

ASSESSMENT OF SUSTAINABLE DESIGN PRACTICES IN THE FASHION INDUSTRY:  
EXPERIENCES OF EIGHT SMALL SUSTAINABLE DESIGN COMPANIES IN THE  
NORTHEASTERN AND SOUTHEASTERN UNITED STATES

by

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(Under the Direction of Katalin Medvedev)

ABSTRACT

The primary purpose of this research was to gain an understanding of designers' knowledge of sustainability and investigate current practices in sustainable fashion design to discover what variables influence designers' decisions during the design and product development process of sustainable fashion apparel. Qualitative, descriptive research methods including an open-ended research guide and in-depth interviews were used. The study focused on sustainable fashion designers from small design companies in the Northeastern and Southeastern United States. The study discusses some of the variables that impact the implementation of sustainable fashion design practices, such as sustainable design education, current industry practices and expectations, consumer knowledge and acceptance, and sustainable sourcing, production, and distribution options. In addition, gaps in knowledge regarding various aspects of sustainability among self-proclaimed sustainable fashion designers are identified.

INDEX WORDS: Sustainable Fashion, Sustainable Design, Apparel Product Lifecycle,  
Sustainable Design Education

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## TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS .....	IV
LIST OF TABLES .....	VII
LIST OF FIGURES .....	VIII
CHAPTER	
I INTRODUCTION .....	1
Statement of Purpose .....	3
Justification .....	3
Objectives .....	4
Conceptual Definitions .....	4
II REVIEW OF LITERATURE .....	5
Principles of Sustainability .....	5
Current Issues in the Fashion Industry.....	6
Addressing Fashion and Sustainability.....	9
Design for Sustainability.....	12
Levels of Sustainability Intervention.....	13
Sustainable Design Strategies.....	15
Rationale .....	30
III METHODS AND PROCEDURES .....	32
Research Population.....	32

Sampling Method.....	33
Data Collection .....	33
Methodology .....	34
Data Analysis .....	35
Assumptions and Limitations .....	36
IV RESULTS AND DISCUSSION.....	38
Designers' Education .....	38
Designers' Sustainability Practices and Considerations .....	45
Designers' Application of Sustainability Knowledge.....	53
V IMPLICATIONS AND CONCLUSION.....	110
Study Aim 1 .....	110
Study Aim 2 .....	112
Study Aim 3 .....	112
Conclusion .....	113
Significance.....	114
Limitations .....	115
Recommendations for Future Research.....	116
REFERENCES .....	117
APPENDICES .....	123
A CONSENT FORM .....	123
B INTERVIEW QUESTIONS .....	126
C TRANSCRIPT: Designer 1.....	130

## LIST OF TABLES

Table 1: [Designers' Education and Company Description].....	39
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LIST OF FIGURES

Figure 1: [Product Lifecycle]..... 13

## CHAPTER 1

### INTRODUCTION

Fashion performs many roles in our lives: it is a social catalyst, a communication medium, an avenue for self-expression, and an art form (Black, 2013). Fashion can help people establish a personal style and identity, find a social niche, or help express a belief. As Mark Twain stated, “Clothes make the man. Naked people have little or no influence on society” (Twain, 1927, p. 6). The power of fashion is not to be denied, but the negative implications of our current fashion system must also be recognized.

The fashion industry is a significant global economic force. 9.3% of the world’s employees work in the fashion industry, which accounts for 4% of worldwide exports (Caniato, Caridi, Crippa, & Moretto, 2012). In 2011, the fashion industry reached USD 3 trillion in turnover (Martin, 2013). Due to the global scale and the vast environmental and human resources required for the production and consumption of products, the fashion industry has a tremendous impact on the global environment (Caniato et al., 2012). In addition, the current trend of fast fashion production and consumption has caused an unprecedented decrease in the production time, price, and lifespan of fashion items resulting in a trend of over-consumption and the desire to pay the least possible price for the most products (Hethorn & Ulasewicz, 2008). This way of thinking “coupled with a lack of understanding and interest about where the clothes come from, who makes them, and at what price, has led to a somewhat hopeless view of fashion in relationship to sustainability” (Hethorn & Ulasewicz, 2008, p. xix). While some people are unaware of the implications of the current fashion system, designers hold the potential for

leading the way to an enlightened and transformed global society. “It is the designer’s creativity and ability to make quantum leaps of imagination that holds the potential to transform not just the way we make things, but also the way we think” (Fletcher & Grose, 2012, p. 48).

A designer’s perspective of sustainability can significantly impact the choices they make in the design process. In a qualitative research study investigating the effects of implementing a sustainable fashion retail supply chain in Europe, researchers propose that two prominent modes of sustainability thinking exist: those who internalize responsibility for past and future sustainability initiatives and those who externalize responsibility and blame others, such as the government, the media, and the consumer (Brito, Carbone & Blanquart, 2008). The stakeholders who internalize responsibility tend to strive for improvement and creative responses to environmental and social issues (Brito et al., 2008). Those who externalize responsibility solely focus on economic survival and view other issues as someone else’s responsibility (Brito et al., 2008). Sustainable fashion requires pioneers who are willing to go the extra mile and make the necessary sacrifices in order to ensure that the product, people, and environment benefit from fashion production and consumption. It is my assumption that designers who actively and willingly consider sustainability in their design practice would be considered among those stakeholders who internalize responsibility to some degree. Therefore, they would be more likely to strive for improvement and creative responses for sustainable fashion. In the fashion supply chain, the product development stage is the point at which it is possible to address a number of factors that help determine the positive or negative impact of a fashion product (Brito et al., 2008). The efforts of a motivated designer, who is actively looking for improvements in the fashion industry, could create opportunities to increase the sustainable development of the entire clothing lifecycle.

### Statement of Purpose

The primary purpose of this research is to gain an understanding of designers' knowledge of sustainability and the current practices used in sustainable fashion design to understand what variables influence designers' decisions during the product design and development process for sustainable fashion apparel. Specially, this study aims to understand: I) the level of sustainability knowledge of current designers, II) how designers' information regarding sustainability is gained, and III) how designers are utilizing their knowledge of sustainability in their design practice.

### Justification

A comprehensive understanding of designers' current practices and efforts in creating sustainable fashion could provide valuable perspective to help better understand where sustainability currently stands in the fashion industry and what the next steps for a sustainable fashion industry could be. Presently, much literature focuses on current sustainable design practice overviews (Black, 2011; Black, 2013; Fletcher & Grose, 2012; Gwilt, 2014), consumers' perspectives and impact in relation to sustainable fashion (Cervellon & Wernerfelt, 2012; Morgan & Birtwistle, 2009), and the implications of a sustainable supply chain (Brito, Carbone & Blanquart, 2008; Welford, 2003). There is a lack of thorough investigation into practicing sustainable designers' perspectives, experiences, and knowledge of sustainable fashion. This project will allow me to gather, analyze, and publish information for a better understanding of designers' knowledge of sustainability and the importance of the design process for sustainable fashion.

## Objectives

The main objectives of this study are: I) to recognize the current status of sustainable development in the fashion industry, II) to understand the realities of sustainable design practices in the fashion industry, III) to contribute to sustainable fashion research by identifying limitations of knowledge of sustainability concepts among sustainable fashion designers.

## Conceptual Definitions

Sustainable Development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987).

Sustainability: Consists of three interrelated and equally important dimensions for the pursuit, and eventual success, of a sustainable future: Environmental Protection, Economic Growth, and Social Progress or Equity (Opp & Saunders, 2013).

Sustainable Fashion Design: Involves the consideration of environmental, economic, and social implications of fashion production and consumption (Mebratu, 1998).

Product Lifecycle: The process of creating a product from inception to culmination.

The product lifecycle stages include preproduction, production, distribution, utilization, and end-of-life.

## CHAPTER II

### REVIEW OF LITERATURE

#### Principles of Sustainability

Sustainable fashion is just one piece of the all-encompassing topic of sustainable development. Sustainable development has been defined as, “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987). This broad statement results from the relationship between a global society that is continually developing and a natural environment with dwindling finite resources. Previously, the predominant thinking was that “it is either the environment you can protect or it is the economy you can develop, but not both at the same time” (Markovska, Duic, Guzovic, Mathiesen & Lund, 2013, p. 1). The Brundtland Report from the United Nations formally established the emergent concept that economic development and environmental stability need to be considered in tandem in order to preserve current progress and allow for future progress of humanity (Markovska et al., n.d.; Mebratu, 1998). Following this thought process, in the 1990’s, the World Conservation Union (IUCN) developed a complementing definition for sustainable development that called for not only sustaining the current quality of human life, but also improving current conditions while safeguarding the environment (Vezzoli & Manzini, 2008). The resulting concept of sustainable development considers the present needs and limitations of society and the environment while underlining the linkage between poverty alleviation, environmental improvement, and social equity (Mebratu, 1998). These points form the main

topics considered in sustainable fashion design: Environmental Sustainability, Economic Sustainability, and Social Sustainability, also known as the three pillars of sustainability (Gibson, 2006).

### Current Issues in the Fashion Industry

Sustainable fashion is a movement that has evolved out of sustainable development thinking. The fashion industry is particularly well suited for advancements and innovation in sustainable development due to its prominent global influence and environmental impact. Currently, the fashion industry is a three trillion dollar industry that encompasses the manufacturing and selling of textiles and garments (Martin, 2013) and employs up to 40 million people worldwide (Black, 2013). The fashion industry has long been considered a source of economic progress and national development around the world (Martin, 2013). A primary example was the significant economic development in Europe and the United States in the 19th and 20th centuries. This development was, in part, a result of Industrial Revolution advancements and the establishment of the ready-to-wear fashion industry (Tortora & Eubank, 2010). The development of mass-produced, ready-to-wear fashion led to the creation of new jobs in the industry, specifically in the garment sewing and manufacturing sectors (Welters, 2008). To this day, there is no machine that is able to replicate the dexterity of the human hand in garment manufacturing, and the need for workers prevails (Godly, 1997). As it did in the United States and Europe in previous centuries, the fashion industry provides a significant opportunity for developing countries to create jobs for masses of low-skilled workers to whom factories pay low wages to carry out labor-intensive manufacturing processes (Fernandez-Stark, Frederick & Gereffi, 2011). Today, production in low-income countries accounts for three-quarters of the

world clothing exports (Frenandez-Stark, et al., 2011). However, when the focus of economic advancement overshadows the importance of social justice and environmental preservation, significant consequences result.

While the fashion industry can create great economic opportunity for developing nations, progress often comes at the cost of those working in the factories and fields. The current fashion industry paradigm is to get the best products, for the cheapest price and the fastest time (Black, 2011). In order to compete in the highly labor-intensive cut-make-trim (CMT) sector, factory managers keep wages low and working hours high (Quigley & Charlotte, 2006). In addition, the tendency has moved toward employing young migrant garment workers, mostly women ages 16-25, who have never worked in a factory before, are unaware of their rights, and are unlikely to defend their rights if they are aware of them (Quigley & Charlotte, 2006). This level of worker vulnerability has caused rampant worker exploitation across the industry.

The issues are not contained to the CMT sector of the fashion industry alone. Fiber production has its set of unique issues. Cotton, for example, is considered the world's "dirtiest" crop due to its heavy use of insecticides and pesticides. Cotton growers experience extensive health risks through daily exposure to these chemicals (Organic Trade Association, n.d.). PAN UK reports (2013) that the World Health Organization "estimates that over 350,000 people die every year from acute pesticide poisoning" (p.3). However, WHO admits that this is a significant underestimate. Accurate figures are hard to know because "the majority of these deaths occur in the developing world where pesticides that are illegal in Europe are still widely available" (p. 3). In addition, in these countries, farmers are at even greater risk because they "receive little or no training in how to avoid exposure" (p. 3). Pesticide use in cotton growing not only presents health problems, but also creates a significant economic burden on small farmers. For example,



pesticides can cost up to 60% of a smallholder cotton farmer's income in West Africa (PAN UK, 2013). To afford the cost of cotton production, farmers often take out loans at the beginning of the season that they later cannot pay off due to inadequate harvests (PAN UK, 2013). In addition, cotton is a cash crop, or a crop that is produced for commercial value, and it is vulnerable to massive price variances that leave small farmers at the mercy of global economic fluctuations (University of Cambridge, 2014).

Apart from the social and economic implications of the fashion industry, the environmental costs are significant. "Taken holistically, the textile and clothing lifecycles consume more energy and water than do the product lifecycles of any other industry other than construction and agriculture" (Black, 2013, p. 9). Scholars have discovered that the significant impact is not only a result of industry actions but of consumer action, as well. In a study of the lifecycle of a pair of jeans, researchers found that consumers' use of jeans accounted for around 50% of the environmental impact, while the manufacturing stages accounted for the other 50% (ADEME, 2006). In addition, with the recent development of a fast-fashion paradigm in the fashion industry, purchasing large quantities of clothing for quick disposal has become the norm (Morgan and Birtwistle, 2009). Scholars estimate that the levels of private consumption have quadrupled when compared to society in the 1960s (Brito, et al., 2008). Manzini (2006) explains that a purchasing culture based on "product-based wellbeing" has developed. This concept evolved from the idea that increased wellbeing results from universal access to products through industrializing and streamlining processes that once required consumer time and effort, resulting in increased individual freedom (Manzini, 2006). This concept is exemplified in the reduced necessity of home sewing throughout the United States as a result of the industrialization of the fashion industry and the development of mass manufacturing. The inherent issue of product-

based wellbeing is that it is recognized by possessing, showing off, and consuming products, which has resulted in an unsustainable consumption culture (Manzini, 2003). Manzini (2006) also argued that “presently 20% of the population is consuming 80% of available resources”(p.2). An example of this is that in 2013, an estimated 15.13 million tons of footwear, clothing, and other non-durable textiles were generated in the United States, of which only 2.3 million tons were recovered for reuse (The United States Environmental Protection Agency, 2015). Manzini (2006) predicted that if Western consumption habits such as these were adopted on a global scale, an ecological and/or social crisis would result.

### Addressing Fashion and Sustainability

The need to address the current problems of the fashion industry is apparent, but the reality is that the problems surpass anything that one person, one company, or one country can solve. Issues exist along the entire lifecycle of a garment from the production of raw materials, textile and garment design, manufacturing and distribution, retail and use, to finally, the disposal of fashion items. In addition, the fashion industry is made up of a global network of designers, producers, and consumers. Because everyone plays some part in the holistic product lifecycle, the resulting issues are, in some part, everyone’s responsibility.

Much research pertaining to sustainable fashion has focused on consumer habits as a result of the importance of consumer action to sustainable fashion development (Cervellon & Wernerfelt, 2012; Morgan & Birtwistle, 2009). Past research has described the need to educate consumers to enable them to make better-informed decisions when purchasing and caring for fashion products (Morgan & Birtwistle, 2009). According to scholars, decisions made in the design process can positively impact user’s actions concerning the sustainability of their

purchasing, use, care, and disposal habits (Chapman, 2005; Fletcher, 2012; Hethorn, 2008; McDonough & Braungart, 2002). It is important for designers to consider consumer needs and lifestyle because the success of a sustainability initiative is often reliant on consumer action after purchase (Fletcher, 2012). All the greatest sustainability efforts will be in vain if the actions are later counterbalanced in the product lifecycle. For example, a shirt made of 100% organic cotton will not have as much benefit, overall, if the consumer wears it twice and then throws it into the garbage. However, as the discussion of sustainable fashion has increased, research shows that consumers are continuously becoming more aware of the implications of their actions and the actions of the fashion industry (Cervellon & Wernerfelt, 2012). In a study of knowledge sharing among 'green' fashion consumers online, it was found that compared to the sustainability knowledge shared in 2007-2008, the information shared in 2010-2011 was more objective, concrete, and precise (Cervellon & Wernerfelt, 2012). The researchers state, "community members have achieved competence in both environmental issues and the latest solutions proposed by the fashion industry to consume in a responsible manner" (Cervellon & Wernerfelt, 2012, p. 189). While education concerning sustainable development should continue, a shift is occurring in consumers' perspectives. As consumers are improving their actions, it is the responsibility of the fashion industry and designers to continue the improvements and innovation.

If we are to primarily focus on the actions of those within the product design and manufacturing stages of the fashion product pipeline, depending on the size and supply chain of the company, the job of creating and implementing sustainability initiatives remains a daunting task. Globalization trends have led to an increasing reliance of businesses on their suppliers and sub-suppliers (Welford, 2003), and supply chains have become broader and more international

(Brito et al., 2008). The battle to make improvements involves liaising with a multitude of stakeholders from all over the world, many of which work under different laws and legislation (Gwilt, 2014). Given that the current fashion system involves constant and ever changing trends and the relentless desire for something new, changing the characteristics of a mature and saturated industry can be a slow and painstaking process. Fashion designers, however, have an excellent opportunity to develop creative solutions.

Research suggests that the decisions made in the design stage of a fashion garment have a significant impact on the sustainability cost of a product's lifecycle (Armstrong & LeHew, 2011; Gwilt, 2014; Orzada & Moore, 2008). More specifically, it is estimated that up to 80% of a product's environmental and economic costs are determined in the product design stage (Fletcher, 1999). The actual statistic depends on the role of the designer within the company. For instance, a designer working in a small-batch production for niche luxury markets may have more influence than a designer for mass-market commodity clothing for a large company (DeLong, Goncu- Berk, Bye, & Wu, 2013). Scholars suggests that it is imperative for fashion designers to understand the key phases within the lifecycle of a garment, including preproduction, production, distribution, use, and end-of-life, due to their strategic position as the initial decision makers in the product development process. (Fletcher & Grose, 2012; Gwilt, 2014; Palomo-Lovinski & Hahn, 2014). Each stage of the garment lifecycle has its implications for the environmental, social, or economic impact of a garment. Each stage requires it own set of sustainability considerations. The timeliness of the design order, for instance, impacts the speed in which the factory needs to work to meet production deadlines, which ultimately determines the working hours of the garment sewer (Fletcher & Grose, 2012). The key to sustainability

thinking is to ensure that no sustainability initiative, at any stage of the garment lifecycle, causes inadvertent negative impacts at any other stage.

### Design for Sustainability

While acknowledgment of the issue of unsustainable production and consumption practices began at the end of the twentieth century, the 1970s marked the development of designing for sustainability (Keitsch, 2012). However, Chapman (2005) points out that because the practices of industrial manufacturing have remained unchanged for decades, current sustainable design methodologies remain predominantly “symptom-focused.” Similarly, McDonough and Braungart (2002) encourage designers to think creatively about the fashion system and move beyond simply working to create products that are “less bad.” McDonough and Braungart (2002) highlight a common tendency among designers to “reduce, avoid, minimize, sustain, limit, and halt” (p. 45). They also point out that if the main focus is only on reducing the problem, sustainability initiatives can often miss the larger issue of what is causing the problems in the first place. These symptom-focused design practices have resulted from a linear method of thinking about fashion production and consumption (McDonough & Braungart, 2002). The focus is on the parts of a system that seem to be malfunctioning rather than considering the entire system within which the issues are occurring (Nguyen & Bosch, 2014). There is a consensus, however, that “it is only by appreciating the dynamic interplay of all elements in a system that today’s complex social, economic, or environmental problems can be solved” (Nguyen & Bosch, 2014, p. 240).

In line with this concept of system-based thinking, and to assist in conceptualizing the breadth of sustainability considerations involved in an ideal sustainable design practice, we have

developed a graphic to illustrate sustainability considerations within the product lifecycle. The graphic depicts the three pillars of sustainability (Environmental, Social, and Economic) and provides examples of topics of consideration for each stage of the lifecycle (Preproduction, Production, Distribution, Utilization, and End-of-Life).

