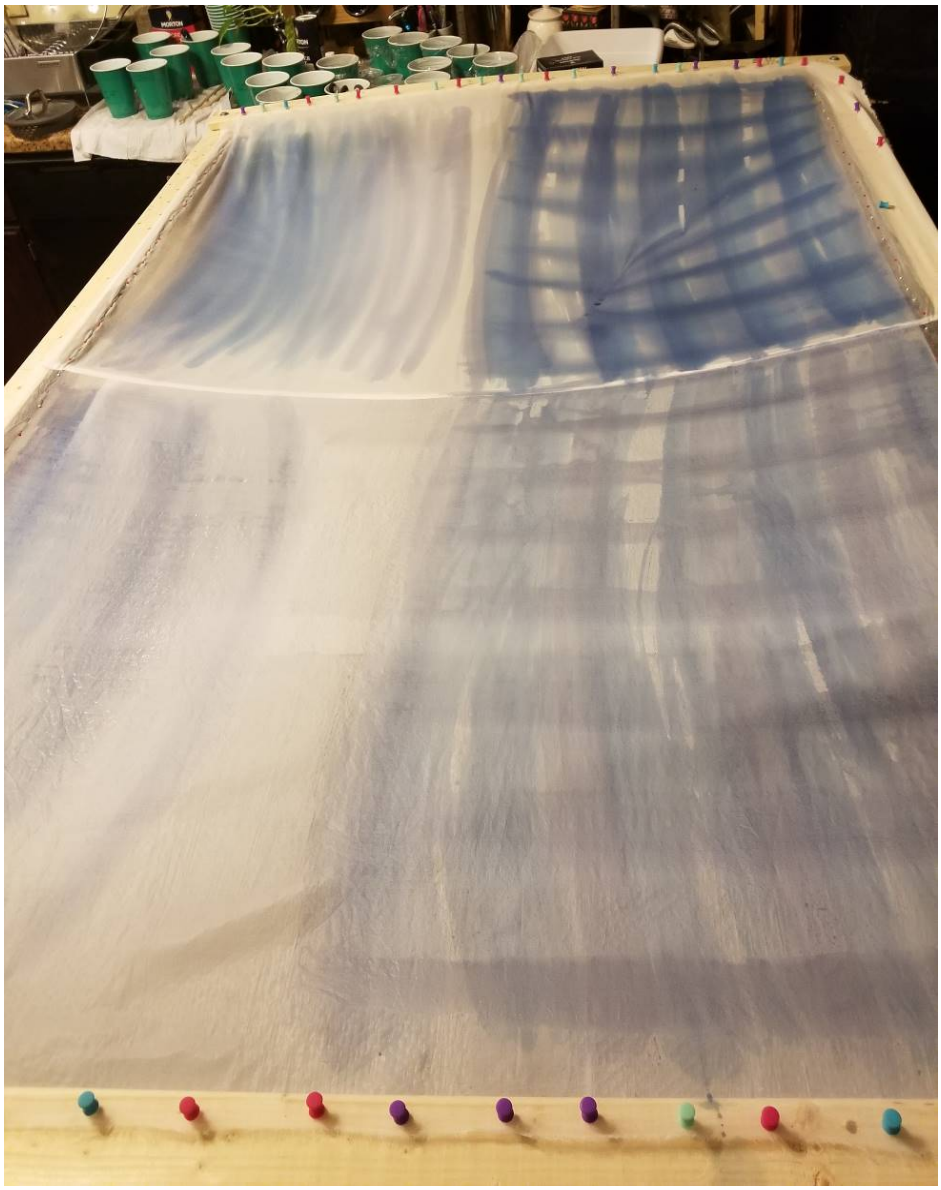

Figure 31. Hand painted dye technique samples: silk organza on bottom, silk chiffon on top. Plastic cups filled with dye seen in background.

Dye test fabric manipulation samples. Fabric manipulation samples were created to explore how different surface painting techniques would look in the chosen petal sample technique (see Figures 32-35). The plaid technique was selected as the most visually interesting, based on fabric manipulation tests with the various painting techniques. Because of the previously-determined four-leaf clover shapes, it was thought that a plaid patterned fabric would yield interest due to variation in color and tone (see Figure 36).

Figure 32. Plaid test.

Figure 33. Ombré test.

Figure 34. Color-blending test.

Figure 35. Plaid, ombré, and color-blending tests grouped for technique selection.

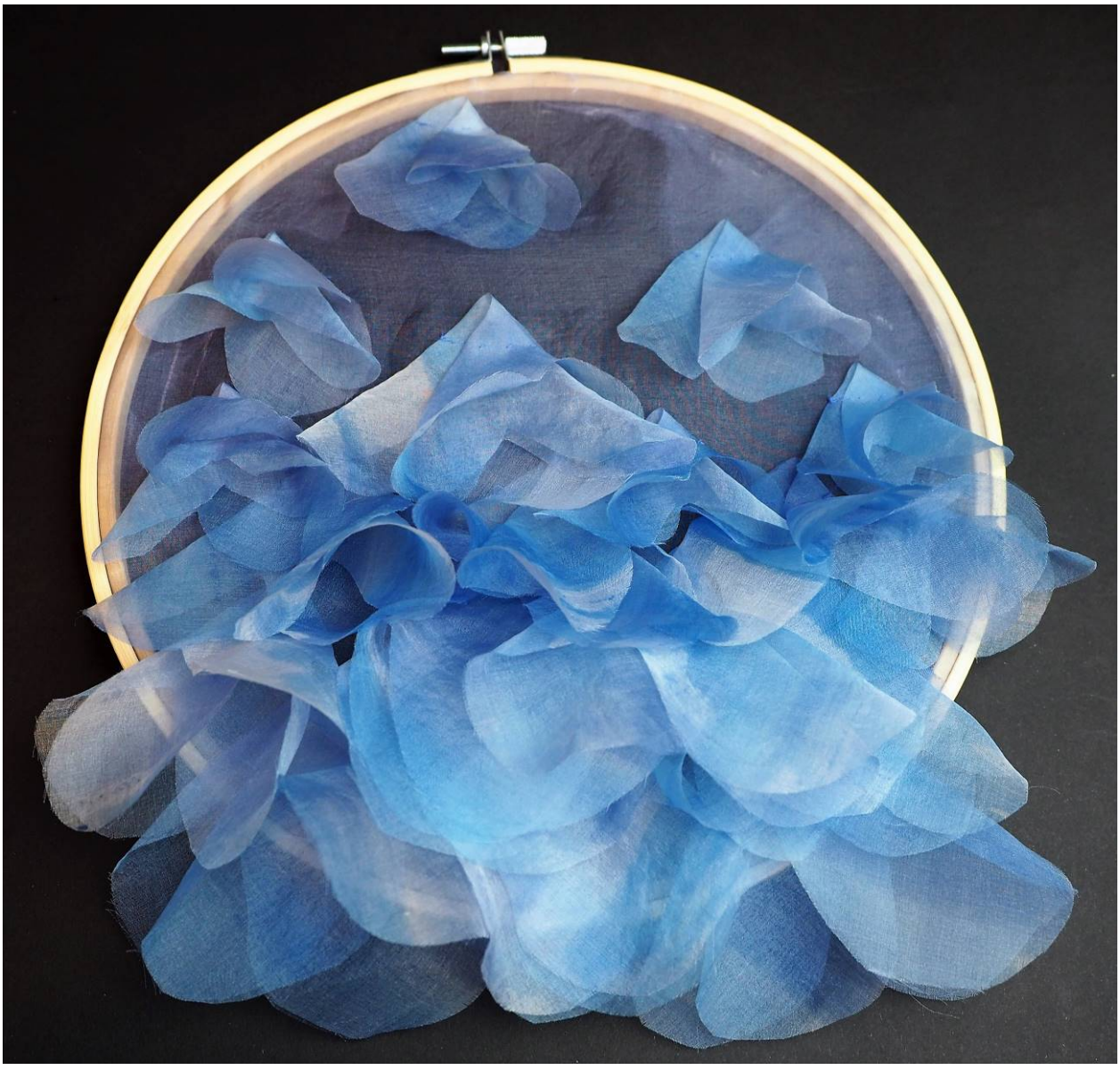

Figure 36. Plaid fabric manipulation technique sample.

Much time was spent in all of the dye tests involved in the research and much dye was wasted to determine the final colors. Additionally, the researcher lost valuable time in creating a wooden frame upon which to stretch the fabrics for dyeing, which yields the conclusion that though an ultimately successful and fulfilling process, the traditional dyeing techniques are extremely labor and time-intensive and without ready access to proper tools and equipment, the process becomes more difficult, expensive, and time-consuming. In an effort to save time and

multitask, a process was developed whereupon the researcher would stretch and pin 2 yards of silk organza, paint it, and leave it to air dry under a ceiling fan. This dried yardage was then rolled onto a cardboard tube so that the next 2 continuous yards could be stretched, pinned, and dyed (see Figure 37). While the fabric was drying, the researcher worked on patterns and garment mockups. This multi-tasking process enabled a more efficient use of time.

Figure 37. Figure __. Plaid painted yardage stretched and rolled on cardboard tube.

Garment Development

Garment patterns and toiles were based on sketches and pattern lists made in the researcher's design journal (see Figure 38) upon the completion of the process mood boards.

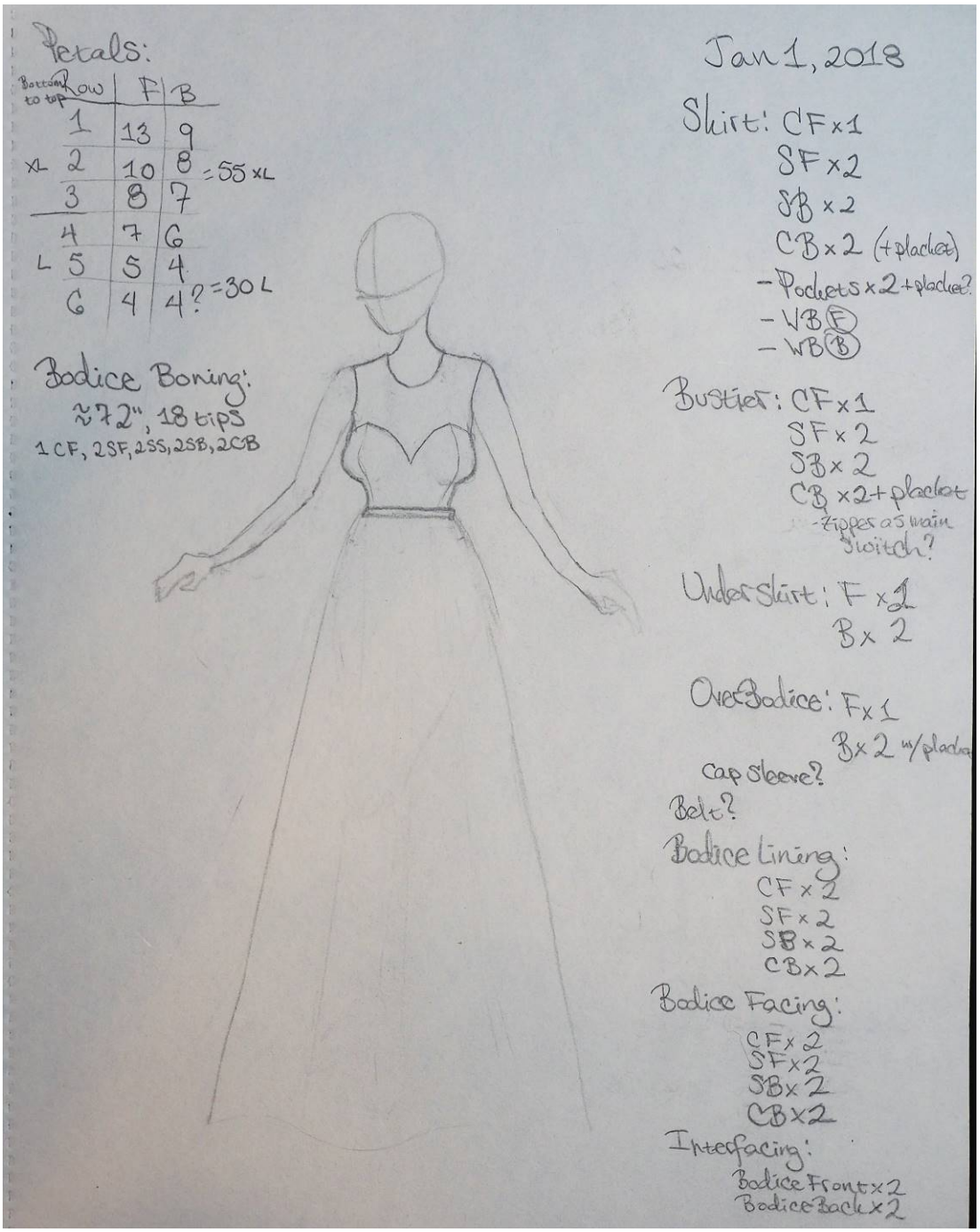

Figure 38. Original garment sketch and pattern list.

Early in the process, it was determined to create a gown using the measurements of a standard size 10 dress form. Because a dress form in that size was readily accessible to the researcher, the creation of draped slopers was a quick and easy process using muslin and employed the considerable training and *tacit* knowledge of the researcher. With these slopers created, it was possible to create paper patterns and "true" them, ensuring accuracy of measurements.

A first toile was created to work through the construction process and conclusions from its process determined a refinement of technique so as to create a better and more visually-pleasing result. The toile was used to test the fit and accuracy of the patterns, and modifications were noted on the toile as necessary which also served as a visual artefact to collect knowledge in the artefact-creation process by showing the manifestation of the original design sketches.

It was also determined, through creation of the first toile (see Figure 39), that the original design would require an exorbitant amount of fabric for completion of the final garment (see Figure 40). This was determined through yardage estimates and price comparisons and documented in the design journal.

Figure 39 and *Figure 40.* First toile with overlay, and overlay of skirt splayed.

Thus, a secondary drape and pattern set was created, utilizing less fabric, and therefore less time and money. This secondary set was turned into a fully-finished muslin toile, upon which it was possible to explore fabric "petal" size, distribution pattern, and placement so as to gain a more clear understanding of how many pieces would be needed (see Figures 41 and 42).

Figure 41. Front view of second toile.

Figure 42. Back view of second toile.

Petal Tests. The first “petal tests” were conducted using synthetic organza readily available in the researcher’s fabric supply. In this way, it was possible to make a final determination on petal sizing, and gain an approximation of placement and distribution over the garment (see Figure 43). Because the yellow and orange “petals” were pinned to the garment rather than stitched, it was easy for the researcher to manipulate their placement and remove them completely after taking documentation photos for a visual record to be consulted in the future. The next “petal” iteration involved the use of the vat-dyed periwinkle “petals”. A preliminary distribution was pinned in place (see Figure 44) followed by the addition of a prior-made sample of dye color and fabric manipulation (see Figure 45) to explore different color and distribution.

Figure 43. First “petal” mockup with synthetic organza

Figure 44. Preliminary petal distribution

Figure 45. Addition of plaid dye sample.

A final iteration using the vat-dyed periwinkle “petals” was developed and it is this iteration that remains pinned to the toile for exhibit and reference (see Figure 46).

Figure 46. Final periwinkle petal distribution toile.

Although it was determined to focus mainly on the skirt of the process garment, preliminary technique and design exploration were conducted with the bodice of the gown (see Figures 47 and 48) with the intent to expand on the technique in future study.

Figure 47. Design exploration on bodice of gown.

Figure 48. Bodice design exploration and skirt petal distribution.

Garment creation. With the basic garment designed, patterned, toile created, and petal iterations selected, progress commenced on the completion of the garment. Due to the sheer quality of the painted silk organza, it was necessary to determine how to increase the opacity of the garment in addition to causing the dye painted on the silk to show more effectively. To explore this, a bodice was created using layers of painted silk organza, plain white silk organza, and white and lavender nylon corset mesh, a fabric that provides necessary support to the overall structure of the garment. To determine whether to use the lavender or white corset mesh, half of the bodice

was created with a white base and half with a lavender base. Each pattern piece (center front, side front, side back, center back) was comprised of different fabric layering techniques so as to gain an accurate view of the color and opacity of the final garment (see Figures 49-52).

Figure 49. Front of fabric layering bustier.

Figure 50. Left side of fabric layering bustier.

Figure 51. Back of fabric layering bustier.

Figure 52. Right side of fabric layering bustier.

This bodice was placed on the researcher's size ten dress form, with large plaid-painted "petals" pinned directly beneath the bodice to mimic the skirt of the gown. This technique placed the final

colors in close proximity, enabling the researcher to make a final selection of layering technique (see Figures 53 and 54)**.**

Figure 53. Fabric layering bustier with “petals”, front view.

Figure 54. Fabric layering bustier with “petals”, back view.

Prototype. With final selections made of color, layering, paint technique, petal sizing/shape and distribution, the next step was to create a near-final prototype in full scale. While the researcher had determined a pattern for petal placement on the skirt, the pattern was quickly discarded and a more organic process undertaken of “eyeballing” the petal placement. This perhaps speaks to the traditional training of the researcher and her reliance on her artistic intuition, which reflects an acknowledgement of a prescribed process and ultimate decision to “go with the gut.” This prototype was created to make technique determinations prior to the final iteration and was used alongside other artefacts in the researcher’s gallery exhibit (see Figure 55).

Figure 55. Final process toile as shown at gallery exhibit.

Contemporary Technologies

The current research originally intended to use the following contemporary technologies as a part of its design research: 3D printing, wearable technology, and digital printing. It is the researcher's belief that these technologies may be effectively incorporated with traditional techniques to aid in bridging the gap between traditional and contemporary, with a byproduct of creating design artefacts. Due to time constraints, cost, and a desire to keep the overall scope of the work in mind, 3D printing was eliminated and wearable technology restricted to the examination of a previously-created artefact. This allowed the researcher to focus exclusively on hand-dyeing, fabric manipulation, and digital printing, in addition to the documentation process, artefact exhibit, and study interviews. It is the intent of the researcher to pursue this research in the future, using 3D printing and further study of wearable technology.

Wearable technology. For the purposes of the current research, study of a previously-made artefact featuring wearable light-up technology was selected (see Figures 56 and 57). In this design, a wearable LED circuit was created and stitched to the back of a tailored coatdress. This circuit layer was covered by a layer of black organza encrusted with beads stitched using a traditional hand-beading technique (see Figure 58). Prior design research into the use of LEDs informed the researcher's choice of lights, in addition to a conscious design choice in the current garment design. This artefact was a coatdress created using traditional tailoring and beading techniques, and featured a large LED-based circuit made of conductive thread, NeoPixels (individually-programmable RGB LEDs), and an Adafruit Flora board (a microprocessor, comparable to a tiny computer, that governed the computer-coded programming of the lights: color, light intensity, pattern repetition) (see Figures 59 and 60).

Figure 56. Back of coatdress with beading. *Figure 57.* Close-up of beading with lights turned on.

Figure 58. Beading detail.

Figure 59. Circuit image.

Figure 60. Close-up of circuit.

Digital printing. Textile printing was utilized in the artefacts. Surface designs were created via watercolor painting techniques on fabric and paper, then photographed and uploaded into Photoshop (see Figure 61-64).

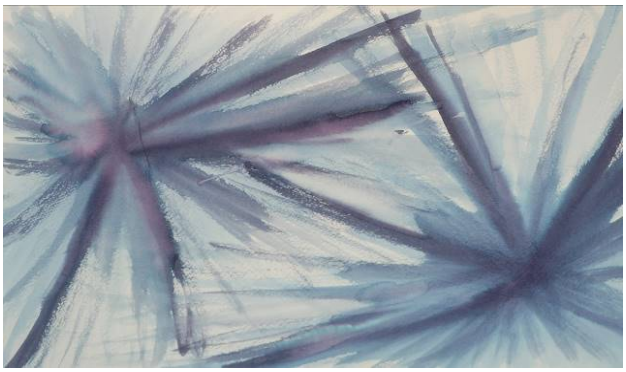

Figure 61. Tarantula painting.

Figure 62. Plaid painting.

Figure 63. Rorschach painting.

Figure 64. Wave painting.

Then, the photographs were cropped and colors edited, after which the images were uploaded onto the website of an outsourcing company. Spoonflower is a company that specializes in digitally-printed fabrics (Spoonflower, n.d.) and their website offers the option to create a double-mirrored print, which was selected for the four sample fabrics (see Figures 65-68).

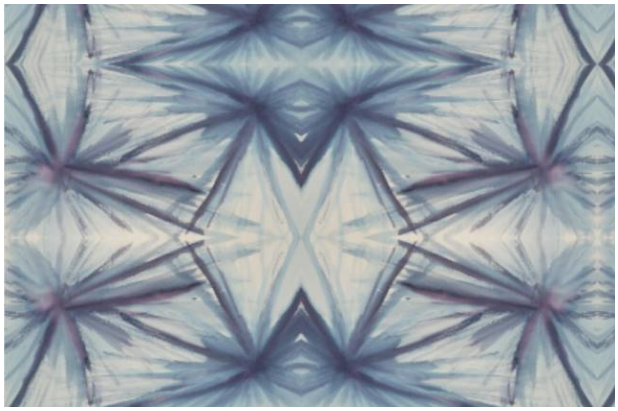

Figure 65. Tarantula double mirror repeat.

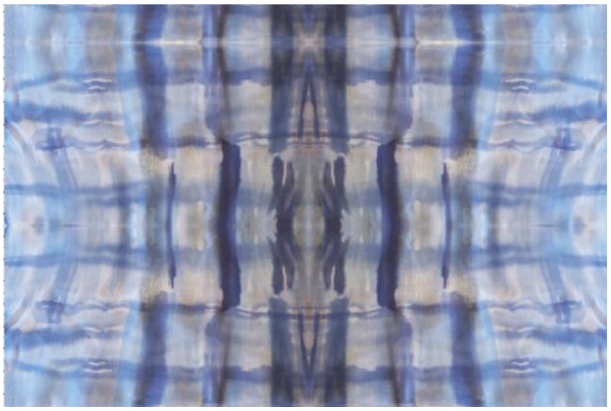

Figure 66. Plaid double mirror repeat.

Figure 67. Rorschach double mirror repeat.

Figure 68. Wave double mirror repeat.

Because Spoonflower does not currently offer printed organza, the researcher selected polyester chiffon to use as a fabric base for the digital print, and ordered yardage of four different prints (see Figures 69-72). The next step was to create fabric manipulation “petal” samples using the digitally-printed chiffon fabrics (see Figures 73-76).

Figure 69. Tarantula printed polyester chiffon.

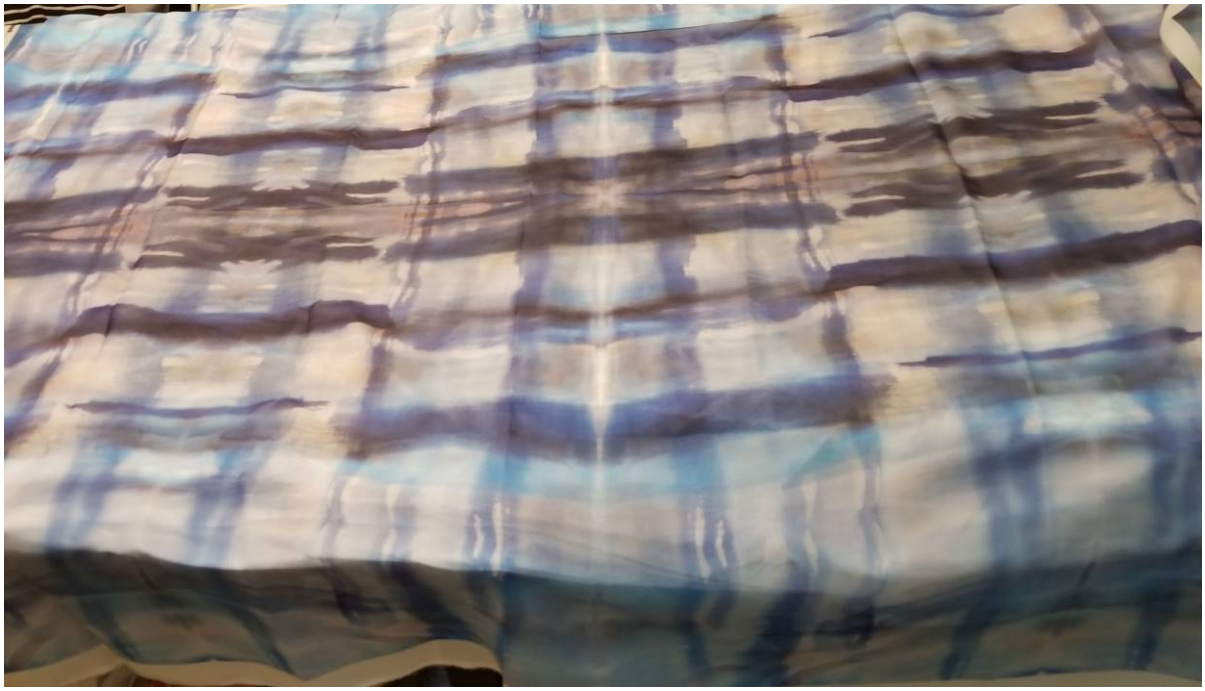

Figure 70. Plaid printed polyester chiffon.

Figure 71. Rorschach printed polyester chiffon.

Figure 72. Wave printed polyester chiffon.

Figure 73. Tarantula fabric manipulation petal sample.

Figure 74. Plaid fabric manipulation sample.

Figure 75. Rorschach fabric manipulation sample.

Figure 76. Wave fabric manipulation sample.

Gallery Exhibit

Hearkening back to the original Master-Apprentice framework, it was important to not only conduct design research but also to display the artefacts to expert artisans so as to gain critique and feedback, opening the created pieces to interpretation by more-experienced others. The method utilized for this display followed that of a traditional gallery exhibit, with a research presentation to an audience of expert artisans followed by the opportunity for engagement and feedback through one-on-one discussions and a Question and Answer (Q+A) period in which the audience was able to ask the researcher direct questions. As the artefacts more closely resembled *showpieces* and because they needed to be seen by the observers from multiple angles, a gallery exhibit was selected as the best fit for display.

The gallery event also served as a means through which to recruit and consent study participants for the qualitative phenomenological portion of the current research. With this secondary objective (recruitment and consent) in mind, it was determined that the best location for the gallery event would be located in Las Vegas, Nevada, due to the researcher's prior professional and personal experience living and working there and making connections with other expert artisans. Thus, an event was held on March 1, 2018 in Las Vegas.

Event Planning Methods

Experiential knowledge gained through extensive fashion event planning experience in the researcher's professional life guided the coordination of the gallery event. After consultations and cost workups from venues such as hotel ballrooms, bar/restaurants, a local university, and independent art galleries, a venue was selected: a boutique photography studio used for photo and video shoots. This space featured a large, white, blank space with excellent lighting and a staff accustomed to working with other artists. The space, SON Studios (see Appendix C for site

authorization letter), also permitted for ease of setup and teardown, relieving a necessary logistical element involved in event planning. With the venue and date selected and confirmed, the researcher created event invitations (see Appendix D for event invitation) and set up a website (see Appendix E for website screenshots) with basic event information and an RSVP form, enabling for a preliminary headcount. The website also featured clickable links to consent information, likeness releases, and a demographics questionnaire, all of which were backed up in hard copy at the event itself. Finally, additional exhibit materials were sourced and/or created, in the form of posters mounted on foam boards into which artefact samples could be pinned; display easels; and dress forms on which to display the garments (see figures 77-79 for images of the gallery event).

Figure 77. Gallery event setup.

Figure 78. Gallery event poster setup.

Figure 79. Gallery event setup with wearable technology garment display.

Gallery Event

The researcher traveled to Las Vegas for the execution of the event, which was photographed and video recorded for documentation and posterity. A paper program was created for the event

attendees with information about the research and the research team (see Appendix F for event program) A trained research assistant was on hand to aid with documentation and the event's livestream via Zoom, which was setup beforehand so that the researcher's colleagues and family would be able to virtually attend. The broadcast concluded at the end of the research presentation and was recorded for documentation purposes. The research presentation gave an overview of the thesis purpose, background in the field, and an extensive discussion of the techniques used, both successful and unsuccessful. At the conclusion of the presentation, the researcher opened the floor to questions and feedback, after which the attendees were invited to examine the artefacts up close and ask any remaining questions. Upon completion of the event at the allotted time, the artefacts were loaded out and shipped back to Auburn University. The research assistant engaged with recruiting and consenting the study participants, all of whom were contacted within 24 hours of the event to set up appointments for Zoom interviews to address the qualitative phenomenological portion of the research (see Appendix G for semi-structured interview protocol).