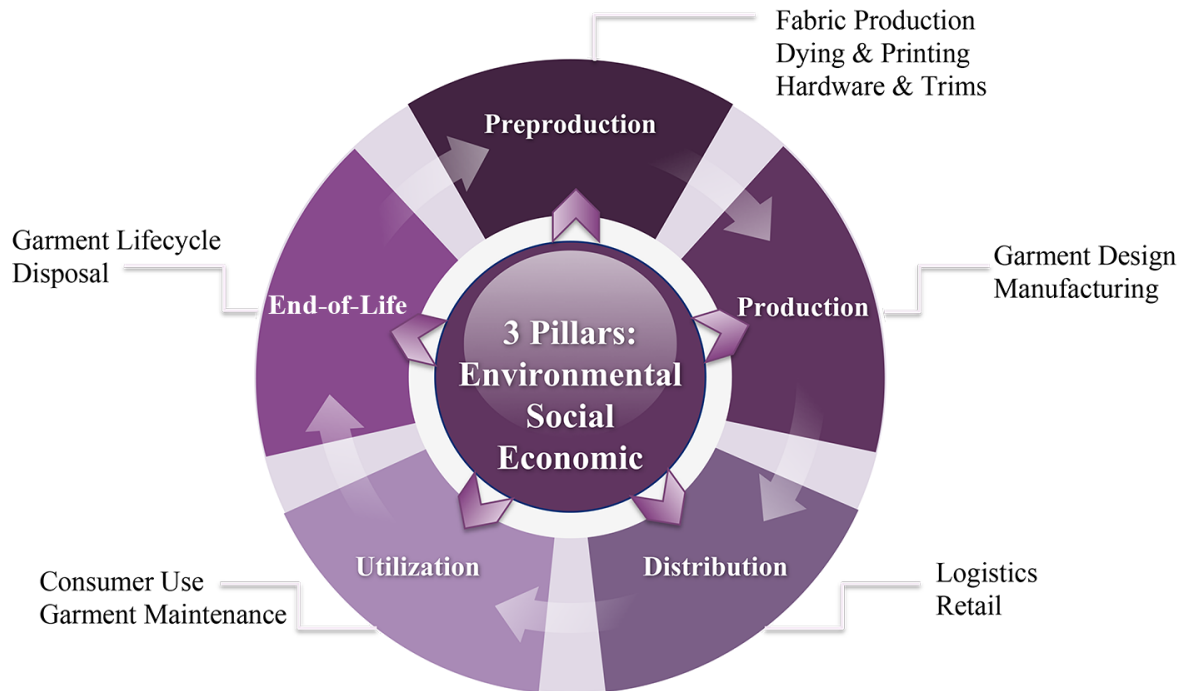


Figure 1: Product Lifecycle

### Levels of Sustainability Intervention

The overlapping and often complicated nature of sustainability is frequently exaggerated when timeliness, cost, and consumer acceptance of fashion products is of critical importance. It can be a tall order to expect working designers to consider inherent sustainability initiatives as well as more abstract ways of thinking about sustainability when they also have to deal with time constraints and deadlines. As stated before, sustainability thinking requires considering many different concepts within a multilayered system of designers, manufacturers, buyers, and

consumers. Although it may be intimidating to attempt to apply sustainability-focused design strategies, Fletcher and Grose (2012) offer a new way of analyzing these sustainable design initiatives in relation to how impactful they are to achieving a sustainable industry. Specifically, the authors have categorized sustainability initiatives based on the depth of sustainability consideration involved. Fletcher and Grose (2012) maintain that there are three levels of sustainable fashion design thinking.

The first level refers to sustainability-focused innovation in fashion products, concentrating on technical, and market-based solutions to sustainability issues (Fletcher & Grose, 2012). This level of thinking is often the easiest, quickest fix to sustainability issues and acts as a starting place in such a complex system (Fletcher & Grose, 2012). These solutions look to the lifecycle analysis of fashion products to analyze the material choices, manufacturing processes, distribution methods, and disposal solutions. These are the pragmatic design choices many designers make daily. Some examples of design innovation in fashion products include the material selection of organic or recycled polyester, using natural or low-impact dyes, or providing best care practice labels (Fletcher & Grose, 2012).

The second level of design thinking strives to find sustainability-focused innovation in fashion systems (Fletcher & Grose, 2012). This category looks to broaden product-focused scrutiny to include a focus on the business models and economic goals that shape the fashion sector today (Fletcher & Grose, 2012). This level of thinking not only requires technical and market-focused solutions, but also moral and ethical considerations for solving sustainability issues (Fletcher & Grose, 2012). These solutions are commonly much more complex and challenging to employ as they often oppose current social norms and expectations (Fletcher & Grose, 2012). Many examples of the second category of sustainable design thinking exist,

including cradle-to-cradle design, designing multipurpose apparel, design for empathy, and designing for disposal (Fletcher & Grose, 2012).

The third level of design thinking is employed when the transformation of the practice of fashion design also includes the investigation of the different roles designers can adopt to creatively explore sustainability initiatives (Fletcher & Grose, 2012). This level of thinking moves away from the traditional role of the commercial designer to reexamine how design thinking could be applied to other sectors of the economy. In this respect, Fletcher and Grose (2012) describe various scenarios of unique designer roles, including designers also acting as communicator-educators, facilitators, activists, and entrepreneurs.

All three levels of sustainability thinking are required in the pursuit of a sustainable fashion industry. The levels correspond to the depth of thinking that should occur in the sustainable design process. For example, designers should not only consider their fabric choices (1<sup>st</sup> level), but they should consider the entire system in which their materials will be disposed (2<sup>nd</sup> level) and search for ways to expand consumer knowledge so that their sustainability initiatives are utilized (3<sup>rd</sup> level).

### Sustainable Design Strategies

To provide clarity on the growing number of design initiatives have been developed to address sustainability issue within each stage of the product lifecycle, this section of the literature review describes a variety of these initiatives. The design initiatives are organized and sub-categorized based on the part of the lifecycle each relates to. This compilation is not an absolute list of sustainable design initiatives and strategies, but a sampling of prominent strategies based on the researchers' review of literature.



## Preproduction

For the purpose of this study, the preproduction stage of the garment lifecycle considers the design decisions that determine the physical attributes of a garment. This stage includes, but is not limited to, a garment's material, dyeing and printing, and hardware and trims.

## *Materials*

To counteract the negative implications of fabric production and consumption, sustainable designers need to take fabric qualities into consideration. While there is no completely sustainable fabric, some are better than others (Fletcher & Grose, 2012). Below are just a few material options produced with sustainability in mind.

One prominent sustainable fabric is *organic cotton*. Organic cotton certification requires eliminating all chemical use, including artificial fertilizers, pesticides, and insecticides throughout the cotton cultivation process (Quigley & Charlotte, 2006). To label a product as 'made with organic cotton', the cotton production must meet the certification requirements from farm to finished garment (Quigley & Charlotte, 2006). The goal of organic cotton is to encourage natural cotton cultivation practices to improve health and working conditions of cotton growers and benefit the environment.

*Biodegradable fabric* is another sustainable material that is being explored. This process "involves a fiber (or garment) being broken down into simpler substances by micro-organisms, light, air, or water in a process that must be non-toxic and that occurs over a relatively short period of time" (Fletcher & Grose, 2012, p. 17). Natural fibers, such as plant and animal based fibers, are considered biodegradable, while synthetic fibers, such as polyester or nylon, are not (Fletcher & Grose, 2012). To create biodegradable garments, designers need to consider what

fiber blends in which their materials are made. Fabrics blended with natural and synthetic fibers inhibit the decomposition process (Fletcher & Grose, 2012). Fabric decomposition offers an environmentally friendly alternative to disposing of clothing into a landfill.

Another material made with sustainability in mind is *recycled synthetic fabric*. To produce this fabric, a synthetic fiber, such as polyester, is broken down into a polymer and then re-extruded into a new product. This method uses around 80% less energy than manufacturing virgin fibers (Fletcher & Grose, 2012). Currently, polyester manufacturing accounts for 75% of textile production and can take up to 200 years to begin to decompose in a landfill (Black, 2011). However, a 100% synthetic fabric, as opposed to a synthetic and natural fiber blend, can be continuously recycled if put into the correct fabric recycling channels at the end of product life.

### *Dyeing and Printing*

The aesthetic properties of fabrics should be taken into consideration when designing for sustainability. Garment color alone has a tremendous impact on the commercial appeal of apparel. The fluctuating color trends of the fashion industry are “the quickest, cheapest and surest way to change appearance, attract a customer and ensure an additional purchase” (Fletcher & Grose, 2012, p. 37). The aesthetic impact of dyeing and printing apparel is evident. However, considerations need to be taken for finishing processes such as scouring, bleaching, dyeing, and printing. These processes are known to cause most of the environmental impact during the apparel production phase (Aakko & Koskennurmi-Sivonen, 2013).

An example of a sustainability-focused dye technique is *natural dyeing*. Natural dyeing is done through the use of seasonally available plants as well as animal and mineral sources (Fletcher & Grose, 2012; Orzada & Moore, 2008). It has been shown that “natural dyes can

provide a variety of benefits including lower energy and water consumption, reduced allergenic effects, and easier biodegradability” (Orzada & Moore, 2008, p. 307). Natural dyes, however, lack the expected consistency and colorfastness of synthetic dyes (Orzada & Moore, 2008). As a result, designers who employ natural dye techniques work to challenge current perceptions of what an acceptable color is (Fletcher & Grose, 2012).

There are a number of printing techniques currently used in the fashion industry including screen-printing, discharge printing, and heat-transfer printing. Each has its downfalls as far as sustainability is concerned (Orzada & Moore, 2008). *Digital printing*, however, many sustainability benefits when compared to conventional printing methods (Orzada & Moore, 2008). During the digital printing process, patterns and colors are controlled and translated through computer software. Printing information is sent to a fabric-printing machine, and dye is deposited directly on the surface of the fabric. The digital printing method has a higher fixation rate than conventional printing techniques and has a less environmental impact overall (Orzada & Moore, 2008). In the digital printing process, the amount of dye is carefully controlled and thickeners, which become part of the waste cycle for conventional printing, are not necessary.

#### *Hardware and Trims*

Hardware and trims make up a small percentage of the overall garment, and, as a result, are often overlooked in sustainability considerations (Fletcher & Grose, 2012). These items, however, can have much influence on the environmental impact of a garment at the beginning and end of life stages (Fletcher & Grose, 2012). The production processes to make buttons, zippers, and other trims rely on a number of industries, including mining and oil. The resulting environmental and social impacts need to be taken into consideration (Fletcher & Grose, 2012).

In addition, the type of hardware used on a garment can impact its lifespan, as missing buttons are much easier to replace than broken zippers (Fletcher & Grose, 2012). Designers need to investigate the production and use implications of hardware and trims when designing sustainable fashion garments.

An example of these considerations would be to choose *non-electroplated metal hardware* such as metal buttons and zippers (Fletcher & Grose, 2012). Electroplating metal requires a vast amount of water and chemicals in the production process and results in a significant amount of toxic waste (Fletcher & Grose, 2012). “It has been estimated that 500 grams of hazardous sludge is produced for every 3,300 metal buttons produced” (Fletcher & Grose, 2012, p. 52). Instead of waiting to treat the problem at the end of the production process, designers can eliminate the problem from start through the use of non-corroding metals such as copper and stainless steel (Fletcher & Grose, 2012).

### Production

The production process offers many opportunities to address sustainability concerns present throughout the lifecycle of a garment. There are an exorbitant number of elements to consider, but for the purpose of this paper, initiatives concerning production techniques, supply chain management, and speed of production will be addressed.

#### *Production Techniques*

It is estimated that 10- 20% of fabric waste is a result of the cut-and-sew apparel production process (Rissanen, 2008). *Cut-and-sew* production is appropriate for all fabric types, including knit, woven, and nonwoven, and consists of cutting pattern pieces out of a length of

fabric and sewing them together (Rissanen, 2008). *Zero-waste design* is a patternmaking design strategy that was created to eliminate this fabric waste. The goal of this design strategy is to use up the entire length of fabric by interlocking pattern pieces so that no waste is created during the cutting process (Rissanen, 2008).

In *fully-fashioned* apparel production, minimum waste is created as the garment pieces are knitted individually and then sewed together (Rissanen, 2008). This technique is used predominantly in knitted fabric because an industrially viable production method for fully-fashioned woven apparel has not been developed (Rissanen, 2008).

*Integral knitting* is a production method that consists of a knitting machine producing a finished garment (Rissanen, 2008). This is an appealing production option for sustainable fashion designers as it creates no fabric waste in garment production, and sewing is eliminated from the construction process (Rissanen, 2008).

*A-POC* stands for A Piece of Cloth and is a production method that is similar to integral knitting in that a garment is created that requires minimal to no sewing (Rissanen, 2008). This production method, however, requires consumer involvement. The consumer purchases a flat tube of knitted fabric with strategically placed join lines (Rissanen, 2008). The consumer can then cut along the lines to create the finished garment (Rissanen, 2008). However much fabric the consumer cuts from the garment determines a significant portion of how much fabric is wasted during the production process (Rissanen, 2008).

*Handcrafting* is a production method that is not practical for mass manufacturing but has been employed by a number of designers and small companies for the ability to create high-quality, unique, and low-energy products (Aakko & Koskennurmi-Sivonen, 2013). In addition,

handcrafted products can instill a level of appreciation and attachment from the consumer that mass manufactured items may not (Aakko & Koskennurmi-Sivonen, 2013)

### *Supply Chain*

The fashion supply chain is highly complex and involves a number of stakeholders located all over the world (Black, 2013). In recent years, demand for information regarding fashion companies' supply chains has grown as consumers have become more aware of the unethical practices taking place within the industry (Black, 2011). As a result, *supply chain transparency* has developed, which involves the creation of a tracking technology to gather information at each point of a garment's manufacture (Fletcher & Grose, 2012). The goal of this technology is to assist in clarifying a complex supply chain to uncover issues that need to be addressed.

Sourcing and manufacturing products locally has reemerged as a desirable method of production in the United States in reaction to the highly industrialized and impersonal outsourced production methods that are common in the ready-to-wear industry. *Local production* "rejects the impersonal and anonymous transactions associated with large-scale commercial trade in favor of the human touch" (Fletcher & Grose, 2012, p. 110). Local production aims to simplify the supply chain by focusing on knowing the people who are producing the goods. By knowing the people behind the products, designers can better understand the impact of their design decisions (Fletcher & Grose, 2012).

Fair trade production was created as a response to poor labor practices across the fashion industry. *Fair trade production* "denotes a trading partnership based on dialogue, respect and transparency" (Fletcher & Grose, 2012, p. 183). This production method focuses on providing a

physically and emotionally safe working environment, equal rights, and fair wages to internationally marginalized producers and workers (Fletcher & Grose, 2012).

### *Speed*

*There is a saying that of the three desirable qualities- 'fast', 'cheap' and 'good'- it is only ever possible to have two out of the three in any one product: fast and cheap, but not good; good and cheap, but not fast; good and fast, but not cheap (Black, 2011, p. 182).*

*Fast fashion* is currently the dominant mode of production and consumption in the fashion industry, and a number of sustainability issues result from these practices (Black, 2011). Fast fashion focuses on bringing runway trends to consumers in the quickest possible time with minimum regard to the social or environmental impact of the production process (Gwilt, 2014). This paradigm within the fashion system is inherently unsustainable and as a result, many sustainable designers have adopted a different approach to apparel production and consumption (Black, 2011).

*Slow fashion* represents a break from the values and goals of fast (growth-based) fashion (Fletcher & Grose, 2012). Slow fashion aims for heightened awareness of the impact of decisions made in the design, production, and consumption processes within the fashion industry. The ways in which to adopt slow fashion vary, but an overall concern for the entire lifecycle of a product and the resulting impact on resources, workers, communities, and ecosystems is inherent in this fashion movement (Black, 2011; Fletcher & Grose, 2012). Some examples of slow fashion initiatives include small- scale production, traditional craft techniques, and utilizing local materials and markets (Fletcher & Grose, 2012).

## Distribution

Distribution is another important topic for sustainability consideration. The fashion industry is a global enterprise, and product shipping and retailing can have a significant sustainability impact as products move from manufacturing plants to retail locations, to consumers' homes.

### *Logistics*

There are a number of ways in which to move goods from one place to another. Some shipping methods, such as air and truck, have more of an environmental impact than others, such as rail and sea (Fletcher & Grose, 2012). It is important for a designer to understand the impact a simple decision, such as product shipping methods, can have on the environment. Making thoughtful decisions, such as sourcing from a local company rather than a company overseas, can result in much environmental benefit in the long run (Gwilt, 2014).

A method of identifying environmental impact of distribution methods is *carbon footprint analysis*. This is a tool to “help companies capture environmental inputs and outputs of entire value chains from raw material supply to product use and disposal, and to identify sources of wasted energy” (Fletcher & Grose, 2012, p. 55). This tool helps companies to identify the problem areas of their distribution methods and to understand fully the environmental impact of their choices. With this information, companies can make informed decisions for better distribution methods.

### *Retail*

There are a number of ways in which the current retail system can be adapted to better benefit sustainable development within the fashion industry. This section highlights three



sustainability-minded concepts for modifying the current retail system, including increasing consumer knowledge, streamlining the retail system, and creating a new retail model.

The concept of *eco-labels* has grown out of the need to better inform consumers of the impact of their purchases and to help explain qualities of a garment that are otherwise unknown to the consumer (Aakko & Koskennurmi-Sivonen, 2013). These labels have been thought of particularly for sustainable fashion to easily explain the sustainability initiatives at work during the design and production of a garment. Eco-labels could help distinguish sustainable fashion products that don't necessarily look different from other fashion products (Aakko &, 2013). One requirement necessary to help establish the validity of eco-labeling would be to create a standardized system of labeling. In an industry where words such as 'environmentally friendly', 'green', and 'sustainable' are used without a clear explanation of the meaning, consumers and companies, alike, need to understand the implications of the eco-labeling system (Black, 2011).

One sustainable retailing method is *lean retailing*. This is a retail strategy where "high-tech information collectors, such as Radio Frequency Identification (RFID) tags, are placed on every product, and analytical systems are used to optimize the flow of garments through the supply chain" (Fletcher & Grose, 2012, p. 54). These technologies help to reduce excess inventory and production by better-informing producers and retailers about consumers' actions within a store (Fletcher & Grose, 2012). Overall, this retailing method aims to streamline the retail process and reduce unnecessary production.

*Leasing* is an example of an opportunity to change the retail system and increase sustainability in the fashion industry. Leasing is a system created to target a consumer's need for the newest designs and on-trend apparel. In a leasing system, a consumer can rent a garment for a specified time rather than purchasing a garment to keep. In other words, "a consumer can buy a

fashion garment's utility or the results it offers (fashionability, warmth, protection, etc.) rather than the material object itself' (Fletcher & Grose, 2012, p. 102). This system provides an excellent way to increase the intensity of clothing use while providing easy maintenance and a never-ending selection of garments for the consumer (Aakko & Koskennurmi-Sivonen, 2013). Great sustainability benefit comes from the ability of the leasing company to determine what happens to the garments when they are no longer appropriate for leasing. The leasing company can streamline the process of recycling, repurposing, or disposing of the fashion item in a sustainable manner.

### Utilization

Designers' choices have the potential to influence how consumers use and care for their clothing, especially when they design with the consumer in mind. Design strategies have been created to improve consumers' relationship with their clothing with the hopes of increasing the lifespan of a garment.

### *Consumer-Product Relationship*

*Design for adaptability* is a design strategy to create a garment that can be worn many different ways and can provide the wearer multiple products or product styles in one garment (Gwilt, 2014). This design strategy focuses on the utility and multi-functional properties of apparel to increase consumer use and garment lifespan.

*Design for empathy* is a design strategy that considers "what meaning the garment carries, how it is used, and the behavior, lifestyle, desires and personal values of the wearer" (Fletcher & Grose, 2012, p. 85). This design strategy focuses on the relationship created between

the wearer and the garment through aesthetic attraction, the benefit of use, and emotional attachment (Norman, 2004).

Another prominent design process is *co-design*. Co-design is a design strategy where the designer and wearer work together to create a personalized garment that meets the wearer's needs (Gwilt, 2014). The thought behind this design strategy is, a consumer will have a stronger connection to the piece, and own it for longer, if s/he has a part in the design of his/her personal garment (Aakko & Koskennurmi-Sivonen, 2013).

### *Laundering*

It has been discovered that frequent laundering of a garment can end up using more energy than the design, manufacturing, and distributing phases of the product lifecycle (Aakko & Koskennurmi-Sivonen, 2013). In addition, proper care is essential to preserving the fabric properties and durability of an apparel product, which can result in a longer garment lifespan (Aakko & Koskennurmi-Sivonen, 2013). Ultimately, it is the responsibility of the consumer to adopt sustainable care practices, but a designer can help facilitate this process.

Design for *low laundering* is a strategy where designers consider the fibers' innate washing and drying characteristics to reduce the impact of care processes (Fletcher & Grose, 2012). An example of this is to choose materials that can be washed at low temperatures and dry quickly (Fletcher & Grose, 2012).

Designers can also use finishes to reduce the need for washing and drying. *Finishes* are chemical solutions applied to the surface of a garment to assist in low-impact laundering practices. Common finishes include stain-repellent coating and antimicrobial finishes (Fletcher & Grose, 2012). Finishes need to be considered, however, for any negative impacts that may

inherently result. If the environmental cost is no better than that of a possible lower laundering impact, the use of finishes could be counterintuitive (Fletcher & Grose, 2012).

Another alternative is to create special *care labels* that better inform the consumer of the potential impacts of different laundering methods (Fletcher & Grose, 2012). The idea behind these labels is that if consumers better understand the impact of their actions, they might be influenced to adopt better practices.

### *Maintenance*

Although the current fast-fashion paradigm has, often, made it cheaper to purchase a new garment than spend time and effort repairing a damaged garment, there are a number of benefits to repairing and maintaining garments. Repairing a garment and prolonging its useful life saves the resources that would be used in creating a new garment for purchase. In addition, the need for a repair service creates opportunities for local jobs to develop (Aakko & Koskennurmi-Sivonen, 2013). Designers can help to facilitate the maintenance process through actions such as supplying spare parts for their products, providing repair instructions, or offering the repair services themselves (Aakko & Koskennurmi-Sivonen, 2013).

### End-of-Life

Considering what happens to a garment at the end of its life can make a significant impact in the amount of textile waste going into the landfills each year. In addition, reducing the amount of virgin materials produced could have a significant environmental impact in the entire product lifecycle.

### *Lifecycle*

*Cradle-to-Cradle* design is a lifecycle method of sustainable design thinking where a product is designed so that no waste is created throughout the entire product lifecycle (Braungart & McDonough, 2002). The ultimate goal of this design strategy is to consider all stages of a product lifecycle during the design process and evaluate how each impacts the other in order to eliminate any negative environmental impacts. For example, when choosing the fabric for a clothing item, the designer should use materials that are either nutrients of the biological cycle, such as natural fibers, or the industrial cycle, such as synthetic fibers (Braungart & McDonough, 2002). The mixing of the two cycles results in what Braungart and McDonough (2002) call a “monstrous hybrid” that creates issues when trying to reuse the material at its end of life.

*Design for the environment* is a product development strategy that aims to reduce a product’s environmental impact based on the environmental issues discovered in a lifecycle assessment (Armstrong & LeHew, 2011). *Lifecycle assessment* is a tool to measure the negative environmental impact of a garment throughout its lifecycle (Gwilt, 2014). The assessment explores environmental impact through water and energy use, waste, and pollutant emissions (Gwilt, 2014). While this assessment typically occurs after a product has been produced, the evaluation helps to identify environmentally problematic elements of product development, manufacturing, distribution, use, and disposal that should be altered for future production.

### *Disposal*

Designers have the opportunity to impact how a garment is disposed of through specific decisions made in the design process. This section highlights a number of creative solutions to

lengthening a garment's life while limiting waste created after the initial product life ends. These design initiatives include design for disassembly, upcycling, reusing, and taking back.

*Design for Disassembly* involves designing a garment that can be easily disassembled and recycled at the end of its life (Gwilt, 2014). A number of design strategies can be implemented to facilitate this process. One example is to design using fabrics that are made with one type of fiber called mono-materials (Black, 2011). Recycling involves reclaiming fibers from existing fabrics (Fletcher & Grose, 2012). The two prominent methods of recycling are chemical, which is only suitable for synthetic fibers, and mechanical, which is suitable for all fibers (Fletcher & Grose, 2012). Mechanical recycling often results with lower quality or downcycled materials as fibers are torn and shortened during the recycling process (Fletcher & Grose, 2012). Designing with mono-materials helps to increase the quality of recycled fabrics by keeping synthetic fibers, such as polyester, which can retain its initial quality through chemical recycling, separate from natural fibers, such as cotton, which can only be mechanically recycled but is inherently biodegradable (Fletcher & Grose, 2012).

*Upcycling, or repurposing*, used garments is an alternative to downcycling materials through mechanical recycling. Upcycle design uses reprocessed or waste materials to make a product that is of equal or higher quality compared to the original product from which the materials came (Black, 2011). This strategy involves deconstructing existing garments and then reshaping, re-cutting, and re-stitching the garment with off-cuts, vintage fabrics, and trims to produce a new and unique product (Fletcher & Grose, 2012).

*Reusing* garments involves “establishing a cycle where unwanted, old or worn clothes are channeled back into the fashion system for sorting, redistribution and resale” (Fletcher & Grose,

2012, p. 66). This method of garment disposal is common among consumers who donate clothing to Goodwill, Salvation Army, or any number of other second-hand retailers.

Developing a *take-back scheme* can help facilitate the process of reusing, repurposing, or recycling a garment at the end of its life. This scheme requires the company who produced the product to set up a system that enables consumers to return that product once they are finished with it rather than donating it or throwing it away (Fletcher & Grose, 2012). This scheme enables a company to be accountable for the end-of-life stage of their products, offers an easy disposal method for the consumer, and facilitates a longer life for the product.

#### Rationale

It has been noted that the efforts of the designer may create opportunities to increase the sustainability of the entire clothing lifecycle, including garment manufacturing, distribution, and consumer action. Fletcher and Grose (2012) explain that design “is an affirmative approach that can create positive feedback loops, and because of its position as the front end of the manufacturing chain can dramatically influence subsequent processing steps and even prevent impact from occurring in the first place” (p. 33). Designers hold an important position in that they can make decisions that directly influence the sustainability of the product.

As exemplified in the sustainable design strategies noted in the literature review, much literary focus has been placed on the current design practices employed by sustainable fashion designers (Armstrong & LeHew, 2011; Black, 2009; Fletcher & Grose, 2012; Gwilt, 2014). While this is very helpful for understanding the overall topic of sustainability and the different design strategies that are currently being used, there is a need for understanding the practicality of these sustainability initiatives in the fashion industry. Before work can be done to reshape or

revolutionize the fashion industry, understanding of the current status of sustainability within the fashion industry needs to occur. Information should be gained from sustainable designers working in the industry explaining how comprehensive their understanding of fashion sustainability is, where and how they are gaining their information, and what they are doing to utilize their knowledge. This study explores sustainable designers' answers to such questions.



## CHAPTER III

### METHODS AND PROCEDURES

#### Research Population

This study focused on sustainable fashion designers from small design companies in the Northeastern and Southeastern United States. Only designers who included an aspect of sustainability in their design practice were selected to participate. Based on the population sampled for this study, the small design companies did not exceed eight employees. All of the designers, except one, were self-employed.

Small companies were chosen for this study due to the potential of the designer to impact the entire product lifecycle. In a study of Minnesota apparel designers, it was indicated that designers at large corporations are less connected to the entire design process, or product lifecycle, compared to designers from smaller companies (DeLong, Goncu- Berk, Bye & Wu, 2013). In addition, designers at large companies report spending more time focused on specific details of the product lifecycle compared to designers at small companies who express that they have more opportunities to connect to the whole product lifecycle and support efforts toward sustainability (DeLong, et al., 2013). As a result, sustainable fashion designers from small companies offered the best opportunity to gain knowledge from design practitioners who are immersed in sustainable design along the entire product lifecycle.

### Sampling Method

Purposive sampling was used for this research study. Purposive sampling is a type of non-probability sampling that is most effective when investigating the knowledge of experts within a field of study (Tongco, 2007). Through purposive sampling, informants are deliberately chosen based on the knowledge or experience they possess (Tongco, 2007). Purposive sampling was particularly well suited for this study as the goal was to understand the knowledge and experiences of sustainable fashion designers working in the industry.

Solicitation of participants was through email and phone calls, and the contact information was collected through the designer's/company's website and through personal contacts. Sustainable fashion websites such as Modavanti.com, Helpsy.com, and Ethica.com were investigated to locate sustainable designers based in the Northeastern and Southeastern United States. After determining which of the many sustainable fashion companies fit the research requirements, seventeen companies were initially contacted. Six companies agreed to participate in the study. Through the interview process, two other companies agreed to participate as a result of recommendations from existing study participants.

### Data Collection

Qualitative, descriptive research methods, including an open-ended research guide and in-depth interviews, were used to gain an understanding of designers' knowledge of and practices used in sustainable design. Eight semi-structured interviews were conducted with self-identified sustainable designers. Six of the interviews were conducted in-person, and two interviews were conducted via Skype. All interviews were conducted in English. After receiving

an explanation of the study and agreeing to participate, designers were asked to read and sign a consent form.

Each interview lasted between 1 and 2 hours. Interviews were audio recorded and transcribed verbatim. Analysis of data was ongoing. If new themes had emerged during analysis, previously interviewed designers would have been approached for a second in-depth interview addressing the emergent themes. The second interview would have lasted between 1-3 hours. As it were, no additional interviews were necessary.

Topics covered in the semi-structured informal interviews:

- I. General questions pertaining to the designers' practice and view of sustainable development
- II. Questions pertaining to the design of sustainable fashion products including, but not limited to, the design process, material choices, aesthetics, cost, and design education
- III. Questions pertaining to the production of sustainable fashion products including, but not limited to, manufacturing, distribution, and corporate responsibility considerations
- IV. Questions pertaining to the consumption of sustainable fashion products including, but not limited to, consumer impact, aftercare, and disposal habits

### Methodology

A qualitative content analysis methodology was used to identify relationships between common variables discovered in each interview. Qualitative content analysis is "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (Hsieh & Shannon, 2005, p.

1278). Qualitative content analysis focuses on extracting categories from the data in order to systematically describe the meaning of the data (Cho & Lee, 2014).

The goal of this study was to understand how a variety of designers understand and implement sustainability practices in their design processes. This methodology allows the content of the interviews to be analyzed for both apparent and latent meanings within the text (Cho & Lee, 2014). As a result, a degree of personal interpretation was utilized in order to investigate the underlying meaning of the data (Graneheim & Lundman, 2004).

Multiple approaches to qualitative content analysis have been identified (Hsieh & Shannon, 2005). This research study used an inductive approach, where codes or themes are drawn directly from the data, as opposed to a deductive approach, which is informed by preconceived codes, categories, or themes drawn from prior research (Cho & Lee, 2014). This allowed for the data to be categorized and analyzed based on the variables present and limited a priori categorization that could restrict the analysis. An inductive content analysis approach is appropriate when prior research is limited (Cho & Lee, 2014).

### Data Analysis

Data analysis began with immersion into the data through repetitive readings of the interview transcripts. The inductive approach of content analysis moves from specific concepts to general themes throughout the coding and analysis process (Elo & Kynga, 2008). Transcripts were analyzed line-by-line using Dedoose, a qualitative research analysis software. The purpose of this software was to assist in classifying, sorting, and filing data.

To begin identifying themes, open coding was performed. Open coding involves interpreting the data and breaking it down analytically (Corbin & Strauss, 1990). Transcripts

were analyzed by highlighting the exact words of the text to capture key concepts (Hsieh & Shannon, 2005). Notes of initial analysis were made, and an initial coding scheme was developed. Next, codes were sorted into categories based on data relationships, and comparison with other categories was made. The categories provided a means of describing the research phenomenon (Elo & Kynga, 2008). The categories were then organized and grouped into themes (Hsieh & Shannon, 2005). Finally, themes were defined, and examples of each were pulled from the text. The data analysis informed the discussion section, and a summary of the findings is provided.

### Assumptions and Limitations

#### *Assumptions:*

- I. The designers who self-identify as sustainable fashion designers do in fact practice a sustainable design strategy.
- II. Designers who practice a sustainable design strategy will have a basic understanding of the principles of sustainability.
- III. Designers' knowledge of best sustainable design practices will greatly impact the decisions made in the design process.

#### *Limitations:*

- I. This study focused on the sustainable design of fashion apparel and did not include other fashion products, such as accessories.
- II. A limited number of designers were interviewed for this study; therefore, the extent of the findings is limited. Although this study provides a good starting point to understand

the practices and knowledge of sustainable fashion designers, the findings cannot be generalized to apply to all sustainable fashion designers.

- III. This study was conducted in the Northeastern and Southeastern United States. Practices and knowledge of sustainable fashion designers may be different in other parts of the US.
- IV. Interviews were conducted with designers working in small companies. Practices and knowledge of sustainable fashion designers may be different at middle or large size companies.
- V. Two interviews were conducted via Skype due to the availability of the designers. Although the interviews were conducted live, in-person interviews might provide more contextual information during the interview process.

## CHAPTER IV

### RESULTS AND DISCUSSION

The goal of this study is to understand how a variety of sustainable designers are understanding and implementing sustainability practices in their design processes. The results of this study are presented in two sections: Designers' Education and Designers' Sustainability Practices and Considerations. Each section is divided into sub-sections to present and discuss the analysis themes. Each of these sub-sections is then further divided into categories created by grouping the themes. The themes are presented with extensive quotes from the data to support and clarify their meaning. The study aims are addressed as follows:

- I. Study aim number 1, the level of sustainability knowledge of current designers, is analyzed throughout the discussion of each section.
- II. Section 1, Designers' Education, addresses study aim number 2, how designers' information regarding sustainability is gained.
- III. Section 2, Designers' Sustainability Practices and Considerations, addresses study aim number 3, how designers are utilizing their knowledge of sustainability in their design practice.

#### Designers' Education

The designers in this study came from a variety of educational backgrounds. They had backgrounds in such diverse areas as fashion design, art, construction management, law, biochemistry, sociology and philosophy. Only one designer studied sustainability in school.

Below is a chart describing the designers' educational backgrounds and a description of their companies.

Table 1: Designers' Education and Company Description

Pseudonym	Education	Company Description	Total Number of Company Employees
Designer 1	- 4-year BFA in Fashion Design from The Fashion Institute of Technology	American made women's wear collection. Focused on domestic production and zero-waste design.	2014: 2 full-time, 2 part time and up to 5 freelance employees 2015: 1 full-time
Designer 2	- Degree from LaSalle College of Fashion Design in Montreal - Certificate in Fashion Design, focus on menswear	Ethically produced and sourced women's wear collection. Employed sustainable design methods that focused on social, environmental, and economic sustainability.	2015: 1 full-time employee
Designer 3	- Degree in Sociology from Barnard College of Columbia University - Studied Design at Central Saint Martins in London - Associate Degree from Parsons School of Design	Women's wear collection. Focused on ethically and domestically sourced labor and materials.	2015: 1 full-time employee
Designer 4	- Studied Art at Schillerska, Göteborg, Sweden - Studied Painting and Printmaking at the Art Students League of New York	Women's wear collection manufactured in New York City. Focused on fair trade, minimum waste, and low impact materials.	2014: 1 full-time employee



Designer 5	- B.S. with a focus in Physics, Chemistry and Biology - M.S. Biochemistry - Bioinformatics at Harvard Medical School - Worked at the Joslin Diabetes Center Harvard Medical School	Women's wear collection. Focused on social sustainability, fair trade, and craft preservation. Worked with legacy artisans in India to produce hand dyed and printed textiles for apparel.	2015: 1 full-time employee
Designer 6	- Degree in Construction Management from Clemson University - Continuing education classes at NYU in Center for Global Affairs	'Ethnic-modern' home decor, accessories, and clothing made by traditional textile artisans and tailors in Latin America and Africa. Focused on fair trade and craft preservation.	2015: 1 full-time, 1 part time employee
Designer 7	- Bachelor of Arts from Linfield College - Master of Arts from the London College of Fashion	High quality hand made accessories and garments. Focused on ethically and domestically sourced fibers and dyestuffs.	2014: 1 full-time employee
Designer 8	- Law Degree	Nonprofit, fair trade social enterprise. Partnered with artisans in Rwanda.	2015: 8 full-time employees

Common themes existed among the interviews as to how the designers gained their knowledge of sustainability and sustainable design practices. Three primary ways emerged. These methods included gaining knowledge from personal investigation and experimentation, industry experience, and sharing information among peers.

#### *Personal Investigation and Experimentation*

While the designers' educational backgrounds varied significantly, it was clear that the

majority of their knowledge of sustainability was gained outside the educational system. Gaining knowledge through personal investigation and experimentation with sustainable practices was prominent among all the designers.

Designer 5 explained that her process of gaining sustainability knowledge involved learning as much as she could through online resources. When learning about the sustainability aspects of fabrics, she researched the processes in which they were made. As she investigated sustainable fabrics available on the market she asked, “Why are they sustainable? What makes them sustainable?”

Some of the designers learned about sustainable design techniques through the actual design process. For example, Designer 7 described how she learned about sustainable dying through trial and error involved in the fabric dyeing process. She explained that she gained much of her knowledge through experimentation. Similarly, Designer 1 described his process of learning about zero-waste patternmaking through trial and error during the patternmaking process: “The first thing that I ever did was just try and see—if I make a totally traditional pattern and I lay it out across my fabric, what's left over? And what can I do with it?” From that initial starting place, his design process changed and grew as he continued to learn about zero-waste patternmaking:

Since then, it's gone into totally other realms. Like, can I design with one continuous strip of fabric so that I never have to waste anything? Can I design, you know, backwards? [Can I] cut everything apart and then try to put it together in a weird way? Can I look at shapes and see if I can figure out if I can fit these things together like jigsaw puzzles? Can I design using only rectangles? All these different projects have come out of that.

### *Industry experience*

For some of the designers, their knowledge of sustainability and sustainable design practices also developed as a result of working in the fashion industry. Designer 2 discussed learning about sustainable materials through the fabric sourcing process:

It was actually a lot of hands on going to the fabric mills in China, talking to the vendors and then doing research online—which didn't really exist, a lot of it—so just trial and error and seeing where I can get information.

Designer 3 explained how her experience seeing the negative aspects of the industry lead her to learn about working in a more sustainable manner: “I think really, my knowledge came from working in corporate, where you really see the deleteriousness of the fashion industry in terms of the environment and also human rights.”

### *Knowledge Sharing Among Peers*

When discussing sustainability knowledge and education, many of the designers described the significance of knowledge sharing and transparency between peers within the sustainable fashion industry. When personal investigation and industry experience failed to provide necessary information, many of the designers turned to each other to gain sustainability knowledge. They declared that the common values and interests that initially led them to work sustainably resulted in the development of a sustainable fashion community, where information and knowledge sharing is the norm.

Designer 2 provided the following example for the usefulness of the sustainable fashion community: “What is beneficial is that if you talk to a lot of sustainable designers, generally they will be very open with their sourcing...” She explained that the transparency in the sourcing

process shows the community members' desire to support the sustainable fashion industry by working with like-minded individuals as well as helping to maintain their manufacturing facilities.

Designer 7 explained how sharing personal contacts and knowledge via friendships with other sustainable designers was a valuable source of information for her. She explained that in some cases, she and her fellow designers traded skills and knowledge in order to increase the sustainability of their products. For example, she might do a bit of natural fabric dyeing for a friend in exchange for knowledge about the best sustainable fabric suppliers. She elaborated on the value of personal connections and friendships when it came to sustainably sourcing materials: "I found a solution [to fabric sourcing] is honestly just talking to my friends who design who have found materials or suppliers that they like, kind of word of mouth."

Designer 5 truly epitomized this concept of knowledge transparency when she described that a goal for her company was to help others learn how to be sustainable:

I'm very open with information. I really truly believe in giving out as much information as I possibly can. So if anyone is interested, I would be more than happy to talk to them and help them figure out how they could do their things. I learn a lot in the process as well.