Qualitative Methodology

Sample

The criterion sample of 5 participants were required to meet the following conditions in order to participate: expert artisans 19 years of age or older in handcraft fields who have knowledge of and experience in *making* using both traditional and contemporary technologies, techniques, and materials. Examples include professional costumers, fashion designers, theatrical production designers, and master carpenters. The identified study participants and their levels of expertise are known to the researcher through her prior professional career, thus, the sample is a criterion-convenience sample.

Via demographics questionnaire, the sample self-identified as craftsperson (100%), maker (60%), designer (60%), and artisan (20%). The ages of participants ranged from 33-50 years old, with a mean age of 40 years old. Participants were White (100%), held a minimum level of education of some college or technical school (100%), 4 year college degree (80%), and graduate degree (40%). Twenty percent of the sample identified as male, with the remainder identifying as female (80%). Finally, the self-stated professions of the sample include wigmaker (20%), educator (20%), fabricator (20%), and freelance designer (60%).

Potential study participants were recruited via email (see Appendix H for recruitment email) wherein they were informed of the study's purpose, and invited to a gallery exhibition of the work. In the recruitment email, invited participants were informed that a condition of participation involved consenting to have their likeness recorded via photographs, video, and audio recordings. Consent to participate in the study, and to have their likeness recorded, was obtained via electronic signature or in person at the event via signed physical documents (see Appendix I for informed consent letter and Appendix J for likeness release form). Additionally, all participants were asked to complete a demographics questionnaire (see Appendix K for demographics form), though failure to complete the demographics form did not disqualify them from participating in the study. Incentive to participate occurred through entry into a drawing to receive a $100 VISA gift card. Interviews were conducted and recorded via Zoom, then transcribed (see Appendices L-P for interview transcriptions).

CHAPTER IV: FINDINGS

Research study findings are presented in this chapter, both from the practice-led design research and the phenomenological qualitative interviews. The first objective of the research was conducted through design research, wherein the findings resulted through analysis of the design journal, notes, video recordings, and photographs, with emergent themes identified and examined against the design research questions[4] developed through the literature review. These findings were also considered in a self-reflexive way through the Five Stages of Skill Acquisition (Dreyfus & Dreyfus, 1986) to evaluate the researcher's advancement in skill sets via the practice-led design research.

The second objective of the study was addressed via the phenomenological qualitative research study. Five expert artisans participated in semi-structured interviews, which were then transcribed and examined by the researcher. Emergent themes were identified through analysis of the interview transcriptions: challenges, documentation, knowledge resources, tacit and experiential knowledge, trial and error, holistic approach, the human touch, and generational gap.

Practice-Led Method Data

In the current research, the skills and practices passed to the researcher via the master-apprentice model provided a sturdy foundation from which to explore innovation. The pursuit and creation of knowledge occurred via adaptation of the traditional master-apprentice model (of gaining experience by asking questions and receiving answers from a more-experienced other or by reading the works they have created and following their written instruction) to include the use of internet-sourced instructions written, photographed, and/or video recorded by more-experienced others. It is also in this way that the current research sought to generate knowledge

[4] See page 37 for list of design research questions.

through written artefacts such as design journaling and visual artefacts such as photographs and video. It is the future intent of the researcher to use the design journal and the visual documentation taken during the design research process to create step-by-step tutorials. The researcher had prior career experience in writing step-by-step tutorials for the creation of costumes and thus will rely on this experience in the creation of documentation resulting from the design research process.

Data Aggregation and Analysis

The design journal contains written process notes and thoughts occurring during the design and creation research processes. This journal is accompanied by the artefact samples, along with conclusion notes regarding successful and unsuccessful design sample techniques. Videos were recorded and photographs taken throughout the entirety of the design and creation process to track techniques. In this way, the researcher was able to track the exploratory techniques used and reflected on each. All notes and reflexive journaling have been analyzed for emergent themes, thoughts, and conclusions and compared to the original research questions. Additionally, self-reflexive comparison of skill level before and after the design research process occurred via Dreyfus and Dreyfus's (1986) Five Stages of Skill Acquisition framework. See Table 1 Techniques used in the design research process, and Table 2 for a reflexive evaluation of skill levels before and after design research.

Table 1

Techniques Used in Design Research Process

Main Techniques	Supplementary Techniques
Traditional dyeing	Tambour beading
Garment construction	Event planning
Fabric manipulation	Documentation
Digital printing	

Table 2

Reflexive Evaluation of Skill Levels Before and After Design Research

Skill	Before	After
Traditional dyeing	Competent	Proficient
Garment construction	Expert	Expert
Fabric manipulation	Proficient	Proficient
Digital printing	Novice	Competent

Qualitative Data

Exhibit data were collected via video and audio recordings of the event. Video recording captured ambient crowd conversation and comments, and the Q&A session. Semi-structured interviews were conducted via video conference tool Zoom and all but one involved both audio and video recording with the remaining interview audio recorded only due to technical difficulty on the participant's end. Descriptive statistics of the participants' demographics data can be found in Table 3.

Table 3

Demographics Descriptive Statistics

Gender	*n*	%
Male	1	20%
Female	4	80%
Highest level of education		
Some college	1	20%
4 year college degree	2	40%
Graduate degree	2	40%
Ethnic group		
White	5	100%
Profession		
Artisan	1	20%
Craftsperson	5	100%
Designer	3	60%
Maker	3	60%

Recorded data from the interviews were transcribed verbatim by the researcher and broken down into meaning units which were examined for emergent themes. Because of the need to increase credibility of the study due to the use of a convenience sample, triangulation of data

occurred between data from the design research, the phenomenological study, and member checks. In this way, thematic analysis can be verified through multiple sources (Creswell & Poth, 2018). Conducting member checks with study participants in order to confirm the accuracy of the analysis, and the reflexive nature of the design research journaling process involving the researcher's examination and disclosure of personal standpoints, experiences, and biases aid in increasing the credibility of the work. The following emergent themes were identified as a result of the qualitative research study: challenges (see Table 4), documentation types (see Table 5) and documentation notes (see Table 6), knowledge resources (see Table 7), and tacit and experiential knowledge (see Table 8). Additional themes include trial and error, the human touch, and generational gap.

Table 4

Challenges Encountered

Category	Topic	Sub-topic	Example Quote
Wearable Technology	Components	Power	"As far as wearable outside you still have to go with the batteries, and they do have a short life, unfortunately. They're bright, but they do have a short lifespan, is the downfall" (WEP)
		Modularity	"… going into wearables it became a challenge… of where to put the batteries, cause the LEDs and the chips keep getting smaller, but the batteries aren't" (CM)
		Aesthetics	"just to kind of make things look like they're sparkling without being like 'oh, that's a string of LEDs' you know, it's something that you wanna hide, but also have seen" (LWK)
Generation Gap	Technology	Intuition	"…because I didn't grow up with YouTube and all of that,… it's not second nature to me, with all of the social media… And so I don't share that way, because I'm not comfortable with that medium" (WEP)
		Resources	"It's a generational gap. Because K is younger than me… she is online much more than I – she uses YouTube a lot, she Googles a lot, I love books so I love going to the library" (MM)

Table 5

Documentation Types

Type	Format	Media
Visual	Digital & Analog	Photographs
	Digital	Video
Text	Digital	Excel spreadsheets
	Digital & Analog	Notes
	Digital & Analog	Directions
	Digital & Analog	Materials lists
Combination	Digital	Pinterest boards
	Digital & Analog	Step by step tutorials

Table 6

Documentation Notes

Theme	Topic	Example Quote
Format	Simplicity	"I have found that the less technology that is involved in that process, the easier it is to disseminate, because so many people have different platforms they're working off of, and the more simple I can have it in a Word document, or some type of template like that, is going to be the most universal" (MM)
Process	Record-keeping	"…it's sort of like cooking - if you want it to taste right the next time, you have to know what you did" (WEP)
Reflection	Visual cue	“Like sometimes you'll look at it and go, oh I SO could have done that, like that would've been easier, you know, or I wish I would've added this, or that” (LWK)

Table 7

Knowledge Resources Mentioned by Study Participants

Traditional	Contemporary
Books*	Industry-specific software
Historical non-fiction	Manufacturer instructions
Pictorial/Instructional periodicals	YouTube tutorials*
Live demonstrations	Pinterest*
More-experienced others*	Maker websites
	Instructables
	Reddit
	Blog posts
	Google search for tutorials

Note. Asterisks (*) denote knowledge resources mentioned by multiple study participants.

Table 8

Tacit and Experiential Knowledge

Knowledge Type	Topic	Example Quote
Tacit	Evaluation of skills	"You have to know what you don't know" (MM)
	Knowledge building	"I think the majority of the knowledge that I have now has really just been from doing and not from training"(BJ)
	Immersion	“I think the designer and craftsperson thing nests really nicely for me specifically because I'm looking at things that I've used on the road for 20 years knowing that there's a better way” (BJ)
Experiential	Training	“You end up absorbing a lot of weird little things here and there in order to figure out what to - like, how do I make this stand up, and how do I make it do this, so, it's just a lot of trial and error, and also pulling from skills that I learned in college” (LWK)

CHAPTER V: RESULTS, LIMITATIONS, SIGNIFICANCE, FUTURE DIRECTIONS

Design Research

Documentation

Throughout the design research process, the researcher was careful to document steps taken to aid in both the creation of knowledge and the recall of procedure. Although it was the original intent of the researcher to remain diligent in writing journal entries, it was discovered early on that frequent interruptions to take notes created disruption to work flow and loss of valuable time. Thus, it was decided to write journal entries when possible, but to rely mainly on visual documentation via photographs and video.

In addition to using the visual records as a way to document the process, photo and video elicitation became a valuable way to recall details and nuances of practice after a period of time had passed, enabling the remembrance of thoughts and techniques that may else have gone undocumented. Because the design research process involved hundreds of hours of work over the previous months, it would have been impossible for the researcher to remember specific process detail without the aid of notations, photos, and video recordings. The visual records may be compiled into multimedia knowledge sources able to be used by other artisans in the field. Accompanied by written records, these will provide in-depth knowledge resources regarding both the successes and failures of the processes.

Techniques

The main techniques used by the researcher involved traditional dyeing, garment construction, fabric manipulation, and digital printing. Supplementary techniques employed include tambour beading, event planning, and documentation including photo and video recording/editing. Although the work relied more heavily on traditional handcraft techniques,

considerable time was spent in the employment of contemporary technologies including locating and learning from internet-based resources such as YouTube and using software such as Photoshop, MovieMaker, and Publisher. Although these contemporary technologies were not the original focus of the research, it would be remiss to ignore the value they added to the design research process.

Recalling Dreyfus & Dreyfus's (1986) Five Stages of Skill Acquisition as a framework through which to gauge skill possession and progress, the design researcher has self-evaluated her skill levels at the beginning and end of the design research process. As a brief refresher: The Novice holds a basic grasp of a concept; the Advanced Beginner a better grasp, which still involves trial & error; Competent can create a plan to complete a task; the Proficient use basic intuition but may still need to plan an approach; and the Expert intuitively knows exactly what needs to happen (Dreyfus & Dreyfus, 1986).

Traditional dyeing. Given the researcher's familiarity and experience with traditional surface treatments, it was originally assumed that the dyeing techniques would require the least amount of time to perform. Instead, the largest portion of time over the course of the design research process was devoted to mastery of the traditional technique, due in no small part to the need to refine and develop the necessary skills required in the dyeing process, and the necessity of sourcing / ultimately building some of the major tools required for proper execution.

Researcher's skill level at beginning of process: *Competent*. End of process: *Proficient*.

Garment construction. Due to the researcher's extensive background in garment construction, it comes as no surprise that garment construction went exactly as expected during the design research process. Multiple iterations of garments were produced as a means of processing refinements and evaluating supply needs, and to streamline the process to be as competent as

possible. The garment construction process also served as a way for the researcher to tap into an expert-level skill set, providing a measure of confidence upon which to build up lesser skills. **Researcher's skill level at beginning and end of process: *Expert.***

Fabric manipulation. Prior experience with fabric manipulation techniques provided an ample base upon which to explore. Investigating different shapes and grouping techniques enabled the furthering of skill and technical ability, though there are many fabric manipulation techniques that remain unexplored through the lens of the current research. For the scope of the design research, it was important to see the fabric manipulation techniques as an expression of aesthetics, rather than the focus of intense scrutiny. Both traditional and contemporary fabrics were manipulated and handled over the course of the research and further avenues of research opened for future study. **Researcher's skill level at beginning and end of process: *Proficient.***

Digital printing. The researcher had no prior experience with creating digitally-printed fabrics and was thus required to start at the beginning. Due to the researcher's lack of deep knowledge with computer programs such as Adobe Illustrator, which may be used in the creation of digital prints via a purely virtual process, it was decided to explore a method that would enable the researcher to retain a measure of confidence and use a familiar beginning. Thus, rather than virtually building a design, the researcher chose to create watercolor paintings with fabric dye, then photograph and upload them for computer work. In this way, the researcher's familiarity with the skill set, tools, and techniques required enabled her to save time and create a product that reflected her original intent. Unforeseen issues arose in the printing process itself, with the outsourced fabrics being printed considerably off-grain. Though the quality of the print on the selected fabrics was impressive, the color tone switched from cool to warm. Potential reasons for this included the ambient lighting in the original photograph, computer monitor settings, and the

researcher's advanced beginner-level skill set using Photoshop. Ultimately, the most successful digitally-printed fabric used a photo taken of hand-painted silk organza rather than the watercolor painting technique. It is believed that this is due to color accuracy (the dyes were mixed according to the original formulae and applied to the originally-intended surface of silk organza rather than paper). Additionally, the ambient lighting in the photo of the watercolor paintings held a warmer tone than the photo of the painted silk, which confirms that care must be taken with light sources if using this technique in the future. Finally, a valuable lesson was learned through the process of fabric manipulation technique samples with the digital print. Wherein the researcher's original favored design yielded mediocre results when transformed from a 2-dimensional print into a 3-dimensional petal sample, the least-favored 2-dimensional print yielded the most aesthetically-pleasing 3-dimensional petal sample. This indicates the importance of technique sample-making in the digital print process.

The four digitally-printed fabrics provided a valuable lesson in not only the learning of technique, but also in the evaluation of failure and success in the design research process. The success resulted from the completed process of turning traditionally-created images into digitally-printed fabrics. In this, the original intent of the design research was successfully completed within the context of the current research study.

Although the fabrics as printed are viable to use in future design projects, they did not meet the aesthetic or functional needs of the current design research. Specifically, the aesthetic failure was that the color tonality of the digitally-printed fabrics (warm tones with a yellow base) did not match the hand-dyed fabrics (cool tones with a white base), and the off-grain nature of the polyester chiffon fabrics made them unusable and therefore a functional failure in the current design research. These two specific issues were identified as failures because they rendered the

digitally-printed fabrics unusable for their intended purposes within the context of the design research of the current study. **Researcher's skill level at beginning of process: *Novice*.** **Researcher's skill level at end of process: *Advanced Beginner*.**

Supplementary process. The original plan for the design research process involved the exploration of wearable LED technology and traditional beading techniques. This plan was set aside after early tambour beading explorations, due to the time involved and the need to explore other techniques and technologies. It was instead decided to review a previously-created artefact wherein the researcher investigated techniques to combine wearable LEDs with an intricately-hand beaded appliqué. This artefact was created for a class and was showcased at the ITAA National Conference in 2017 under the name of CIRCUitS (see Figure 56). Because this garment's process served as the original inspiration for the current research, it was decided to review the artefact and explore the conclusions to be drawn from its age and current state of wear in an effort to help in answering the Design Research Questions. Thus, though the original intent was to explore dyeing and digital printing in addition to further study of traditional beading and LED techniques, it was quickly decided to focus on the former.

Design Research Questions

The design research questions that were developed as a result of the literature review helped to guide the research side of the design process. Although it is the belief of the researcher that these questions should be applied to future design research as well, the current work served as an acceptable base upon which to build knowledge and develop skill sets. It is through this research process that answers developed, which are detailed below with their corresponding questions.

DRQ1: How does a practice-led methodology inform the knowledge-making process in the incorporation of traditional materials and techniques with contemporary technologies?

The creation of design artefacts as a means of technique exploration and skill building provided the researcher with valuable insight into the incorporation of traditional materials and techniques with contemporary technologies. Through planning, physical manipulation of elements involved and a considerable amount of trial and error, the researcher was able to evolve through various stages of skill development and create knowledge through those processes. Hearkening back to the concept of "learning by doing", it was possible to create and refine new knowledge through a practice-led method in the current research. In addition to the skill-building process, the researcher was able to refine her documentation process, thereby developing knowledge resources for the field.

DRQ2: What are the design and fabrication considerations needed when incorporating contemporary technologies, techniques, or materials into a traditional fashion practice?

Based on the researcher's experience over the course of the current research, the design and fabrication considerations needed when incorporating contemporary technologies, techniques, or materials into a traditional fashion practice are numerous. Based on the difficulty with the outsourced digitally-printed fabrics, close attention must be paid to color tone and ensuring that the fabrics are printed on grain. If employing traditional fabric manipulation techniques, it is recommended to test the printed fabrics through technique samples to confirm that the digital print retains its intended impact in a 3-dimensional technique as well as a 2-dimensional technique.

DRQ3: What are the limitations and implications of incorporating traditional techniques with contemporary technologies, techniques, or materials?

The main limitation is the considerable knowledge gap existing at the beginning of the research and the time investment that was required to find, access, and implement the knowledge necessary to proceed with the research. Additional limitations included lack of readily-available tools and proper work space for large-scale hand dyeing which resulted in time taken to research and create a large wooden frame and the repeated motions of clearing, setting up, and cleaning in the researcher's home. These limitations could have been avoided with access to proper space and tools. Had the researcher not already possessed the necessary knowledge required to build the large wooden frame, considerable expense would have been necessary to have one built for the purpose. Other limitations include the disappointing results with the digitally-printed fabrics, which were purchased at a rate of $21/yard, which is considered expensive for polyester chiffon. As of the present moment, the researcher believes the difficulty and considerable time expended with traditional hand-dyeing techniques still outweighs the convenience of digital printing. Further research is certainly needed to explore other digital printing techniques and materials, as the researcher *also* believes that the convenience of digitally-printed fabrics may become more apparent with further skill-building and technique exposure.

DRQ4: What design interventions emerge as a result of the research?

The most interesting design intervention comes from the technique of creating a "watercolor" painting (using a traditional technique) then turning it into a digital process via photography and software manipulation. This is perhaps a way to introduce other traditionally-trained artisans to the use of digitally-printed fabrics as it may draw on a commonly-used technique with which they may already be familiar. Other design interventions include the

combination of digitally-printed and traditionally-dyed fabrics through fabric manipulation. In the garment artefact, the digitally-printed “petals” complement the traditionally-dyed “petals” in color tone and physical texture. Through documentation techniques and advances in technology, it is possible to create easily accessible and retrievable knowledge resources and make them available to whoever may need them in their own work. Through sources such as web blogs, YouTube videos, Pinterest boards, and social media posts, it is possible to quickly and easily share design research knowledge. Finally, an unintended consequence of the researcher’s need to build a large wooden frame for fabric dyeing was the documentation and recording of the frame-building process which can be turned into a step-by-step tutorial for others looking to create their own. Though the media and equipment (wood and power tools) are considerably different from the other techniques used in the course of the design research, the concept remains the same: a need was identified, knowledge sought, and the design was planned, executed, and recorded.

DRQ5: What is the knowledge gleaned from a practice-led methodology in the exploration of incorporating traditional materials and techniques with contemporary technologies and materials?

The main knowledge gleaned from this work is that a practice-led methodology was an effective approach to the research topic. Through this practice, the researcher was able to gain knowledge in the field, develop and refine skill sets, and create knowledge resources for others. Specifically, previously-unfamiliar traditional techniques are now comfortable to use and digital techniques were introduced and practiced. Though there is still work to do and practice to investigate before the researcher would be considered an expert in the field of combining tradition and technology; considerable personal and professional progress has been made towards that goal. The knowledge resources created as a result of the current research are able to

serve as tutorials and guides to others in the field, and the vast amount of hands-on practice (both successful and unsuccessful) served to reveal deeper insight into the topic at hand.

DRQ6: What are the recommendations for future research?

There are many recommendations for future research. Given the breadth of techniques covered in the current research, it would be possible to engage with each in their own respective research studies: tool and equipment development for traditional home practice; documentation in traditional fashion and *making* practices; comparisons of hand-dyeing techniques; deeper explorations into digital printing from a traditionally-created image; comparisons between digital printing outsourcers and the quality of the respective products; further refinement of the techniques used throughout the entirety of the current work. Ultimately, it is the intent of the researcher to continue the current research into the future in an effort to master the skills that need practice. Additionally, it would behoove the researcher to expand the overall research topic to address other printing techniques such as engineered printing, or possibly include additional technologies such as 3D printing and laser cutting.

Qualitative Study Results

Through semi-structured interviews with the study participants, it was possible to gain insight into the phenomenon of traditionally-trained artisans incorporating contemporary technologies, techniques, and materials into their practice. Though the participants have each their own artisanal specialty, common themes emerged that indicated general characteristics shared across disciplines. In addition to answering the research questions previously developed through the literature review process, other commonalities emerged and were thought to be worth further study.

RQ 1: What are some of the challenges facing traditional artisans in the incorporation of contemporary technologies and materials into their practice?

Though the artisans interviewed differ widely in their fields of expertise, certain common themes emerged in their discussion of the kinds of challenges they face in incorporating contemporary technologies, techniques, and materials into their practice. WEP, a freelance costume designer and scenic painter, described difficulty with powering her LED projects: "As far as wearable outside you still have to go with the batteries, and they do have a short life, unfortunately. They're bright, but they do have a short lifespan, is the downfall" (WEP, personal communication, March 9, 2018). In addition to the discussion of the power draw itself, mentions of battery size and placement (modularity, per Seymour, 2008; and also mentioned by Malmivaara, 2009) were made by both WEP and CM, a freelance prop and accessory technician: "… going into wearables it became a challenge… of where to put the batteries, cause the LEDs and the chips keep getting smaller, but the batteries aren't" (CM, personal communication, March 9, 2018). This was echoed by WEP, who described multiple projects where the wearable technology's power draw necessitated plugging into a stationary power source rather than using difficult-to-hide battery packs. LWK, a freelance designer, described a project wherein the technological elements were disguised in the design:

> We've inset LEDs in between other traditional materials and lace and pearls, just to kind of make things look like they're sparkling without being like "oh, that's a string of LEDs" you know, it's something that you wanna hide, but also have seen. (LWK, personal communication, March 14, 2018)

These descriptions of power-related challenges in the incorporation of wearable LED technology reflect back to Seymour (2008) discussion of "modularity," or the battery size, power pack

location, and ease of access for removal, which demonstrates that this still, after ten years, is a challenge in the field.

Other challenges were more broadly applicable across disciplines: both WEP, a Generation Xer, and MM, a wigmaker and Xennial, described a generational gap. From WEP: "…because I didn't grow up with YouTube and all of that,… it's not second nature to me, with all of the social media… And so I don't share that way, because I'm not comfortable with that medium" (WEP, personal communication, March 9, 2018). MM went further into detail regarding her own upbringing: "I was born in '80, so there's all those articles about how my generation in particular, we grew up analog and had to switch to digital when we were about 15" (MM, personal communication, March 11, 2018) and about her work partner and her own age difference: "It's a generational gap. Because K is younger than me… she is online much more than I – she uses YouTube a lot, she Googles a lot, I love books so I love going to the library" (MM, personal communication, March 11, 2018). This generational gap was an unexpected, yet not surprising, discovery in the interview process. Further research into the generational information of traditionally-trained artisans may yield deeper insight into the way they incorporate contemporary technologies into their traditional practice. Based on these quotes and others made by the study participants, it is apparent that an "analog" upbringing creates the challenge of a disconnect with the nature of internet-based knowledge resources such as YouTube video tutorials.

RQ2: What documentation methods are employed by traditionally-trained artisans in the incorporation of contemporary technologies, techniques, or materials into their practice?

Discussions of documentation in the study participants' various practices yielded a commonly-used format, photographs accompanied by text instructions. While each had their own term for the format, the basic idea is that photographs visually record the object, technique, or materials, and written text instructions. BJ, a fabricator and designer, explains:

> I want it to be filled with as much minutiae as possible… because if everything is documented and it's all in that production book, they can open it up, answer their own question, and everyone is doing the same thing. (BJ, personal communication, March 8, 2018)

This was echoed by MM's description of step-by-step makeup tutorials:

> We'll have a whole file of the steps, step by step, makeup application because a lot of the time, we have larger crews that are doing these makeups, … and so we have to break it down for them in order for it to look how we want it to look in the end… lots of photos, lots of documentation, lots of Excel, and just to kinda keep everything straight and in order. (MM, personal communication, March 11, 2018)

A conclusion that can be drawn from the above statements is that regardless of media, detailed and thorough documentation can permit others to have a visual reference that will enable them to replicate an original design or process. WEP likened the notation of dye and paint formulae to cooking: "it's sort of like cooking – if you want it to taste right the next time, you have to know what you did" (WEP, personal communication, March 9, 2018). CM described documentation as a way to increase speed with repetitive tasks, and LWK explained it as a reflective process: "sometimes you'll look at it and go, 'oh I SO could have done that, like *that* would've been easier'… or I wish I would've added this, or that" (CM, personal communication,

March 9, 2018). To further MM's reflection on documentation as a tool for others to use, she stated:

> I have found that the less technology that is involved in that process, the easier it is to disseminate, because so many people have different platforms they're working off of, and the more simple I can have it in a word document, or some type of template like that, is going to be the most universal. (MM, personal communication, March 11, 2018)

Thus, it is evident that documentation is seen by traditionally-trained artisans as a necessary way to disseminate information to others. The commonly-used format of visual aids (photos) accompanied by rich description of steps, procedures, and materials helps to ensure that the end result will mimic or mirror the original design. Study participants also relayed the desire to increase diligence in their own documentation practices. From MM:

> There are still definitely some where we probably should have documented it, cause it was freakin' cool, but we didn't know that it would wind up so cool, so we didn't document it like we should have. So that's still a learning process sometimes. (MM, personal communication, March 11, 2018)

RQ3: How do traditionally-trained artisans acquire knowledge when learning contemporary technologies, techniques, or materials?

RQ3a: What kinds of knowledge resources are used by traditionally-trained artisans in the incorporation of contemporary technologies, techniques, or materials into their practice?

The study participants revealed much in discussion of the acquisition of knowledge in their practices. Generally speaking, the artisans combined traditional training with contemporary resources. Though all study participants had at least some college experience, reliance on their

formal training varied and all but one study participant made specific mention of learning from more-experienced others, and/or *being* a more-experienced other themselves. This speaks to the traditional Master-Apprentice framework of a less-informed artisan seeking information and training from a more-experienced artisan. BJ, who runs his own business and manages a team said the following:

> I don't have a formal education. And because of that, I don't know how to teach in a formal way. What I *do* know is how to help people find their own. Let them, give them the tools and the confidence to find their own path to teaching them what they want to know. Rather than me trying to force information on them that A: I don't know how to give, and B: they may not want to have, I give them an opportunity to pick my brain, draw from my experience, and then use their own ideas to try and make what we do more efficient, stronger, more attractive, more options… They all have their own individual ideas, and I want them to bring their ideas into what we do every day. (BJ, personal communication, March 8, 2018)

MM, who also owns a business and frequently oversees teams of others, discussed her love of the process:

> You know, the most fun I always had even in acting was the rehearsal. And the journey to get to the opening night. And that hasn't really changed, I still get such a thrill from the event, but mostly that thrill comes from knowing how much work we all put into it, and look how happy and blissful everybody is around, looking at all of these fashion things. They have no idea what it took to make that. And, that's where we come in to teach people, and educate them on how to make that happen in a positive way that only encourages our professions to continue. (MM, personal communication, March 11, 2018)

WEP, who has both extensive formal and non-formal training, related her learning process as follows:

> I really like to have someone there that I can ask a question to. I like that interaction. I can self-teach myself, but I love to be able to ask a question, and you know really take it - take my initial inquiry further and then get back and forth back and forth, and then I used it in this situation or that situation, and it just opens up a whole plethora of other possibilities. (WEP, March 9, 2018)

What these results demonstrate is that there is considerable value placed in the traditional Master-Apprentice framework. Although these artisans rely on diligent documentation in their practices, the ability to learn from or to teach others in the field provides valuable knowledge to themselves or their teams. In addition to these learning processes with others, knowledge resources mentioned by the study participants include both traditional and contemporary formats.