The development of the sustainable fashion community represents a type of camaraderie between sustainable designers. It facilitates idea sharing and creative collaboration, which is necessary for expanding sustainable design practices within the fashion industry. When the designers are willing and open to share their knowledge and information, they also create opportunities for growing into the role of educator and/or facilitator of sustainable fashion ideas. This represents the third level of sustainable design thinking described in the literature review

because designers volunteer to take on new roles in order to transform current fashion design practices (Fletcher & Grose, 2012).

### *Expanding Sustainable Knowledge: Designer as Educator*

After analyzing the prominent ways in which the designers gained knowledge of sustainable design practices, it was clear that many of the designers were motivated to increase sustainability knowledge within the fashion industry by adopting the role of a sustainable design educator. Many of the designers expressed the desire to share their sustainability knowledge with others as a result of the lack of emphasis on sustainable practices in design school and the industry.

Designer 1 described that, currently, “sustainability is an optional topic that you can learn about” in design school. Designer 2 explained that while “design schools are starting to talk about sustainable textiles and manufacturing,” teaching fashion sustainability is not necessarily the norm. She continued, “What's unfortunate is that...the industry ways are taught to students, so they don't know any different. But they also aren't taught to question [them].” Designer 7 emphasized the necessity of teaching students sustainable design practices from the beginning of their education: “You can't expect the designers—the future designers of tomorrow, who are the students currently...to actually make those sustainable design solutions if they're not getting it at the very foundation level, which is education starting from their primary year.”

Designer 1 explained his interest in “developing a series of practical and teachable techniques for zero- waste,” which he could then teach to design youth. He was interested in teaching new designers “about what some of the issues are and getting them to start thinking creatively” because, he explained, “eventually they will be running these companies, and if zero-

waste patternmaking is a course that everyone has to take in school, it will follow these designers throughout their careers.”

In addition to Designer 1, Designers 2 and 7 both taught sustainability courses in New York. Designer 2 taught a class on corporate social responsibility at FIT. Designer 7 taught natural dye classes at The Textile Art Center in Brooklyn.

### Designers' Sustainability Practices and Considerations

After understanding the ways in which the interviewed designers gained and continued to develop sustainability knowledge, it was interesting to learn about factors that shaped and influenced their willingness to implement sustainability within their design practices. Each designer presented his/her personal reasons for adopting sustainable practices. Throughout the analysis, it was clear that the existence of a personal and/or company mission was a major requirement for the successful development and growth of a sustainable design practice. The mission represents the personal motivation of the designer and the factors that influence his/her desire to work sustainably. Below is a description of each designer's personal principles and values that shaped his/her design practices.

#### *Designer 1*

Designer 1 worked in New York designing his namesake women's wear collection. He focused on domestic production and zero-waste design. He explained that his desire to work sustainably came from a number of factors, but his motivation really resonated through his experience working in the fashion industry. He described a past experience he had while working at a large fashion company:

I graduated; I got a job. Once I was sitting in that job, we had a meeting about costing, you know, costing out all our garments. We had a sweater that we just couldn't get the price down because we had 20%, 27% waste on that garment. And I was like, 'what does that mean'? And they said, 'well, that means when we cut out the patterns, 27% of the fabric isn't being used'. And I said, 'what happens to it?' And they said, 'ehhh throw it out'. And I was like, wwwooooahhh.

Through this experience, Designer 1 realized that in order to work in the fashion industry, he had to work differently:

One of the big things that really did it for me was the concept of 'away.' Nothing ever goes away.... Every single piece of trash I've ever made, since I was a child, still exists somewhere. So, I gotta focus on cutting that number down.

Through these realizations, he was motivated to leave corporate fashion and to create his own company that focused on reducing waste and working ethically.

### *Designer 2*

Designer 2 worked in New York designing an ethically sourced and domestically produced women's wear collection. She employed sustainable design methods that focus on social, environmental, and economic sustainability. Designer 2 explained that her motivation to work sustainably developed from her experiences running her business. Through sourcing her materials, she was introduced to environmentally conscious fabrics, and her interest was sparked. Once she started using sustainable fabrics she received much positive customer feedback. Eventually, her line became known as an "eco-line or green line." She explained, "...the trend hit and it became really popular, and it was just probably right time for me. But by sourcing that

way, I started learning more about [sustainability] and then, of course, I converted the whole line to eco.”

From her initial introduction to sustainability her knowledge and interest grew. After this experience, she started another company that was sustainability focused. With this new company, Designer 2 adopted her own set of sustainability standards. She described a few of her standards:

I have this checklist on my website, it’s a kind of internal, personal checklist that I use....

I have ten items on the checklist: one is local production; one is environmentally responsible materials, or socially responsible meaning, fair, living wages, upcycling, or zero-waste. Those are the primary ones that I usually use. And I figure if a garment can check off at least three of those, I’m happy with it, calling it sustainable. And then I produce everything only to order. I don’t usually carry inventory or extra stock except a little bit for my website, but in very small quantities.

### *Designer 3*

Designer 3 worked in New York designing a women’s wear collection that focused on ethically and domestically sourced labor and materials. She described a number of factors that influenced her sustainability mindset, including her family history and culture:

I’m Jewish, and we learned about the Triangle Factory fire when, maybe when I was eight or nine years old. So, weirdly, learning about garment workers’ rights was part of my cultural history. And my grandmother was an Italian immigrant who worked in the garment industry.



In addition to her personal history, her experience working in the fashion industry and witnessing the negative environmental impacts and the lack of emphasis on human rights greatly influenced her current practices. As a result, Designer 3 was motivated to work differently:

So, I think it's really great to have [my] own company in that I can make the decision to not be a part of that culture of fashion and also do things that are beneficial to the environment and to my own country's domestic economy.

#### *Designer 4*

Designer 4 designed a women's wear collection manufactured in New York City. She focused on fair trade, minimum waste, and low impact materials. Designer 4 explained that her motivation to work sustainably was a result of her upbringing:

I didn't grow up in a family with a lot of money.... I couldn't buy the clothes I wanted, so I made them. I would go to flea markets or vintage shops and buy the cheap stuff and cut it apart, figure out how it was made, and change it into something else. I did this my whole teenage years; I was making stuff.

She explained that her adoption of sustainable thinking was a natural process, a result of her perspective of the world. She explained,

I think it's just the way I think. You know? It's the same with food and just waste in general. It's just—we live so wrong. It's like, we produce so much, and we don't need to live like this.

She described the process of trying to design more sustainably:

I was not sustainable from the beginning. It started in the 90's, and there was almost nothing out there at all. So, I tried to sort of do the dead-stock thing and buy up fabric

that was, you know, left.... I made everything myself; it was very tiny. But I started looking for more sustainable fabrics. I mean, there was pretty much nothing—it was like organic cotton muslin; that was it. The more I worked and...searched, I started meeting other people in New York and the community, and then fabrics started to actually happen.... There were more fabrics in the market, and I just slowly picked up one after the other.

### *Designer 5*

Designer 5 worked in New York designing a women's wear collection that focused on social sustainability, fair trade, and craft preservation. She worked with legacy artisans in India to produce hand dyed and printed textiles for apparel. Designer 5 explained that a need for a life change is what motivated her to follow her passions and start her own fair trade sustainable fashion company:

I used to be a research scientist in a previous life, but I was always very interested in design, I just never had the opportunity to go to design school. After I had my children, I decided to stay home with them.... When I went back to work, I realized that my priorities had changed. And I think I kind of had a midlife crisis, and I said, you know what? I'm just going to do what I really always wanted to do. It was in line with my priorities at that time.

She described the goal of her company:

For me, sustainability is just what I want to do. It's not something that I want to position my company as; it's not a selling point for me. It's just something that seems right, and that's just the way to do it....

Through the process of following her dreams, her motivation to work sustainably only grew stronger. She explained,

For me this is like—I eat, breath, and sleep it. You know? It's something that I don't really consider work. It's something that, to me, is my life now. It's a process. And other than my family, this is the most important thing in my life and something I always wanted to do. It's my passion.

### *Designer 6*

Designer 6 worked in Charleston designing a home decor, accessories, and clothing line made by traditional textile artisans and tailors in Latin America and Africa. She focused on fair trade and craft preservation. Similarly to Designer 5, Designer 6 started her company as a result of a needed career change. She explained, “I worked for a contractor in New York and I just hated it.... So, I quit my job and I went to South America to volunteer with Habitat for Humanity in Chile...” There, she fell in love with the people and textiles. She continued, “I kind of knew that I wanted to do something creative, didn't know what it was, and things started kind of coming up...” Her motivation to start her fair trade company was fueled by the desire to have a job that enabled her to travel and was about people, connections, and personal fulfillment.

### *Designer 7*

Designer 7 worked in New York designing high quality, hand-made accessories and apparel. She focused on ethically and domestically sourced fibers, and natural and sustainable dyestuffs. Designer 7 explained that her interest in sustainable dyeing practices developed during a project she did while working on her graduate degree:

I have a Masters in Sustainability in Fashion from the London College of Fashion. And that's actually where I got started into natural dyes.... It was kind of my pet project when I was pursuing my Masters because I was also doing my collection, but it ended up becoming something that I really enjoyed.

She went on to explain her motivation for starting her own business:

I didn't envision myself actually starting a business when I moved to New York. I thought I would work in industry, which I did for a bit, and it wasn't for me. And so I—about a year ago—quit that full time and pursued this full time.... So that's how I've gotten into natural dyeing.

Designer 7 created naturally dyed materials for her own products and acted as a naturally dyed fabric supplier and educational resource for other sustainable designers:

So basically, my goal is to not only provide a service for natural dyes—so less chemicals going onto fibers, therefore going onto the customer's skin, and less chemicals going into the water systems—but also...I would consider myself an educational source on traditional techniques... to kind of link designers as well as customers... to an understanding of where color comes from and how it's possible to have color without a chemical lab based source.

She explained the responsibility she felt as a sustainable designer to communicate and pass on her knowledge: “Another important thing for me moving forward in my business is job creation and passing on this skill to others that are interested.... So, that's really important... to create skill within the New York fashion manufacturing community.”

### *Designer 8*

Designer 8 worked in New York as the Creative Director for a nonprofit, fair trade social enterprise, which partnered with artisans in Rwanda. While Designer 8's background set the stage for her work in sustainable fashion, her initial interests started outside the fashion industry. She explained how she began working for her company:

I went to law school to study human rights and refugee work with a focus on women in Africa... I came on with just a personal interest in fashion and design, an eye for it, and I was in the right place at the right time.... It was just kind of a moment in time at [the company] where they needed someone to take hold of the creative department, and I did.

She explained that the meaning of fair trade within her company involved a number of factors, including local sourcing, open communication with artisans, and safe working conditions.

Ultimately, empowerment is what shaped their fair trade mission. She went on to describe the transparency within her company and the relationships that developed as a result:

There's nothing that has ever come up that, you know, has been a shock to us, because we're pretty much on top of everything. [The artisans] feel like they can come and talk to us for good or bad reasons. So, those are the kinds of things that truly shape our fair trade policy.

### *Conclusion*

As a result of the each designer's personal experiences and moral, ethical stance, the interviewees were motivated and willing to adopt sustainability into their design process. The following section discusses the sustainability initiatives that the designers adopted.

## Designers' Application of Sustainability Knowledge

While the drive to practice sustainability must be present in order to initiate sustainable strategies within the apparel product lifecycle, the actual success of these strategies depends on a number of circumstantial variables. Some of these variables include the designers' level of sustainability knowledge, financial capabilities, and available resources. This section will portray, through interview quotes, which sustainability initiatives the designers emphasized and considered in their design process. The prominent variables impacting their sustainability initiatives will be discussed. This section is divided into three sub-sections: Environmental Considerations, Social Considerations, and Economic Considerations, to address the three pillars of sustainability.

### Environmental Considerations

Each designer considered some aspect of environmental sustainability in his or her design process. In total, the designers discussed environmental sustainability considerations for every stage of the apparel lifecycle, including preproduction, production, distribution, utilization, and end-of-life; however, certain areas of the lifecycle were more thoroughly emphasized than others. This section is organized into sub-sections relative to each product lifecycle stage in order to address the initiatives the designers considered within each.

### Preproduction

The preproduction stage encompasses the design decisions that determine the physical attributes of a garment. Among the designers, the most discussed environmental sustainability considerations in the preproduction stage included fabric choice, dyeing, and printing methods.

### *Sustainable Fabrics*

Utilizing sustainable fabrics was, overall, the initiative most emphasized among the designers when discussing the sustainability of their products. This is not surprising because sustainable fabrics are often one of the first topics discussed in relation to sustainable fashion due to the ease of implementation into the design process (Fletcher & Grose, 2012). However, sourcing and implementing sustainable fabrics presented a number of challenges for designers.

Currently, no completely sustainable fabric exists (Aakko, M., & Koskennurmi-Sivonen, R., 2013). To have the most sustainably conscious products possible, the designers considered a range of sustainability characteristics during their fabric sourcing process. Each designer had his/her method of incorporating sustainability into his/her material choices; however, there were common themes in terms of sustainability options the designers considered. The designers considered a vast array of sustainability characteristics when sourcing their fabrics, including organically grown (cotton, hemp), reclaimed (cupro, Tencel, lyocell), recycled (polyester), and biodegradable (silk). In addition, the designers considered a number of other sustainability factors employed in the fabric production process, including ethical and low-impact fabric manufacturing (hand-woven) and sourcing (local, dead-stock fabric, animal fibers).

Designer 2 optimized the theme of sourcing the most sustainably conscious materials possible by considering a wide range of factors that impacted the sustainability of her fabrics. In addition to concentrating on how the fiber was grown and produced, she considered how the fabric was dyed and manufactured as well. She stated,

Environmentally sustainable is translated as organic cottons, hems, [and] pesticide free materials. I do use some vegetable and natural dyes, but primarily they're azo-free or low impact dyes. Most of those textiles come from China, Japan, and India; they're being

woven there. The cotton is grown everywhere from Egypt to China, and I try to have as much transparency in the supply chain as possible.

In addition to the environmental impacts of her materials, Designer 2 illustrated how she aimed to consider all aspects of sustainability during her sourcing process:

I had a call this morning with a woman who's doing sourcing of organic cotton, hand-woven, naturally dyed items... in India; it's grown there. It is certified, which is tough to get in India, and then it's also being woven for a living wage, which is great. Just those three check marks on its own is great, and then to be able to process that textile in New York, you know, using labor here is really nice too; that's my ideal.

However, she explained that often it isn't possible to achieve all of her sustainability goals when it comes to fabrics:

It's hard to hit all three [pillars of sustainability] in the textile reign. So, if I can get two out of those three, or even one, I am happy. Ultimately, I'll always seek out what's available, you know, sustainably, and then make my choices aesthetically from that.

Many of the designers sourced their fabrics from fabric manufacturers and suppliers and, as a result, they did not have total control over the processes used in the fiber and fabric manufacturing stage. This is typical for small fashion companies, as often they do not have the resources to have a completely vertically integrated production system. The designers did, however, have control over which suppliers they sourced their materials from. Designer 2 illustrated some of the many considerations that can be made during the fabric sourcing process, including sustainable fiber production, low energy manufacture methods, fair treatment of workers, and low impact dyes. However, the designers faced sourcing challenges when fully sustainable materials were not available. In addition, it was difficult for the designers to know



the wide range sustainability factors that should, or could, be considered when sourcing fabrics. As a result of limited knowledge, financial capability, and/or available sourcing options, many of the designers considered a condensed number of sustainability factors, when compared to the comprehensive list considered by Designer 2. Following are two examples of considerations made by Designers 4 and 7 during their fabric sourcing process.

### *Environmentally Conscious*

When information concerning the production methods of a fabric is limited, such as when purchasing from a bulk fabric retailer, understanding the environmental impacts associated with different fiber types can help the designer make sustainably informed fabric purchasing decisions. Designer 4 explained how she primarily focused on utilizing environmentally conscious fabrics in her collection. She described the variety of fabrics she sourced, including silk, organic cotton, dead-stock wool, Tencel, cupro-lyocell, and cupro-organic cotton blends. Based on the variety of environmentally conscious fabrics she mentioned, Designer 4 considered many environmental factors when sourcing. For example, when sourcing organic cottons, cupro, and lyocell, she considered the environmental impact of fiber production. When she sourced dead-stock fabrics, she worked to reduce some of the unnecessary waste of the fashion industry. She explained the sustainability benefits of using dead-stock fabrics:

A lot of the US and Canadian mills have gone out of business because everything has moved. I have a guy who buys up dead-stock from mills and also from companies that are over-buying fabrics. So, instead of it getting thrown away, or it becoming waste, it's reclaimed [for] smaller designers that don't need thousands of yards, but maybe a hundred.

### *Animal Fibers*

Designer 7 considered both the environmental and social impact of her materials, but she sourced only natural fibers and was passionate about locally grown animal fibers. She explained the many positive benefits of animal fibers: "...It requires less washing; it's strong; it's biodegradable. It also takes the natural dyes probably better than any other fiber." Her goal was to create items that could be easily and safely returned to the earth. Her focus on biodegradable animal fibers, organic cotton, and natural dyes helped to facilitate her sustainability goal. This example portrays the importance of the fabric selection process because it impacts whether a product can be reused, recycled, composted, or reclaimed at the end-of-life stage.

### *Sourcing Limitations*

The designers emphasized the difficulties they faced trying to source sustainable fabrics. The lack of available sustainable sourcing resources and fabric options were the most prominent limitations noted by the designers. Designer 2 illustrated the difficulty of the fabric sourcing process:

If I were really to be honest with myself, I would produce nothing at all, because there is no seriously viable sustainable option... as far as fabric goes.... I've done so much research on the environmental impacts and it's just kind of...just one bad over another. There's no perfect choice there.

While the designers acknowledged that finding suitable fabrics is difficult for any designer, sustainable designers, in general, face the additional challenge of locating fabrics at an appropriate price point and aesthetic, in addition to meeting their sustainability requirements. Designer 2 noted the limitations of sourcing locally produced fabrics:

[There is] very little textile anything [in the United States]. So, it's really hard to find.

And then, the people who are making textiles here either aren't doing organic options or have really high minimums; so, they're out of my range... Some of the trade shows have options for fabric, but not a lot of them are doing sustainable because the sustainable producers can't really afford to do a trade show. So, there is a vicious circle there.

At times there are no alternatives but to source outside of the US. However, this method of sourcing has its own sustainability issues. Designer 4 noted limitations she faced when sourcing from China:

My silks are done in China. It's very hard to have exact knowledge [of the production methods]. The one thing I know is that the place that makes the silks also prints them. And...they use the recycled water, which is one of the worst things in China—that they just let out the [contaminated] water and destroy so much. So, as far as China goes, this is a good place [to source from]. I don't know if it's completely perfect, but...it's the only place you can get silks.

Even when the designers found and used more sustainably conscious materials, a lack of consumer acceptance often hindered product sales and required the designers to adapt their decisions. Designer 1 explained,

I started the collection thinking that I wanted to be completely organic, everything made in America, everything either recycled or upcycled, bamboo, organic cotton, all of those kinds of things, and I wasn't getting the reaction from the customer that I wanted from that. You know, people wanted things that were softer; people wanted things that were more durable, [and] people wanted things that were more conventional. And then, I started using regular silks from whatever silk house that I could get low minimums of,

and the reaction to the product has been incredible. And so, I am finding that as a zero-waste designer, I want to be refining the materials that I am working with to be more ecologically friendly, but as long as I am not doing that, I may as well not waste anything.

A number of factors limited the designers' ability to source and implement sustainable fabrics into their fashion lines. The biggest limitation was the lack of affordable, sustainably conscious materials. As Designer 2 explained, there is no perfectly sustainable fabric. Each material type, whether it is natural, synthetic, or both, present sustainability limitations. What is very important, however, is that the designers are fully aware of the sustainability implications of the fabrics they source and realize how this initial decision impacts the sustainability of their products along the entire product lifecycle. In order to create products that are as sustainable as possible, the designers must consider not only the implication of the fiber production, but also the fabric care practices and end-of-life renewal options. If a designer creates a product that can be recycled and reprocessed into new clothing at the end of its life, the materials chosen will be the first factor to determine the success of this initiative. For example, fabric that is 100% polyester can be recycled and reprocessed into a brand new, high quality apparel product, while cotton can only be down-cycled into a lower grade product. Cotton fibers shorten, and therefore lower in quality, when processed through current textile recycling methods.