It is evident that both traditional and contemporary knowledge resources are accessed and utilized by traditionally-trained artisans in the incorporation of contemporary technologies and materials into their practice, and that they are willing and able to use the format most suited to their needs, whether it be an internet-based resource, book, or the oral guidance of a more-experienced other.

RQ4: How do traditionally-trained artisans use *tacit* and *experiential* knowledge to acquire and implement skills used in the incorporation of traditional techniques with contemporary technologies in fashion and *making*?

Traditionally-trained artisans may have formal and/or informal training in their areas of specialty. The episteme (knowing *what*) and techne (knowing *how*) of their respective skill sets accompany the *tacit* and *experiential* knowledge gained from their background and training.

Perhaps *because* traditionally-trained artisans have the benefit of familiarity with extensive training methods, it was unsurprising to discover that they were thoughtful in regards to how their *tacit* and *experiential* knowledge informed their acquisition and implementation of skills used in the incorporation of traditional techniques with contemporary technologies in their practice (RQ 4). In describing her process, MM stated: "You have to know what you don't know" (personal communication, March 11, 2018). This is an example of the self-awareness that traditionally-trained artisans have in their own practices, which may better enable them to identify and seek out knowledge resources to help them in completing tasks and projects they may not otherwise have the skill sets to complete. Common responses from each study participant indicated that their formal training gave them *experiential* knowledge, and *tacit* knowledge developed from long exposure and immersion in their respective fields. The techne of the artisans developed through hands-on practice, and the episteme from formal or on-the-job training. From LWK: "You learn little weird things, working in theatre, that's just sort of like: 'this is how we make *this* work, and read on stage,' like weaving feathers into cording to make spearman skirts fluffy. So, all of those things can kind of come together" (personal communication, March 14, 2018).

Separating the episteme and the techne into disparate entities, BJ discussed the following:

> I think the designer and craftsperson thing nests really nicely for me specifically because I'm looking at things that I've used on the road for 20 years knowing that there's a better way, and the designer part of my brain works out those problems and the craftsman side of me figures out how to implement them in reality. (BJ, personal communication, March 8, 2018)

Through this statement, BJ is reinforcing the idea that both *experiential* and *tacit* knowledge can inform and guide an artisan's process, which suggests that these knowledge types may further aid traditionally-trained artisans in the incorporation of contemporary technologies, techniques, and materials into their practice. Going back to the "learn by doing" mentality, BJ stated: "I think the majority of the knowledge that I have now has really just been from *doing* and not from training" (personal communication, March 8, 2018), which suggests that even though both the *experiential* and the *tacit* can aid in the acquisition and implementation of knowledge and skill, the *making* process can extend this knowledge and skill further than training alone. Additionally, prior work experience and training can inform the best approach to a project. Therefore, it is suggested that *experiential* and *tacit* knowledge can not only aid in the acquisition and implementation of contemporary techniques and technologies, but that they can also help the traditionally-trained artisan in their decision-making process as to whether traditional or contemporary techniques, technologies, or materials are best suited to the work at hand.

MM described the importance of well-rounded knowledge in regards to the larger picture of a project as thus: "… the thing is, it *sounds* like it's all over the place, but what I've learned as a professional and then now as an educator myself, is that it's all just so interconnected" (personal communication, March 11, 2018) and further elaborated: "You have to have a working understanding of what's happening.... and it all is so important when putting together – I think – well-rounded and efficient productions" (personal communication, March 11, 2018). Translating these statements into a discussion of knowledge and skill in fashion and *making*, traditionally-trained artisans may discover a need to not only consult more-experienced others, but also to collaborate with them through teamwork. This is an example of episteme and techne (knowing about the skills needed and knowing the skills themselves, respectively) combining with

experiential and *tacit* knowledge (knowing what an artisan does and does not know, and determining if they possess the necessary skills and knowledge to complete the task at hand). If the answer is no, traditionally-trained artisans may tap into the skills and knowledge of more-experienced others in the incorporation of contemporary technologies, techniques, and materials into their practice. From BJ:

> I think it makes the job more fulfilling, and it also makes what we can do as a team – gives us more possibilities. If we have a bunch of different minds thinking of both the design side and the fabrication side, then that gives us a lot of possibilities, and a lot of ability to pivot, when things get weird or we're faced with a new challenge. (BJ, personal communication, March 8, 2018)

In this way, traditionally-trained artisans are able to rely on and learn from more-experienced others when implementing the contemporary into their traditional practice.

Additional Qualitative Findings

Trial and Error

An unsurprising finding was how many of the study participants mentioned "trial and error", which WEP summed up as "We're kind of learning as we go, and *making* paths where there isn't one laid out, and so there's lots of trial and error" (WEP, personal communication, March 9, 2018). This simple statement reveals an overarching theme across the study participants: a willingness to try, even if the attempts lead to failure. There is much to learn from both successful and unsuccessful processes and the trial and error approach may reveal strengths and weaknesses in the incorporation of contemporary technologies, techniques, and materials, especially if there isn't a procedural system in place. Thus, the previously-mentioned documentation techniques coupled with the trial and error approach may yield valuable

information into the incorporation of contemporary technologies, techniques, and materials into a traditionally-trained artisan's practice.

The Human Touch

MM and BJ both mentioned the importance of the human touch in their practice. From MM:

> No matter how much you rely on the computer there's still something really beautiful about the human eye, and when you're like "no, it's just that perfect shade of periwinkle" okay, no I'm gonna dip it for 2 seconds longer, the computer I think, can't really rely on – that's why the fashion houses were so amazing, because it was all the human eye. (MM, personal communication, March 11, 2018)

BJ echoed a similar sentiment:

> The way that I teach – even though we use CAD for everything, I still make all of the guys use steel rulers for everything, because at the end of the day, organic products are not the same size you think they are, and they have a variance that you can't account for in CAD. CAD is the idea that we start with, and the product that we end up with is the reality. And there has to be a melding of the modern techniques and the traditional techniques in order to make that come together. You can't rely on the digital copy to produce what comes out of the shop. (BJ, personal communication, March 8, 2018)

MM and BJ's statements reflect the overarching theme of the current research, which is to explore how traditionally-trained artisans incorporate contemporary technologies, techniques, and materials into their practice. In their view, though contemporary technologies may supplement a traditional practice, the traditional element remains essential. It can therefore be concluded that a way for traditionally-trained artisans to incorporate contemporary technologies,

techniques, and materials into their practice is to find a balance between the two. BJ's example of CAD and physical steel rulers is apt: though the team utilizes on the contemporary, it relies on the traditional. In this way, traditionally-trained artisans may find a system for incorporating the contemporary with the traditional. It is further proposed that through trial and error, traditionally-trained artisans may discover and refine where their balance between the two lies.

Discussion

Documentation

Regardless of media, detailed and thorough documentation can permit others to have a visual reference that will enable them to replicate an original design or process. Documentation is viewed by traditionally-trained artisans as a necessary way to disseminate information to others. Photographs (or other visual methods) accompanied by rich description of steps, procedures, and materials helps to ensure that the end result will mimic or mirror the original design. Also, traditionally-trained artisans may express a desire to increase diligence in their own documentation practices and may find that the use of contemporary technologies such as digital photography and video recordings can aid the process. It has also been suggested that documentation should have as simple and clear directions and formatting as possible, to enable as many people as possible access and ease of use. Future research into the development of an easy-to-use mobile app or software program designed to easily create documentation records, step by step tutorials, and/or video documentation may aid traditionally-trained artisans in increasing their own documentation practices and procedures. These resources would then be of benefit to other artisans, and would serve to create or expand written and visual knowledge in the field.

Tacit and Experiential Knowledge

For traditionally-trained artisans, both *experiential* and *tacit* knowledge can inform and guide practice, suggesting that these knowledge types can aid traditionally-trained artisans in the incorporation of contemporary technologies, techniques, or materials into their practice, however, the *making* process can extend this knowledge and skills further than training alone. Additionally, it is suggested that *experiential* and *tacit* knowledge can not only aid in the acquisition and implementation of contemporary techniques and technologies, but that they can also help the traditionally-trained artisan in their decision-making process as to whether traditional or contemporary techniques, technologies, or materials are best suited to the work at hand.

The use of a holistic view in the process of incorporating traditional techniques with contemporary technologies, techniques, and materials in fashion and *making* may yield a need to not only consult more-experienced others, but also to collaborate with them in their practice. If a traditionally-trained artisan is able to reflect on the larger picture of the work as a whole, they may identify gaps in their own knowledge or skill sets for necessary tasks or elements that would best be suited by more-experienced others. In this way, traditionally-trained artisans are able to rely on and learn from more-experienced others when implementing the contemporary into their practice. The trial and error approach may reveal strengths and weaknesses in the incorporation of contemporary technologies, techniques, and materials, especially if there isn't a procedural system in place. Thus, the previously-mentioned documentation techniques coupled with the trial and error approach may yield valuable information into the incorporation of traditional techniques with contemporary technologies, techniques, and materials.

The Human Touch

Though contemporary technologies may supplement a traditional practice, the traditional element remains essential. It can therefore be concluded that a way for traditionally-trained artisans to incorporate contemporary technologies, techniques, and materials into their practice is to find a balance between the two. Though the team utilizes the contemporary, it relies on the traditional. In this way, traditionally-trained artisans may find a system for incorporating the contemporary with the traditional. It is further proposed that through trial and error, traditionally-trained artisans may discover and refine their balance between the two. Further research on the topic is recommended for a deeper dive into ways traditionally-trained artisans balance between tradition and contemporary technologies, techniques, or materials. A better understanding of existing combined practices may yield information of value to artisans seeking to adjust their own practice.

Materials

Seymour's 2008 discussion of "modularity" (or the battery size, power pack location, and ease of access for removal in wearable technology) found relevance in the work of the traditionally-trained artisans interviewed in 2018. This indicates that issues and challenges of "modularity" in wearable technology is an as-yet unresolved issue for traditionally-trained artisans, given the ten-year difference between Seymour's work and the current research. Future research into traditionally-made garments incorporating wearable technology would benefit from specific focus on the modularity of the power type, source, and location.

Also regarding the integration of wearable technology with traditionally-made garments, research findings suggest that wearable technology components have not yet evolved to a more-easily manipulated state that would allow better integration into garments. Future research into

the physical form of the wearable technology components may yield new knowledge and products that would have benefit to traditionally-trained artisans looking to incorporate wearable technology into their artistic practice.

Generation Gap

The current research revealed an unexpected, though unsurprising challenge for some traditionally-trained artisans. Artisans who were raised in an "analog" way, having to switch to a "digital lifestyle" well into their teen years, may as yet still rely more on "analog", or traditional techniques and have difficulty adapting to contemporary technologies due to their inexperience or unfamiliarity with contemporary technologies. This disconnect may create a challenge for some traditionally-trained designers of certain generations due to the nature of internet-based knowledge resources such as YouTube tutorials. It is certainly worth further study into this "generational gap", as the research may yield implications outside of the fields of fashion and *making* and into studies of aging and technology adoption.

Master-Apprentice

Traditionally-trained artisans may be familiar and comfortable with the Master-Apprentice model, wherein a more-experienced other passes knowledge and skills to a less-experienced other through hands-on training and practice. Because of this, contemporary resources such as video conferencing or webinars may be of benefit to traditionally-trained artisans seeking to incorporate contemporary technologies into their practice. Rather than relying on locally-found, more-experienced others from whom to learn or ask questions, digital resources may enable traditionally-trained artisans to seek out and find the knowledge, skills, and feedback they require to increase their understanding. The use of online forums such as Instructables and Reddit are already well-known among some traditionally-trained artisans, and

further research into the impact of various web-based “virtual guilds” or instructional tools may yield insight into how traditionally-trained artisans incorporate use of these resources into their practice.

Limitations

Due to the exploratory nature of the phenomena, only 5 study participants were interviewed. While this is an acceptable number for a phenomenological approach, higher sample numbers may increase the credibility of the research. Additionally, expertise amongst the artisans interviewed varied across disciplines (though all were experienced in *making*) thus it may be advisable to narrow down the inclusion criteria to include only artisans directly involved in fashion and *making*, rather than *making* alone. Further limitations stem from time and monetary restraints, as the original intent of the research included the use of 3D printing and lasercutting in the design research. A decision to scale down the scope of the research was made to ensure adequate time for study completion, though the researcher believes that future work can be enriched via use of these additional technologies and techniques.

The subjective nature of the design research necessitates extra thought towards its credibility. Through the design process, the researcher found difficulty in maintaining a written design journal, as it detracted from the flow of the work and productivity levels. Valuable insights are thus lost due to lack of recording, though photo and video elicitation did aid in later recall. Other limitations in the design research process come in the form of inexperience with digital printing processes and the resulting issues with the outsourced fabrics: off-grain printing and color mismatching. Had the researcher known about the difficulty inherent to printing polyester chiffon, a different fabric would have been selected. Additionally, closer care to the ambient lighting in the researcher’s studio and computer monitor color settings would have

negated the issue with color tone switching from the cool of the original paintings to the warm of the final product. It is believed that these issues are a result of both the warm-colored light in the researcher's studio, and the blue-light filter setting on the researcher's computer monitor, which adjust the blue tones on the screen.

Significance

Although there are many limitations in the current work, there is also significance to the field. Through the design research process, the researcher was able to document various successes and failures through trial and error. As was evidenced by the feedback to the gallery exhibit and the qualitative interview data, the discussion and presentation of these processes resonated with expert artisans from across many *making* disciplines. Although the media differs, the processes are remarkably similar, and thus resonate with artisans of varying skill levels and backgrounds. Additionally, the recording of these processes yielded valuable knowledge that can be turned into resources such as step-by-step tutorials with pictures and rich text descriptions, how-to and time-lapse videos, webisodes, and lectures. The feedback gained from the gallery exhibit and qualitative interviews also indicated that live events, wherein artefacts are presented and discussed, would be of immense value to artisans, not only as a way to experience others' works and learn through others' processes, but also as a way to provide and observe critique, which may act as yet another learning tool. It is apparent, based on feedback and interpretation of data that events of this type would be of major benefit to artisan communities not only for knowledge accession, but also for the creativity that springs forth from being surrounded by other artisans talking about and experiencing art.

Aside from the artisan community, the knowledge and processes performed through the course of the current research has implications for the academic community. In addition to

expanding the field of knowledge, the creation of explicitly laid-out learning resources provides information for colleagues and students alike, and the more general themes discussed herein can be more broadly applied across disciplines.

The unexpected finding of the generational gap and its impact on artisans' comfort with and use of contemporary technologies may yield valuable intelligence in the fields of aging and technology. From a consumer standpoint, better understanding of how age groups use and are (or are not) comfortable with contemporary technologies and techniques can potentially help to create better processes and products. Though technology continues to advance at a rapid pace, there are many traditionally-trained artisans who would lack the knowledge and/or access to information or resources that would enable them to take full advantage. Along the way, technologies that may be deemed passé by the media and general population may yet find importance in the practice of traditionally-trained artisans.

It is the researcher's intent to use the results of the research for presentation and publication in professional and academic settings, and to continue the research into the future. Deeper dives into the topics covered may yet yield further insights of value to traditionally-trained artisans, and the addition of other contemporary technologies such as 3D printing and laser cutting may yield interesting and relevant results. As the advent of contemporary technologies in fashion is ever rapidly changing, it is important to consider that the results from the current research study serve not as a conclusive stamp on the discussion of tradition and technology, but as a means through which the conversation can be amplified, explored, and continued.

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APPENDIX A

IRB information

IA

IRB Administration <irbadmin@auburn.edu>

Tue 1/16, 8:33 AM

Jenny Leigh DuPuis; Karla Teel

Reply all

Inbox

Dear Jenny,

The IRB has reviewed your request for a study titled "A Practice -Led Exploration into the Confluence of Traditional Techniques and Contemporary Technologies in Fashion and Making" and has determined that your project, as described, **is not** considered human subjects research. Your research plans **do not** meet the definition of human subjects research.

IRB Comments:

NHSR – Most of this activity is more journalistic in nature and not human subject research. Appropriate signed permissions and consents are still needed for legal requirements of recording activity, permission to publish likenesses, quotes, etc.

Further documentation for this study does not need to be submitted. If you make any changes to your study that might include human subjects research, please contact our office. If you need an official letter regarding this decision, please let us know.

Thank you,

IRB Administration
Office of Research Compliance
115 Ramsay Hall
Auburn University, AL 36849
334-844-5966

AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS

RESEARCH PROTOCOL REVIEW FORM

FULL BOARD or EXPEDITED

For Information or help contact **THE OFFICE OF RESEARCH COMPLIANCE (ORC)**, 115 Ramsay Hall, Auburn University
Phone: 334-844-5966 **e-mail:** IRBAdmin@auburn.edu **Web Address:** http://www.auburn.edu/research/vpr/ohs/index.htm

Revised 2.1.2014 **Submit completed form to IRBsubmit@auburn.edu or 115 Ramsay Hall, Auburn University 36849.**

Form must be populated using Adobe Acrobat / Pro 9 or greater standalone program (do not fill out in browser). Hand written forms will not be accepted.

1. PROPOSED START DATE of STUDY: 02/01/2018

PROPOSED REVIEW CATEGORY (Check one): ☑ **FULL BOARD** ☐ **EXPEDITED**

SUBMISSION STATUS (Check one): ☑ **NEW** ☐ **REVISIONS (to address IRB Review Comments)**

2. PROJECT TITLE: Fashion, Forward! A practice-led exploration into the confluence of traditional techniques and contemporary technologies in fashion and making.

3. Jenny Leigh DuPuis	Graduate Student	CADS	jld0069@auburn.edu
PRINCIPAL INVESTIGATOR	**TITLE**	**DEPT**	**AU E-MAIL**
4315 Golf Club Dr. #6916 Auburn, AL 36830		9788466147	jennyleighdupuis@gmail.com
MAILING ADDRESS		**PHONE**	**ALTERNATE E-MAIL**

4. FUNDING SUPPORT: ☑ N/A ☐ Internal ☐ External Agency: _____ ☐ Pending ☐ Received

For federal funding, list agency and grant number (if available). _____

5a. List any contractors, sub-contractors, other entities associated with this project:

_____

b. List any other IRBs associated with this project (including Reviewed, Deferred, Determination, etc.):

_____

PROTOCOL PACKET CHECKLIST

All protocols must include the following items:

☑ **Research Protocol Review Form** (All signatures included and all sections completed)
(Examples of appended documents are found on the OHSR website: http://www.auburn.edu/research/vpr/ohs/sample.htm)

☑ **CITI Training Certificates** for all Key Personnel.

☑ **Consent Form or Information Letter** and any Releases (audio, video or photo) that the participant will sign.

☑ **Appendix A**, "Reference List"

☑ **Appendix B** if e-mails, flyers, advertisements, generalized announcements or scripts, etc., are used to recruit participants.

☑ **Appendix C** if data collection sheets, surveys, tests, other recording instruments, interview scripts, etc. will be used for data collection. Be sure to attach them in the order in which they are listed in # 13c.

☐ **Appendix D** if you will be using a debriefing form or include emergency plans/procedures and medical referral lists (A referral list may be attached to the consent document).

☑ **Appendix E** if research is being conducted at sites other than Auburn University or in cooperation with other entities. A **permission letter** from the site / program director must be included indicating their cooperation or involvement in the project. NOTE: If the proposed research is a multi-site project, involving investigators or participants at other academic institutions, hospitals or private research organizations, a letter of **IRB approval** from each entity is required prior to initiating the project.

☐ **Appendix F** - Written evidence of acceptance by the host country if research is conducted outside the United States.

FOR ORC OFFICE USE ONLY

DATE RECEIVED IN ORC: _____ by _____ PROTOCOL # _____
DATE OF IRB REVIEW: _____ by _____ APPROVAL CATEGORY: _____
DATE OF IRB APPROVAL: _____ by _____ INTERVAL FOR CONTINUING REVIEW: _____
COMMENTS:

6. GENERAL RESEARCH PROJECT CHARACTERISTICS

6A. Research Methodology

Please check all descriptors that best apply to the research methodology.

Data Source(s): ☑ New Data ☐ Existing Data

Will recorded data directly or indirectly identify participants? ☑ Yes ☐ No

Data collection will involve the use of:

- Educational Tests (cognitive diagnostic, aptitude, etc.)
- ✓ Interview
- ✓ Observation
- Location or Tracking Measures
- Physical / Physiological Measures or Specimens (see Section 6E.)
- ✓ Surveys / Questionnaires
- Internet / Electronic
- ✓ Audio
- ✓ Video
- ✓ Photos
- ✓ Digital images
- Private records or files

Other: _____

6B. Participant Information

Please check all descriptors that apply to the target population.

☑ Males ☑ Females ☐ AU students

Vulnerable Populations

☐ Pregnant Women/Fetuses ☐ Prisoners ☐ Institutionalized

☐ Children and/or Adolescents (under age 19 in AL)

Persons with:

☐ Economic Disadvantages ☐ Physical Disabilities

☐ Educational Disadvantages ☐ Intellectual Disabilities

Do you plan to compensate your participants? ☑ Yes ☐ No

6C. Risks to Participants

Please identify all risks that participants might encounter in this research.

- ☑ Breach of Confidentiality*
- ☐ Deception
- ☐ Psychological
- ☐ None
- ☐ Other:
- ☐ Coercion
- ☐ Physical
- ☐ Social

*Note that if the investigator is using or accessing confidential or identifiable data, breach of confidentiality is always a risk.

6D. Corresponding Approval/Oversight

- **Do you need IBC Approval for this study?**
  ☐ Yes ☑ No

  If yes, BUA #_____ Expiration date _____

- **Do you need IACUC Approval for this study?**
  ☐ Yes ☑ No

  If yes, PRN #_____ Expiration date _____

- **Does this study involve the Auburn University MRI Center?**
  ☐ Yes ☑ No

  Which MRI(s) will be used for this project? (Check all that apply)
  ☐ 3T ☐ 7T

  Does any portion of this project require review by the MRI Safety Advisory Council?
  ☐ Yes ☑ No

  Signature of MRI Center Representative: _____
  Required for all projects involving the AU MRI Center

  Appropriate MRI Center Representatives:
  Dr. Thomas S. Denney, Director AU MRI Center
  Dr. Ron Beyers, MR Safety Officer

7. PROJECT ASSURANCES Fashion, Forward! A practice-led exploration into the confluence of traditional techniques and contemporary technologies in fashion and making.

A. PRINCIPAL INVESTIGATOR'S ASSSURANCES

1. I certify that all information provided in this application is complete and correct.
2. I understand that, as Principal Investigator, I have ultimate responsibility for the conduct of this study, the ethical performance this project, the protection of the rights and welfare of human subjects, and strict adherence to any stipulations imposed by the Auburn University IRB.
3. I certify that all individuals involved with the conduct of this project are qualified to carry out their specified roles and responsibilities and are in compliance with Auburn University policies regarding the collection and analysis of the research data.
4. I agree to comply with all Auburn policies and procedures, as well as with all applicable federal, state, and local laws regarding the protection of human subjects, including, but not limited to the following:
    a. Conducting the project by qualified personnel according to the approved protocol
    b. Implementing no changes in the approved protocol or consent form without prior approval from the Office of Research Compliance
    c. Obtaining the legally effective informed consent from each participant or their legally responsible representative prior to their participation in this project using only the currently approved, stamped consent form
    d. Promptly reporting significant adverse events and/or effects to the Office of Research Compliance in writing within 5 working days of the occurrence.
5. If I will be unavailable to direct this research personally, I will arrange for a co-investigator to assume direct responsibility in my absence. This person has been named as co-investigator in this application, or I will advise ORC, by letter, in advance of such arrangements.
6. I agree to conduct this study only during the period approved by the Auburn University IRB.
7. I will prepare and submit a renewal request and supply all supporting documents to the Office of Research Compliance before the approval period has expired if it is necessary to continue the research project beyond the time period approved by the Auburn University IRB.
8. I will prepare and submit a final report upon completion of this research project.

My signature indicates that I have read, understand and agree to conduct this research project in accordance with the assurances listed above.

Jenny Leigh DuPuis		12/14/2017
Printed name of Principal Investigator	**Principal Investigator's Signature**	**Date**

B. FACULTY ADVISOR/SPONSOR'S ASSURANCES

1. I have read the protocol submitted for this project for content, clarity, and methodology.
2. By my signature as faculty advisor/sponsor on this research application, I certify that the student or guest investigator is knowledgeable about the regulations and policies governing research with human subjects and has sufficient training and experience to conduct this particular study in accord with the approved protocol.
3. I agree to meet with the investigator on a regular basis to monitor study progress. Should problems arise during the course of the study, I agree to be available, personally, to supervise the investigator in solving them.
4. I assure that the investigator will promptly report significant incidents and/or adverse events and/or effects to the ORC in writing within 5 working days of the occurrence.
5. If I will be unavailable, I will arrange for an alternate faculty sponsor to assume responsibility during my absence, and I will advise the ORC by letter of such arrangements. If the investigator is unable to fulfill requirements for submission of renewals, modifications or the final report, I will assume that responsibility.

Dr. Karla Teel		12/14/2017
Printed name of Faculty Advisor / Sponsor	**Faculty Advisor's Signature**	**Date**

C. DEPARTMENT HEAD'S ASSSURANCE

By my signature as department head, I certify that I will cooperate with the administration in the application and enforcement of all Auburn University policies and procedures, as well as all applicable federal, state, and local laws regarding the protection and ethical treatment of human participants by researchers in my department.

Dr. Pamela Ulrich		12/14/2017
Printed name of Department Head	**Department Head's Signature**	**Date**

8. **PROJECT OVERVIEW: Prepare an abstract that includes:**
(350 word maximum, in language understandable to someone who is not familiar with your area of study):

a) **A summary of relevant research findings leading to this research proposal:**
(*Cite sources; include a "Reference List" as Appendix A.*)

b) **A brief description of the methodology, including design, population, and variables of interest**

The proposed research is a combination of practice-led design research and phenomenological qualitative study into the incorporation of traditional handcraft techniques such as millinery, garment construction, and embellishment, with contemporary technologies and materials such as 3D printing, wearable electronics, and digital printing. Artefacts (art objects) will be created as a means of exploring the integration of traditional techniques and contemporary technologies.Through the design research process, created artefacts are used to amass and retain knowledge, yet are incapable of transferring that knowledge without interpretation in an appropriate context (Mäkeläm, 2007). When all artefacts have been completed, it is important to engage in a display of the created works so as to gather response from experts in their respective creative fields. In this way, artefact interpretation occurs through the eyes of experts, thereby helping to uncover meanings previously unaddressed by the artisan and aiding in the processing of the work. Kholina (2015) described experts ' knowledge in judgment as tacit, which suggests that the experience of their respective fields lends itself to an intuitive knowing. According to O'Riley (2011), the experience of the viewer informs their perspective of the work's implications and context.

Qualitative data regarding the phenomena of making and knowledge will be studied through semi-structured interviews and one-on-one conversations with expert artisans. The expertise of these professionals will enable them to interpret the artefacts in an informed way, aiding in their understanding of the information revealed. The gallery exhibit will provide a forum for the expert artisans to observe, examine, and interpret the artefacts in person. There will be a short presentation by the researcher, followed by a question & answer period, and semi-structured interviews will occur (See Appendix C for interview protocol).

The population is: artisans in traditional handcraft fields with an interest in incorporating contemporary technologies and materials such as 3D printing, wearable technology, and digital printing into their practice.
Variables of interest: Knowledge creation and passing, Making, Handcraft, Wearable technology, 3D printing.