The development of sustainable fabric options is out of the designers' control and requires time and technological advancement. However, designers have the opportunity to improve the sustainability of their products now. If designers adopt the cyclical apparel lifecycle thinking within their sourcing and design processes, the potential for creating sustainable design solutions only increases.

### *Dyeing/Printing*

While it can be unfeasible for the designers to manufacture their fibers and fabrics, the dyeing and printing process emerged as areas that many of the designers were successfully able to integrate into their design practice. Among the designers, three techniques were prioritized: natural dyeing, digital printing, and artisanal block printing.

### *Natural Dyeing*

Natural dyeing was highly discussed among the designers as a sustainable alternative to the toxic and environmentally degradative dyes typically used in the industry. However, natural dyes do not come without their drawbacks. Designer 7 focused on natural dyeing as part of her design process. She explained her process and the pros and cons of working with natural dyes.

One major advantage of natural dyes was the ability to have a fully transparent sourcing and production process that she could openly share with her customers. She illustrated her dyestuff sourcing process:

All of the colors that I put onto cloth come from natural substances, so whether that is plants, or insects.... Everything else is mineral and plant based, some of which I actually source locally, grow locally in Brooklyn, as well as forage locally in the Northeast region of the United States.

She explained that another beneficial sustainability aspect of natural dyes is that “they only work with natural materials, so I know that everything that I'm using will eventually, and can eventually, return to the Earth.” Finally, she described the aesthetic value that natural dyes provide:

...[Natural dyes] are incredibly beautiful and rich.... Chemical dyes, for me personally, pale in comparison to the richness, and the beauty, and the vibrancy of natural dyes.... Every single molecule from a chemical dye is the same, that's why you can get the consistency. But with natural dyes...each dye lot is made from a different plant matter. The molecules are all different. So, that's why the color looks so much more rich and beautiful.

While natural dyes are one sustainable option for dyeing and printing fabrics, Designer 7 acknowledged that this is not an end-all solution for sustainability: “I'm not suggesting that natural dyes will eventually replace, or should replace chemical dyes; that's definitely not a solution. It's not possible. We don't even have enough land to grow...enough dyestuffs for color application. But, it's an alternative...” In addition, she explained that natural dyes have their application limits. She provided the following example: “A designer that wants a neon color, deeply saturated, and large quantities is not going to get what they want from me....” because “certain colors are not possible from plant materials.” She continued to explain some other limitations of natural dyes, including light sensitivity and the fugitive nature of certain dyes that leads to colors fading sometimes within a few wears. She added that natural dyes are not even an option for certain applications such as athletic apparel because they don't work with synthetic materials.

These aspects of natural dyes, she explained, could have positive sustainability benefit, however. In an industry that often neglects environmental preservation, natural dyeing encourages working within environmental limits and restrictions. Designer 7 added that the delicacy and sensitivity of natural dyes could help to bring about greater awareness to consumers about the impacts their care practices have on their clothing and the environment:

...There's an opportunity with using natural dyes to educate on...how to take good care of your garments so that they will last. If you wash them less, the color will stay longer. If you take good care of them—you know, wearing dress shields perhaps, or airing out your woollens instead of washing them, and finding an environmentally friendly dry cleaner if you can...

With this statement, Designer 7 provided a great example of the lifecycle thinking that she employed in her design process. She illustrated that by utilizing natural dyes in the preproduction stage, positive sustainability impact occurs in the utilization stage because her consumers are forced to be more conscious of how they care for their clothing if they want it to last. While some consumers will not be interested in purchasing clothing that requires extra consideration in the care process, designers have the opportunity to ease this transition to better care practices by providing additional information explaining positive care alternatives. One example is informing consumers of alternative environmentally friendly dry cleaning methods, like Designer 7 mentioned, such as CO<sub>2</sub> cleaning, silicone cleaning, wet cleaning, or the K4 dry cleaning system. These are alternatives that many dry cleaners are adopting in opposition to the toxic perchloroethylene dry cleaning method that is still commonly used in the industry.

### *Digital Printing*

The designers discussed digital printing as a viable sustainable printing method. Digital printing reduces waste in the fabric printing process because the inks are directly printed on the fabric and don't require excess water or ink. Designer 1 explained how digital printing has helped him reduce even more waste in his zero-waste design process. He stated that the company that digitally printed his fabrics was “great” because they were located in the United States,

worked from digital files, and had no minimums, which allowed him to keep his waste as low as possible. Eventually, he hoped to utilize digital printing to bring his zero-waste patternmaking to the next level. He explained, “I’m moving in the direction of basically printing everything because I’m realizing that by printing information directly on the fabric, I can eliminate paper from the patternmaking process.”

In addition to the positive environmental factors of digital printing, Designers 1 described how digital printing allowed for a new outlet of creative expression in his fashion collections:

...I find that the prints are a way for me to incorporate some of my personal artistic expression. So, the flora print was a collaboration with a dear friend of mine. The kaleidoscope print is made out of two of my grandmother's paintings that I sampled and created something original from. And then, the heaven and hell print is my own original artwork.

Digital printing offers many positive benefits when compared to typical screen-printing methods. Some benefits include reduced waste in the print sampling process, less environmental impact through reduced ink and water usage, greater design capability, and greater financial feasibility for small designers. However, digital printing has its limitations as well. Many digital printing processes require the chemical pretreatment of fabrics in order for the ink to bond to the fabric surface. Knowledge of the specific environmental impact of these chemicals, as well as the characteristics of the inks used, is a necessity when implementing digital printing strategies. In addition, current digital printing technology limits the feasibility of digitally printing large areas of solid color or printing large quantities of fabric. While these restrictions may not be limiting factors for small productions, this option is not necessarily financially feasible for mass manufacturing.



### *Artisanal Block Printing*

Designer 5 worked with legacy block printers in India to create custom fabrics for her fashion designs. She explained the appeal of block printed fabrics versus mass manufactured printing: “I mean, it's more expensive, definitely than digital printing.... To me, [it's] a lot more beautiful because it has that human touch. It has that tradition, art, and history behind it.” In addition to the beauty of the work, she explained how the process of block printing is appealing in itself:

...To me, the [apparel] design process is miniscule compared to the actual creating the textile. I think creating the textile is where the art is. I mean it's just [an] extremely...tactile and a censorial way of producing art. You know? I mean...you're down and dirty; you're dealing with pigment and screens and blocks.... You want to go one step further; you want to learn how to carve. You're dealing with these archaic iron instruments that probably were used by people in the 15th century, the 14th century.... It drips with history, and legacy, and art...

When discussing the environmental sustainability aspects of block printing, Designer 5 explained that the biggest hurdle she faced was trying to source dyes and pigments that met consumers' expectations for durability and easy care, while also ensuring the health and safety of her workers. She explained, “If you want a dye that is strong enough to withstand machine washing or dry cleaning, you have to use a synthetic dye.” However, Designer 5 explained that other aspects of the printing process are very environmentally sustainable. “The blocks are actually really one of the most sustainable parts of the process.” She explained that the wood is locally and sustainably sourced from fast growing trees that are annually planted.

Similarly to the sustainability aspects of different fabrics, each dyeing and printing method has benefits and limitations. It is important for each designer to understand the implications of the processes they employ so that they can make informed sustainability decisions and help create solutions to the issues they discover.

### *Conclusion*

Overall, the designers were knowledgeable about ways to incorporate environmental and social sustainability into their fabric sourcing process. Many considered not only implications of fiber production, but also fabric production, dyeing, printing, sourcing location, and end of life implications of their fabrics. However, it was clear that designers face a number of hurdles when making sustainable material choices, including availability, price point, minimum-ordering requirements, sourcing location, aesthetics, and consumer acceptance. Designer 2 acknowledged the reality of the material selection process for sustainable designers: “Designers at the end of the day want to work with materials that they love. And if they're not available in sustainable options, they're gonna take the fabric anyway.”

### Production

There are an exorbitant number of elements to consider in the production stage. Some examples are manufacturing techniques, supply chain management, and speed of production. However, the designers in this study mostly emphasized waste reduction, specifically focusing on zero-waste patternmaking, utilizing pattern scraps, lean production methods, and reducing unnecessary waste in the work place.

### *Patternmaking*

While many of the designers discussed employing some level of minimum-waste patternmaking as part of their sustainable design strategy, Designer 1 specialized in zero-waste pattern design. He explained the importance of zero-waste patternmaking for the future of fashion sustainability:

A lot of people just don't realize how much clothing there is and how it's being produced the wrong way. I think the way Whole Foods kind of changed the way people eat and think about produce... I feel like zero-waste has a very large part of this picture. I think whether you are working with organic cotton, or micro fibers, or neo-printing, we should be wasting as little of it as possible. That is the future of consumption.

While zero-waste patternmaking is a valuable way to reduce the amount of fabric waste produced during the cut and sew process, it also provides a unique design challenge that often results in innovative and unexpected design details. Designer 1 described how he used a number of techniques to achieve his zero-waste goals, including crochet, braiding, appliqué, origami, and geometry. He explained that zero-waste design was an area for constant exploration and innovation because some cutting techniques were better than others:

We are trying to get to zero. I'd say right now we are probably around somewhere between 1-3%. We have projects that are literally zero, and we have some that are probably 4-5%. There are some cutting techniques that are completely efficient, and there are some that are more wasteful. So, every season we try and eliminate the ones that are not as effective, and we try and re-imagine the ones that work really, really well to make new, more creative, better designs that utilize those same techniques.

### *Fabric Scraps*

Another area of focus among the designers was reducing waste during the pattern cutting process. Even when minimum or zero-waste patternmaking is used, some fabric scraps remain. For those designers who don't employ minimum-waste patternmaking, pattern cutting is an important source of waste to consider. Designer 5 explained how she worked to reduce fabric waste by educating her artisans on better production techniques:

...There's a [manufacturing] process...[in India], which [focuses on] actually trying to save as much fabric as you possibly can. So, educating the cutter, you know the master cutter, that when you cut, try and conserve as much fabric as you can, you know? Use as little fabric as you absolutely need to create the piece.

There is inevitably some fabric waste, however. To combat this Designer 5 explained,

All the little pieces that we have—that come off—we try and use them in some way. So right now, what we're doing is...we're making little pouches out of those scraps, so you can actually use them for the jewelry...

Designer 1 explained a similar situation he experienced when designing with zero-waste patternmaking:

There are instances where we are trimming this and cutting that off. And in the cutting process, we have damaged goods and all these different things. So with all of those left over materials, we save them and recycle them for other projects. But we are constantly working towards eliminating that from the process.

### *Overall Waste Reduction*

In addition to fabric scraps, the designers worked to reduce unnecessary waste that resulted from daily activities. Designer 1 explained how sustainable office standards helped to reduce general waste:

In our studio, the interns and the whole studio have basically a rule: we don't bring outside plastic bags in here. So when interns are running errands, they bring tote bags with them. When we pick up fabric, we always say no bag. That's just one little thing that we do.

He described how he worked to create sustainable practices in the workspace:

It's easy to do anything as long as the management puts a system in place.... I have crazy ways of doing things. And I feel like sometimes I am driving everyone totally insane, but we reuse all of our paper. And I'm like, 'Okay, so big pieces of paper go over here, and medium size pieces of paper go over here, and we're not buying post-its because we cut patterns constantly. I have all these little scraps of paper from all of our patterns, so if you need to write a to-do list, here is a box.'

### *Conclusion*

Reducing and/or eliminating waste were the primary environmental considerations for the designers within the production process. A number of initiatives were considered among the designers, including zero-waste patternmaking, utilizing pattern scraps, lean production methods, and reducing unnecessary waste in the work place. However, some of these methods have greater sustainability benefits than others. Zero-waste patternmaking is an example of a design strategy that works to correct the flaws of the current system by eliminating waste to begin with, rather

than working to repurpose existing waste. Such design practices are examples of second level sustainability thinking (Fletcher & Grose, 2012). In contrast, repurposing fabric scraps, for example, represents only first level sustainability thinking. At this level, the designers are aware that an issue exists and look for a solution to combat, rather than solve, the problem (Fletcher & Grose, 2012). While any effort to work more sustainably has a positive impact, it does not necessarily create long-term solutions to sustainability issues.

### Distribution

The fashion industry is a global enterprise. Therefore, product shipping and retailing can have a significant sustainability impact as products move from manufacturing plants, to retail locations, to consumers' homes. While the designers did consider some of the ways in which their distribution methods impact the environment, they predominantly emphasized the many limitations they faced when working alongside typical industry practices of packaging, shipping, and retailing products. Designer 4 explained a typical practice of the fashion industry: “[For] 95% of all makers, every single garment is individually wrapped in plastic.” This practice and expectation among retailers becomes a hindrance to sustainable designers who try to limit the waste and environmental impact of their products. Designer 1 explained that he understood that these practices occur because companies want to protect their investments, but he stated, “I can just see so many other alternatives to the way we do things.” For example, “Why don't we use plastic reusable containers to ship things?”

### *Packaging Waste Reduction*

Despite poor industry practices, the designers took steps to limit the amount of waste they produced through distribution. For example, Designer 4 explained how she set sustainability standards throughout her supply chain:

...One of my production places—the first time I worked with them—they put each garment in a plastic bag. And I was like, ‘This is not gonna fly. You need to put at least ten garments in a bag for me to bring it and then recycle the rest of the bags.’

In addition to bagging her products, she was very conscious about reusing her hangers and sending them back to her tailors when she was finished with them. Designer 4 explained why her environmentally conscious methods are not the norm in the industry: “It’s a lot of work. I mean...I got like 600 pieces in yesterday. If I got 6,000 pieces in yesterday, maybe I wouldn’t be able to take all the hangers off each of the pieces...”

Designer 1 described similar challenges when trying to package and retail products sustainably. As a result of the inadequate retail and industry standards, he decided to move away from typical retail methods. He explained that through moving away from wholesale practices to other retail strategies, such as pop-up shops and online retailing, he would be able to “...hone in on how to ship more responsibly and consume less.”

### *Lean Retailing*

Utilizing lean retailing strategies was another way that some of the designers tried to reduce waste in the distribution process. Designer 2 explained, “I produce everything only to order. I don’t usually carry inventory, or carry extra stock, except a little bit for my website, but in very small quantities.” Similarly, Designer 4 described her strategic production practice of

manufacturing extra of everything she sold, but in an intentional manner. She explained that she only produced when she had money coming in from a style as it sold. Producing to order, like Designer 2, or strategically, like Designer 4, are both methods that not only reduce material and energy waste when an item doesn't sell, but are financially safer methods of production for small designers.

### *Shipping methods*

When considering the environmental impacts of their shipping processes, sustainable options appeared to be limited according to the designers interviewed. The designers explained the complications they faced when utilizing regular shipping methods, and as a result, ease, reliability, and cost of shipping were the designers' highest priorities.

Designer 3 explained the considerations she made when shipping her orders. When asked if she considered the carbon emissions of her distribution methods, she stated, "No, I think about, where can I get my tracking number easily? When I call them, will they communicate with me? Am I able to easily find out where [the package] is..." She illustrated her experiences trying to ship packages to her customers:

I use the US postal service. When I call them, I get hung up on—I didn't know if the package was ever delivered.... If it's a large package, and it can't fit in your mailbox, then it will be delivered but it will be to your local post office. There's no way of calling to find out where it was delivered...

For Designer 3, the lack of ease and reliability were the biggest issues she faced when shipping her products. As a result of the difficulty she faced in this process, she didn't consider sustainability, but instead, how she can effectively manage her distribution process.



Designer 4 explained her shipping methods and considerations: “I try to pack it small.... I usually just use UPS because they pick up, and a lot of times I can't move it myself.” She explained that with small and international orders she typically used the Post Office because it was “less expensive, mostly.” However, she explained, that as a small business, she was at a disadvantage: “If you’re [a] big business you can bulk ship a whole container. But I'm not big enough so that doesn't make sense.”

Designer 6 described the many complications that come with trying to ship products internationally. As a result of the difficulties she frequently experienced, she was often willing to pay more to simplify the process. She explained that when shipping with DHL, “you pay more so that all the customs stuff, the duties are handled...” She illustrated how time often became a major consideration when shipping internationally: “Sometimes I just need the products.... I need to ship it; I need to get paid for it. So it's just cash flow, and managing cash flow is such a big thing.”

### *Conclusion*

When considering their sustainability efforts in the distribution stage, the designers discussed limiting waste through sustainably conscious product packaging and strategic retail methods. They brought up several limitations they are faced with when shipping merchandise and argued that because of these limitations they primarily focused on ease, reliability, and cost of shipping instead of sustainability considerations.

The designers’ best intentions were often limited by outside obstacles. Even when they wanted to implement sustainable distribution practices, current industry requirements and expectations, available shipping methods, and business logistics hindered their best sustainability

efforts. As a result, designers must adopt methods that contradict mainstream industry practices. They may also choose to selectively focus on areas within the supply chain where they can exercise more control.

However, the distribution segment of the product lifecycle offers many opportunities for designers to develop creative solutions to their sustainability issues. Designer 1 presented a sustainable alternative to current industry practices when he discussed shipping items in reusable containers, rather than shipping in single use plastics. Designer 2 presented an alternative method to clothing production and retailing with her made-to-order lean retailing strategy. These examples show that positive alternatives to unsustainable distribution methods exist. Designers are aptly positioned to identify the key issues within current distribution methods and have the potential to develop and implement creative solutions.

### Utilization

Consumer action is a very important factor of sustainability because it is estimated that 50% of the environment impact of a garment occurs during consumer use (ADEME, 2006). In regards to the utilization stages, the designers discussed extending the life of their products through quality construction and versatile designs as well as reducing the environmental impact of garment care through consumer education.

### *Garment Lifespan*

The interviewed designers worked to create products unlike the low quality and trend-driven styles prominent in the market today. Instead, they chose to create clothing that was high quality, durable, and versatile.

Designer 5 described how she designed her garments to last through the fashion seasons. She explained some of the considerations she made during her design process:

It's just trying to create pieces that are multifunctional and beautiful at the same time.

You know, something that is not just a one-time thing that you wear, specifically, for one purpose only. I think practical clothing. Being a mother myself, I realize that it's not practical for me to buy specific things just for specific occasions.

In addition to her design considerations, Designer 5 worked closely with her artisans to ensure that quality construction was a priority.

Designing clothing that is not trend-driven, but versatile, has sustainability benefits because consumers can associate memories and positive feelings with their garments through extended wear. Designer 4 prioritized her consumers' connection with their clothing. She explained how she not only considered the first owner of a garment, but also possible subsequent owners in her design and production process:

...My sewers are really amazing. I want my pieces to last for, you know, 10, 20, 30 years, and grandma gives it to the grandkid, you know what I mean? I want it to last for a really long time.

She designed her pieces to have an extended life by using quality construction techniques and strategic garment design. She created garments that were not dictated by trends or body types. She explained that she tried to design garment shapes for a variety of body measurements, while remaining flattering and stylish. When designing this way, her garments became “flexible in terms of body type and age.”

### *Garment Care & Laundering*

While extending the lifespan of a clothing item has its benefits as far as reducing the rate in which clothing is discarded and, possibly, the rate in which apparel products are consumed, it is important to consider how consumers care for their clothing throughout its lifespan. As Designer 7 noted, “Many people don't realize that [50%] of the environmental impact of a garment comes from the use phase.... [50%] comes from the washing and especially the tumble-drying...” Designer 5 explained that a key obstacle to the flourishing of sustainable fashion is that consumers are not concerned or aware of the impact of their actions:

There is a very small portion of the clientele that actually is interested in a piece being fair trade, or eco-friendly, or sustainable. There are pockets of neighborhoods or people that actually care about these things and the majority—and I'm talking about all over the US—the majority of people don't really care and would prefer it to just look nice and be practical in terms of it being machine washable and not having to take special care.