9. **PURPOSE.**

a. **Clearly state the purpose of this project and all research questions, or aims.**

The purpose of the research is to expand knowledge and literature in fashion and making through meeting the following objectives:
1. To explore the design and making processes involved that, through use of a foundation in fashion, integrate traditional techniques and materials with contemporary technologies and materials such as 3D printing, wearable technology, and digital printing.
2. To create art objects (artefacts) as a means of skill building and technique exploration.
3. To document and record the steps taken, processes developed, and resultant thoughts/conclusions of the researcher in order to create written, aural, verbal, and visual knowledge for the purpose of expanding tutorial and and informational literature in the field.
4. To present all process findings and artefacts to a group of experts in order to ascertain the credibility of the work and discover suggestions and recommendations for process refinement and future research work.

b. **How will the results of this project be used? (e.g., Presentation? Publication? Thesis? Dissertation?)**

The results of the project will be used towards completion of a Master's Thesis, followed by academic and professional presentation and publication.

10. **KEY PERSONNEL.** Describe responsibilities. Include information on research training or certifications related to this project. **CITI is required. Be as specific as possible.** (Include additional personnel in an attachment.) *All key personnel must attach CITI certificates of completion.*

Principle Investigator Jenny Leigh DuPuis **Title:** Graduate Student **E-mail address** jld0069@auburn.edu
Dept / Affiliation: CADS

Roles / Responsibilities:
Primary Investigator and Onsite researcher

Individual: Dr. Karla Teel **Title:** ssociate Profess **E-mail address** simmokp@auburn.edu
Dept / Affiliation: Consumer & Design Sciences - Apparel

Roles / Responsibilities:
Thesis Major Professor

Individual: _____ **Title:** _____ **E-mail address** _____
Dept / Affiliation: _____

Roles / Responsibilities:

Individual: _____ **Title:** _____ **E-mail address** _____
Dept / Affiliation: _____

Roles / Responsibilities:

Individual: _____ **Title:** _____ **E-mail address** _____
Dept / Affiliation: _____

Roles / Responsibilities:

Individual: _____ **Title:** _____ **E-mail address** _____
Dept / Affiliation: _____

Roles / Responsibilities:

11. **LOCATION OF RESEARCH. List all locations where data collection will take place.** (School systems, organizations, businesses, buildings and room numbers, servers for web surveys, etc.) **Be as specific as possible. Attach permission letters in Appendix E.**
(See sample letters at http://www.auburn.edu/research/vpr/ohs/sample.htm)

Case Craft. 6225 S Valley View Blvd Suite G. Las Vegas, NV 89118

12. **PARTICIPANTS.**

a. **Describe the participant population you have chosen for this project including inclusion or exclusion criteria for participant selection.**

☐ **Check here if using existing data, describe the population from whom data was collected, & include the # of data files.**

The convenience sample will be comprised of 5-15 expert artisans 19 years of age or older in handcraft fields who have knowledge of and experience in "making" using both traditional and contemporary techniques and materials. Examples include professional costumers, fashion designers, university design professors, industrial engineers, theatrical production designers, and carpenters. The identified study participants and their levels of expertise are known to the researcher through her prior professional career, thus, the sample is a criterion-convenience sample.

Participants must consent to having their likeness recorded through photographs, video, and audio recordings in order to participate. If this likeness recording consent is not given, participants will not be eligible to participate. This is because participant identities will be revealed through publication and presentation, in the form of photographs, voiceovers, and video. Because the participants are experts in their fields and have established careers under their real names, it is logical to identify them in this way, though they will have the option to use an alias or pseudonym if they so choose.

b. **Describe, step-by-step, in layman's terms, all procedures you will use to recruit participants.** *Include in Appendix B a copy of all e-mails, flyers, advertisements, recruiting scripts, invitations, etc., that will be used to invite people to participate. (See sample documents at http://www.auburn.edu/research/vpr/ohs/sample.htm.)*

Participants will be recruited via email invitation to attend a gallery exhibit and research study involving one-on-one semi-structured interviews and a demographics questionnaire. The email invitation will include an attached informational letter of consent, and a likeness release form.

c. **What is the minimum number of participants you need to validate the study?** 5

How many participants do you expect to recruit? 15

Is there a limit on the number of participants you will include in the study? ☐ **No** ☑ **Yes – the # is** 15

d. **Describe the type, amount and method of compensation and/or incentives for participants.**

(If no compensation will be given, check here: ☐)

Select the type of compensation: ☐ Monetary ☑ Incentives

☑ Raffle or Drawing Incentive (Include the chances of winning.)
☐ Extra Credit (State the value)
☐ Other

Description:

A drawing to receive one $100 VISA Gift Card. Chances of winning are 1 in 5-15 (depending on final number of participants.)

13. **PROJECT DESIGN & METHODS.**

a. **Describe, step-by-step, all procedures and methods that will be used to consent participants. If a waiver is being requested, check each waiver you are requesting, describe how the project meets the criteria for the waiver.**

- ☐ **Waiver of Consent (including using existing data)**
- ☐ **Waiver of Documentation of Consent (use of Information Letter)**
- ☐ **Waiver of Parental Permission (for college students)**

Participants will be consented via the following: An informational consent letter will be attached to the original recruitment email. Printed copies of the informational consent letter will be provided onsite for review and signature by the participants. Additionally, included in the informational consent letter is that participation is contingent upon consenting to have their likeness recorded at the event, thus, physical copies of likeness release forms will also be available for review and signature at the research site.

b. **Describe the research design and methods you will use to address your purpose. Include a clear description of when, where and how you will collect all data for this project.** Include specific information about the participants' time and effort commitment. *(NOTE: Use language that would be understandable to someone who is not familiar with your area of study. Without a complete description of all procedures, the Auburn University IRB will not be able to review this protocol. If additional space is needed for this section, save the information as a .PDF file and insert after page 7 of this form.)*

As the artefacts will more closely resemble showpieces, and because they must be able to be seen by the observers from a distance, close up, and from multiple angles, a gallery exhibit has been selected as the best fit for display. Taking the form of a gallery exhibition, an invited audience will attend the research presentation and provide feedback in the form of semi-structured interviews. The exhibit will include a gallery display of all design artefacts including mood boards, notes, sketches, process samples, garment toiles and patterns, video journals, and step by step process documents. The researcher will give a presentation of the research: its purpose, methods, goals, benefits, results, and emergent modification needs. This will be followed by presentation of the final garments, either on live models or a gallery display on mannequins. Dedicated time will be set aside for a Question and Answer (Q&A) period between the researcher and the audience. All semi-structured interviews and Q&A sessions will be video and/or audio recorded. All event attendees will be provided with a physical gallery exhibition program, including information from the presentation, and photos of the garments and artefacts, along with contact information for the researcher. The exhibition will take place in Las Vegas, Nevada in the gallery space of the Case Craft production shop. The exhibition will occur on Monday, February 12, 2018 and/or Thursday, February 15, 2018. These dates coincide with both the MAGIC industry trade convention and Las Vegas International Fashion Week.

Exhibit data will be collected via video and audio recordings of the event. Video recording will capture ambient crowd conversation and comments and the Q&A sessions. Semi-structured interviews will be audio or video recorded based on the participant's selection. Recorded data from the study site will be transcribed verbatim by the researcher and broken down into meaning units, which will be examined for emergent themes.

13. **PROJECT DESIGN & METHODS.** *Continued*

c. **List all data collection instruments used in this project, in the order they appear in** Appendix C.
(e.g., surveys and questionnaires **in the format that will be presented to participants**, educational tests, data collection sheets, interview questions, audio/video taping methods etc.)

Semi-structured interview protocol
Demographics questionnaire

Photographs of the event
Video and audio recordings of the event and interviews

d. **Data analysis: Explain how the data will be analyzed.**

All recorded data will be transcribed verbatim and analyzed for common and emergent themes. Demographics questionnaire data will be broken down into percentage statistics. Video recordings will be compiled into a final documentary-style video presentation of the thesis research, including the research study event.

14. **RISKS & DISCOMFORTS: List and describe all of the risks that participants might encounter in this research.** ***If you are using deception in this study, please justify the use of deception and be sure to attach a copy of the debriefing form you plan to use in Appendix D.*** *(Examples of possible risks are in section #6D on page 2)*

All participants will risk breach of confidentiality, as it is the intent of the research to create informational knowledge to pass on to others in the field, including a documentary-style video presentation of the research.

15. **PRECAUTIONS.** Identify and describe all precautions you have taken to eliminate or reduce risks as listed in #14. If the participants can be classified as a "vulnerable" population, please describe additional safeguards that you will use to assure the ethical treatment of these individuals. ***Provide a copy of any emergency plans/procedures and medical referral lists in Appendix D. (Samples can be found online at http://www.auburn.edu/research/vpr/ohs/sample.htm#precautions)***

In the Informed Consent letter, participants will be advised that they may choose to use an alias or pseudonym in lieu of their real name, and that they may choose to skip any question that causes discomfort or embarrassment.

If using the Internet or other electronic means to collect data, what confidentiality or security precautions are in place to protect (or not collect) identifiable data? Include protections used during both the collection and transfer of data.

16. **BENEFITS.**

a. **List all realistic direct benefits participants can expect by participating in this specific study.**
(Do not include "compensation" listed in #12d.) Check here if there are no direct benefits to participants. ☐

Benefits include increasing knowledge in the areas of handcraft, knowledge creation/passing in "making", and the adaptation of traditional techniques with contemporary technologies.

b. **List all realistic benefits for the general population that may be generated from this study.**

As technology continues to advance, it is important to consider ways in which to pass on informational knowledge about processes involved. Thus, the proposed research would benefit the general population by contributing to the knowledge, information, and literature available to professionals, academics, and hobbyists who engage in traditional or contemporary handcraft.

17. **PROTECTION OF DATA.**

a. **Data are collected:**

- ☐ **Anonymously with no direct or indirect coding, link, or awareness of who participated in the study (Skip to e)**
- ☐ **Confidentially, but without a link of participant's data to any identifying information (collected as "confidential" but recorded and analyzed as "anonymous") (Skip to e)**
- ☑ **Confidentially with collection and protection of linkages to identifiable information**

b. **If data are collected with identifiers or as coded or linked to identifying information, describe the identifiers collected and how they are linked to the participant's data.**

All participants' identities will be photographed and video and audio recorded during data collection. The participants will have the option to use an alias or pseudonym if they so choose.

c. **Justify your need to code participants' data or link the data with identifying information.**

It is the intent of the research to create informational knowledge to pass on to others in the field, including a documentary-style video presentation of the research. As the study participants are experts in their respective handcraft and technology fields, knowledge of their identity is an acceptable risk.

d. **Describe how and where identifying data and/or code lists will be stored.** (Building, room number?) **Describe how the location where data is stored will be secured in your absence. For electronic data, describe security. If applicable, state specifically where any IRB-approved and participant-signed consent documents will be kept on campus for 3 years after the study ends.**

Identifying data will be stored in a locked office, on the researcher's computer and 2 backup flash drives, all of which are password-protected.

e. **Describe how and where the data will be stored** (e.g., hard copy, audio cassette, electronic data, etc.), **and how the location where data is stored is separated from identifying data and will be secured in your absence. For electronic data, describe security**

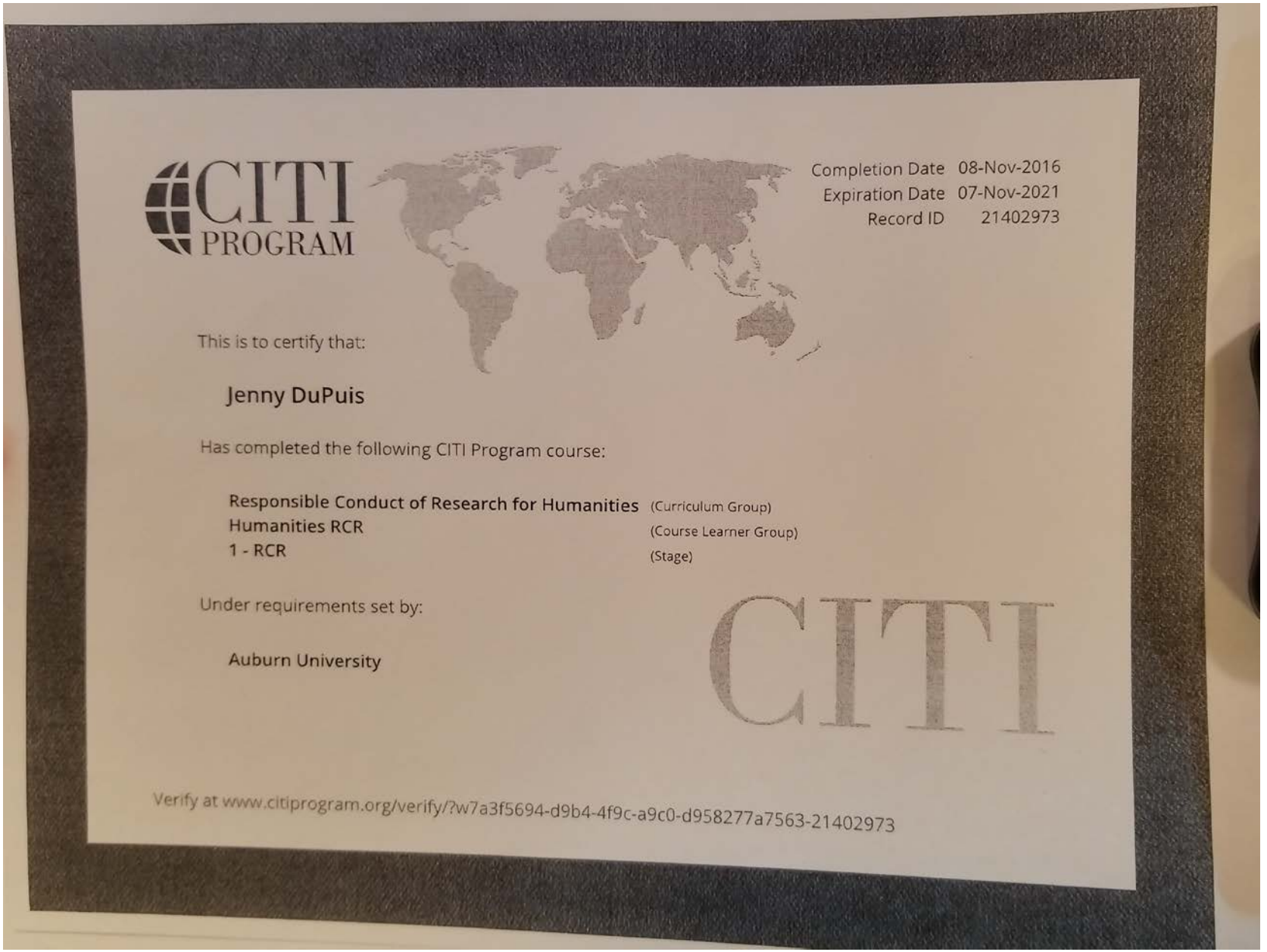
Data will be stored in a locked office on the researcher's computer and 2 backup flash drives, all of which are password-protected.

f. **Who will have access to participants' data?**
(The faculty advisor should have full access and be able to produce the data in the case of a federal or institutional audit.)

The primary researcher (Jenny Leigh DuPuis) and the faculty advisor (Dr. Karla Teel) will have full access to the participants' data.

g. **When is the latest date that identifying information or links will be retained and how will that information or links be destroyed?**
(Check here if only anonymous data will be retained ☐)

Identifying data will be retained for two years from the date of the IRB approval, then destroyed by permanently erasing the files.



CITI PROGRAM

Completion Date 08-Nov-2016
Expiration Date 07-Nov-2021
Record ID 21402973

This is to certify that:

Jenny DuPuis

Has completed the following CITI Program course:

Responsible Conduct of Research for Humanities (Curriculum Group)
Humanities RCR (Course Learner Group)
1 - RCR (Stage)

Under requirements set by:

Auburn University

CITI

Verify at www.citiprogram.org/verify/?w7a3f5694-d9b4-4f9c-a9c0-d958277a7563-21402973

CITI PROGRAM

Completion Date 22-Oct-2016
Expiration Date 22-Oct-2019
Record ID 21048853

This is to certify that:

Jenny DuPuis

Has completed the following CITI Program course:

IRB # 2 Social and Behavioral Emphasis - AU Personnel - Basic/Refresher (Curriculum Group)
IRB # 2 Social and Behavioral Emphasis - AU Personnel (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Auburn University

CITI

Verify at www.citiprogram.org/verify/?w437c9e6a-c21b-44f5-abae-30cdd4fccb3d-21048853

APPENDIX B

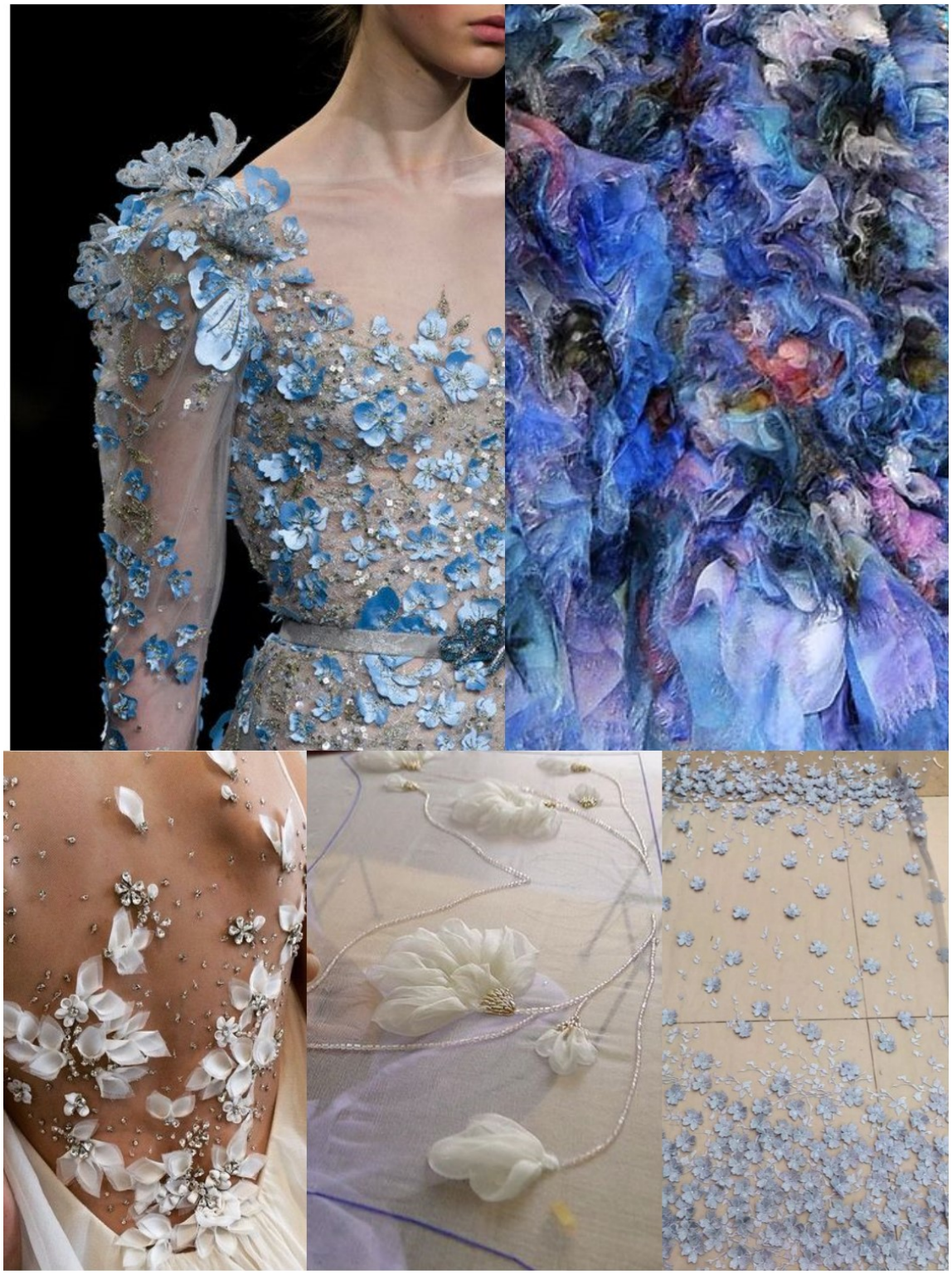
Mood Board

APPENDIX B

Mood Board

APPENDIX B

Mood Board



APPENDIX C

Site Authorization Letter

APPENDIX E:
Site Permission Letter

CASE·CRAFT
UNION SHOP
720
702.685.0279
WWW.CASECRAFT.COM

December 12, 2017

Auburn University Institutional Review Board
c/o Office of Research Compliance
115 Ramsay Hall
Auburn, AL 36849

Please note that Ms. Jenny Leigh DuPuis, AU Graduate Student, has the permission of Case Craft to conduct research at our Las Vegas facility for her study, "Fashion, Forward! A Practice-Led Exploration into the Confluence of Traditional Techniques and Contemporary Technologies in Fashion and Making"

Ms. DuPuis will be using our facility to hold a gallery exhibition of her design research artefacts on Monday, February 12, 2018 and/or Thursday, February 15, 2018. The event will take place between 10 am and 8pm. Ms. DuPuis's event will be attended by industry professionals, and she will give a presentation and conduct interviews with the aid of one to two research assistants. All event-related activities will be completed by 9pm on the aforementioned date(s).

Ms. DuPuis will not be recruiting employees onsite and understands that permission is granted for use of facilities only. She has also agreed to provide to my office a copy of the Auburn University IRB-approved, stamped consent document before she holds the event and conducts her study onsite, and will also provide a copy of any aggregate results.

If there are any questions, please contact my office.

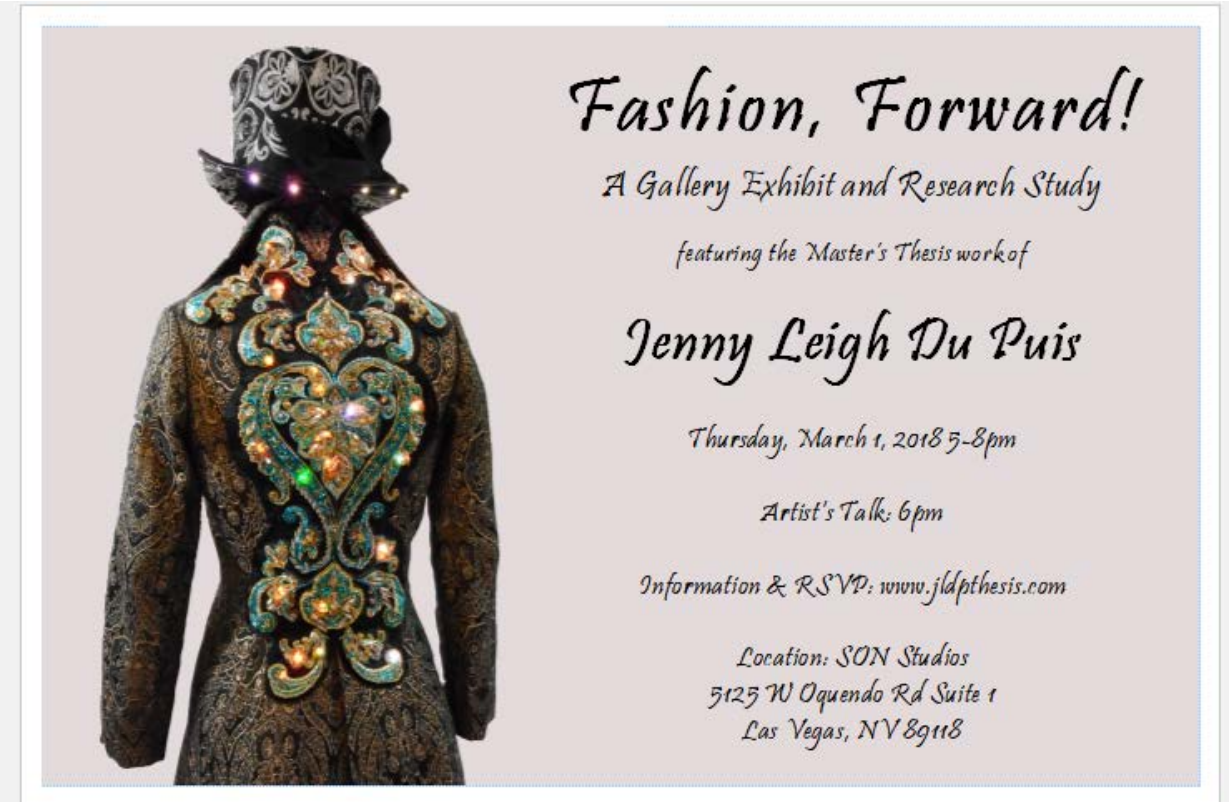
Signed,

Brian Judd
President/CEO
brianjudd@casecraft.com

6225 S Valley View Blvd Suite G, Las Vegas, NV 89118 • 702.685.0279

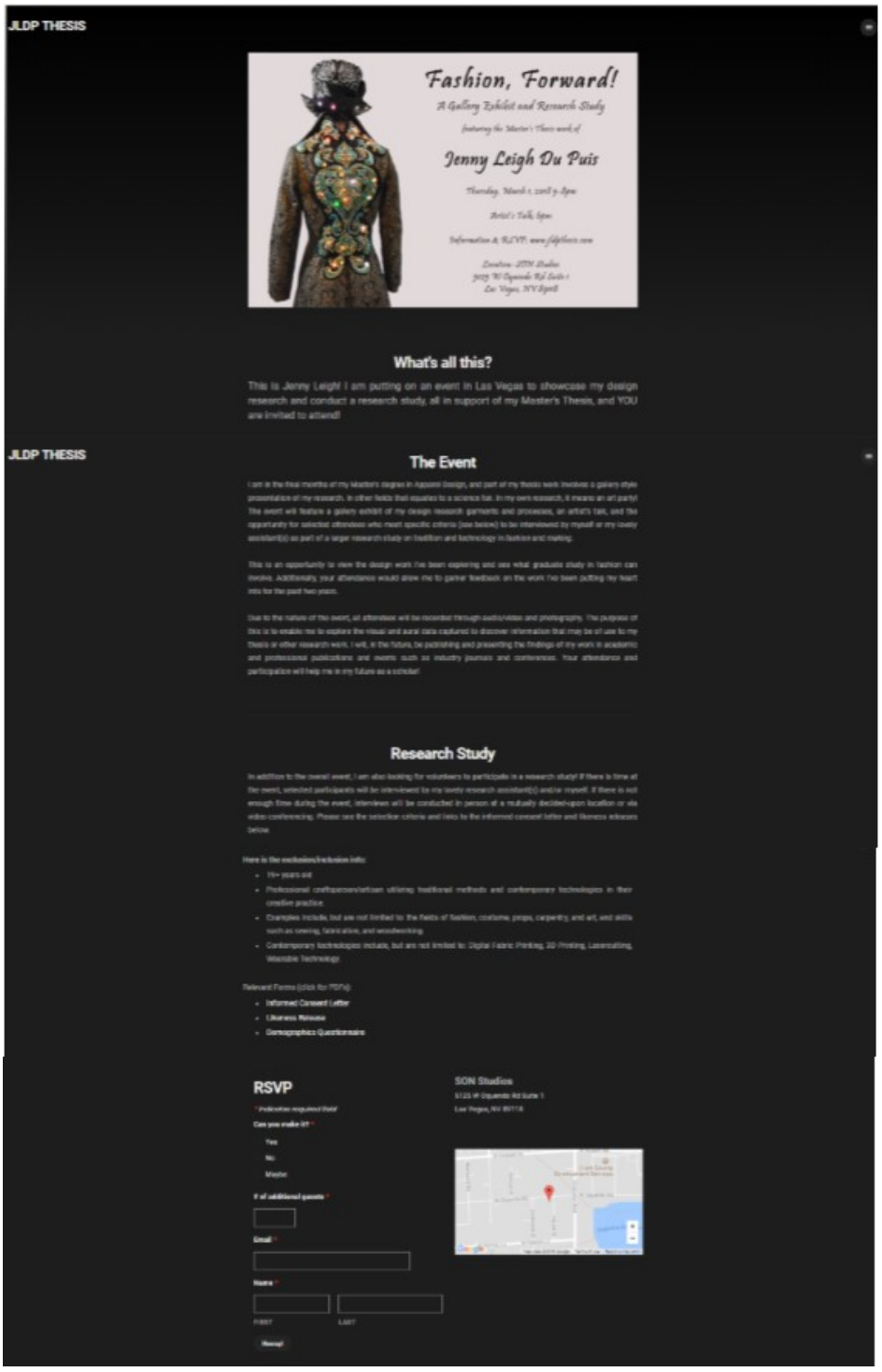
APPENDIX D

Gallery Event Invitation



APPENDIX E

Thesis Website Screenshots



APPENDIX F

Gallery Event Program

Thank You!

Dr. Karla Teel
Dr. Ann Beth Presley
Dr. Sarina Sun
Brian Judd & Jenn Crawford
Abbi-Storm McCann
Ginger Whatley
Shane O'Neal & Deed DeBruno!
Liz Waterbury Kitzberger
Wendy Eberhardt-Petrick
Belinda Long
Trevor Maynard

& all who attended today!

Fashion, Forward!

A Gallery Exhibit and Research Study

featuring the Master's Thesis work of

Jenny Leigh Du Puis

Thursday, March 1, 2018 5-8pm

Jenny Leigh Du Puis is a Master's student at Auburn University with a focus on Apparel Design. In her free time (ha!), she enjoys spending time with her husband Trevor and making sparkly things!

Abbi-Storm McCann is a PhD student at Auburn University. She enjoys traveling to Italy, spoiling her dogs rotten, and making sure Jenny Leigh actually gets enough sleep. (I could not have done this event without her!)

Event Schedule

Doors: 5pm
Artist's Talk: 6pm

*This event will be photographed and recorded for research purposes, and will be used in academic and professional presentations and publications.

Please feel free to explore! I am happy to answer any questions you might have.

Welcome to my thesis research event!

This evening's event will feature the work I've put forth thus far in pursuit of my Master's of Science Degree in Apparel Design at Auburn University. As a design researcher, my focus is on the *process* of design, with a more specific focus here on the integration of tradition and technology. What you'll see here tonight are my process artefacts I've created in the exploration of technique, which, while leading to the end goal of a finished garment, focus more directly on what can be learned by *doing*.

Please feel free to touch the displays (but be gentle, know that there may be straight pins involved).

I invite questions, comments, and critiques! This is a glimpse into an ongoing research process, and the input of expert artisans is both welcomed and encouraged.

If you are interested in further participating in my research, I am seeking participants to interview who meet the following criteria:

- 19+ years old
- Professional craftsperson/artisan utilizing traditional methods and contemporary technologies in their creative practice.
- Examples include, but are not limited to: the fields of fashion, costume, props, carpentry, and art, and skills such as sewing, fabrication, and woodworking.
- Contemporary technologies include, but are not limited to: Digital Fabric Printing, 3D Printing, Lasercutting, Wearable Technology.

If you are interested in participating in the interviews, please see my lovely research assistant Abbi-Storm McCann for relevant consent forms and information.

At this event, you will see the following:

Dye tests

Fabric Manipulation samples

Process garments

Digitally-printed fabrics

—And other fun things!

APPENDIX G

Semi-structured Interview Protocol

The Artefacts:

What is your opinion of the processes used to develop the artefacts showcased?

What would you have done similarly/differently?

With which of the techniques and/or processes used in the artefacts are you most familiar?

Which (if any) of the techniques and/or processes used in the artefacts are unfamiliar?

What techniques do you use in your chosen craft to document knowledge and/or processes?

What else should I know about the artefacts?

(Need more Q's for this section)

Their Craft:

What is your chosen craft?

What can you tell me about your chosen craft?

How would you describe your involvement/experience with your craft?

(As an artisan, designer, maker, etc. Don't lead, but see if they describe any of these)

What types of training have you had in your chosen craft?

Apprenticeship/Formal Education/Learn by doing/make it up as I go, etc.

Did you use written instruction, video, or photo tutorials?

What are some of the traditional techniques, technologies, or materials associated?

What are some of the contemporary techniques, technologies, or materials associated?

How have you incorporated contemporary technologies or materials into your practice?

Is there anything else you'd like to tell me / think I should know about your craft and process?

APPENDIX H

E-mail recruitment invitation for study

Hello!

This is Jenny Leigh DuPuis, and I am a graduate student from the Department of Consumer and Design Sciences at Auburn University. I would like to invite you to participate in my research study to explore the incorporation of traditional techniques with contemporary technologies and materials in *making* and *handcraft*. You have been identified as a potential participant due to your knowledge and expertise in a field of *craft* and/or your position as an industry professional. You may participate if you are over the age of 19 and would allow having your likeness recorded. Please do not participate if you are under the age of 19 or would not allow having your likeness recorded.

If you decide to participate in this research study, you will be asked to attend a gallery exhibition of design research artefacts. At this exhibition, you will be photographed in general crowd photos, and audio/video recorded while participating in a one-on-one interview and while in general attendance at the event. Your total time commitment will be approximately one to two hours: twenty minutes for a general presentation, ten to twenty minutes for a Question and Answer period, ten to fifteen minutes for the one-on-one interview, and the remaining time for observation and consideration of the artefacts.

Benefits to participating in this study include helping to further the knowledge and literature of incorporating traditional techniques with contemporary technologies in *handcraft* and *making*. As compensation for participating, you will be entered into a drawing to win a $100 VISA gift card. If you so consent, your likeness may be used for publication in academic and professional publications and in presentation at academic and professional conferences.

If you would like to participate in this research study, please email me at jld0069@auburn.edu.

If you have questions later, please contact me at jld0069@auburn.edu or you may contact my advisor, Dr. Karla P. Teel at simmokp@auburn.edu.

Thank you for your consideration,

Jenny Leigh DuPuis

APPENDIX I

Informed Consent Letter

DEPARTMENT OF
CONSUMER AND
DESIGN SCIENCES

AUBURN UNIVERSITY
COLLEGE OF HUMAN SCIENCES

(NOTE: DO NOT SIGN THIS DOCUMENT UNLESS AN IRB APPROVAL STAMP WITH CURRENT DATES HAS BEEN APPLIED TO THIS DOCUMENT.)

INFORMED CONSENT

for a Research Study entitled

"Fashion, Forward!
A Practice-Led Exploration into the Confluence of Traditional Techniques and Contemporary Technologies in Fashion and Making"

You are invited to participate in a research study being conducted by Jenny Leigh DuPuis, Graduate Student, under the direction of Dr. Karla P. Teel, Faculty Advisor in the Auburn University Department of Consumer and Design Sciences. You were selected as a possible participant because you are an industry professional / expert artisan 19 years of age or older in a *handcraft* field who has knowledge of and experience in *making* using both traditional and contemporary techniques and materials.

Study Purpose. As technology continues to evolve, traditionally-trained artisans are increasingly choosing to incorporate contemporary technologies and materials into their traditional practice, yet there exists little to no published material regarding the knowledge of *making* and *handcraft* in this field at a highly skilled level. As such, the purpose of the study is to: a) explore the design and making processes involved that integrate traditional techniques and materials with contemporary technologies and materials, b) create artefacts as a means of skill building and technique exploration, c) document all processes and thoughts to develop written, aural, verbal, and visual knowledge for the purpose of expanding literature in the field, and d) present all process findings and artefacts to a group of experts to ascertain credibility of the work and discuss relevant processes and thoughts of expert artisans in fields including and adjacent to fashion.

What will be involved if you participate? If you decide to participate in this research study, you will be asked to attend a gallery exhibition of design research artefacts. At this exhibition, you will be photographed in general crowd photos, and audio/video recorded while participating in a one-on-one interview and while in general attendance at the event. Your total time commitment will be approximately one to two hours: twenty minutes for a general presentation by Jenny Leigh, ten to twenty minutes for a Question and Answer period, ten to fifteen minutes for the one-on-one interview, and the remaining time for observation and consideration of the artefacts. All recordings and data collected will be retained for a period of two years after the date of the IRB approval stamp at the top of this page. At the two year point, all data collected will be destroyed.

Participant Initials:_____ Page 1 of 3

308 SPIDLE HALL, AUBURN, AL 36849-5601; TELEPHONE: 334-844-4084; FAX: 334-844-1340
WWW.AUBURN.EDU

APPENDIX I

Are there any risks or discomforts? The risks associated with participating in this study are minimal, and only present in the form of identification through photographs or video capture. To minimize this risk, we will assign you an alias if you so choose. Additionally, you may choose to skip or not answer any interview questions that cause discomfort or embarrassment.

Are there any benefits to yourself or others? If you participate in this study, you can expect to help further the knowledge and literature of incorporating traditional techniques with contemporary technologies in *handcraft* and *making*.

Will you receive compensation for participating? To thank you for your time you will be entered into a drawing to win a $100 VISA gift card.

Are there any costs? If you decide to participate, you will not incur any costs.

If you change your mind about participating, you can withdraw at any time during the study. Your participation is completely voluntary. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of Consumer and Design Sciences.

Your privacy will be protected. Any information obtained in connection with this study will remain confidential, though you have the option to be identified by your real name or an alias or pseudonym. Information obtained through your participation may be used to fulfill an educational requirement, and may be published in a professional book or journal and presented at a professional meeting or conference.

The researcher, Jenny Leigh DuPuis, **reserves the right** to terminate subject participation should inappropriate or unsafe behavior occur. If the researcher terminates subject participation, eligibility for incentives will be withdrawn.

If you have questions about this study, *please ask them now* or contact Jenny Leigh DuPuis at jld0069@auburn.edu, or Dr. Karla P. Teel at simmokp@auburn.edu. A copy of this document will be given to you to keep.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334)-844-5966 or e-mail at IRBadmin@auburn.edu or IRBChair@auburn.edu.

Participant Initials:_____ Page 2 of 3

APPENDIX I

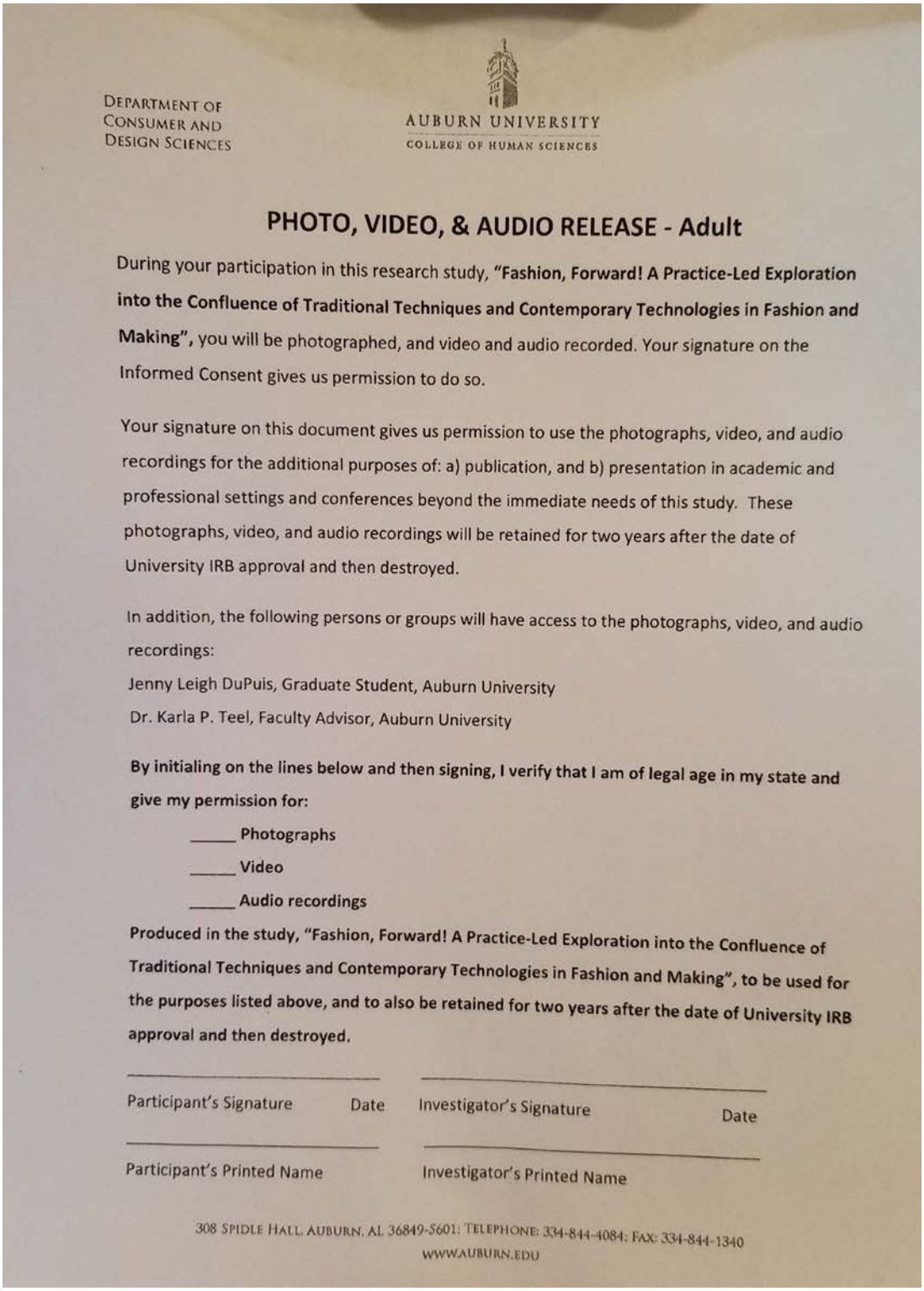
HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO PARTICIPATE, WHICH INCLUDES CONSENT TO BE PHOTOGRAPHED AND AUDIO/VIDEO RECORDED.

Participant's Signature Date	Investigator Obtaining Consent Date
Printed Name Date	Printed Name Date
	Co-Investigator's Signature Date
	Printed Name Date

Page 3 of 3

APPENDIX J

Likeness Release



DEPARTMENT OF
CONSUMER AND
DESIGN SCIENCES

AUBURN UNIVERSITY
COLLEGE OF HUMAN SCIENCES

PHOTO, VIDEO, & AUDIO RELEASE - Adult

During your participation in this research study, **"Fashion, Forward! A Practice-Led Exploration into the Confluence of Traditional Techniques and Contemporary Technologies in Fashion and Making"**, you will be photographed, and video and audio recorded. Your signature on the Informed Consent gives us permission to do so.

Your signature on this document gives us permission to use the photographs, video, and audio recordings for the additional purposes of: a) publication, and b) presentation in academic and professional settings and conferences beyond the immediate needs of this study. These photographs, video, and audio recordings will be retained for two years after the date of University IRB approval and then destroyed.

In addition, the following persons or groups will have access to the photographs, video, and audio recordings:

Jenny Leigh DuPuis, Graduate Student, Auburn University

Dr. Karla P. Teel, Faculty Advisor, Auburn University

By initialing on the lines below and then signing, I verify that I am of legal age in my state and give my permission for:

_____ Photographs

_____ Video

_____ Audio recordings

Produced in the study, "Fashion, Forward! A Practice-Led Exploration into the Confluence of Traditional Techniques and Contemporary Technologies in Fashion and Making", to be used for the purposes listed above, and to also be retained for two years after the date of University IRB approval and then destroyed.

_____ _____

Participant's Signature Date Investigator's Signature Date

_____ _____

Participant's Printed Name Investigator's Printed Name

308 SPIDLE HALL, AUBURN, AL 36849-5601; TELEPHONE: 334-844-4084; FAX: 334-844-1340
WWW.AUBURN.EDU

APPENDIX K

Demographics Questionnaire

DIRECTIONS: Please answer the following questions by checking the appropriate box(es) or filling in the blanks. Thank you for participating! Please return your questionnaire to the research team.

1. What is your **gender?**
   - □ MALE
   - □ FEMALE
   - □ OTHER
   - □ PREFER NOT TO ANSWER

2. What is your **age?** _____ YEARS OLD

3. What is **the highest level of education** you have completed?
   - □ 8TH GRADE OR LESS
   - □ SOME HIGH SCHOOL
   - □ HIGH SCHOOL DIPLOMA
   - □ SOME COLLEGE OR TECHNICAL SCHOOL
   - □ COLLEGE DEGREE (4 YEARS)
   - □ SOME GRADUATE SCHOOL
   - □ GRADUATE DEGREE (MASTER'S, DOCTORATE, ETC.)

4. Which of the following **ethnic groups** do you consider yourself to be a member of?
   - □ AMERICAN INDIAN/ALASKAN NATIVE
   - □ ASIAN/PACIFIC ISLANDER
   - □ HISPANIC
   - □ BLACK, NON-HISPANIC
   - □ WHITE, NON-HISPANIC
   - □ OTHER (Please specify: _____)

5. What is your **profession**? Please check all that you feel apply.
   - □ ARTISAN
   - □ CRAFTSPERSON
   - □ DESIGNER
   - □ MAKER
   - □ ENGINEER
   - □ OTHER (Please specify: _____)

APPENDIX L

Interview Transcription: LWK

J: So the structure of the interview today, I've got 2 segments of questions, the first segment is gonna talk about you and your chosen craft, and your process and your background a little bit, and then the second segment is because you did attend my exhibit, so I'll be asking for some critique

L: Oh!

J: And a few specific things. So, diving right in, what is your chosen craft, or, what is your field of experience

L: I have a Bachelor's in costume design, and my chosen craft, I suppose, is theatrical costuming, but it's um, I'm a dresser currently, so I'm not really working as a stitcher. Most of my crafting happens extracurricularly, so I make costumes on the side, I've done freelance work, I make costumes for myself for EDC, that's kind of most of where that appears, and then just you know, the stitching required for my job, and long term maintenance type stuff.

J: So, we touched a little bit on this, your primary job right now is as a dresser, which for the purposes of this recording, since I'm transcribing everything, I know what that is, and I know the level of stitching that comes with it, but can you talk to me a little bit more about your freelance stuff, and about what you make for yourself - you touched on EDC, but is there anything you'd like to go into depth about?

L: Yeah! Some of the freelance work that I did was a lot of cosplay stuff, so making superhero costumes, and very strange and different things. And then for EDC, that's pretty much just anything goes. It's a lot of embellishment, I also took up scale mailing, so that is a specialized skill that is a passion of mine, which is a very rare skill in the world of costuming, is working with maile, so, that's one of the specialized skills that I have, and then a LOT of very strange and imaginative work, like how do I make a galaxy into a tutu? (laughs)

J: (laughing)

L: How do I make sure that this bra that looks like it's made of pearls also is covered in ostrich feathers and LEDs? It's just taking a wacky, out there inspiration and bringing it into something that is going to be functional for an 8 hour event, but also comfortable, and brings what I want to life for the event. And it's - you end up absorbing a lit of weird little things here and there in order to figure out what to - like, how do I make this stand up, and how do I make it do this, so, it's just a lot of trial and error, and also pulling from skills that I learned in college.

J: So, um that's actually my next question, what types of training have you had in your chosen craft?

L: All of the - I didn't have extensive collegiate training, we definitely did basic stitching and then a couple of specialized courses, so anything from millinery to mask making to corsetry, we learned some crazy, out there stuff like trapunto and fabric painting, lots of strange little embellishments, and so that was sort of covered everything I learned in college, and then most of what I've learned - you would learn weird things along the way, in my dresser experience, like how are we going to make knit chainmaile, friggin' sparkly, we're gonna use foil, we're gonna glue foil to chain maile, and that's how we're gonna make it happen! so, you learn little weird things, working in theatre, that's just sort of like: this is how we make *this* work, and read on stage, and like hand weaving feathers into cording to make spearman skirts fluffy (laughs) so, all of those things can kind of come together, and then I've also done just independent learning on the side, of like, okay, how do I learn how to chainmaile? I'm gonna try to find some stuff on the internet, or try to find a book, and so some of my skills have been just from individual study and exploration.

J: To expand on that just a little bit - when you go to the internet to find something, what kinds of things do you look for, do you look for blog posts, or videos, or Pinterest boards, or whatever?

L: I will usually go to, I'll see if there's a tutorial on Youtube, I do a lot of Pinteresting, as well, you can find a lot of good blog posts on Pinterest, and then sometimes you'll stumble on good websites that have just masses of information on what you're looking at - and sometimes, I don't do a LOT of Reddit, but sometimes you'll land on something on Reddit, so it's rarely like, a Google search, it's usually more looking for tutorials.

J: What are some of the traditional techniques, technologies, or materials associated with what you do when you make stuff? You touched on the maile, but what else?

L: The maile is a big one, that's definitely a very old traditional technique, but also depending on what I'm working on, I do a lot of applique, a lot of, I do like to make corsets, so that's anytime I get a chance to do that, that is a traditional technique that I actually enjoy. For my Halloween costume 2 years ago... right? 2? 3? 3 years ago, I was Sarah Sanderson [SJP from Hocus Pocus] and I couldn't find what I needed, and so a week before Halloween, I decided "I'm just gonna make a corset" so that's sometimes just what happens, you're like "okay, this is a hard deadline", so that's one of my favorites, I DO like to throw in trapunto where I can cause it's super fun and puffy, but also like old school pleating techniques, I love to cartridge pleat, I love making Elizabethan ruffs, all that sort of fun stuff. So there *are* traditional techniques that I try to incorporate, but sometimes also it's just slapping stuff on stuff.

J: Fair enough! So, related question, what are some of the contemporary11:57 techniques, technologies, or materials associated with what you do?

L: Obviously, lighting, I like to use a lot of LEDs in my EDC costumes, and we'll use string LEDs, we'll use individual LEDs, just pretty much any lighting I can get my hands on. Last year we used fiber optic hair clips on everything, so you just kind of like, we just see what's out there, what can find to make sparkly and - we've taken individual LEDs and put them behind scale maile to light them up, we've inset LEDs in between other traditional materials and lace and pearls , just to kind of make things look like they're sparkling without being like "oh, that's a string of LEDs" you know, it's something that you wanna hide, but also have seen. So lighting is definitely the big one for new technologies that I would use. Trying to think of anything else...

J: With the lighting that you do, do: are they premade things, or do you do your own circuits, do you do your own - like do you solder things together, are you doing the programming of anything,

L: I can't be trusted to do any of those things (laughs)

J: (laughs)

L: Yeah, like it's gonna be some kind of a premade thing, that I've put on something else.

J: Are there technologies that you are considering working with in the future?

L: I mean I would like to learn more about making my own sort of lighting situations, getting a little bit more well-versed in EL wire, we played with a little bit of EL wire, but I'd like to figure out some more fun with figuring out how to program that, how to incorporate it, how to join strands and things like that, so, I definitely would like to expand into having more options, and not being so, you know, amateur on that, but yeah, that's definitely a big interest is to figure out like how the things actually work not just like "Woo, electricity!"

J: So when you're looking into these things, and when you're thinking about approaching, kind of the next phase: are there barriers to going forward with it, is there anything that kinda jumps out at you as "I would have done it already except for this..."

L: The biggest is probably time constraints, there *is* information on the Internet, but also there's - when you're working with something like electricity, there's also like "I don't know if I want to trust some guy on YouTube, especially if he like shocks himself 3 times in the video", or anything like that, and something that I haven't really utilized is that I do work in a building with a lot of very talented people who have these skill sets, so I can utilize them as well, and sometimes I will, like if I have a question like "hey, how do I start with soldering?" I know that I can at least find a person at my work that can give me a couple of tips, like how do I rewire this lamp? [NAMED PERSONS], they taught me how to rewire a lamp, so I know that I can go and find these people, but sometimes I just don't really have the time to go that in-depth when I'm just like "oh my god, EDC's in a month, crap"

J: What techniques do you use... that's a very dry question

L: (laughs)

J: So, when you're making stuff, do you document? And if you do, how do you do it?

L: I wish I did more, I rarely document as much as I would like,... most of it just ends up in the form of pictures taken at the event. Like I really wish I had documented more during my freelance work, but I wasn't exactly attempting to build any kind of portfolio at that time, it was just for my enjoyment and for extra money. So, documentation is not really my strong suit, but I

should probably get better at it. Cause I would like pictures of my stuff, but that seems to always be like the lowest priority.

J: So when you look back at your photos, are you able to kind of re-envision how you did something, like is it like - is it a visual cue for you?

L: Sometimes. Like sometimes you'll look at it and go, oh I SO could have done that, like *that* would've been easier, you know, or I wish I would've added this, or that, and then sometimes you just see the photos and you're like "YES, I did it, I did the thing!"

J: SO final question in this first segment, is there anything else that you would like to tell me about any of this that we just touched on: your process, your new stuff or old stuff...

L: I dunno: pretty much most of my process is how can I cover it with as much ridiculousness as possible? And, what techniques are gonna get me there? ... It could be something as rudimentary as "I'm gonna make a hand-tied tulle tutu, because that's like the easiest thing to do, or like "I'm gonna buy a ruffler foot, and ruffle for the rest of my life"

J: So choosing between: Okay! Tertiary question, how do you decide, when you know more than one approach or one technique, how do you decide when to use which one?

L: It depends on if I'm going to get personal enjoyment out of the more complicated technique, I'll do that, or it's whatever's the easiest and quickest thing to make the thing happen

J: Okay

L: But to also make it functional, cause it *has* to be something that's going to last, so it's whatever is going to fit all of the parameters of what I need, if it's a simple technique that will be durable, that will take a small amount of time? Yeah, do that thing. But if it is something that needs to be sturdier 19:02 that the more complicated, traditional technique will work better for, then I'll take the time and do that if I have the time ... or if it's just like, "I get to make a ruff!" then I'll do that.

J: So we're gonna move on to the second segment of questions, there are just a couple here. So, essentially what I'm doing with all of these interviews, you are my 5th of 5, and

L: I'm usually the last one, I procrastinate

J: ... so what I'm doing with this is, I'm transcribing everything so that I can get the text down, and then look for common things that you guys are saying, and what I will do with that then, is to do a writeup for my thesis, but before I move forward with my draft, I'm gonna run it by you again, just to make sure that I am interpreting your words correctly, so that I'm not misinterpreting anything

L: Cool, yep.

J: So, 20:07 probably in the next couple of days, up to about a week, I'll probably send you an email and just be like "please review this highlighted part, and tell me if I'm on track or if this is the worst"

L: Yeah

J: 20:36 Moving into the next section, because you very kindly came to my exhibit, you helped me set all this up... .... you've known me for a really long time, you know me, you know my work, you know my process, so I think that you're actually a really great person to ask these questions of, so of the techniques and the processes that I used in the artefacts that I showcased, with which ones are you the most familiar?

L: Probably just the construction of the basic silhouette. Haven't done extensive fabric dyeing or printing or anything like that, and the 2nd one would probably be fabric manipulation. But yeah. Just basic garment construction would be my most familiar area of expertise, I guess.

J: And so reverse question, which ones are the least familiar?

L: Oh, the whole Photoshop, turning that into a fabric thing - that, no idea, yeah, I wouldn't even know where to start

J: The event itself, I'm thinking about putting it on again at school, and then potentially again over the summer, up in New England at my Alma Mater, ... so events of that kind of type, where it's more about the process and less about the pretty, finished product, do you think that events of that type would be beneficial to other artisans in the field?

L: YEAH, absolutely. It's always helpful, at least for me, to see someone else's process, and to see, to be exposed to new techniques, um, OH beading. I forgot about beading - that's sort of middle of the road for me, I haven't done tambour beading, but I definitely have beaded and embellished. But yeah, I think it's great to see someone's process, especially to see the different steps and what you consider your successes and your failures, and like, *all* the different points of the process22:57 that was awesome, because a lot of times, I think, as an artisan, you only really get to see your own process, or the processes of the people that you're working with, so I think having a more expanded knowledge of how other people's brains work is SUPER valuable.

J: Awesome, um, so, for resources - when you are learning new skills and techniques and things, would things like webisodes or books or step by step tutorials, or a blog or something - would you find any of those to be particularly beneficial in your own process?

L: Yeah, for sure! Um, any kind of tutorials, step by steps are awesome, like when I *find* a step by step tutorial, usually on Pinterest or something like that, I'm like "yes, awesome" it's nice to have it broken down for a dummy, you know? And especially since like, working at Cirque, you're very, very like used to the step by step in order to construct something. So that's super helpful. I would watch webisodes, personally, like if you were gonna teach them I'd be like "send me that!" But yeah, I um, I still use some of my reference books from college, like The Magic Garment, or Corsets/Crinolines, they're - some of those books that I'm so happy I was exposed to because I wouldn't know where to look for references like that, that I still refer back to.

J: Okay! Awesome, final question, um... looking for critiques! Do you have any critiques for me about the garments, the process, the event itself, the exhibition setup, anything?

L: Um, just the - hold that, here [mimes holding a microphone closer to her mouth] hold the microphone here (laughs)

J: (laughing)

L: But I thought that the structure flowed really well, the event was beautiful, it was beautifully set up, yeah I really enjoyed it, the Q&A, everything was really good, I feel like it was a good length, yeah. I thought it was a good event, I thought it was very successful.