Designer 7 explained that raising consumer awareness about small changes in garment care practices could make a significant difference in the sustainability of a garment:

I think consumers have a great responsibility.... I know everybody has busy lives, and everybody has their own priorities.... So, I can understand that sustainability in fashion is not—is usually not most people's priority. But...just taking a little bit of responsibility, a little bit of change, you know, washing on cold makes a big difference. If...one out of ten people do that, how much energy and water will be saved?

Many of the designers emphasized the importance of informing consumers about sustainable care practices. For example, Designer 7 explained one method she planned to utilize in order to improve consumer understanding:

Up until now, I've been operating and kind of letting my clients be responsible to inform...their clients, their customers, about how to take care of their garments. But I think one of my business strategies now moving forward is to... not mandate, but to ask and to request that they use my tag, my care tag, which indicates hand wash... if machine wash is needed, wash on cold always, lay flat or air dry.... Hopefully people read their care tags.

Many of the designers, however, described the difficulty of expanding sustainability knowledge among consumers. When asked about the best ways to inform consumers about sustainability initiatives, Designer 2 stated, "To be honest I've given so much thought to that question, and I have never come up with a viable solution...." She discussed several efforts she made to better communicate with consumers, such as providing as much information as possible on her website and creating informative care tags. She explained, "I've tried everything.... and haven't found that there's so much more of an engaged community that adopts it."

In addition, many of the designers expressed apprehension about being strongly associated with sustainability as far as their branding was concerned. Designer 3 explained that there tends to be a preconceived notion of sustainable fashion: "I think that sustainability has a little bit of a crunchy, granola connotation to it, like San Francisco. [It is] just not, you know, necessarily my aesthetic."

Many of the designers agreed that although transparency is an important aspect of a sustainable design company, tension is created when the reality isn't the pretty picture that consumers are accustomed to. Designer 5 expressed her concern for this: "I worry tremendously about branding because branding seems to require such a slick package, and this is not slick; this

is very down and dirty.” Despite this, the designers expressed a desire to create successful products that are aesthetically pleasing and sustainable at the same time. Designer 5 explained,

I didn't really want to position myself as eco-friendly, or sustainable, or fair trade. I really wanted the actual work to speak for itself. I wanted people to actually love the design, [the] clothing. I wanted people to be able to live in it, and breathe in it, and feel really comfortable in it, and not have to really make the choice between something that's fair trade versus something that, you know, they would rather have.

The reality of the fashion industry is that visual appeal and design continue to be the most important factors to the consumer. Designer 1 supported this thought by stating, “What I started finding out was whether it was zero waste or it was completely conventional, organic, made out of petroleum, people just like the designs, and so I should lead with the designs when I am trying to sell things.”

### *Conclusion*

Considering the utilization stage of the garment lifecycle, the designers discussed extending the life of their products through quality construction and good design, as well as reducing the environmental impact of garment care through educating consumers. The designers appeared much more optimistic about their ability to create high quality, long lasting garments than being able to impact consumer action. This is understandable, as the designers cannot control what their consumers do. However, if consumers are not aware of the significant sustainability impacts of their purchasing and garment care habits, creating clothing that is durable and long lasting may not have much sustainability benefit in the long run. The success of sustainable fashion requires action of all those involved in the apparel lifecycle. While consumer

education presents a big challenge for designers, creative solutions, such as informative care tags or educational links on a website, can assist in this process. Therefore, this area of the lifecycle holds much potential for improvement and progress.

### End of Life

Considering what happens to a garment at the end of its life can make a difference in the amount of textile waste produced each year. Some of the designers were aware of particular end-of-life strategies, such as the cradle-to-cradle approach or apparel take back schemes, but only a few had attempted to implement any of these strategies into their actual design process.

Designer 2 depicted her knowledge of end-of-life strategies by describing companies who had attempted a closed-loop initiative. She explained that while a closed-loop system of apparel production and consumption is “amazing,” she believes that “very few companies have mastered it.” She continued, “I think one who might be making strides is Eileen Fisher.” She went on to describe the system that Eileen Fisher has put in place:

A couple of years ago, they started a program called Green Eileen. And it's stand-alone stores as well as just an in-house program where they'll take back their old clothes. And if I'm not mistaken, they take back other clothes too, and they'll give you a discount on a future order. They look at all their old clothes that they get in, and then they sort them. They sort them by quality and finishing. So the ones that are in really excellent shape—look like they've never been worn—go back into the store under the Green Eileen label. They have been cleaned, obviously. And then they resell them for a discount in their stores. The secondary tier, I believe, gets donated to an organization that helps battered women who are getting back on their feet and getting to work. And then the third tier

goes to a recycling plant. So, they're really looking at the entire lifecycle of a garment and trying to re-coop it.

As is illustrated in this example, creating solutions for what consumers should do with clothing at the end of its life involves creative thinking and multistep solutions. The process involved in facilitating the transition of used clothing to a new owner, or into a new product, can be a daunting task for a small company. However, considering what happens to apparel at the end of its life can inform sustainable design decisions that work to assist consumers in this process.

Designer 7 was one of the designers who did consider the entire lifecycle of her products during the design and production process. She explained how she designs with the cradle-to-cradle approach in mind:

Sustainability to me means looking forward so that what you leave behind is as minimal as possible. So that's another great thing about working with natural dyes in that they only work with natural materials. So I know that everything that I'm using will eventually, and can eventually, return to the Earth. There aren't any heavy metals or odd chemicals in the dyes or the fibers.... So, there is sort of a cradle-to-cradle approach in that I know that everything that I'm creating will not have a detrimental effect and can be used for a long time, too.

Through designing products made of only natural materials, Designer 7 created the opportunity for her clothing to be composted at the end of its first useful life. By informing her customers of this end-of-life possibility, Designer 7 could potentially impact her consumers' actions and help build their sustainability knowledge.

Similar to Eileen Fisher's label Green Eileen, Designer 1 explained how he hoped to one day close the loop on his apparel lifecycle by implementing an apparel take-back strategy:



So, we have this amazing idea. I think it's going to take a little bit of time for us to be able to actually fully launch this, but we really wanted to close the loop on [the apparel lifecycle] and offer to take our goods back after people are done with them. We have two nice ideas. One is to use them for post-consumer products, for example, pillows. And another would be, if they are lightly used, to resell them like vintage.

He illustrated his ideas by the following,

So, you know, you aren't going to wear my shirt anymore because you have just decided you hate the color blue, and you are getting rid of everything blue in your wardrobe. And I will say, alright, well, send it back to me, free of charge, you get 15%, 20%, whatever, off your next purchase, and I then resell that lightly used garment at a really great price...

When asked about the complications that would arise when implementing this type of system into his design practice, he explained that this system would require the full attention of an employee, as this process would be a full time job. However, the complications that come with facilitating this system would be minimal as a result of the size of his company and the fact that everything was already done in-house: "The really nice thing is that we make everything here; everything is coming back here." His ultimate goal for his company was to "...work towards a vertical model." He explained, "Eventually I would like to be milling and printing my own fabrics and just having really no waste." This type of model would be very beneficial for a sustainable designer because it would allow the designer to have significantly more control over the entire product lifecycle. Complications, such as lack of information and transparency from third-party sourcing companies, would no longer be an issue.

### *Conclusion*

When designers fully consider what happens to their product at the end of its first useful life, they can make design decisions that enable their products to be reused and remade into new products (McDonough & Braungart, 2002). While some of the designers were aware of end-of-life strategies as they relate to the sustainability of their products, many of the designers were not. This stage of the product lifecycle holds much potential in terms of sustainability impact in the industry through the continuous reuse of valuable materials. As a result, increasing knowledge of end-of-life sustainability strategies among the designers is of crucial importance and holds great potential for improvement within the sustainable fashion community. In addition, by adopting consumer education tactics, designers can help impact their consumers' actions (Hyllegard, Yan, Ogle, & Lee, 2012).

### Analysis of Environmental Considerations

After analyzing the environmental considerations of the designers, it was clear that accounting for the environmental implications of each stage of the product lifecycle is a difficult task. The ability of the designers to address environmental factors can be limited by a number of variables, including financial capability, company capacity, industry practices and norms, consumer habits, and technological restrictions, to name a few. In addition, the limiting factors vary for each designer depending on his or her personal awareness and understanding of sustainability. While varying levels of understanding existed among the designers, it was clear that certain stages of the product lifecycle, and specific sustainability initiatives associated with them, were emphasized over others.

Within the preproduction stage, the designers heavily focused on sustainable materials, with some attention to dyes and printing. Utilizing sustainable fabrics was, overall, the initiative most emphasized among the designers when discussing the sustainability of their products. The designers considered a vast array of sustainability characteristics when sourcing their fabrics, which shows a depth of knowledge of the implications of their fabric choices. Overall, the designers showed thorough consideration for what makes a fabric sustainable. In addition, the designers were generally aware of both the positive and negative sustainability implications of their fabric dye and printing processes and bore them in mind when sourcing their fabrics. However, it was apparent from the interviews that industry advancement in sustainable fabrics and dyes is needed to help facilitate designers' future sustainability action in the preproduction stage.

In the production stage, the designers discussed their efforts to reduce and eliminate material waste. A number of initiatives were considered among the designers, including zero-waste patternmaking, utilizing pattern scraps, lean production methods, and reducing unnecessary waste, overall. As addressed earlier, some of these methods, such as zero-waste patternmaking, creatively approach solving sustainability problems, while others only work to deal with the problem as it is. The production phase of the product lifecycle offers great opportunity for sustainability improvement because decisions made at this stage are predominately within the designers' control. Designers can develop creative design solutions to sustainability issues that result from these processes, such as eliminating fabric waste entirely.

The designers addressed a number of sustainability considerations within the distribution stage, such as product packaging and sustainable retailing methods. Sustainable product shipping was found to be the least considered initiative at this stage of the garment lifecycle. The primary

reason for this was the lack of reliable and affordable sustainable shipping options. The designers faced many challenges with distribution as industry norms and expectations set the precedent for poor sustainability practices. Currently, in order to counteract such industry norms, designers must either adopt new practices or work to reduce the negative impact of existing practices as best they can.

The least emphasized stages of the product lifecycle were the utilization and end-of-life stages. The designers were the least aware of sustainability initiatives in these two stages of the product lifecycle. Therefore, the utilization and end-of-life stages hold much potential for improvement. Although consumer education presents a significant challenge for designers, creative solutions such as utilizing informative care tags could assist in this process. A recent study by Hyllegard, Yan, Ogle, Lee (2012) examined consumers' impressions of informative hang tags for sustainable fashion apparel. They found that explicit and informative hang tags received more favorable evaluations than less explicit tags, or tags with no information. In addition, the authors also discovered that the frequency with which consumers use hang tags to gain information about apparel has increased from 11% to 60% when compared to prior research. Therefore, while designers may feel that their actions have little impact, research shows that such actions are beneficial.

### Social Considerations

Social sustainability focuses on how people are treated throughout the production, consumption, and disposal of fashion products. The stages of the product lifecycle that are of major consideration for social sustainability are the preproduction and production phases. These stages primarily utilize skilled labor, require a human workforce, and have the highest likelihood for

human rights violations and the unfair treatment of workers within the fashion industry. All eight designers considered some aspect of social sustainability throughout their fashion production process. Two prominent methods of manufacturing were discussed, including global fair trade practices and domestic sourcing and production.

### Global Production & Fair Trade

Fair trade was a primary area of consideration among the designers when considering social sustainability. Fair trade production focuses on providing a physically and emotionally safe working environment, equal rights, and fair wages to marginalized producers and workers around the globe (Fletcher & Grose, 2012). These aspects were addressed among the designers who emphasized fair trade in their production processes. For Designers 5, 6 and 8, specifically, fair trade was a primary area of consideration in their production processes. In addition, Designers 2 and 4 mentioned utilizing fair trade practices within their production processes.

### *Fair Trade Policy*

Of the designers who employed fair trade production practices, each had a set of goals and standards they used to establish true, fair trade relationships. For Designer 5, fair trade meant working “directly with the person who's actually doing the work, as opposed to having a middleman.” She continued, “For me it's really about taking the most important thing, which is the human being...treating them with respect...working directly with them, and giving them a fair wage... so they can actually support their families on that wage.”

Designer 6 practiced fair trade production in multiple countries, including Peru, Guatemala, Mali, Morocco, and Ivory Coast. She explained that her fair trade policy involved

“developing relationships with artisans...that will last...” In order to create these long lasting partnerships, she focused on creating successful products. She explained that she designed products that would be successful throughout many fashion seasons, as opposed to designing to stay up with current trends. The success of her products was necessary to keep work consistent for her artisans. She explained the importance of consistency and trust in her partnerships:

I don't want to just develop a relationship and place a big order, then [say] okay, I'm over it; I'm moving on to someone else.... I see that happen a lot. People will place really big orders and then, never again.

She described the detrimental effect this practice has on workers within artisan groups: “These artisans will hire more people, they'll train more people on the ground and then after that project is over, they're like sorry, you don't have a job anymore.” Artisan groups take a significant financial hit when they invest money and effort into hiring workers and buying equipment to fulfill a large order. When these situations occur, workers' livelihoods are often sacrificed.

Designer 8's company was a non-profit, social enterprise that works with artisans in Rwanda. Her company's mission was “100% to employ women.” In order to do this she explained, “We sell, design, [and] market their products [for] our own line, which you can buy on our e-commerce site.” The artisans' products are also sold “...through wholesale partnerships, and then we also do custom brand work where we work with large retailers or small designers.” She continued, “We also invest all of our profits back into education for those artisan women.”

Additionally, she explained what fair trade meant for her company:

We want to make sure the working relationship is fair and that they feel good about it; that they can come to us with problems. That also, they don't feel pigeonholed into accepting orders or to work a certain way because of the income... everything is a

discussion.... That's really what shapes our fair trade policy, I would say, that kind of open communication and seeing each other as equal business partners.

Throughout the interview analysis, it was apparent that the designers considered a number of factors when working fair trade. A primary focus for the designers, however, was creating relationships with their workers based on trust, equality, and respect. In order to achieve such relationships, the designers focused on fair wages, empowerment strategies, skill training, expanding producers' markets, and craft preservation.

### *Fair Wages*

The need for fair wages in the fashion industry is one of the primary reasons fair trade practices developed in the first place. What determines if a wage is fair or not, however, can be a difficult question to answer. In developing nations, the standard minimum wage is often well below the cost of living for that area. The designers addressed the question of fair wages in a number of ways in order to meet their personal social sustainability standards.

Designer 2 defined a fair wage based on the living wage of the country. She explained, I prefer the term living wage. I prefer the reality of living wage just because I don't think minimum wage is appropriate in a lot of places—particularly third world countries where you can't actually live off of minimum wage, or there isn't one in place.

While following a minimum wage might appear to solve the problem of unfair wages, this concept can be deceptive. Determining a living wage requires much more consideration of the variables that determine an adequate standard of living. Designer 2 explained that a living wage “...takes a lot more research and understanding of humanity and the country....”

Designer 8 explained that her company established fair wages based on open communication with the artisans. She described the ordering and pricing process for her company:

... We pay per product. So, if we're ordering, you know, 5 units or 5 thousand, that price is generally the same, you know, unless we are doing some sort of bulk pricing. But, that price is set by the artisans.

She explained that while her company had a standard concept of what fair wages are in the country in which it was working, "everything is a discussion." She illustrated the product pricing conversation:

We'll come to the co-ops with a product and say, what do you think? Can you make this? What is the price that you're giving us? And 99% of the time, and this is the truth, they'll tell us and we'll say, okay, great.

For designer 8's company, fair trade meant going against the standard ways of doing business:

Fair trade for us is having that discussion. I mean, we want them to feel like empowered decision makers.... Us coming to them and saying, 'hey, we have this order, and we're only going to pay you this much, or else your never gonna... get this order from us,' I mean, yeah, that might work, that might help our business, but they're not going to feel like they're empowered in the decision-making.

### *Empowerment*

The designers illustrated that another important aspect of fair trade was the empowerment of the workers who produced the goods. The designers discussed ways in which they worked to empower their artisans through personal work relationships and education.



Throughout the interviews, positive and meaningful work relationships were one of the most noted benefits of working in a sustainable manner. However, it is no surprise that positive and lasting relationships develop when social responsibility is a priority and people's wellbeing plays a dominant role in decision-making. Overall, the designers emphasized the idea of equality and partnership in their business practices.

Designer 5 explained the importance of equality and partnership when working with her artisans:

I always tell them, you know, we're a team, no one is more important than the other person. I can't do this without you, and you, you probably wouldn't have the capacity to experiment without me.... It's a symbiotic relationship; we depend on each other.

She explained that by working this way with her artisans, "They have more control over their lives."

Designer 6 exemplified this theme when she described how her working relationships were based on "pride, not pity." She explained that her initial concept of empowerment changed after working with the artisans for an extended period of time. At first, she stated, she was willing to take whatever the artisans produced, no matter the level of craftsmanship. Overtime, however, she realized the importance of holding her artisans accountable and expecting only the best quality work from them. Designer 6 shared her thoughts that triggered this change: "I don't think they want to be treated like they're not capable of being a business partner.... I want them to do good. I want to keep working with them.... I want us to grow this thing together.... So I want them to get it right."

Designer 8 explained the positive relationships between her artisan groups and staff: "It's about us seeing these co-ops as business associates.... We're working with them; we're buying

from them the same way JCrew might buy from us, or Anthropologie.” She explained how this type of relationship developed over time:

Our whole team in Rwanda is all Rwandans. And the relationships that they've established with the women are just, they're really strong.... I mean, our Country Director [name omitted] and our Production Manager [name omitted], they've been with us for years...you know, they're Rwandan women just like the artisans. So, there's a really good, trustworthy relationship.

### *Education and Skill Training*

In addition to empowerment through mutually beneficial working relationships, the designers emphasized the importance of empowering their business partners through education and skill training. For Designer 8, artisan education and skills training was of prime importance and emphasis within her company. She described an education program her company developed:

... Right now we are doing training programs for our artisan partners in kind of long-term business. So, that looks like financial management, technology, entrepreneurship [and] literacy in both English and Kinyarwanda.

She explained how her company streamlined its previous education program:

We're actually re-launching our whole training program later this fall. We are going to be transitioning from individualized training, where we go into each of our cooperative partners and provide them with training based on curriculum we developed, into more of what we're calling a leadership academy, where members of each cooperative will come to a central location to learn highly specialized training that we've developed that is relevant, more relevant to their businesses and to the work that they do.

She explained that the education program was developed based on what the artisan women were interested in learning. She stated, “I think the real message we got across the board was that they wanted help understanding the supply chain and how they can best operate as an independent cooperative in the Rwandan market.” Specifically, she explained that the women were interested in learning how to access more customers through branding and merchandising online. In addition, they wanted to learn about “quality control, design [and] customer expectations...” She explained, “They really want to know how to grow their businesses... and to diversify their clients.” She added,

English is a huge thing.... Everyone really wants to master the English language.... A lot of these women, these mothers, really want to understand, themselves, and want to be able to keep up for [their] businesses and for...their families.

Designer 5 described a different kind of education program she hoped to develop as her company grew. She explained that many of her artisans were working to provide more opportunities for their children: “They didn't have the opportunity to go to school.... They don't want to see their kids in the same situation as them, because it's difficult.” As a result, her next goal was “to start creating scholarship funds for...the kids of the artisans that we work with.... And also creating a context for when they come back home.” She described the importance of creating a good learning environment when the children come home from school because this is one of the “biggest problems.” She explained, “Their moms don't really understand the importance of education; you know, their dads don't either. So, they're allowed to do whatever they want to.” Her goal was to create “a club for [the children] where... they have tutors to help them with their homework...” Her ultimate hope for this type of program was to provide opportunities for people who don't have many. She stated, “It's really about motivations...you

know? If somebody is really motivated, then it's a shame not to provide them with the resources.”

### *Expanding Producers Markets*

Providing economic opportunities through fair trade partnerships is an important aspect of the fair trade initiative. The designers explained how they worked to create these opportunities for their artisan groups.