J: Thanks, I'm always looking for, you know, "how can we make this better". I will be - based on feedback I received through interviews, and through being at the event itself, and also my own - cause I *have to* actually finish things, I will be finishing the blue gown

L: Oh, yeahhh

J: in a traditional way. I will also be using the - I had ordered like 5 extra yards of the fabric that I ended up not liking as much - it was the Rorschach kind of looking one

L: mmhmm

J: I'll use that, and I'll dye some more silk to match that color tone and do a completed garment. So when I do, I'll post photos and video, so that you guys can be like, "here's the actual conclusion to this whole adventure/"

L: Awesome

J: Alright, do you have anything else that I should know, that you wanna tell me about, if you don't right now and you think of something later, you are welcome to email me, or text or call or whatever.

...26:35 wrap up... the end

APPENDIX M

BJ Interview Transcription

J: So, um, diving into the interview, I've got a couple of questions, but if we decide we need to tangent a little bit, we can.

B: Okay

J: And if, at any point you decide that you would not like to participate in this anymore, if you feel like we've covered something, just tell me and we can stop and that's totally fine.01:18

B:Oh- okay.

J: SO first question, on your demographics questionnaire, at the very end, I had asked you to identify your profession, and um you selected Craftsperson and Designer. I'm wondering if you could tell me a little more about what it is you do.

B: Well, the company that I own is something that's come out of a 20 year career in live entertainment. I was looking for a way to stop being on the road, and to start to spend more time at home, and knowing that I couldn't be on the road for the rest of my life, figure out what was next. And, the company that I started, CaseCraft, was a transition where I could still keep one foot in an industry that I love, but also use the knowledge that I'd gained about specific products along with the skills that I've honed in that industry, kind of merging those two things together to make a business that I could do from anywhere, and allow me to be home. So, starting off as I think the designer and craftsperson thing nests really nicely for me specifically because I'm looking at things that I've used on the road for 20 years knowing that there's a better way, and02:54 the designer part of my brain works out those problems and the craftsman side of me figures out how to implement them in reality.

J: I'd like to touch on something that you mentioned, with the skills and the knowledge –

B: Okay

J: So, the knowledge that you gained along the way, do you have any formal training in that? Or was it all on-the-job?

B: I - formal training - not really, I drafting is obviously a big part of what I do, I have no formal drafting training, I started using a program called MiniCAD Plus, in 1992 on a Mac 2E, and that I worked with AutoCAD and MiniCAD at the same time, and became more familiar with MiniCAD and just from using it and following that software's transition into what it is now,

which is VectorWorks, I've trained myself just by doing the CAD side. Any of the formal training that I have I don't necessarily think comes into play much in what I do day-to-day now, I went to Varilite school, I went to a bunch of different rigging schools, so I have a little bit of trade school background, but I think the majority of the knowledge that I have now has really just been from *doing* and not from training.

J: And would you say the same goes for your skill sets?

B: Yes.

J: So specifically, we talked about your business, what is your chosen craft?

B: The chosen craft I think –

J: You can pick more than one

B: I think it all kinda goes down into fabrication. It isn't necessarily just metalworking or carpentry, because a lot of what I do now melds the 2 of those together as I feel they need to. We use steel and aluminum where I think it's appropriate, and we use wood products where I think it's appropriate. So I would really consider the craft now to be more of a manufacturing than a carpentry-welder, all of that is, I think fabrication or manufacturing kind of encompasses those skilled trades that we use daily.

J: 06:10 How would you describe your involvement and experience with your field - you touched on - we talked about your being a craftsperson and designer - do you have anything else to add on that kind of end?

B: On how I view it?

J: Mmhmm

B: I think the, I feel blessed in the spot that I'm at because I have the opportunity to be both of those things, and not everybody gets that opportunity. And one of the things that I try and instill in my crew is I want them to do that too. I want them to hone the designer side - they're the ones that have their hands in it every day, I have really honestly become more of the designer and less of the fabricator, and my team are the fabricators but I want them to be - because I feel like it's been so valuable for me - both of those things make me better at the other. 07:30 Being a better designer makes me a better fabricator, and being a better fabricator gives me ideas to become a better designer. And I want them to be able to do that, too, because I think it makes the job more fulfilling, and it also makes what we can do as a team - gives us a lot more possibilities. If we have a bunch of different minds thinking of both the design side and the fabrication side, then

that gives us a lot of possibilities, and a lot of ability to pivot, when things get weird or we're faced with a new challenge.

J: When you are talking about encouraging them to kind of do both, when you're passing on the information to them, are you training them as designers through on-the-job training, or are you encouraging them to develop skill sets that they may already have?

B: I feel like I'm kind of back-dooring a lot of this. I don't have any formal training procedures for any of my staff, but I feel like what I try and do with all of my team is watch them, find out what their interests are, by watching them and by speaking with them, find out where they want to go in this company, what do they see themselves at in 12 months, 2 years, 5 years, 10 years. What are their goals there. And then kinda, while we're building projects, give them an opportunity to have input on solutions and I think because I don't have a formal - I don't have a formal education. And because of that, I don't know how to teach in a formal way. What I do know how to do is help people find their own. Let them, give them the tools and the confidence to find their own path to teaching them what they want to know. Rather than me trying to force information on them that A: I don't know how to give, and B: they may not want to have, I give them an opportunity to pick my brain, draw from my experience, and then use their own ideas to try and make what we do more efficient, stronger, more attractive, more options... They all have their own individual ideas, and I want them to bring their ideas into what we do every day.

J: So, in your practice and in your chosen craft, what are some of the traditional techniques, technologies, or materials that you use, that you employ, so for example, an example of a contemporary technology would be using CAD, so what do you use that's more traditional?

B: When we first, when I first started, what, 6...years ago, 6, almost 7 years ago, We used what would not necessarily be "traditional tooling" but we did use - uh, we. *I*, used what would now be modern traditional carpenter shop tools like a table saw, and a drill press, and things that are motorized but not automated.11:40 The way that I teach - even though we use CAD for everything, I still make all of the guys use steel rulers for everything, because at the end of the day, organic products are not the same size you think they are, and they have a variance, that you can't account for in CAD. CAD is the idea we start with, and the product that we end up with is the reality. And there has to be a melding of the modern techniques and the traditional techniques in order to make that come together. You can't rely on the digital copy to produce what comes out of the shop. So, I think the majority at this point, because we are now we're

getting more and more automated with the CNC router and the automated drawer clamp, and we're getting more automated, but at the end of it, if the guy who's putting it together doesn't have a physical, not a tape measure, but a hard steel rule, then the project will always either take ten times longer, or a lot of things will have to be recut. So I think for the traditional, what we would consider to be traditional woodworking tools, it all has to do with layout and measuring. And I think that's the foundation of the project. And I don't think there's any way to get away from - the CNC is accurate down to a 10,000th of an inch. But that doesn't mean that the lumber that it's cutting is. So the guys still have to employ traditional layout techniques even though we have this much accuracy with the machine.

J: So the follow up question to that, and you've kind of touched on a few of them already, some of the contemporary technologies and things, that you employ with your CNC machine, with CAD, and with the - was it the drawer press?

B: Yes

J: The dovetailing thing you were telling me about?

B: Yes

J: Okay. Because that part isn't recorded, would you mind just rehashing very quickly what it does in place of by hand.

B: Oh, sure! Traditional drawer construction, the good, old-fashioned, if you open up any antique piece of furniture, you will see drawers that are constructed in one of two ways, and it all has to do with corner joinery, and they're either dovetail joints or they're finger joints. Dovetail joints are probably the strongest of the traditional bits of joinery because you have a lot of glue surface, but you also have a joint that automatically compresses itself. Those are extraordinarily time-consuming. They're typically hand-cut, so it's a long time to lay out, it's a long time to hand-cut, it's a lot of hand saws and chisels. We have figured out a way to keep that traditional strength, but also that traditional look. I love the way that looks when you open up the drawer and you see the dovetailed sides. We figured out a way that we can utilize our CNC machine and then 15:16 with another piece of automated equipment, the CNC cuts out all the drawer parts, and then instead of the guys having to glue them up and hammer them together, the parts are loaded into this big machine that, once the parts are loaded in, you push a pedal on the floor and it compresses the entire thing, it's all glued up, it's all done, it takes rather than taking 5-10

minutes per drawer to assemble, it takes about 30 seconds. We can get through 150 drawers in a day with that machine.

J: When you have started to move from just being you, and employ these more refined techniques, shall we say, is there a knowledge gap, is there a little bit of catchup that you have to play, how do you go about actually adapting these new contemporary technologies?

B: That's a good question. Luckily, a lot of the automation that we've started going through over the last year, implementing the CNC machine, implementing the drawer clamp, implementing a lot of the smart tools we have now, have actually come around with my same crew. So, we had a knowledge gap that was kind of equal across the board. We got a new piece of equipment in, and none of us knew how to use it, so we've all kind of learned together how to put this together. The, what I would call our company's architecture for the way our cases are assembled, that knowledge gap was - there is a learning curve. There's a learning curve to the guys getting to the point where they build things the way I build things, and that takes - and there's really no way around it other than time and documentation. And we spoke about this when you were here, the 17:29 construction bible that we're in the process of putting together, and I have now decided, since you and I have talked about this, I've decided to put my entire staff in that process, rather than have me create something that they are going to implement, I want them to be a part of what's crafted so that A: they feel invested in that process, but also, it's been a year and a half since I've been in the shop building every day, and I know that parts of this, parts of the process have changed, since we've gotten the new CNC machine. Parts of the process have changed since I was building, and that has to go into that book. Cause it's no longer *my* process, it's *our* process - it's a Casecraft process that has organically come to where it's at, but we're now at a point where we've got it together, and we need to lock that down.

J: So that actually goes into my next question - what techniques do you use in your chosen craft to document knowledge and/or processes? So, you'll have this, this um, we know this terminology from theatre, calling it a bible, but for the purposes of me getting it down into text, it is essentially what: what is a "bible" in this sense?

B: It's essentially a step by step, it's what would be referred to as an as-built engineered drawing, and it would go through, the way I currently have it broken down is the chapters, if you will, are each major step in the process of building one of the cases, and within each one of those chapters, it has the work flow, everything down to: what length staple is used, what size bolt is

used to put the handles on, so it's consistent, everyone can grab this book and reference it at any time, you know, they're putting something together and think, what size bolt holds a handle on? They can open up to that part and the finishing section of the case, or the re-assembly section of the book, and go to the handles and say, "okay, that's a (technical specs of an example piece of hardware), I want it to be filled with as much minutiae as possible, because that - answering questions takes time, and even if you're answering - and you know me well enough to know that I don't answer any question in 20 seconds - I ramble on forever - it also stops the work flow, if someone has to walk away from their project to ask a question, now that process has interrupted my work flow and their work flow, and a 30 second answer is going to wind up costing 5 or 10 minutes. If everything is documented and it's all in that production book, they can open it up, answer their own question, and everyone is doing the same thing. Does that answer that question?

J: It does! Very well. Thank you. So with your, when we talked briefly about the knowledge gap, when you got the CNC machine, and you were all trying to figure it out together, *how* did you figure it out? Did you read the manual, did you go online, did you ask other people who used these things before,?

B: Sort of all of those things. The manufacturers are not great with documentation manuals for these things, because there's a lot of industries that use these for different things. So, we had to figure out how to make this machine work the best for us. 21:36 What that turned into was a lot of wasted product from making mistakes, finding the right piece of software that would be the intermediary between our CAD program and the machine. We went through 4 different versions of what they call "CAM" software, Computer-Aided Manufacturing, software until we found the one that really was right for what we were doing and the skill level that we had. Then there were *countless* Youtube videos, there were, luckily we've made enough friends in town that have CNC machines that we were able to call and ask questions, or they would swing by to see how we were doing. Honestly, again, we've been very lucky and I don't take that lightly, that we've been very lucky that we have had the support of a lot of the people around us, to kind of come in and say "what are you guys doing, you really shouldn't do it that way," and we can kind of pick and choose from that information as we use it to implement into what works best for us. So it's been a lot of, there's been no one stream of information that's been the end-all be-all, and it's been myself primarily, and my CNC operator (NAMED PERSON), he goes home every night

and he reads and he looks up stuff online, and he has ideas of how things can get better, and he then he does the due diligence to figure it out. So it's a lot of streams of information.

J: That is it for this - the interview is split into two sections, the first section is where we're talking about your craft and your work, and the second section is where 23:35 we're talking about the exhibit of mine that you attended, so before we switch into the second part, is there anything else that you would like to tell me about your craft or process, or anything else you think that I should know? Maybe something I didn't touch on today?

B: Not that jumps out to me right away.

J: Okay.If anything comes up, you're more than welcome to email me, if you want to write it down or if we want to do another Zoom real quick and just get it out, that's totally cool too. 24:11

J: So moving on, you attended an artefact exhibit of mine, and so the purpose of me asking you questions about this is that in my research, I'm kind of following the Master and Apprentice type of model

B: Right

J: Where at the end of it, the apprentice learns a particular skill, they present it to more informed others for reception by the masters. So, even though fashion is not your specific craft, because you are an artisan and an expert in your field, I felt that it was important to engage you in the process because you have this level of expertise in a specific area, so for - let's just dive in

B: HA!

J: With which of the techniques or processes used in the artefacts that I created are you the most familiar? Was anything familiar?

B: It was, had you and I not had the lengthy conversation two nights before your show, I don't know that I would have picked up on it as much as I did, but based on our conversation, your work flow and my work flow are very similar. The end result is remarkably different, and the media is very different, but the process is was shockingly - was *shockingly* similar. And I was able to see based on our conversation, looking through your trial and error with different fabrics and different coloring techniques, and because I live that. That feels like every day to me. So being able to look at what you're doing, and showing your process, I was - I felt like I was able to identify with what you were probably going through every moment of every one of those pieces, because we do that all the time. So, I feel like I really did identify with and recognize your

process part of the work, and I do want to say, my favorite part about your exhibit was showing that process, because I think it's so easy for people to want to hide that part of the process and show what's beautiful and what's perfect, but that isn't what's real, and honestly that isn't what's real interesting.

J: I am in full agreement with you

B: (laughs)

J: I think that there's a lot to be learned about what doesn't work,

B: Right

J: I think that we can learn from that

B:Yes

J: moving forward. So, I'm gonna eliminate some of these questions because you are not in fashion and they are not therefore relevant.

B:(laughs)

J: What kind of critiques do you have about the artefacts showcased? Do you have any recommendations for the future? Do you have any suggestions for change?

B: For you, no. Looking at what you put together, and what the very thorough and advanced process that you've already created for yourself, I feel like I took away information from that. I learned from watching you explain your whole process, it gave me information to be able to take back to my shop, and sort of reevaluate the way we do things.

J: Great! That is very humbling and flattering for me to hear, thank you!

B: (laughs)

J: Would events of this type be of benefit to other artisans in your field, do you think? 28:17

B: Yes. Definitely, because again it's not just about - if you can set aside the media, and pay attention to the process, I think that the process part is what gets more often overlooked, and under-recognized, and I think that the process part of this is what everybody can benefit from it.

J: Great! So , as I am likely presenting this exhibit again on a slightly smaller scale at school, and then potentially to my mentors from my undergrad in MA over the summer, do you have any recommendations for ways I can improve the presentation itself, the setup or anything?

B: I liked the way you had your boards set up, I feel like the only - you did a phenomenal job. You seemed so comfortable and ready to not just present but also to field. Field questions and field sort of impromptu comments, the only thing that I would say is the way that you had it kind

of set up, and I know that this was kind of space-determinative, was your, the beginning part of your process on house right and the end part of your process on house left, and there was a lot of reference back and forth to them, which just means that you walked around more, but it didn't affect anybody in the audience.

J: Okay, so maybe if there was more of a flow through rather than "let me walk over here then let me walk back over here"

B: And that's honestly more for your sake, because I don't think any - nobody in the audience cared. You were moving around confidently, so it didn't seem like you were lost in your own exhibit - I don't mean it to sound that way, you moved through your exhibit perfectly, so I don't think it really affected anybody in the audience but for your own sake, you know, mapping out your exhibits to your talk might help you a little bit.

J: I think that that's a great idea! Alright, is there any other input that you have about the exhibit, or the artefacts, or anything else that we have discussed today?

B: I don't think so, I don't think so. We were, both Jenn and I, our socks were blown off.

J: (laughs)

B: We were impressed with you, and with your work

J: Thank you very much! I feel like we are lucky in that we know a bunch of people who know what they're doing in their own specific ways, and to get to see each other in our element doesn't happen as often as maybe we would like for it to happen, but when it does, it's just really cool.

B: Yes. I 100% agree. Yeah.

32:01 sign-off including description of member checks

APPENDIX N

CM Interview Transcription

J:On the demographics questionnaire that you sent to m, at the very end I had asked you to indicate what your profession is, and you selected the term "Craftsperson", so I was wondering if you could tell me a little bit more about that.

C: Well, obviously that's not my profession anymore, but uh, I guess probably the reason you wanted to talk to me is because of my crafty things, so uh what that is for me uh, is I've been sewing all my life, my mom taught me how to sew. I'm not that good at it, but you know, I know how to work a sewing machine, and um, and so it's never been something where I've been particularly inclined to *design* something from scratch, but I'll get an idea, and it's not exactly something I can find in a store, or what I can find in a store is crazy expensive so I'll make it. So, I always just kind of had that feeling of "If I don't have it, I could probably make it" um, and "why buy" so um, so now I guess what that mostly is, is working with LEDs, 06:35 Obviously I have the LED hula hooping stuff, and that was a reasonably successful business for a while, so, that kind of was mostly electronics work, but when I moved back to Vegas 4 years ago, people started asking me to do, um, like *props* that lit up, and different things like that, and that turned into - I had always wanted to do flower crowns, and eventually I'd really like to do LED jewelry, um, yeah and actually, you inspired me your headpieces?

J: Yaayy!

C: Um, or like "I should make LED ones *like* that" so yeah basically what's turned into now is I make mostly LED flower type things, um and then I've done a little bit of working with other people who design costumes and putting LEDs in those.

07:53 ... N/A....

J: So, how would you describe your involvement and experience with this specific field, like did it, how did it start? Because I think, if I remember correctly it started with the LED hoops, but how did *that* come about?

C: That was actually kind of a marriage of the hula hooping that I was doing, I was kind of deep into the fire spinning, burner people, and we all really enjoyed performing with fire, but we couldn't get gigs, because nobody wanted to pay all the fire insurance and everything like that, so my girlfriend and I, you know, I was like, I'm sure I can find a tutorial somewhere on how to make one of these hoops, and sure enough I found it, um, that turned into the way that I made it I was like "ugh, this is awful, I could never give this to somebody else, and have them expect to know how to work it. So then, just kind of, because I'm a dork, um, I started working on the design, because I'm like, I want this to be streamlined for me, but you know it'd be nice, you know, if somebody wanted me to make them one, if I made it you know, streamlined for them. So that was, you know 09:13 *multiple iterations* of things and experimenting with materials, and um and finally, you know my, (NAMED PERSON) and I were working together and he was like "what if you used like a cork, or a stopper, for the battery compartment? And so I looked around, and corks weren't gonna, and I tried using them and they fell apart, and if they got wet, they got weird, and so finally I found these rubber stoppers that they use for test tubes, and they have vented ones, and they were perfect for stringing the wire through, and then attaching to the battery. Um, and so that's how that ended up, and I sold that design for years, um so yeah, that's kinda how that came about, and then you know, going into *wearables* it became a challenge of course as you know, well even with hoops it was a challenge of *where to put the batteries*, cause the LEDs and the chips keep getting smaller, but the batteries aren't.

J:Right! Yep. So with I want to touch on a few things that you just mentioned. When you were looking for a tutorial, where did you end up finding one, what form was it in? Was it um, pictures and writing, was it someone telling you something, or was it a video?

C: So I actually found it on... it was a website, and it was one of the Maker websites, and I can't remember exactly which one right now, um, but it was one of those websites that's **Instructables**, or something like that, and I found a guy and he was like "this is how I made my girlfriend's LED hula hoop" and he and I actually corresponded uh quite a bit over the next several years, I ended up buying a lot of my rechargeable batteries from him, because he had found a really good source, so, yeah.

J: Awesome. Allright, um, and when you mentioned your multiple iterations, so as you were going through your process, did you do any kind of documentation or anything, to kind of track what worked and what didn't, or is everything totally up here (pointing to head)

C: It's totally up here (also pointing to head). I didn't start doing documentation, until I started kind of, well, I wouldn't say mass-producing, but producing larger volume, and that was when I started keeping `track you know of, it was just easier to make a jig, you know, where to drill the holes in the tubing, and all of that stuff, so that was when I started tracking, not while I was doing the design.

J: So as you're moving forward into the wearables realm, um, where does your electronics knowledge come from? Does it come from your sound expertise, or do you have electrics training as well, what is your background?

C: So, when I first moved to Vegas, it was like in '07, or '08, that I was like "I should just get some basic electronics background, so I took a community college course that was like an overview of programming, wiring, all of those things, and that gave me just enough knowledge and then, when I was at KA, I'm sure you heard about all the soldering we did, down for the in-ears, and those little tiny wires made me really good at soldering. And so, that was it, I mean, and then from there it was just kinda like oh, looking online, "how do I calculate resistance?" looking online, and once I needed a piece of knowledge I would go and usually google it, and get it that way.

J: So that kind of touches on my next question which is "what kind of training have you had in your chosen craft" so you, um, it sounds like there's an element of teaching yourself, but you also had that formal training of the course at school?

C: Yeah so other than that, it was definitely self- taught and Google. Adafruit, of course, has been incredibly helpful with um, I used elements of their designs when I was looking at how to do this ball gown that we were doing that needed multiple avenues to different places on the dress, and so I found a tutorial on Adafruit that was for a wig, that had multiple inputs and outputs coming into the board, and that was like the basic design that I used, and then I modified it for what I needed to do.

J: So, in what you're making now, so let's focus I think on the - cause you, have you stopped with the LED hoops or are those still in play? Or have you totally migrated over?

C: I've totally migrated over, and mostly it's just for personal, I'm gonna make a bunch for giveaways for EDC, um with LEDs, cause I just have soo much LED stock right now, so that's kinda the plan with that. But yeah, it's I don't really make hoops anymore, it's too time consuming.

J: So with the crowns that you're making, what are some of the more traditional techniques that you're using, so setting aside the LEDs for a minute, what techniques do you use?

C: Um, so I don't know how traditional they are, but making a flower crown is very similar to what I used to do with my grandmother, we used to make Easter baskets. Um, with and we would actually make the flowers out of tissue paper, but um, so we would make the flowers, and then we would wrap them in floral and attach them to wires, and attach them and all of that is exactly what I do for the flower crowns except I buy the flowers, because they're much prettier. I mean, I don't know how traditional those techniques are, in the larger scheme of history, but certainly, the flower arrangements and things like that are... those same techniques of just shaping the wire, and wrapping the flowers, and making sure, laying them right so they fit on your head and things like that.

J: So when you were doing the Easter baskets with your grandmother, is this something that she taught you how to do?

C: Yeah, um, she worked for a charity in Houston that did gigantic Easter egg hunts and Easter baskets for underprivileged kids and things like that, and so for months before Easter we'd be making these Easter baskets, but yeah, she taught me.

J: So now setting aside the traditional techniques, so the contemporary techniques that you are using, with the LEDs, is there a basic way that you can describe that for me, how you incorporate the 2 together?

C: Um yeah so it's funny, I use something as simple as a seam ripper to.. cause I've used some programmable LEDs but I'm still sometimes just using regular single LEDs and so in order to get the LEDs into the right place, into the flower, I've found that the little pokey part on the seam

ripper is perfect for inserting the LED leads, and it'll go through plastic as well. I'm pretty sure that there's a better tool for this, but that's the one that ended up working.

J: Are there any other kind of contemporary technologies or materials that you've incorporated into your practice, are you looking into fiber optics, or EL wire, or is the LED field your jam right now?

C: The LED field is my jam, but I did use, I did play with fiber optics for a while, and um for what I was trying to do, it wasn't working out, but I did a really interesting prototype for a hoop for one of the guys at Love, actually, and he wanted it to be completely white, no like dark spots or anything like that, so I found some of the it was like fiber optic sheets, and you could actually, I tried to fold it around into a circle facing out so that there would be no dark spots, and it worked out but then powering it was the big problem, again.

J: Is there anything else that you'd like to tell me, or think that I should know about this particular craft and process?

C: Now that I'm getting into programming, or when I started getting into programming, that was where I got really really fascinated, and I don't know what it is about me because I don't feel like I'm a person that has the patience to write code, the codes that I was working on for the dresses and things like that, uhm, were things I found online, open source, and then I really enjoyed getting into the coding of it, and modifying and experimenting because when you're coding - I don't know if you've done any or if you know people that do, but uh, you go in and you change - if you don't know what you're doing, you go and you change one thing, and you see what it does. And then you go in and you change the next thing, and see what it does. and so for me, that was almost like a conversation with a computer chip, you know, with the LEDs, and uh I really, I mean it doesn't replace human conversation or anything like that obviously, but that was interesting to me that it felt like a conversation that I was having.

J: I've found in my own practice, that my biggest hangup is with the coding, because I don't - I haven't taken any formal training in any kind of electronics or anything - um, so when I look at the Adafruit tutorials on the coding, uh, it's a little, it's Greek to me, so it's like

C: YEAH

J: Like that's my biggest hangup with working with LEDs, and part of the reason I've slowed down on working with them so much is that I just don't have the time to dedicate to learning the coding and figuring out how to change stuff

C: yeah

J: so it is encouraging to hear that other people can do it!

C: Well, and it was completely, I mean I knew a little bit of HTML just from working on my own website, but like I had somebody design that, and then I would go in and play with it and break it, um, but another thing that I kind of observed and I was never somebody before I started hooping that felt like I could play and make mistakes, and hooping was really the first place that I started enjoying making mistakes, and that actually translated over into the coding, of you know *enjoying* that process, rather than the ultimate result. And I think that that's where - and it's probably because I'm older too and less impatient, but that was where I really started enjoying it, is enjoying that process of learning, and um, making those mistakes.

J: So the process of, you just mentioned "breaking" your website, so the process of going in and kind of tweaking something, and then seeing what it does, is a learning process for you, I'm just trying to make sure that I'm fully understanding what you're saying for the purposes of this research, and that you learn a lot by seeing what doesn't work.

C: Yeah, the whole trial and error process, when you talked about your process with the fabrics I was like "oh yes, I know" and committing yourself to just trying something, even if it's not gonna work.

J: Because you never know what's gonna happen!

C: Yeah

J:All right, well, that leads me into the next segment of the interview, so the first part (so this is in 2 parts), the first part was about your specific process and techniques, and if there's anything that you think of later on that you think "ohh, I really needed to tell her this" just email me or call me and let me know, um, I'll be transcribing everything, it'll take a couple of days for me to get all the info down. So the second part of the interview is um, you as an attendee of my exhibit, um, the kind of model that I'm following is that of Master and Apprentice

C: Okay

J: So I'm taking the role of the Apprentice and presenting my work to Masters in their field. so, um I am looking for critiques, or recommendations um, and I have a couple of specific questions, so uh first of all, the techniques and the processes that I showcased - I know that there were a lot of them, um but with which ones are you the most familiar?

C: Um, I would say the jacket, cause I looked at that thread and I was like "I'm gonna break that so fast", um but that would be the one that I'm most familiar with - I've done dyes, but again, washing machine.

J: So, what kinds of critique do you have about the artefacts that I showcased? And by artefact I mean any of the physical samples that I did, so those the embroidery hoops or the big fabrics, or the garments themselves?

C:I think I would say that I enjoyed the most the digital printing that you did on the fabrics. That was really fascinating to me, especially, the process of printing out the fabric and honestly my opinions were similar to yours in that the large swatch of fabric, I didn't like the print so much, but those ended up being the ones I liked the fabric manipulation the most. So that's really most of the commentary I have on that. Um, but I'd say the jacket was the most fascinating to me, and when you featured that the first time on Facebook or wherever it was, I was just like: "oh, yes!" um, because as you said, that marrying of the old and the new style - crafts um is really fascinating to me. So, you know I think 26:31 if I were a little more practiced in the art of sewing, I would be doing a lot more of that um, because beading, jewelry, things like that has always been - I love sparkly things. Um, so there I mean the only thing that I saw is something that you discovered very naturally, which is that the wire HAS to be hardy, because it's gonna be worn, and then the challenge with that, of course, is because the wire is larger, the garment is heavier, you know you have to worry about the color of the casing of the wire and all of these things and that was something that I dealt with so so much, even in the hoops. You know people would be like , during the day they'd be like "oh, I can see the wire" I'm like, "yeah - it's clear tubing" But I did find it's on bulkwire.com, um, they have all different colors of all different gauges of wire. um, and so all of the tubing that surrounds the casing is actually, you can get it in blue, you can get it in orange, and things like that, um, and then also, I found that stranded wire even if you're using - well, I'll just say generally stranded wire obviously is gonna be way better

than solid core wire, so if you're using even a single strand, those multiple strands are your insurance. Because the signal can still pass within reason, if one strand is broken. And that, with it being a wearable garment or in my case where I started with the hoops, that made it more durable. because it's just gonna get worn out. And the other thing that I found, that I really had to do in my designs, and I don't know if you've discovered this or not, is I *had* to make it something that I could open up and fix.

J: YES.

C: But you can't permanently put anything in. Hot glue is a no-no. Well, in certain fabrics, I think hot glue would probably be good. But I used to use hot glue to seal certain electrical, terminations and things like that, and then I'm like oh, well it seeps into all the pores and you can't open it up and fix it. so, those are my big things.

J: Thank you, those are very helpful - I used um, on the coat whenever I had to tie a knot in the conductive thread, I used clear nail polish

C: Ahhh

J: So it was time-consuming in that I had to wait for it to dry, but it allowed me to not have a big glob of glue in the coat, but I think part of the reason why the all the LEDs don't light up anymore, in addition to the fact that it's traveled quite a bit and it is made of thread, is that I have taken that beading piece off of it so many times, and put it back on, that I imagine that I likely damaged the circuit at some point, so my -

C: sure

J: I think that my next iteration will be to incorporate uh - I found something cool on Adafruit, it is kind of like a glorified Christmas tree light, if you think of the components all together - so everything is encased. I'll try to find the link and send it to you afterwards cause you may find that it will work for your stuff too. There are programmable NeoPixels that within these little things, and they have a sewable loop on the back, and all of the wiring is coated clear

C: whaaaaaaaat

J: Yeah! It's pretty great, it's pretty great. And it comes at 2" apart or 4" apart, so that's gonna be my next thing, and I'm gonna try to hide it within some beading, um, so that will be my next iteration.

31:06

J:So, the event itself - do you think that, because I was trying to talk about the process, and showcase the process to other artisans in different fields, do you think that events of that kind of type would be of benefit to other artisans in your field?

C: Oh my gosh, yes. ... I think as designers, as a general rule, we tend to get stuck in our workshops, right? And I feel like getting out and seeing that just kind of gave me the "okay, these people are doing the same thing too, they're going through the same struggles, and then that sharing of ideas is so essential, because I hadn't been on Adafruit in a while, that was kind of my project (my 63 is on Monday) so I was not even looking on the website until after that. But that sharing of ideas, and bringing people together to see one person's achievement, and like um, and especially because you fully admitted that you had not finished, um and that for me especially, because I'm type A, perfectionist, that whole thing, and I think , you know, designers can be either - or many different spectrums - I think that the essential things about those events are the sharing of ideas and seeing that other people are - connecting with people on that level of oh, we're all having the same process, even if you know, the specifics of it are different.

J: One of the things that I, um, I started with an original intent, with my thesis, which was *just* to look at how we marry these two, these traditional and contemporary techniques, and then it's evolved into this *whole new thing* about knowledge sharing, and about where we find knowledge, when we're trying to incorporate new techniques, and because a lot of what we have is what we called at KA was the "tribal knowledge" and so everything's up here (pointing to head), and nothing's documented, and so we can't really pass it along unless we're specifically giving direction.

C: mm, yeahhhh.

J: That's one of the things I'd like to address in further33:39 research, so asking that question about "would the events be beneficial to other artisans in the field, is to maybe open up a larger

conversation for me in the future, to look at how we do this kind of thing. So, just for some perspective on that.

J: So, final question - what else should I know about the artefacts that I've created - do you have any other opinions, or recommendations, or suggestions, or anything for me?

C: Um... you should know how far you've come, because I for me at least, that's the hardest part to acknowledge for myself, is we're so focused on where we want to be, and it's partially enjoying the process and all of that, but it's also taking a minute, ...34:48 ... talking about her gratitude practice...35:24 you should know that from the outside, watching you grow is an absolute joy, so thank you. And, that ballgown just sticks with me. it's just one of those things that's in my head now ... cause I designed an evening gown one time -or, I didn't design it, I made it - from a pattern, um, and lined it and did the whole thing, and so sticking that and the intricacies that you're wanting to put into it, and into future designs, yeah, you know it, just do it.

J: My intent is to take that, because it's at "almost-final" iteration, so my intent is to take the feedback that I get from these interviews and to incorporate my kind of 'adjusted plans" over time to produce a *final*, complete, whole version of it, uh, for presentation when I'm talking about this research in the future, so, I will be posting photos, and some videos of it when it is complete and whole, done phase, so I will definitely keep you in the loop on that one.

.....wrap-up.... telling C about my transcription/theme-finding/member checking

APPENDIX O

WEP Interview Transcription

J: What is your chosen craft?

W: I am a paper costume designer and scenic designer. But I currently work primarily as a costume designer and scenic artist.

J: And are you self-employed, or do you still work at Imagine? (Costume house)

W: I do not work at Imagine any longer, they no longer exist. Yeah, they were like premiere in the day, Farrington Productions remains, but the costume shop doesn't. I think they do rentals but I do not think they necessarily fabricate like they used to. So, I now currently work for a specialty contractor, and that's on the scenic art side, and my costume designs are a freelance thing. So that's a self-employed, side thing.

J: What is your field of experience, what's your background?

W: Costume and set design, and like what I was just saying about the scenic artist. So my background is theatre, I came to it from my father, he was a stagehand, and so I got the theatre bug from him, and had to find my, where I fit in in theatre, because a stagehand didn't seem to be a fit for me, as a career, so the design angle lent itself, and so I went to undergrad and then onto graduate school.

J: And where did you go to undergrad and where'd you go to grad school?

W: I studied at Webster University Conservatory of Theatre Arts in St. Louis, MO, and then graduate school was Carnegie Mellon University.

J: Great! That I didn't know! Alright, um, what can you tell me about your chosen craft or field of experience?

W: Um, I guess I'll start with moving to Vegas after school, I came to Vegas after attending a USITT convention here, my latter months of graduate school, and fell in love, and just thought this is the place, and at that time, there were showgirls everywhere! and there were multi-variety shows, so there were a lot more opportunities for designs then, um Cirque had one show when I moved here, and I thought this is it, this is where I wanna go and jump off, and do you know

glitz and feathers and crazy and stuff like that, so that's what brought me here. The first thing that I was able to design here was for the Venetian, and when the property opened, they had strolling opera singers, and I was lucky enough to design um those original costumes and those were built by Imagination. So that was my first introduction to them, I didn't work form them at that point, it wasn't until years later that I started working for them. But they fabricated them, I strictly did the designs at that point. But that was my first thing in Vegas, and it's kind of evolved, because I've done things for the hotel properties, I've done things for like the 09:26 Donnie and Marie show, that was at the Flamingo, um, so some things for different performers and the hotel properties, as well as the atmospheric characters that will stroll around and entertain and amuse but not on a stage setting, so I've done that sort of thing, but it's kind of evolved into now, large-scale fabric designs, so it's a lot of things that I currently am doing are large-scale fabric designs um that are often in the Bellagio conservatory. And those are over-scaled pieces um, big Jack in the box, large Christmas stockings, I remember I posted opera gloves when I was doing opera gloves for - it was an 18 foot female character , and she needed fur-trimmed opera gloves! And so the costume designs go in weird directions that you wouldn't traditionally think "oh, we need a costume designer for that". The skills lend themselves in non-traditional ways... and the scenic painting lends itself, people don't think that crosses over into the costuming, but I found it has on several different occasions - distressing, painting, living statues. Oh, at Imagination, we did a whole series of living statues is what (NAMED PERSON) wanted them to be, so we had complete tuxedos, top hats, too, shoes, I painted them all to look like marble, and so they could pose and we even painted the wig so everything stayed in place and that was a lot of fun. But the scenic artist came into the costume world and they cross over more than one might think.

J: A bit of venn diagramming happening, perhaps?

W: A little - what?

J: Venn diagramming - where your worlds kind of overlap

W: yes yes yes - they do in ways I never would have imagined, but thankfully they do!

J: So we talked about your formal training with your undergrad and graduate school, do we need to elaborate any more on that - is there anything that we haven't touched on there yet?

W: I don't think so, unless you have questions for me?

J: In your practice, what are some of the traditional techniques, technologies, or materials associated, typically?

W: I still render on paper, I still do old school pencil to paper, and multimedia to get the look, I just feel that there's more of a connect for me, I think with the new programs, you don't have to commit, and things aren't necessarily12:53 as thought out, it's kind of playing more than analyzing and putting that thought through the arm and into the - I dunno. So I do still render by hand, then with the structures and things, wired buckram, boning, lots of layers of interfacing, things like that for support. Decoratively - beading and rhinestones, I don't do any beading to the extent that you do - that just blows my mind. I'm a heat set girl - lots of heat set. And then the dyeing. My dyeing is not - I wouldn't say advanced, it's a lot of Rit dye, Jacquard dyes, and machines or containers kind of things depending. And then ageing and distressing, there's different things that go into the different looks that I do, not everything wants to be pretty and clean-looking, so I still do distressing with sandpaper, rasps, things like that but there are new things I've started to incorporate - but some of my favorite, like old traditional things and designs are bone flair - I love bones and I love quills and horns and teeth and you know, crazy stuff whenever I can. So that goes real old school traditional - and shells, yeah, different tactile things, I like really tactile.

J: Okay, so I'd like to touch on your traditional techniques and your training, so did you learn to sew growing up, or was that all once you got to school?

W: That was all in school, yeah. I just, my mother was not one to sew, and so it wasn't until undergrad in the costume shop where I started learning the different things a machine could do, the different machines, the industrial vs. the home, the ... industrial sergers vs. the home unit, and all of the patterning - interpreting patterns, creating patterns, all of that was in my undergrad studies, and then more into depth in the graduate program.

J: So you touched a little bit on moving into the contemporary techniques and technologies - what can you tell me about what you are using in your practice?

W: The more contemporary things that weren't available when I was learning - breaking down a script. When I was in school, we had to make our own charts and you know you blocked your scenes and your characters, and if it was a large cast, you ended up with a large chart if you

wanted to make notes in it, and it just became huge and it took a lot of time. And now, there are software programs that will break down your script, break down all the characters by day, by scene, by time of day, and cross plots, and, huge time saver, and a big, big organizational tool. So there's one that I like - Costume Pro, but it focuses more on episodic, like television series, but they also have another area of it that focuses on film scripts. And so I'm kind of getting into film a little bit, I'm still in my wee early phase, but that's another path that I'm exploring, so that's a new software program that I'm continuing to learn. There's a lot that it can do that I have not been able to harness yet , but it'll come with more projects 17:09 As far as structures, where I still do wired buckram with felt for certain things, but Worbla and Fosshape...but those two are wonderful for height and different shapes to hold... and then a lot of kite-building supplies I've found to be very helpful, I guess it's kind of new technology, it's new to me, just because it's used for something else, but it's the fiberglass rods, and graphite rods, and they're very lightweight, and very flexible, and very strong, and so for wings and things, kite-building tools are very very handy, so that was, that's a fun one.

J: I want to just clarify just a little bit, because this will be read by people who are not in costume. So could you please break down for me, Worbla and Fosshape, and what thermoplastics kind of are?

W: Okay. The Worbla is more of a harder rigid, it does come in different widths, but it's a thermoplastic product, and you can manipulate it with heat, hairdryer temperatures, it doesn't have to be extreme, although you can -depending on what you want it to do, it's a heat-malleable material. It has a slickness to it, that lends itself to armor or things of that nature. Where Fosshape is more, it has a felt-like appearance but you can steam it and press it, and it will flatten and become a little less felt-fuzzylike, but it also is manipulated with heat, and can help you create unusual and unnatural shapes, and it helps keep the rigidity of them in different designs.

J: While we're still on this topic, and I know you have other tricks up your sleeve. So, I am also of the wired buckram with felt school, that traditional training. How do you balance determining when you're going to use a thermoplastic vs. a wired buckram shape?

W: Sometimes I think it comes down to what the piece is, what the shape is, if it's something that I've done before then I'll pull from what has worked, and oftentime *time* will dictate19:56 what's tried and true and I know through in and throughout I will default to, but I do like the Worbla in

that it's paintable right there, right off the bat, you don't have to reskin it or do anything like that if you want to put a finish on it. But, the Worbla's tricky - too much heat and you've got a noodle and then oop, you've gotta start over, and with the wire and the buckram, it's a process and you really can't go so awry so quickly as you can with the heat products. Sometimes you can get a little hasty, and things can get terribly bad, quickly! So I think it depends on the time I have for trial and error, and if it's a familiar shape or something, I might just go to what worked best the last time I tried something like that.20:50

J: Okay, um, please continue in your contemporary technology discussion of what you use!

W: Another thing that I found in my film investigating, and in that world is with distressing, cause I used to use Fuller's Earth, and you know, if you needed grass stains, you made grass stains, and ... at the time I was first learning this in theatre school, we would age and distress things with kind of rudimentary products. Now they have lines of things that are called "Clean earth" that are schmear sticks, and so you've got a - looks like a deodorant stick that replicates sweat, or replicates grass stains, or something, and so it's hypoallergenic, it's a little cleaner, for people, you don't want to put real dirt on people's costumes, or people have allergies for grass stains, you can't just use grass to make a grass stain even though it seems logical, but you know you have allergies to be concerned with, and so there's new technology with ageing and distressing that has lent itself very well22:14 ... goes into detail about earth tones for distressing in the traditional way.

22:42

W: And then, illumination. We both like illumination.

J: Yes.

W: The fairy lights, the little tiny wire fairy lights, that was a big one at Imagination that was a very - battery packs with the fairy lights to illuminate headpieces and different things. And then the bigger LED strips - they're a little trickier because they don't bend in all the directions like a wire, they're a tape, and so manipulating those can be a little trickier, BUT the brightness and the variety of colors, you just deal with its rigidity, and you find ways to work around it, so you get those options of color changes. and then the EL wire - I'm not a huge fan, now that I - LEDs just have so much more brightness, so much more bang, and the EL wire... it has its pros with how

bendable and flexible, but I just, maybe it will come out with the brighter, brighter... I've tried some of the brightest on the market, and in a dark setting it's great. But, on the stage, like when I was doing the skeleton for Jeremy Spencer (lead singer for rock band Five Finger Death Punch) and I had the EL wire, when he's blasted with light, you know, the subtle glow of EL wire is lost, so that was kind of unfortunate. You know, there would be dark moments with the solo, but overall, it just did not have the *bang* that it did when I was doing dark tests in my workroom. But, the illumination is a contemporary thing that I like to add in when I can. 24:32 And then when I mentioned that I liked to do unusual things - bones and teeth and claws, now with resin castings, I can use lighter-weight versions of things. And alter them with paint if they're not quite the right color, and so it's just a lightweight, more, often - sewer friendly. like I can put needles and wires through the resin castings a lot easier than I can if I have to drill through bones or anything like that, so that's a modern, contemporary material that lends itself with that still-traditional look. So that's one that I've incorporated in some recent designs. I think the resins, the softwares, the schmears, those are the most used for me.

J: So with - I'd specifically like to touch on the illumination. So,=... as a traditionally-trained artist, who is now incorporating wearable LED technology into your practice, how did that first come about, and how did you learn how to do it?

W: It first came about with a Living Red Carpet, that I designed, and this was after the fairy lights, that was at Imagination, and the living red carpet, they wanted something new, we've had LRC at different events, but what can we do to really make her really stand out? And so it's illumination, so ... quick break.....So I think the LED strip, on a wheel, LRC, that was the first time I had used some of the larger, multi, color-changing LEDs. And then from there, I tried to incor - and she was stationary. This was built on a stationary carpet, and then a rigid, wire buckram, kind of ribbon that went around her. And so, she wasn't really moving in it, she wasn't needing to walk or anything like that, so it was a really stagnant design. So then, when I went and tried to incorporate it into a wearable outfit - another example would then be the tuxedo, that I just sent to you, and how to work in these LED strips, and then, try to figure out the battery packs, because the battery packs - LED doesn't *pull* a lot, but you need a lot of power for all the multi-changing. And so when I was doing that tuxedo video I had sent to you, I was trying to work in the battery pack into the lower back section, thinking the jacket would hide that, and it

ended up being about a little bigger than a brick with all the D batteries that we needed, because he had 2 different runs down the pants, and he had ... 4 in the jacket, and so that was a TON of battery weight. So what I ended up doing with that one - and this was for a video shoot, so he was going to be moving, and there was a lot of motion. So what I ended up doing was having custom wiring done, that would hardwire off of stage, so he didn't have to have the battery pack, we didn't have to worry about it running out in the middle of the shoot, so the ... that the battery pack would plug into I just had, you know 40 feet run, and we just plugged him in and he could walk all over the place and be hardwired in. As far as wearable outside, you still have to go with the batteries, and they do have a short life, unfortunately. They're bright, but they do have a short lifespan, is the downfall. BUt I'm sure that will change, and I'm sure the battery size will get smaller as these things advance, but ... I'm still trying to incorporate it, it's just those pesky battery packs, trying to disguise them.

J: I completely understand

(both laugh)

W: Trying to fit them in where you can. The fairy lights, because they use the AA - much smaller, but when you get into the D batteries, man, it's harder to hide.

J So, in this process, I have two more specific questions about this. Do you use elements that are pre-programmed, or do you do coding?

W: No, pre-programmed. I have not explored the coding myself. The wiring, I've been taught how to splice the LED and things together, but I still don't necessarily trust my skills. I can do the EL wire, and that itty bitty hairline brass wire - I don't know WHY it has to be so fragile and small, but I'm learning, I'm learning. And trying to get away from having to rely on prepackaged things. I use them when I can for ease, but I'd like to become more comfortable, so that I can create the lengths that I need and have them, you know, connected to the rainbow and everything like that. It's 30:53 just learning the electrician end of it, it's something that didn't come up in costume design classes or construction, it just wasn't a thing that was typical, or really thought of, or done, when I was in school. So, we figure it out as we go. And like I love your - you coined the term "tribal knowledge" because we're kind of learning as we go, and making paths where there isn't one laid out, and so there's lots of trial and error, we share with people with

similar interests, but because I didn't grow up with YouTube and all of that, I'm not a blogger, I don't you know, make videos, and I love people that do make these video tutorials because they're so helpful, but it's not second nature to me, with all of the social media. I'm very, I use some, but not all. And so I don't share that way, because I'm not comfortable with that medium. But thank you for all those people that do, because it's so helpful.

J: That leads into my next question about documentation: which also ties into your - um, I know that we've spoken about when you were first learning to use Worbla, you relied on YouTube videos, are there other resources online or people in the community who have assisted in your knowledge-gaining in this process?

W: Unfortunately, it is a lot of YouTube tutorials, I don't know a lot of people locally that I collaborate with that have similar - I don't want to say tastes, but interests. So I explore often alone, and online, and vicariously through things you share (laughter)

J: I feel like it's sympatico, I think we do the same.\

W: So unfortunately, there's not a big pool to go and collect from, or drink from, so I do have to rely on the interwebs and YouTube seems to be the place that I'm - I think there's new, other media outlets, but YouTube is the one that I am most familiar with to go hunt and peck. And then Pinterest! Pinterest has some nice things as well. People share a lot on Pinterest. Between Pinterest and YouTube, I can kind of muddle my way through, or at least get a direction, and then I can just blaze and burn and it'll either go well, or it won't. But I don't go back and share the hit and misses like I should, but at this point, I don't I just -

J: That's okay! There's nothing that says that you have to

W: But it would be nice, and I know that one of the questions that you had put out was "Do you think that the event that you had would be useful" - those type of things... And it would be like a thousand times yes, to share what you learned and share and show, and be able to touch and feel. Cause a video is helpful, but you can't touch it. Like with the Worbla - how hot does that have to get before it's a noodle?! I can't tell on the video and so there's still trial and error even though you're looking at a video tutorial, you still have to crash and burn and go through the motions doing it yourself. But, with a live event like you had, there's somebody there that you can speak

to, you can touch, you can just get a lot more. So, I think that events like that would be a wonderful wonderful thing…

J: So we've talked about how you don't really document your process to put it out into the world, but do you document it for yourself? Do you take process photos, or videos, or notes, or anything?

W: On my painting, I am much more diligent. But with the sewing, not so much. I don't know why, but i think with the different painting techniques that I come up with, they're not as obvious how you get there, with that final layer you don't know how you necessarily got there, but I think when I'm sewing or fabricating - I don't know. I don't know if it's because it's a dimensional thing, I think "Oh, I can refer back to that." And I can kinda see how i got there. But when it's a painting, you see that final top most often and not the `18 layers that might've come before it. So, I'm more diligent documenting my painting techniques than I am the sewing at this point.

J: So when you do do that documentation, is it photos, or notes, do you have dye or paint formulas for when you mix

W: formulas, yeah, the formulas are crucial, because sometimes you need more and so the teaspoon, and the drops, and how many drops are in a half teaspoon - I know that - you can.... if you need a bigger batch, so you need to really make precise notes with I don't know if it's the liquid mediums, the dyes, varying detail when it comes to documenting those processes, because it's sort of like cooking - if you want it to taste right the next time, you have to know what you did. I'm better with that than the sewing documentation.

J: That covers most of the questions in the first section of questions, is there anything else that you'd like to tell me, or think that I should know about your specific crafting and processing - I know you wrote some notes -

W: I did, I just don't know how interesting they'll be for what you're doing, but

J: tell me everything!

W: I think one that is very interesting with the costume designing, is that it is nt always designing pretty things, and I kinda was mentioning that with my distressing kit, and the powders and the sticks.. that things aren't always needing to be pretty, or new, and the process that I found

very fascinating and therapeutic in a way, when I'm distressing things just researching and trying to figure out 38:05 how things would become, given the time that it would naturally take for them to get that way. And so, weighting pockets with rocks and getting them wet so that they sag an ...38:20 [Interesting, but not relevant to study. Transcribe this section at a later date.] 38:31 I think my craft and my process, people don't realize what goes into making clothing that we see, and this is more towards film projects....38:48 ... this is all about ageing and distressing.....

big break in relevance

43:16

J: Are there any other specifics you would like to tell me, anything else you wrote down in your notes about that first section of questions?

W: The Spoonflower thing. That was another thing that I really enjoyed at your event, was seeing your process with that technology. It's something that I have learned about and heard of, but I have yet to use it, and so just seeing things that went well, that didn't go as you had hoped, just was really helpful for me, so when I do jump and try and do some custom printing through there, then I'll have some things to keep in mind, and so that was really helpful. I wanted to thank you for having that in your.. yeah.

44:09 JLDP tangent to recommend Costume People Facebook Group to WEP, and told her about the woman who posted a photo about the large format printer and fabric she could custom print anything

47:13

J: moving into second section, here I go over the master-apprentice summary, and end with asking for critique of exhibit.

48:37

W: Well, I want to say, I was very, very impressed with all of the different dye samples, and the processes that you went through, and I was really, really happy that , because we're FB friends, that I was able to see when you were talking about the, the - I want to say Loom for lack of a better word, but when you made your dye frame, and you know, going through the hand painting process and all of that kind of thing - I was so impressed by seeing the actual results in person,

and knowing just by your postings what you had gone through, and I was just blown away by the subtle differences, but you could really see - [interruption] all the dye samples, because of all the subtlety in the colors. It made me think of when I'm making my formulas, and so I could just see "another drop! and then we're gonna make the batch and we're gonna try - " And I could just see that whole process, and I know at least for myself what it has taken to get all those subtle variations, and I just thought it was very thorough, I thought it was very well-documented, visually, that you could see all of the different tones, especially in the bodice when you were layering them up, and I think that's another really smart thing, instead of changing your formula necessarily, if you wanted to darken something, maybe you don't need to dye a new batch - maybe you can layer up with different opacities, and - so that I thought was a really smart presentation with the bodice, where you showed the different fabrics beneath, and how that changed the tonality I guess, or the color, I just thought the presentation was very user-friendly, it was very clear what you were trying to show, and when you were pointing to the different sections of it, it was very clear, and so I really learned and enjoyed all at the same time, which - it's a hard combination to [coopt? go off?] I thoroughly enjoyed it. And I loved being able to touch things, and the fabric manipulation, I thought, you could see the shapes that - was it the organza that you started with but the chiffon, but then you went to the organza, and you could see the perkiness, and so you can *say* that to somebody, and you can show a picture, but to be able to touch it, that tactile part of the presentation was very helpful for people that understand the different body and bodies of fabric. Just to see it and to touch it. I'm a tactile person, so I thoroughly enjoyed it, and say Brava!

J: Grazie, grazie, mille grazie! 51:58 So, diving into some specifics: with which of the techniques or processes that I used in the artefacts are you the most familiar?

W: The dyeing - the traditional dyeing techniques that you used were familiar. What wasn't, and what I really enjoyed learning about was the spoonflower, the digital printing. Because they didn't look printed - they kept the feeling of the hand dyeing - some of the ones the book end and things obviously, but the moodier ones, they were very successful-looking, um not digital in my opinion. I really liked that, hadn't seen it in person before, the Spoonflower technique, but I liked it. Yeah, I was familiar with the traditional but not that new one, that was new to me.

J: So you mentioned earlier that you think that events of this type would be beneficial to other artisans in the field, so a little bit more specifically, because I think of all of the people that I'm interviewing, um, our brains are probably the most similar, in our processes and our practices. So what.... I'd like to replicate this kind of event or this event itself at school, and then I may do it up in New England at my alma mater over the summer, so I'll be reaching different kinds of audiences - both academic, what other kinds of... maybe not an event per se, but AHH! Okay. I have come full circle in my thought, okay, sorry that took so long. And this is something I thought of earlier, something you had mentioned. So when we traditional artists are learning, we do Pinterest, we do Youtube, we may learn from someone who's close to us physically, who has more experience - are there resources that you can think of that would be like the ultimate kind of benefit to you? A book, or like a web workshop series, or an in-person workshop like they have at conventions, those kinds of things.... is there anything that jumps out?

W: I want to say all the above (laughs). I think all of that. But I think just the web series I think, because I love book. I like to be able to highlight in a book, I like to be able to refer back to it, and I... but I also like the live explanation of video, or seeing it perform. Cause I do find, and this was just in my education, not necessarily design specifically, but I was a hands-on, and not - this isn't gonna come out right....I really like to have someone there that I can ask a question to. I like that interaction. I can self-teach myself, but I love to be able to ask a question, and you know really take it - take my initial inquiry further and then get back and forth back and forth, and then I used it in this situation or that situation, and it just opens up a whole plethora of other possibilities. But I think a book associa- or in combination with a web series would be really great, you know, this specific chapter, and we're going to have some live tutorials in regard to something you've got tangible in hand I think would be really neat, and then something locally that you could actually also participate in would even be bigger, you know a bigger mind blow. But all of it. I just think all of it would be beneficial to all of us that have similar interests, or are just curious, and it's food for thought to, take someone in a direction that they may not otherwise have thought of. For continuing learning, and then just inspiration. I think a book, a webseries, live events, all of it, I think is beneficial to all of us artists. So I don't have one favorite, I like them all.

J: So my original project was JUST to look at how we traditionally-trained artisans incorporate these contemporary technologies, and it spawned this whole big "how do we get the knowledge, what do we do with it, how do we document it" so it has turned into this huge thing, that I was not anticipating, but I would like to run with in my future research. So, my next steps are going to be - ...57:29 [describing how i"ll transcribe and look for themes and do member checks]

58:11

J: Is there anything else I should know about the artefacts, do you have any recommendations for me moving forward in my practice?

W: Off the top of my head, I wish I had something, but no, no, I'm looking forward to seeing what you explore next (laughs)

J: My intent is to - cause I got a lot of great feedback from you and from the others at the event itself about my final gown, which isn't really final - And where I would like to take it next, so when I get back to school what I'll be doing is to actually fully finish and complete that gown using the feedback that I got. - So I'll be posting pictures, and ordering more fabric off of spoonflower now that I know what color I can go with, so I will keep you updated on everything, and after we're done talking tonight, if you, if you have a strike of inspiration, if you have something that you think "oh, I really wanted to tell her this and I forgot, email me, call me, whatever, you're more than welcome to do so.