Designer 6 explained that the biggest benefit she could provide for her artisans was “giving them access to broader markets.” She described how the areas her artisans lived in often restricted their retail market:

Most of them just sell in their tourist market in their countries. And places like Mali, where they've had war in the past two years, that local tourist market is totally depleted.... I mean, the only kind of work they have is exports, so [I provide] them access to sell their stuff.

Similarly, Designer 8 explained how her company worked to help the artisans expand their businesses:

We actually don't sell in Rwanda as an organization; all of our sales are done based out of the US. So there are a lot of opportunities for women artisans in Rwanda to access the local Rwandan market through tourists and through Rwandan nationals.... So [we provide] advice on how to navigate that...

Designer 8 explained how her company was interested in helping the artisans expand their markets overseas as well:

There's other organizations sourcing from Rwanda, and we are always encouraging our partners to work with them and to find as many market opportunities as possible. So, that's something that they wanted advice on: 'How do we access more customers...? How do we interact with them? What are the things we need to know if we do have an international client?'

### *Craft Preservation*

Craft preservation was another area of consideration for many of the designers who worked with artisans overseas. In an industry where mass manufacturing has become the norm, preserving unique, artisanal techniques becomes very important. Especially in countries where mass manufacturing is not an option, traditional craftsmen can make a living using their unique talents and skills.

Designer 8 emphasized the importance of craft preservation to the overall sustainability initiative:

I think a huge movement in sustainability is using long held artisanal techniques to make beautiful things. I mean, that's going on everywhere, and it's... something you have to stop and think about to really appreciate.

She emphasized how this was an important aspect to her company:

That's something that we've been really pushing this year. If you look at our products, and you really think about what it takes to make them—by hand from start to finish—it's really remarkable. I think it really puts value into not just our products but everything, that they come across handmade.

Preserving artisanal techniques proved to be an important motivating factor for Designer 5 when she was beginning her fair trade business. She explained that when she first started her company, she was working with manufacturing units in India that employed skilled artisans to produce hand made items. While this was a helpful starting place for her business, she realized that along with supporting the workers financially, she wanted to support their artisanal skills and creativity as well. She explained that when working in the manufacturing units “[the artisans] never actually get to explore their art any further or really understand why things are being done a certain way. They're not really part of the design process...” She decided she wanted to capitalize on their skills and experience once she realized the kind of knowledge they had with block printing:

...After talking to them I realized that they were legacy artisans who had generations of experience behind them. And [they] had so much to contribute to the actual design process as well, because they knew more about the actual process... than some of the people they are working for.

At first, she explained, the artisans didn't necessarily see what they did as an art form, rather a way to make a living:

...Then underneath it all there was this...very strong sense of legacy and dignity, and feeling of belonging to this particular group of artisans.... This is what they did; this is what their fathers had done; this is what their grandparents had done. And they would sometimes bring out little antique blocks or little pieces of antique fabric that they had saved; that was part of their legacy.

Craft preservation is more than just making handmade products; it is about creating meaning and connection with the artisans who actually make the products. For Designer 5, it was

about giving meaning and value to the lives of the artisans who created the items. Thus, what may have once been, solely, a source of income for the workers became a source of relevance, pride, and belonging.

### *Conclusion*

Safe working conditions, equal rights, and fair wages are the basic requirements of fair trade (Fletcher & Grose, 2012). Therefore, it was gratifying to learn from the interviews that the designers who took advantage of global fair trade production methods employed business practices that went above and beyond the basic requirements of fair trade. Fair trade was interpreted by the designers as more than a means of providing personal and financial security for their workers. Engaging in fair trade compelled the designers to work to better their employees' lives and provide opportunities for personal fulfillment in the artisans' craft or business. Overall, in the designers' attempts to encourage fair trade business relations, they emphasized the importance of fair wages, worker empowerment, financial opportunity, and craft preservation.

### Domestic Sourcing & Production

While many of the designers focused on global production and fair trade, a number of the designers employed local, domestic production. The designers who primarily focused on local production included Designers 1, 2, 3, 4, and 7. While Designers 2 and 4 also utilized global sourcing and fair trade, their primary production took place in the United States. Overall, the designers noted a number of reasons for their support of domestic sourcing and production,

including assurance of fair labor practices, job creation, and supporting other local business owners.

### *Fair Labor Practices*

A significant advantage to sourcing and manufacturing locally was the proximity of vendor companies and the heightened assurance of fair and ethical labor practices. Designer 3 explained her stance on local production and the advantages she experienced working in this way: She explained,

In terms of sustainability, one thing that is really important to me is domestic production.... I sort of see the garment industry as this way for immigrants to come to the West to build a better life for themselves and...facilitate this notion of the American dream.... So, I really like the idea of getting to be part of the industry in a positive way... She explained that her method of working was not common in an industry “that usually...takes advantage of workers...” She went on to state, “People in China don't have the same rights that they do here.” She explained that when working in the United States, she was able to know that her workers were working under fair labor regulations because she was able to go and physically see her factories.

Designer 1 expressed similar sentiments when he described some of the reasons he chose to manufacture in New York. He described how his previous experience working for a large fashion company in New York shaped some of his views on local production:

...When I was working at [my previous] job, my boss went to China and went to one of the factories. And he basically said, you know, it's nice, they're very clean—where this company had their things produced—but it felt a little sad for [my boss] because there



would be a 14 year old sitting there, linking on sleeve, after sleeve, after sleeve, to sweaters all day long.

Designer 1 described his personal perspective on this situation:

It's good that that person has a job and is able to provide for themselves—and I certainly understand not wanting to take a different road in life and having that be what you want to do—but I also think, having grown up in America and thinking about the American dream, I can't imagine living in a culture where that was my only opportunity at 14.

He described his thought process when deciding how his own company was going to manufacture differently: “I just didn't feel like it was something that I could support.... I don't think there is anything wrong with it, it's just not where I want to be putting my consumer dollars.” Instead, he decided to create a business that he was proud to be part of:

I think that by reducing waste and knowing where my product is coming from... everyone can do whatever they want to do, I have nothing to hide or be ashamed of about this business. And, that's the most I can hope for, you know, is just knowing that I can sleep at night. I know how much my employees get paid. I know that it's a fair living wage—above minimum wage— I know all those factors. And I know how everyone is treated here.

### *Job Creation*

Job creation was another factor that the designers referenced when discussing the benefits of working locally. Designer 1 explained his reasoning to produce domestically: “When I think about starting a company, my first thought is, why wouldn't you do it in a responsible way? And

why wouldn't you create as many jobs as you can?" He explained how his personal experiences trying to find a job in New York City factored into his current business practices:

I graduated in the top ten of my class, and I had a very hard time finding a job in New York City. And so, I would rather be creating opportunities for people here who want to be doing what I want to be doing and live here.

Similarly, Designer 7 shared her future goals for her company in terms of job creation: "Another important thing for me moving forward in my business is job creation and passing on this skill to others that are interested.... So, that's really important...to create skill within the New York fashion manufacturing community."

### *Supporting Local Business Owners*

Many of the designers expressed their desires to support local business owners through their purchasing, sourcing, and manufacturing practices. Some prominent benefits of supporting local businesses included strengthening sustainable initiatives and creating positive relationships in the production process.

Designer 1 explained the effort he made to support sustainability-focused local businesses:

I try and make sure that I am supporting companies that support my values, like making in America, or eco-friendly fabrics, or whatever it is—small production, fair labor. So, yeah, you have a lot of power with your dollar. And I think it's just as powerful to not shop as it is to shop at some place bad.

As Designer 1 explained, every purchase counts, and fashion sustainability requires the involvement of everyone in the industry to grow and thrive. As more designers work to support

sustainability through their sourcing, production, and business expenses, the sustainability impact will continue to grow. Designer 7 described why she chose to source locally:

I'm very passionate about sourcing as local as possible, especially when it comes to animal fibers. There's a lot of fiber out there that is coming from small-scale farms...that need to be supported if they're going to continue to exist. And there's a lot of fiber out there...that could be used by fashion designers in the city; it's just that there's difficulty in linking the designers with the farmers and the producers.

Currently, many of the companies that are fully embracing sustainable practices are smaller scale producers. Designer 7 illustrated the importance of sustaining these small businesses that are taking part in the large goal of creating a sustainable fashion industry.

### *Valuable Relationships*

Similarly to the positive working relationships that result from global, fair trade partnerships, working in a socially conscious manner with local business owners provided the opportunity to create trusting and lasting relationships throughout the apparel lifecycle. Designer 4 primarily partnered with New York businesses to create her products. She explained the two production teams she worked with. One was a production house in the Garment District that handled her bulk orders, and the other was a small family business. She described the benefits of working with the latter, which she had known for many years:

I have a tailor, which is a small...husband and wife team that I've been working with for over 10 years. I've seen their kids grow up and stuff like that. They used to work from home in Brooklyn in their tiny apartment. I used to work from my loft here and we would...meet in the subway and pass fabric.... And now, they have a production place in

the city...and they work with a lot of different designers, a lot of my friends that I've introduced them to. So, we've kind of grown together, which is really nice.

Designer 3 expressed similar sentiments as she described the quality working relationships she had, "I love the person I work with.... Working with someone who is accountable, who you can trust, and you have a good working relationship with, is paramount over anything...."

### *Conclusion*

The designers illustrated a number of benefits that occurred when sourcing and producing domestically. They explained how their chosen production methods created opportunities to support sustainability initiatives within different areas of the product lifecycle. Some of the major benefits of producing locally were the proximity of vendor companies and the ability to create and maintain personal relationships with the people who manufactured their products. The designers in the study emphasized the importance of fair working standards and having a personal connection with their employees and business partners. In addition, they noted the benefits of being able to support fellow sustainable fashion practitioners through job creation and business support. Lastly, the designers felt that they were able to invest and become involved in the local sustainability community by choosing to source and produce locally. They emphasized that the benefits of the sustainable fashion community were manifold. Through involvement, the designers could significantly increase their sustainability knowledge and also gain helpful professional partners and contacts.

### Analysis of Social Considerations

The designers considered many socially sustainable initiatives throughout the sourcing and production of their fashion items. When considering global production and fair trade, the designers portrayed a thorough understanding of what it truly means to work in a socially conscious and fair manner. In addition to establishing basic fair trade principles, the designers emphasized the importance of fair wages, worker empowerment, creating financial opportunities for their artisans, and craft preservation. For the designers, working fair trade meant more than providing the basic levels of workers' rights and safety. The designers emphasized the importance of connection, friendship, wellbeing, personal advancement, and opportunities for their artisans.

Similarly, when considering domestic sourcing and production, the designers emphasized having fair working standards and a personal connection with their employees and business partners. In addition, the designers emphasized their ability to financially support other sustainability initiatives within the United States through their business transactions and expenses.

In case of both fair trade practices and domestic sourcing and production, the designers were fully aware of the importance and necessity of improving the treatment of workers in the fashion industry. For many of the designers, implementing socially sustainable business practices added an additional sustainability benefit where environmental initiatives fell short. Many of the designers also emphasized the intrinsic value that was added to their products through utilizing hand-made or artisanal production techniques. They stated that when working in a socially conscious manner, the story and the people behind the product became just as important as the product itself. Through utilizing these production methods, the designers hoped to impact how

consumers engage with the things they buy. Designing to impact the relationship consumers have with products is an example of designing for empathy, which represents second level sustainability thinking (Fletcher & Grose, 2012). No longer is a shirt just a shirt; it becomes someone else's livelihood or artistic creation.

### Economic Considerations

Any sustainability initiative will fail if a company cannot financially sustain itself. For the participating designers, practicing economic sustainability meant balancing business with sustainability decisions. Designer 7 explained how this could be a challenge for small companies: "I think it's much more difficult for smaller designers and start-ups ...to work in a socially conscious and environmentally friendly way.... The margins are so small..." When discussing economic sustainability, the designers emphasized three considerations: I) prioritizing sustainability over profit margin, II) specializing in particular sustainability initiatives, and III) the importance of product price for consumers.

### *Financial Sacrifice*

A common theme among the designers was the willingness to reduce their personal and/or company profit in order to support their sustainability goals. Designer 4 explained that this sort of financial sacrifice is often difficult to do in the fashion industry:

There's a lot of people wanting to do good, but then when it comes to profit margins, you're going to make more money if you produce cheaper. So that's what people choose—or using cheaper fabrics, or whatever.... It becomes about money.

She explained that her sustainability priorities enabled her to make the necessary financial decisions:

...What I do is expensive, and I don't make as much as I could if I used cheap fabrics or cheap labor; you know, which is not what I believe in.... But if I would do that, of course I would make twice as much money or more, you know? But [that's] not my priority...

Designer 1 described how his personal goals and values impacted his business decisions.

He explained that when he was starting his business, he was encouraged to embrace the common methods of production in the fashion industry, but he did not see value in working that way:

Someone told me when I first started the collection that I should definitely be making everything in China. If I was making everything in China, I would only be responsible for finished goods, and if someone shipped me something that I didn't like, it would be their problem and not mine. And I just said, 'I never want anyone to think that I'm that guy. I never want someone to think... that I'm going to pawn one of my problems off on somebody else.'

Based on this decision, he created a company that he was proud of. He described his work philosophy:

I basically make everything as big a problem as I possibly can in my life, and I keep [the products] as close to me as possible. Most of the things that we're sending out or shipping, I've either touched them, cut them out, clipped threads on them, put labels on them, you know, sewn the buttons on myself. This is what I really love to do, and I'm trying to create an opportunity for myself to do it.

Designer 3 explained that while cheaper and, perhaps, easier methods of production were possible, these methods did not align with her sustainability principles. She described how being

surrounded by people fighting for workers rights in the US impacted her decisions to manufacture and produce her goods domestically: "...The whole protest for workers' rights, [is] literally right outside where I live. So, it's hard for me to be like, 'Oh I want to make more money. I'll do it in Asia.' " She explained that utilizing cheap, overseas production is easy and that the prices of producing in this manner are so low they are "tempting," however "it would just be very morally compromising for me to do that just to be able to turn a higher profit."

Working sustainably requires adopting a new way of considering financial success, which is often in direct opposition to the common industry practices and standards. Sustainability initiatives, often motivated by personal moral standards, take precedent over large profit margins as designers work to improve the environmental and social impact of their products.

### *Sustainability Specialization*

Another way that the designers worked to be economically sustainable was to prioritize particular sustainability efforts rather than trying to focus on them all, which can be impossible in such a complex industry. This theme occurred in all of the interviews. In order to achieve their personal sustainability goals, the designers tended to focus on specific areas they were most passionate about or felt they could successfully impact.

Designer 8 explained the characteristics of her fair-trade business that made it difficult to target all areas of sustainability:

...We're working with a lot of constraints. We have to price in fair trade labor; everything is made by hand. So, something...that might cost whatever to make by machine, making it by hand, it has the same look, but it's triple the price for us. Which is great...that's our mission, but we have to take that into consideration for selling.



She described other business expenses that needed to be considered in addition to the price of production, including international shipping costs, company overhead, and funding for the artisan training programs. As a result, she described the need to make sacrifices in some areas of sustainability to achieve success in others. She disclosed that, for example, she has had to choose between women's economic empowerment and producing fabrics organically. The choice, she said, was evident because whether her socially vulnerable workers were able to earn a living or not depended on her decision. She went on to explain the reality of working toward a sustainable industry:

You can't solve everything at once, and economic empowerment is what we're looking for.... In a perfect world, our products, you know, we would be using all organic dyes, and we would be encouraging the women to create their own fabrics and farm locally to make sure everything was non-toxic.... There's a million things we could do.... But for now, I think the economic empowerment is first, and then education, and then, you know, implementation.

While sustainability initiatives often take precedence over large profit margins, the designers must consider their financial limits. As Designer 8 summed up, sometimes one sustainability initiative must be the priority over another in order for the company to stay financially viable.

### *Product Price*

A final major consideration and area of discussion among the designers was product pricing. Consumers' expectations of the price of garments are highly influenced by the unsustainable prices that currently exist within the fashion industry as a result of low labor wages

and high production numbers. When consumers' expectations are much lower than the cost of producing sustainably, designers experience product-pricing issues.

Designer 7 explained the difficulty this presented: "I think that's one of the biggest hurdles that sustainability faces in fashion and apparel.... Especially in the West, and now more so in developing nations because they're following our path that we've trot..." She explained that consumers are expecting "more stuff for less amount of money." She described how this creates difficulties for the sustainable designer:

[A] battle that sustainable fashion designers continually have to fight is communicating to the consumer why something is the price that it is. [The designers are] not, you know, tripling and quadrupling their price.... The reason why something costs so much more is because the person who made it is making a living wage...

Designer 2 explained that, often, sustainable fashion costs no more than fashion from any other emerging designer, but sustainable fashion has a pricing stigma that could deter customers:

I do take offense a little bit when people say, 'I can't afford it,' because you can't afford it because I'm an emerging designer and my prices have to be higher. But if I was making thousands of units—which I don't want to be, but if I was—my prices would be a lot lower, and you could actually afford it. So that's where the issue is. There's a stigma there, and it's not wrong, but it's because the only people that really adopted sustainability are smaller brands, with a few exceptions.

While consumer price assumptions and expectations did create design limitations, the designers had no choice but to be sensitive to product price in the design process. Designer 1 described how financial practicality and a garment's end-price played a significant role in determining the success of a design:

I think that the most successful things have tended to be the simplest because you can't just measure success on the aesthetics. I think, aesthetically, I've had some really successful designs that have gotten a lot of attention [but] have been a nightmare to produce and that I make very poor margins on because I have to put so much labor or time into them. Or maybe they look amazing, but they aren't very sturdy because there is a lot of hand sewing, or whatever it is. They might be super successful designs, [but they] aren't very practical for the consumer.

Similarly, Designer 8 explained that, ultimately, some products could not go into production due to the cost of the product compared to consumers' expectations. This issue is particularly difficult for hand-made items, as a product could cost significantly more than a mass manufactured item. Designer 8 explained,

...Sometimes we'll have products that...don't look as high end, but...because it's hand made, [and] the way that they have to do it is so detailed and complicated, and takes so much time, the price is skewed from what, perhaps, the product should look like, pricewise, to a final customer. And that's okay. I mean that happens...we can't make everything.

### *Economically Unsustainable Industry*

As the designers adapted to new ways of working to improve the sustainability of their companies, they had to consider the financial implications of their actions. However, designers continue to face an added level of difficulty because they work within an industry where unsustainable business practices are the norm. Currently, the fashion industry's business model is based on a never-ending cycle of trends and planned obsolescence in order to stimulate consumer

demand and make profit. The designers expressed the strain the fashion calendar, which was primarily developed to help orchestrate the industry's unsustainable business practices, has on those trying to create fashion with sustainability in mind.

Designer 5 expressed that when she was expected to produce within the fashion calendar cycles, "economics" became one of the "biggest hurdle[s]" to working fair trade. She explained that the fashion calendar is "such an artificial system that just is not necessary..." She continued, "If you have a certain aesthetic then you should be able to roll effortlessly into spring/summer, fall/winter and not have to deal with color trends and all that stuff, because that's where all the money goes."

Designer 6 expressed the frustration she felt when she was expected to follow industry norms: "Every season people want—the fashion calendar dictates you have something new." She explained that "every six months" she received emails asking her: "what do you have new, what do you have new?" She exclaimed, "I don't want to have anything new!" She continued, "But that's just how they buy, it's how fashion buyers buy, and that kind of sucks."

Designer 2 explained that currently, design students are taught to work within this calendar and many believe that these practices are necessary to be successful: "They just think, 'I have to do two, four, to six, to eight collections per year on this cycle. And I have to produce this many styles to make a good collection'..." She stated, however, "We don't need that." She explained that this model actually works to inhibit sustainable development because of the time constraints designers work under:

Change probably won't happen until there's some kind of upheaval in the business models because there's a constant struggle for designers just to produce, and within that they have no time to think about what they're doing ethically.

Ultimately, Designer 1 expressed the need to weed out the poorly designed products that result from these constant fashion cycles and emphasize good quality and design:

This is a very over saturated industry right now. Basically everyone who has ever produced a record has a fashion line. Every company is trying to out wheel and out deal everybody else. And then, every big designer has a mainstream line for some secondary store. What we really need to do is say, how do we separate the men from the boys, so to speak. Who can really design a product that should be on the market, and who needs to go find another job?