W: ok!

J: Final question: is there anything else you think I should know, anything else you'd like to tell me about anaaaaaaaaanything we touched on tonight?

W: ...anything... I don't think so! I mean, we went all over the place, but -

J: That's okay!

W: Not at this moment, but if something flashes, I will send it your way.

J: Perfect.

59:57 Sign off, thanks for participation and time, then:

1:00:38 :

J: Did I talk to you about - we talked about the LED tape and how inflexible it was, did I show you the physical example that I had off of Adafruit, that's -

W: No!

J: Okay. So Adafruit has this really cool stuff, I'll send you a link to that too, it's in its most basic form, think of it like fairy lights, but waaaay upgraded. So,

W: okay!

J: the wires are encased, so there's no conductive thread to deal with, there's a little bit of soldering to do, um

W: I can do that

J: And there's a tiny bit of programming to do, but on the Adafruit forums, they have downloadable code

W: oh!

J: And where to change stuff. So, their lights are addressable, Neopixels. So, they are full range RGB through white - any color, so you can program each one individually, you can program color effects if you want, they can all be white, they can blink, they can twinkle, they can like do a marquee thing, and it's super cool -

W: And it's ... apple - what was the name of it?

J: Adafruit!

W: Adafruit! I see fruit and apple, I just went to apple, but Adafruit, okay (laughs)

J: I'm gonna put this in the email too, this Adafruit is where I really learned about wearable tech in the first place, and they have all of these forums where you can interact with other people to learn about techniques and technologies,

W: (gasps)

J: And they're very open about: "here's the product, here's what you can do with it, here's a link to an example project... go." But this particular product, they developed it I believe for cosplayers originally - I might be wrong on that - but the lights are encased, so they're protected,

and they have a little sewable loop on the back of them, I think there are 3 little loops - so they are made to be sewn to garments.

W: That is why they were created! Wow!

J: So that's little things, and your wires in between (gesturing with hands) so it can move and take different shapes, instead of being this LED that doesn't want to move at all

W: Right, it wants to go thiiiiis way, but not - the side to side but it wants to go up and down, but not -

J: Yeah - not the way you want it to go. This might be a good resource for you, I'll send you a link to the website in general and also to that specific product,

W: Okay, thank you!

J: That might help you in your future exploits.

W: Oh, I think so. It already sounds like I will be exploring that, yes. Thank you for sharing!

J: Of course! This is what we - we need to do this!

W: Yess! Yes, when we find these pearls, we must share.

J: Sign off, thanks1:03:34

APPENDIX P

MM Interview Transcription

J: I have 2 segments of questions to talk to you about today, the 1st segment is about you, yourself as an artisan , and your craft process, and then the 2nd is the, regarding the exhibit you attended of mine, looking for some critiques and things. so, I'm gonna start with: on the demographics questionnaire that I had you fill out, at the very end I had asked you to indicate what your profession was, and you indicated craftsperson, designer, and maker, in addition to makeup artist, hair and makeup. So I'm wondering if you could just give me a - because I know you already, let's pretend like I don't, and if you could give me kind of what you do, and what you're craft or processes are:

M: Okay, well, my day to day full time job is maintaining and repairing wigs for KA, and then in addition to that, I'm an educator, and have a school in which we teach, hopefully future artisans how to become professional makeup artists in the entertainment industry is the main focus, and also make wigs and all of the different degrees that that involves, and that is for personal use, as well as for entertainment purposes. That's kind of my main job. I have on there designer and craftsperson and person that makes things because some of the jobs that we get hired for are to come in from a base level on a concept design, and we come in in addition with the costume designers and whoever else needs to be involved - projection, lighting, director, creative director, producer, and we come in to collaborate on what the design of an event or a show should look like, and then we take it from that point. The making stuff and the crafting part comes in after the design meeting, and we've decided what things should look like, and so K (lastname), my partner in crime, we sit down and really kind of look at the logistics of things of um, how much money do we have in the budget, what do we already have in stock, what do we need to make, what does that look like, DO we know how to do that, and if we don't, who do we pull in to the group to make whatever the look is happen? So, we kind of have a well-rounded business of concept design and execution as well as being hands on and actually doing and creating the product ourselves, if that makes sense (laughs)

J: It does! So, I want to touch on something you just mentioned, um, a point of collaboration, so in that kind of vein, when you are identifying things that you may, maybe don't know how to do, at what point is it, "oh, I think we might be able to figure out how to make this" or, "oh my god I

can't do this, I need to pull somebody else in." Up until that point, right before you pull somebody else in, are there resources that you use to try to figure out how to make things?

M: Well, we have a pretty extensive *actual* library, book library, between K and I at the school, which for your record purposes is the Academy of Makeup and Wig Design, and so over the years ...04:09 [interruption] 04:22 So we have a pretty extensive library, of resource material and we can kind of look in and see like, "okay, what does that ..." - So we look at that and we see "ok, what is this gonna take?" or if we just have no idea, we are huge fans of the interwebs, and we can kind of go online and see: has this been done before, and I have to say honestly, about half of the stuff we do has been done before, and then half of it, there's no precedent for it, so we have to figure it out (laughs) I feel like that happens a lot, and in those cases, like let me give you an example. I'll give you two examples: One was we had a client that was a burlesque dancer and she wanted to do a wig that was very very stylized, and she brought in a photograph, and we had a meeting, ... and it had essentially like a foam circle on the top like a, like um... like from Michael's, what is that, y'know like where you stick plants in it,

J: yeah!

M: That kind of thing. And then the hair was wrapped around it, and it was this very intricate thing, but her whole goal was to be upside down on a hoop, (laughs) so we were like, "oh-kay", so we're like well, that is not gonna work, logistically, and that comes from us having a little bit of common sense, but also working in the circus, and understanding the physics and what actually is gonna be happening, on stage. So we were able to have that conversation with her because she's *not* from that world, so that was very helpful. What we did do, was we had to call in one of our milliner friends, because we wanted to be able to do the job for her, but neither one of us are milliners - I mean, we don't make hats. We can kind of wing it, i guess, but this is a paying client, so we wanted it to work, but it couldn't be really heavy, because she's gonna be moving around and it's upside down, AND it needed to attach to her head, AND look seamless, like it was her hair going up into this crazy circle thing. So we did, we called in one of our milliner friends, that's their specialty, and we sat down and had a meeting with them, and then of course if we're getting paid for this job, we have to you know, do a percentage to them, which is also important, and so we just sat down with them and said you know, we don't necessarily want you to do this, but we need to have a consultation meeting about what we're doing, and what will

work, and what won't work, and so that's what we did and ultimately it was beautiful, and it's in her calendar, and she was able to do the show, but that's an instance where pretty early on, we know that we don't necessarily have the skill set or tools or the knowledge to make it, we need a little bit of help. A more recent incident was the One Night for One drop, Cirque du Soleil's charity show, I had found a picture on Pinterest of this balloon tree, that I fell in love with, and I wanted some form of it to happen. And in the photo, the tree is floating, and then there's red balloons toward the ceiling. But there's nothing touching the floor,

J: okay

M: So, obviously, that cannot happen. And this, y'know, had nothing to do with hair and makeup, it just - this is just part of the design part of what we do, and ... so we had a meeting, and we happen to know a balloon artist randomly, Tawny Bubbles, and K's husband is an electrician, cause we wanted to light it, so we just needed to have a collaboration meeting with the artistic director for the show and everything, and figure out: "do you guys like this concept, this is in a totally different color scheme, how can we make this happen?" So we had about 4 different logistical meetings, about this balloon tree, and how to secure the statue, and what does that look like, and can acrobats be on it with the LED strips, well yes they can, but they have to be *these kind* of LED strips, and well, they're gonna have this kind of wig on, is it gonna catch on fire, like (laughs) you know -

J: (laughs)

M: So, it's those types of conversations that are really important, cause they can't only look good, but ultimately it has to be safe,

J: yes.

M: And it has to work with the concept of the show - I can't, just as an independent artist be like "I WANT A BALLOON TREE", and then -

J: (laughing)

M: There be a balloon tree that doesn't go with anything and be like, "don't you like my balloon tree?" Like, that's not gonna work, so ... but it worked and we had this amazing balloon tree at

this event that was the centerpiece and I was so happy, and we had acrobats on it. So, I don't know if that answers your question, but...

J: It does!

M: It's pretty early on in the process, **you have to know what you don't know** I think, is a really important lesson I learned early on

J: and how did you learn that lesson? Was that through trial and error, was it through repeated experience,

M: Well, I think it started in college, when I had to take a craft - uh, like, you know you have to take um, you have to take wardrobe, and you have to be on this crew, and you have to be on this run crew, and I had to take stagecraft, and I was like "this is NOT my jam" I was like, I don't care about these measurements, I don't want to build sets, I'm sick of painting, and there's all these men and women in the shop that were super happy to be doing this, and so we were working on a project, and my instructor he was like "MM, you HAVE to know how to do this, you HAVE to know how to use a nailgun. And I had this lightbulb go off, and I was like, "actually, I DON'T" I just kind of understand what you're doing, have a conceptual idea of what your job is, and I will give you money to do it. And he just stared at me and he was like "whaat?" and I was like, " do YOU want to go build costumes?" cause that's what I was in there for, and he was like "well, no" and I was like "DING DING DING" it's the exact same thing. I was like, I don't care about sets. I care about set *design*, I do not care, nor am I good at, nor should I even be in here for safety reasons... about building the sets11:13 and so then it just kinda took on, that made a lot of sense to me, in terms of other things. I understand the concept of lighting design, I've taken those classes, I don't know how all the dimmers connect, I don't care, you know, but I know that there are people that do, and I as a collaborator or as a producer I will hire those people.

J: mmhmm

M: cause that is their specialty. There's no need for me to know how to do everything, I just need to know WHO does everything and how to hire them.

J: Great. Now that kind of leads me into my next question, on my little list here, what kind of training have you had in your chosen craft? Could you expand on your schooling, please?

M: Well, that's funny, because I think that, you know my undergrad is in acting and directing, from the University of Houston, and then I went to the Westmore Academy for makeup for film and television, then I worked in the actual field for a long time, for about five years, in LA and the school of hard knocks (titters) uhm, doing makeup and hair – *hair* was totally an accident. I learned how to do wigs when I was an undergrad just so I could make extra money, because the local theatre in Houston - Theatre Under the Stars, they needed a "wiggy" and it was JUST to put wigs on and off - it wasn't to *do* anything, and they paid pretty well, it was like the late 90's so it was like $12, and I was like "ohmagawd, that's so much money!" So, I learned how to do that while I was in um, acting school, and then I didn't touch it again for like 5 years, but when I came back, because I had worked, after that first job I had quite a rapport with the wig mistress so she hired me - kept hiring me! for different jobs. So every different job that I had with her on, at TUTS, she would show me how to do something. So she would be like "I need you to steam this wig out, can you do this, can you roll this, and so I kind of learned wigs completely practically. I didn't have an official schooling for that. Um, and then when I came back from LA, back to Houston, they were like "oh my gosh, you're back, can you do wigs for Romeo and Juliet? "I was like OMG I haven't done wigs in like 5 years - let me figure it out. And so I did, I locked myself in a room for 2 days, and figured it out, and then was just like "come back to me, all of the information I knew" And from there it just kind of blew up, because I learned how to tie hair, and really kind of got into the more - the wigmaking part, and then Cirque du Soleil called, and they hired me. So I have official schooling in acting and directing, and in makeup, and then I went back to grad school for costume history and design when I was here in Las Vegas, and I started that in Houston and then finished it here in Las Vegas, and the thing is, it *sounds* like it's all over the place, but what I've learned as a professional and then now as an educator myself, is that it's all just so interconnected, that it's just *terribly* important, because I have you know, I have an understanding of what the performers are going through, and the pressure that they have, and I also hate wearing wigs, and that's what I do on a daily basis, so I have *empathy*, for them to a certain extent. And then um, you know the costume history and design portion, that whole education that it encompasses in having, you have to take the lighting design classes, and you have to take set design, and you have to do run crew on those things so

you have a working understanding of what's happening on set and on a theatre stage, and it all is so important when putting together - I think - well-rounded and efficient productions. Because you're not just a balloon head, you know, floating around in your own world, you're very aware of what's happening, and that your piece of it is exactly that - it's a *piece* that makes the whole illusion come to life. It can nev - if I was to do stuff on my own, it could never happen. .... cause I don't have enough money (laughs) but yeah that's ba16:23 basically my education, and then of course throughout the years, you know with Cirque, we have to have OSHA training, and now as freelancers here in Las Vegas, Nevada, you also have to have OSHA ten hour, which is new, this year, and very interesting, and also important because of bloodborne pathogens and stuff, and I have all of the OSHA training, and throughout the years, different training on different cosmetic lines, and random things here and there, period hair classes, stuff like that.

JL : So when you're brushing up on these, like your OSHA trainings, and the hair classes, I know that you mentioned the library of books that you and K have at your school, can you talk to me a little bit about the kinds of resources that you use to gain information - do you gravitate primarily to books, are there YouTube videos, or web postings...

M: Well, what's interesting, it's a generational gap. Because K is younger than me. I think she's about six years younger than me?

J: okay

M: She is online much more than I - she uses YouTube a lot, she Googles a lot, I tend to, I love books, so I love going to the library, and I will sit down and look through art books and stuff to gain inspiration and find out what kind of artists I really like, and I mean like traditional painters and things like that. Our library is a mix of very practical things, like 1940's hairstyles, or African-American culture in New Orleans in the 30's. Because it has pictures in there of real people. Also, it's an amazing cultural book, but we tend to pull those kinds of books and old salon magazines from the 30s and 40s that have like pin patterns in them, and really practical things like that - we also have theatre history books, like the Art of Directing Films, because it's important for our students to have a vocabulary when they're going on set, we want them to understand what everybody's job is, so again they're not just floating makeup artists on set that have no idea what's going on, we want them to be able to spea18:58 k to people with purpose, and intention. We also have art books and interior decorating books, because they have amazing

color schemes, and color theory books and the history of color, and the history of film, so it's a really big range of things that we have. Most of them are visual, and then a lot of it is historical. But we - inspiration comes from anywhere, really, and we want to have some of that at our fingertips, so at least it's a tipping off point, if I'm like "Oh, I wanna see more about this particular period in Picasso's art life", you know, and *then* I'll go to the library or I'll go online, or... I'm really interested in this particular director, I wonder what else he's done - let me look in my history of film books. So... I'm a book nerd though.

J: (laughs) that's okay, there's nothing wrong with that, I'm also a book nerd.

M: No, not at all. It's interesting because, in the future, in our classes, I am gonna be pretty strict about, when they do design research, at least half of their research has to come from actual books. I think that it's important to put the work in, to find your sources, and find your inspiration, and understand how libraries work, and also have that silence - when you're in a place and you can focus. And so I figure if I can force people to do that, then, great.

J: Do you think that that maybe stems from your extensive formal education?

M: I think, sooo. I think it's a combination of my love of books and the romantic notion of touching them and moving the pages, and scanning them with your fingers, and the atmosphere, and then I also think that it's a dying thing, and my love of it will not permit that. So, it also just - I think it's important when you have students that want to research something for there not to be a laziness about it. And that definitely comes from a formal 21:28 education, and my undergrad as well, and you have to *read* the plays and you have to break them down, and you have to read your books. And you can't just wing it

J: mmhmm

M: Because I feel that people who claim to be professionals come to meetings and they're winging it, I don't find the nobility in that. I would rather you have an understanding of what you're talking about, and a depth of knowledge, so we can go further in the meeting and the concept design, rather than you just kinda looked around on google before you came, like that doesn't interest me at all as a designer, as a professional, and kind of as a person, really, but that's kind of separate... I think it definitely stems a lot from that.

J: In your practice, what are some of the traditional techniques, technologies, or materials associated with what it is you do?

M: One of the things that we, in the beginning process steps we do is put together collages, they're called "morgues" which is a little bit morbid, but which is a binder of faces, essentially. So it's old age, avant-garde, editorial, day to day, bridal, it just has different makeups and hairstyles in it... That has transferred a little bit into a digital format so we use Pinterest a lot because we can share those boards between the collaborators, between the costume designer, the lighting designer, or whoever else needs to be in that collaboration so everybody's on the same page. So we use Pinterest a lot, and then that way we can print out those boards for meetings and then we can go through and "X" things: no, I don't like that but I like this. I like this, but I don't like this. And then once that happens, depending on if it's makeup, of course, we have like a basic kind of "set kit": foundations, lashes, skincare, brushes, disposable items for sanitary reasons like mascara wands, all of those types of things, and then we can build in the specialty stuff, if there's prosthetics, or if there's jewels or gems or glitter or shimmer, or body paint. On the wig end, it's the same beginning process but then the tools might be different. We'll always have wig blocks and wig stands and we need the styling tools and the styling products. The hair, we have a basic supply of synthetic and human hair that we can pull from, and then we have to go online if we need to purchase more, because there's not really a good place to purchase *wig* wigs here in Vegas. And then if we need more tools, we can go to Michael's and get floral wire and stuff, if we need to build a cage to make the wig bigger, and so we have all of those in our arsenal, but our basic kits are the same, kind of, beginning set. You need a wig, you need a block, you need styling tools, and you need a concept. And then you need your makeup, your kit, your brushes... and a face.

J: So in addition to using Pinterest, are there other contemporary technologies or techniques or materials that you guys have adapted?

M: ...25:20 K is, she does 3D, not 3D modeling - she does plaster heads, so we use those sometimes if we need to, so we'll we've adapted using that, and at work we use computers to 3D print heads, which is kind of interesting and less invasive on the performer, so that is definitely an adaptation that has been nice that we would like to be able to afford one day, and it's funny though, because in the world of makeup, the - it's almost like the processes are the same, but the

materials have advanced, technologically. So, it's kind of interesting, right? Cause the steps are the same, just the material is different. Now we use a lot of silicone. Still kind of core it the same way you did 30 years ago. It's just kind of, weird. Wig-making is *very* traditional, because it works. The thing that changes is what you use to make the wigs. But the process of actually making the wigs is the same as it was like 50 years ago. The thing that has changed is maybe the - on a lace-front wig, that material has changed over the years. It's more durable now, it's a synthetic... but the actual process of tying hair into a wig is the same as it was in the 1700's. That's really kind of nuts, right?

J: mmhmm

M: But yeah with the materials we can do anything we want, it's kinda fun. We can make a hat out of crab legs if we wanted to.

J: LAUGHING. I would love to see one of those

M: right?

J: I feel like I - *that* makes a lot of sense to me, because a lot of the sewing techniques have stayed exactly the same, but the materials, again, change - 27:34

M: Right, it's just the materials evolve

J: Yes. Could you, for the purposes of this research, could you delve a little bit into the, um, for work - the plaster heads vs. 3D printed and tell me just a little bit about the process of each?

M: So, traditionally, when you make a plaster head, they're very heavy, and it's a very messy process, and you really hope that the person you're doing it on is not claustrophobic. Essentially, you have to kind of cover their body in plastic, up to the point that you want to have molded, and then, and you're using alginate, and you're mixing that really quickly, you have straws up their nose so they can breathe, you vaseline their whole head, put a bald cap on them, vaseline their eyebrows and their eyelashed, so that the alginate doesn't stick, and then you pour it on them, and you have hand signals and stuff if everything's okay, and then it has to set up` 28:45 and then you have to take plaster of paris, you know the mummy strips

J: yep

M: And then you go and you have to do that whole thing. It's very heavy, it's very compressed, and then it has to cure, and then you can take it off of them, and then the whole process begins, you have to fill it with whatever mold material you want, after you have the negative, and then after that you have to sculpt it, it's a very long, labor-intensive process. ut can be very expensive because of the labor, and like I said, it's very messy. The new 3D printing technology that's come in, and Cirque du Soleil has implemented it, we're slowly getting all of our plaster heads transferred to the 3D technology. They literally come in, and they place little dots all over their heads, you know, little sensors, and then they scan their heads, go back to Montreal, and put it in the computer, and then it comes out and it's *maybe* five pounds,... and it is, I mean, *exactly* like their head. It is the craziest thing. Now, the difference is, what's the rule, it can be fast, cheap, or good, but it can't be all three?

J: mmhmm

M: So, with the plaster heads, it's not fast, but it is good, and it's not cheap [due to labor] With the 3D heads, it IS fast, and it's not messy, it is really good, it is NOT cheap. It is very, very expensive technology right now. So that rule is always true. But that is the thing is... as independent business owners there's no WAY we can afford that technology, but it is kind of the way of the future, and dealing with, you know, some of my friends work at a very prominent studio in Los Angeles, and they make films that all of us have seen, they do the costumes, and they do wigs, and stuff, but they do a lot of 3D printing for that because it's like armor, suits, and things like that. They are *just* phenomenal pieces that they make - it's crazy to me. Now the wigs department is still very traditional, but all the rest of it is super technologically advanced.

J: So we're almost done with this first section of questions, just so that you have a ... cause I know you're on a time constraint. When you are in your craft, what kind of techniques do you use to document knowledge and process?

M: We take a lot of photos, and then if it's something we haven't really ever done before, I mean, I 'm old school I write everything down, which I get made fun of for a lot, BUT if the apocalypse ever happens, I'm not gonna lose my files

J: (laughs)

M: So they can laugh. So I write all my notes, and I keep file folders, of things and binders upon binders of stuff, we also do what's called 32:20 step by step processes, and especially for the makeup side, so we'll have a whole file of the steps, step by step, makeup application because a lot of times, we have larger crews that are doing these makeups and the execution of these makeups, and so we have to break it down for them in order for it to look how we want it to look in the end. Of course with a little bit of creative freedom sometimes, but overall we have to break it down. And then if a step changes, we can go in and just adjust from there instead of starting completely over in the file and paperwork. So we do that a lot. Lots of photos, lots of documentation, lots of Excel, and just to kinda keep everything straight and in order. But we don't do a lot of dyeing or anything, if we do that we send it off, and we just have the formula that we, you know, for like the hair color, we'll just have it notated what we used, but we're not rebuilding the wheel in most cases, and there are definitely some where we probably should have documented it, cause it was freakin' cool, but we didn't know that it would wind up so cool , so we didn't document it like we should have. So that's still a learning process sometimes.

J: A learn as you go kind of thing

M: mmhmm

J:So in your step by steps, I have seen them myself but for the purposes of getting all of this documented down in text, is it photos and text, is it just photos, is it video?

M: It's photos and text, usually it's one photo accompanied by a paragraph of text of directives, and also materials that need to be used at that particular point in time. Sometimes there's a video, but most of the time there's photo and text so that we can print it and also have a hard copy. I have found that the less technology that is involved in that process, the easier it is to disseminate, because so many people have different platforms they're working off of, and the more simple I can have it in a word document, or some type of template like that, is going to be the most universal.

J: Great! ok. So final question in this segment, is there anything else that you would like to tell me, or think that I should know about your craft, your process, your work?

M: Um, ... I think the thing that is really, I always find surprising is how surprised people are when they find out how in depth what we do it, and so it there's future artists out there and

artisans, that are like "oh, it's just wigs it's just makeup" it's so much more than that, because at the end of the day, the play or the film, yes they could go on stage, and yes the words usually are spectacular, but it is the visual that brings it to life and transports people into whatever period of time that is or concept that is and it's not an easy feat, and it takes an army for that to happen, and so my goal as an educator AND as a professional is to create artists and instill integrity and a collaborative spirit so that *that* part of the art doesn't ever die. You know, the most fun I always had even in acting was the rehearsal. And the journey to get to the opening night. And I that hasn't really changed, I still get such a thrill from the event, but mostly that thrill comes from knowing how much work we all put into it, and look how happy and blissful everybody is around, looking at all of these fashion things. They have no idea what it took to make that. And, that's where we come in to teach people, and educate them on how to make that happen in a positive way that only encourages our professions to continue. 37:10

J: I LOVE THAT

M: Well, good!

J: That was fantastic! Alright, we're gonna move into the second segment of questions, and there are just a couple, so thinking back on the exhibit of mine that you attended, this will be about the artefacts that I created and showcased. So, artefact refers to any physical piece that was showcased there. So, the fabric manipulation, the dye samples, the fabrics, the gowns, the coat, all that stuff. So, with which of the techniques or processes that I used are you the most familiar?

M: Probably the dyeing, the computer stuff was super cool, but I'm not as familiar with that like the Photoshop and adobe and stuff, so the more traditional techniques is more what I'm familiar with . I sound like an old person

J: (laughing) no you don't!

M: I'm like "back in my daaay, we just had a pot pf dye"

J:I think it's also, candidly, like our generation - cause I'm not, I mean, I'm between you and K in age, and I kind of, like I see both parts where the traditional documentation is important, and then like K, on the internet, all the time, I just feel like we're in a switch phase, and that you and I

are of the generation where we understand the importance of evolving with technology, but we also really rely heavily on the analog stuff, you know?

M: Yeah, I mean, I was born in '80, so there's all that, those articles about how my generation in particular, we grew up in analog and had to switch to digital when we were about 15, `and it was weird, and nope, not every39:27 body had access, so you, while all of those things were really fun and cool, if you didn't have a kazillion dollars, you didn't have cell phones, you didn't have a computer at home, you know, so you still had to go to the library and check books out, you know, I had a beeper...

J: Yup

M: You know, that type of thing, so it is really interesting but as far as like your stuff went, those are the, the dyeing and stuff, that's what I was most familiar with even from going to like, grad school, and things. And I think I like it too, because, no matter how much you rely on the computer, there's still something really beautiful about the human eye, and when you're like "no, it's just that perfect shade of periwinkle" okay no I'm gonna dip it for 2 seconds longer, the computer can't I think really rely on. That's why the houses, you know, the fashion houses, were so amazing because that was all the human eye. That's amazing. So, anyway, anywhosie...

J: So the event itself, do you think that events of that type where it's showcasing process and artefacts, would be of benefit to other artisans in your field?

M: I do, actually. I think that - I think it's important to see the process of things like I was saying, you know like behind the illusion is all of this work, and I think it not only is cool, it's cool to see, but I think it's important too on an education level because a lot of times, it just helps inform their own kind of brain rolodex or like " oh, okay that makes sense, I could do *that* for this particular project I'm working on, I wonder if that would work." You know, and then they can go back and try that process or call you with more questions, see what were the trials and errors you had while they were doing it, cause you never know what people's budgets are and that kind of stuff. I think it's very important.

J: Final question, um, I'm looking for critique, so the entire basis of that portion of the research was, I was essentially following the Master and Apprentice kind of model where I was filling the apprentice role, and the master role was kind of filled by the internet, and books, and trial and

error, um, so sin any traditional master and apprentice relationship, it culminates with the apprentice presenting their work to masters in the field and more experienced others, for the purpose of gaining critique. So I am wondering if you have any critique for me about process, or any of the pieces that were there, or the event structure itself, anything.

M: I think overall the event was really beautifully laid out, I think that you were very well spoken, and informed about your processes and your projects, that was very impressive, I think the only thing that I would like to see just because I like bows on things, is I know that yours was still in progress, and you were like, " this is what I decided to go with"` I think even if it was on a maquette or something like that, had a small finished version of it, I just would like, because like I said I like little endings like that, and I know that a bigger garment would be really time consuming, so maybe if it was on a doll or something like that, with that skirt filled out with all of the clover thing you decided to go with. That would have been really fun. But other than that, I think that it was extremely educational 43:38 and very well thought out.

J: Thank you! That is my intent 0 when I end my grand world tour that I'm doing right now, I have one more week until I get home, and then 1 weekend in there before I start back up with classes again, so my intent is to take that gown "because it's SO CLOSE to being done, and just finish it out over the course of the weekend, and then post pictures, and videos, and things of it (indecipherable)

M: Awesome! Can't wait to see it

J: Yay! Me either. so taking the critiques that I'm getting from these interviews, and also from conversations with you guys AT the event itself, I got some really good insights and some recommendations ... it's nice for me, as an artisan in my process, to actually go out and get critique. Cause usually I just hide in my studio in a flurry of rhinestones until everything is done. And so I felt like coming out with an unfinished garment... it felt a little vulnerable, honestly, but

M: Well, YEAH! I mean it was a beautiful unfinished garment though like you could see where it was going, which I think is the important part.

J: Right? Yeah, I think so too.

M: I wouldn't worry about it too much.