In order to truly emphasize good design and sustainable practices, Designer 1 explained that industry focus needs to shift from trends to design. He described, however, the restrictions in place that might inhibit change:

I think we are in a funny place because the buyers really have the industry by its balls. You know? They're really holding control of everything. Because these major stores are saying, this is what sells, this is what won't sell, and consumers don't get to see a lot of what's on the market. And, I think that we need to shift the focus towards the designer. And we need to be picking out the designers who are doing the right things, and highlighting them.

### Analysis of Economic Considerations

It was evident from the interviews that the current economic model in the fashion industry does not support the development and adoption of sustainable practices. The designers expressed dissatisfaction over the fact that industry norms, such as quickly produced, ever-changing products and high profit through low prices, do not reflect the reality of working in

manner that benefits society and the environment. Because of this, small sustainable designers struggle to achieve their sustainability goals profitably within the fashion industry.

It became obvious from the interviews that a shift in thinking needs to occur both among consumers and throughout the entire fashion industry. However, what many people don't realize is that through streamlining production processes, reducing waste in the entire supply chain, and developing creative solutions to solving sustainability issues, financial benefits abound. In an article investigating the economic opportunities of applying sustainability innovation to business practices, the authors estimate that "UK businesses have the opportunity to unlock around £100 billion a year in value from new innovation opportunities that address social and environmental challenges" (Gillies, McQuail, Keeble, Morrison, & Fisher, 2013, p. 3). This means that sustainable businesses have an enormous financial potential. If the fashion industry took advantage of these opportunities, sustainability would not just be a topic of discussion; it would be the only way to do business.

## CHAPTER V

### IMPLICATIONS AND CONCLUSION

The primary purpose of this research was to gain an understanding of designers' knowledge of sustainability and the current practices used in sustainable fashion design in order to understand the variables that influence designers' decisions during the product design and development process of sustainable fashion apparel. Specifically, this study aimed to understand:

- I) The level of sustainability knowledge of current designers
- II) How designers' information regarding sustainability is gained
- III) How designers are utilizing their knowledge of sustainability in their design practice

The study aims were achieved through analysis of the information garnered during in-depth interviews with eight self-identifying sustainable fashion designers. Through analysis of interview data, I gained insight into these designers' knowledge of sustainability and assessed the application of sustainability in their design practices.

#### Study Aim 1

The findings regarding Study Aim 1, the level of sustainability knowledge of current sustainable designers, were reached through the discussion of the prominent sustainable design considerations the designers made during their product design process. The main topics that emerged from the data were organized into three sections: Environmental Considerations, Social Considerations, and Economic Considerations, to address the three pillars of sustainability and

the corresponding sustainability initiatives within each pillar. Overall, the designers had a good general understanding of sustainability and considered environmental, social, and economic impacts throughout their design process. However, a closer investigation of sustainability considerations revealed that certain sustainability topics and initiatives were emphasized over others.

When discussing the environmental impact of the apparel lifecycle, the designers' primarily focused on the preproduction, production, and distribution stages with limited emphasis on the utilization and end-of-life stages. While environmental considerations were incomplete within every stage of the product lifecycle, the utilization and end-of-life stages appear to offer the greatest opportunity for improvement among the designers in terms of gaining sustainability knowledge and employing creative problem solving strategies.

When discussing the social impact of the apparel lifecycle, the designers were fully aware of the importance and necessity of improving the treatment of workers in the fashion industry. The designers emphasized fair working standards and having a personal connection with their employees and business partners. Throughout the interviews, the designers expressed the benefits of working in a socially sustainable manner, including the development of valuable work relationships, the improvement of people's lives, the creation of meaningful products, and the ability to support others to achieve their sustainability goals and initiatives.

When discussing economic considerations of the apparel design and production process, the designers emphasized three prominent considerations: I) prioritizing sustainability over profit margin; II) specializing in particular sustainability initiatives; and III) the importance of product price for consumers. The dominant theme emerging from the interviews was the need for drastic change in the current economic model of the fashion industry in order to support the



development and adoption of sustainability practices. The designers explained the difficulties they faced trying to reconcile profitability with sustainability goals within the established norms and expectations of the industry and consumers.

### Study Aim 2

The findings regarding Study Aim 2 focused on how designers gain information regarding sustainability. It became apparent that the majority of the designers' knowledge of sustainability was gained outside of the educational system. Sustainability knowledge was primarily through personal investigation and experimentation, industry experience, and knowledge sharing among peers. The designers emphasized the importance of a sustainable fashion community made up of designers, educators, manufacturers, and others involved in the production and consumption of sustainable fashion apparel. It became evident that designers not only relied on this community for sustainability information, but also as a place to develop professional relationships and to network with fellow sustainably minded individuals within the greater fashion industry. In terms of sustainability thinking, the community contributed to transparency and knowledge sharing between peers, which, in turn, may perpetuate the continued progress of sustainable fashion through collaborative sustainability problem solving.

### Study Aim 3

The findings regarding Study Aim 3 explained how the designers were utilizing their knowledge of sustainability in their design practices. Throughout the interviews, the designers discussed the sustainability goals and priorities of their companies. When initially adopting sustainability practices, it became clear that each designer prioritized their sustainability efforts

to focus on specific areas they were most passionate about or felt they could successfully impact. Overtime, however, many of the designers realized the importance of continuous improvement and considering all aspects of sustainability. Designer 5 explained her personal experience with this shift in thinking as she became more knowledgeable of sustainability concepts:

I think when it comes to sustainability you have to look at every single aspect. I used to think something was more important than the other and I realized—I think in the last three years—that nothing is more important than the other.

While each designers' particular areas of focus may still be his or her area of biggest emphasis in relation to sustainability considerations, each designer readily and universally expressed a desire to improve his/her companies so that it would become as sustainable as possible.

### Conclusion

Manzini (2006) states, "The groundwork for macro-transformations and for great systemic changes is laid by micro-transformations and by local systemic discontinuities" (p. 3). The analysis of eight designers' sustainable design practices demonstrated that, in spite of current industry practices, their sustainability efforts, achieved mostly through personal experimentation and innovation, indicate a gradual shift towards systemic change in the fashion industry. However, the experiences of the designers also revealed that integrating sustainability principles into design education is necessary to achieve sustainability in the fashion industry. The designers underlined that while topics of sustainability are beginning to appear in design education, they remain optional. As a result, many of the designers have, voluntarily, taken on the role of sustainable design educator in an effort to increase knowledge of the inherent problems of the current fashion industry and inspire creative solutions.

Although fundamental changes in design education are necessary, it is also equally important to recognize that designers are just one element of a system that includes manufacturers, distributors, retailers, and consumers. Currently, sustainable fashion designers fight an uphill battle as they work against unsustainable industry practices and expectations and cope with inadequate options in sustainable material sourcing, distribution methods, and retail practices. In addition, they must continuously overcome limitations in consumer knowledge and acceptance of sustainable design. A truly sustainable fashion industry requires the combined efforts of all participants, not only designers. However, in the fashion industry, currently, each player involved in the product lifecycle appears to be disconnected from the others. As a result, it is hard for each to see the results of his or her actions. In order to elicit change, interconnected thinking needs to occur. To achieve this goal, sustainability education is essential for all industry practitioners and consumers alike. As Nelson Mandela (n.d.) stated, “Education is the most powerful weapon which you can use to change the world.”

### Significance

The findings of this study contribute to understanding the current status and realities of sustainable design practices in the fashion industry. In addition, this study contributes to sustainable fashion research by identifying gaps of knowledge of sustainability concepts among sustainable fashion designers.

## Limitations

This study has several limitations:

- I. This study focused only on the sustainable design of fashion apparel and did not include other fashion products, such as accessories.
- II. Only a limited number of designers were interviewed for this study and, therefore, the extent of the findings is limited. Although this study provides a good starting point to understand the practices and knowledge of sustainable fashion designers, the findings cannot be generalized to apply to all sustainable fashion designers.
- III. This study was conducted in the Northeastern and Southeastern United States. Practices and knowledge of sustainable fashion designers may be different in other parts of the United States.
- IV. Interviews were conducted with designers working in small companies. Practices and knowledge of sustainable fashion designers may be different at middle or large size companies.
- V. Two interviews had to be conducted via Skype. Although the interviews were conducted in the same way as the other interviews, in-person interviews might provide more contextual information during the interview process.

A further limitation was recognized throughout the data collection and analysis process. Because the topic of sustainability is vast and this study had to be completed within a short academic time frame, it was not possible to discuss every possible sustainability consideration throughout the entire product lifecycle. Consequently, the discussion section only addresses the design considerations that were actually discussed in the interviews. Because the interviews were open-

ended, the designers dictated the topics discussed. This means that the data from the interviews reveal only the major topics within sustainability that the designers considered at the time.

### Recommendations for Future Research

Some recommendations for future research into the topic of sustainable fashion design include:

- I. Continuation of in-depth research on the topic of sustainable fashion design is recommended because the current published research on the topic is sparse.
- II. A study that utilizes a larger research population could enable greater generalization of the findings and provide increased understanding of the current knowledge and practices of sustainable designers within the fashion industry.
- III. Since sustainability is such a vast topic, limiting the scope of the study to one area of sustainability could provide greater depth of knowledge. For example, conducting further research into the practices and knowledge of designers within one pillar of sustainability would provide valuable depth of insight into variables which impact designers' sustainability initiatives.
- IV. Researching sustainable fashion designers' knowledge and practices in medium or large companies would provide greater understanding of how sustainable design practices are considered within different levels of the fashion industry.
- V. Researching sustainable fashion designers' knowledge and practices in different geographic locations could provide greater understanding of how sustainable design practices are considered worldwide.

## References

- Aakko, M., & Koskennurmi-Sivonen, R. (2013). Designing sustainable fashion: Possibilities and challenges. *Research Journal of Textile & Apparel*, 17(1), 13-22.
- ADEME. (2006). An environmental product declaration of jeans. *Bio Intelligence Service for the French Environment and Energy Agency ADEME*, 1-8. Retrieved from [http://www.avnir.org/documentation/bdd/ademe/EPD\\_en\\_jeans\\_v2.pdf](http://www.avnir.org/documentation/bdd/ademe/EPD_en_jeans_v2.pdf)
- Armstrong, C. M., & LeHew, M. A. (2011). Sustainable apparel product development: In search of a new dominant social paradigm for the field using sustainable approaches. *Fashion Practice: The Journal of Design, Creative Process & The Fashion Industry*, 3(1), 29- 62.
- Black, S. (2011). *Eco-chic: The fashion paradox*. London: Black Dog.
- Black, S. (2013). *The sustainable fashion handbook*. New York: Thames & Hudson.
- Brito, M. P. de, Carbone, V., & Blanquart, C. (2008). Towards a sustainable fashion retail supply chain in Europe: Organization and performance. *International Journal of Production Economics*, 114(2), 534-553. doi:<http://dx.doi.org.proxy-remote.galib.uga.edu/10.1016/j.ijpe.2007.06.012>
- Caniato, F., Caridi, M., Crippa, L., & Moretto, A. (2012). Environmental sustainability in fashion supply chains: An exploratory case based research. *International Journal of Production Economics*, 135(2), 659-670. doi:10.1016/j.ijpe.2011.06.001
- Cervellon, M., & Wernerfelt, A. (2012). Knowledge sharing among green fashion communities online: Lessons for the sustainable supply chain. *Journal of Fashion Marketing and Management*, 16(2), 176-192.

- Chapman, J. (2005). *Emotionally durable design: Objects, experience and empathy*, London: Earthscan.
- Cho, J. Y., & Lee, E. (2014). Reducing confusion about grounded theory and qualitative content analysis: Similarities and differences. *Qualitative Report*, 19(32), 1-20.
- Corbin, J., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology*, 13(1), 3-21.
- DeLong, M., Goncu-Berk, G., Bye, E., & Wu, J. (2013). Apparel sustainability from a local perspective. *Research Journal Of Textile & Apparel*, 17(1), 59-69.
- Elo S., & Kynga, S. H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing* 62(1), 107–115. doi: 10.1111/j.1365-2648.2007.04569.x
- Fernandez-Stark, K., Frederick, S., & Gereffi, G. (2011). The apparel global value chain: Economic upgrading and workforce development. 1-57. Retrieved from [http://www.cggc.duke.edu/pdfs/2011-11-11\\_CGGC\\_Apparel-Global-Value-Chain.pdf](http://www.cggc.duke.edu/pdfs/2011-11-11_CGGC_Apparel-Global-Value-Chain.pdf)
- Fletcher, K. (1999). *Environmental improvement by design: An investigation of the UK textile industry* (Unpublished PhD dissertation). Chelsea College of Art & Design, The London Institute, London.
- Fletcher, K. (2012). Durability, fashion, sustainability: The processes and practices of use. *Fashion Practice: The Journal of Design, Creative Process & The Fashion Industry*, 4(2), 221- 238.
- Fletcher, K., & Grose, L. (2012). *Fashion & sustainability: Design for change*. London: Laurence King.

- Gibson, R. B. (2006). Beyond the pillars: Sustainability assessment as a framework for effective integration of social, economic, and ecological considerations in significant decision-making. *Journal of Environmental Assessment Policy & Management*, 8(3), 259-280.
- Gillies, R., McQuail, C., Keeble, J., Morrison, H., & Fisher, Z. (2013). *Fortune favours the brave*, Report of Marks & Spencer and Accenture. Retrieved from <http://www.accenture.com/SiteCollectionDocuments/PDF/accenture-fortune-favours-brave-executive-summary.pdf>
- Godley, A. (1997). The development of the clothing industry: Technology and fashion. *Textile History*, 28(1), 3-10.
- Graneheim, U., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*, 24(10), 105-112. doi:10.1016/j.nedt.2003.10.001
- Gwilt, A. (2014). *A practical guide to sustainable fashion*. London: Bloomsbury Publishing Plc.
- Hethorn, J. (2008). Consideration of consumer desire. In J. Hethorn & C. Ulasewicz (Eds.), *Sustainable fashion: Why now? : A conversation about issues, practices, and possibilities* (pp. 53-76). New York: Fairchild Books.
- Hethorn, J., & Ulasewicz, C. (2008). *Sustainable fashion: Why now?: A conversation about issues, practices, and possibilities*. New York: Fairchild.
- Hsieh, H., & Shannon, S. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277-1288.
- Keitsch, M. (2012). Sustainable design: A brief appraisal of its main concepts. *Sustainable Development*, 20(3), 180-188.



- Manzini, E. (2003). Scenarios of Sustainable Wellbeing. *Design Philosophy Papers*, 1(1), 5-21.  
doi:10.2752/144871303X139652993014340.2752/144871303X13965299301434
- Manzini, E. (2006). Design, ethics and sustainability: Guidelines for a transition phase. *Texto de estudo, Milão: DIS-Indaco, Politecnico di Milano*, 1-8.
- Markovska, N., Duic, N., Guzovic, Z., Mathiesen, B., & Lund, H. (2013). Our common future-25 years later: Sustainable development whats, hows and whos of energy, water and environment systems. *Energy*, 57, 1-3.
- Martin, M. (2013). Creating sustainable apparel value chains: A primer on industry transformation. *Impact Economy*, 1-41. Retrieved from  
[http://www.impacteconomy.com/papers/IE\\_PRIMER\\_DECEMBER2013\\_EN.pdf](http://www.impacteconomy.com/papers/IE_PRIMER_DECEMBER2013_EN.pdf)
- McDonough, W., & Braungart, M. (2002). *Cradle to cradle: Remaking the way we make things*. New York: North Point Press.
- Mebratu, D. D. (1998). Sustainability and sustainable development: Historical and conceptual review. *Environmental Impact Assessment Review*, (6), 493. doi:10.1016/S0195-9255(98)00019-5
- Morgan, L. R., & Birtwistle, G. (2009). An investigation of young fashion consumers' disposal habits. *International Journal of Consumer Studies*, 33(2), 190-198. doi:10.1111/j.1470-6431.2009.00756.x
- Norman, D. A. (2004). *Emotional design: Why we love (or hate) everyday things*. New York: Basic Books.
- Nguyen, N. C., & Bosch, O. H. (2014). The Art of Interconnected Thinking: Starting with the Young. *Challenges*, 5(2), 239.

- Opp, S., & Saunders, K. (2013). Pillar talk: Local sustainability initiatives and policies in the United States- Finding evidence of the "Three E's": Economic development, environmental protection, and social equity. *Urban Affairs Review*, 49(5), 678-717.
- Organic Trade Association. (2011). *Cotton and the Environment*. Retrieved September 22, 2014, from [http://www.ota.com/organic/environment/cotton\\_environment.html](http://www.ota.com/organic/environment/cotton_environment.html)
- Orzada, B., & Moore, M. (2008). Environmental impact of textile production. In J. Hethorn & C. Ulasewicz (Eds.), *Sustainable fashion: Why now?: A conversation about issues, practices, and possibilities* (pp. 299-325). New York: Fairchild Books.
- Palomo-Lovinski, N., & Hahn, K. (2014). Fashion design industry impressions of current sustainable practices. *Fashion Practice: The Journal of Design, Creative Process & The Fashion Industry*, 6(1), 87- 106. doi: 10.2752/175693814X13916967094911
- Pan UK. (2013). *Annual Review 2013*. Retrieved from [http://www.pan-uk.org/files/PAN\\_UK\\_Annual\\_Review\\_2013.pdf](http://www.pan-uk.org/files/PAN_UK_Annual_Review_2013.pdf)
- Quigley, M. & O. Charlotte. (2006). *Fair trade garment standards: Feasibility study*, Report of TransFair USA. Retrieved from [http://www.pannastrategies.com/fairtrade\\_garment.pdf](http://www.pannastrategies.com/fairtrade_garment.pdf)
- Rissanen, T. (2008). Creating fashion without the creation of fabric waste. In J. Hethorn & C. Ulasewicz (Eds.), *Sustainable fashion: Why now?: A conversation about issues, practices, and possibilities* (pp. 184- 206). New York: Fairchild Books.
- The United States Environmental Protection Agency (EPA). (2015). *Advancing sustainable materials management: 2013 fact sheet*. Retrieved from [http://epa.gov/solidwaste/nonhaz/municipal/pubs/2013\\_advncng\\_smm\\_fs.pdf](http://epa.gov/solidwaste/nonhaz/municipal/pubs/2013_advncng_smm_fs.pdf)
- Tongco, M. D. C. (2007). Purposive sampling as a tool for informant selection. *Ethnobotany Research & Applications* 5, 147-158.

- Tortora, P. G., & Eubank, K. (2010). *Survey of historic costume: A history of western dress*. New York: Fairchild Books.
- Twain, M. (1927). *More maxims of Mark*. New York. oclc: 05986855
- University of Cambridge. (2014). Suicide epidemic among India's 'marginalized' farmers. *ScienceDaily*. Retrieved from [www.sciencedaily.com/releases/2014/04/140417090734.htm](http://www.sciencedaily.com/releases/2014/04/140417090734.htm)
- Vezzoli, C., & Manzini, E. (2008). *Design for environmental sustainability*. London: Springer.
- WCED. (1987). *Our common future*. London: Oxford University Press.
- Welford, R. (2003). Beyond systems: A vision for corporate environmental management for the future. *International Journal of Environment and Sustainable Development*, 2(2), 162-173.
- Welters, L. (2008). The fashion of sustainability. In J. Hethorn & C. Ulasewicz (Eds.) *Sustainable fashion: Why now?: A conversation about issues, practices, and possibilities* (pp. 7-29). New York: Fairchild Books.

## APPENDIX A

**UNIVERSITY OF GEORGIA**  
**CONSENT FORM**  
**Sustainable Development of Fashion Design**

**Researcher's Statement**

We are asking you to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. This form is designed to give you the information about the study so you can decide whether to be in the study or not. Please take the time to read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information. When all your questions have been answered, you can decide if you want to be in the study or not. This process is called "informed consent." A copy of this form will be given to you.

**Principal Investigator:**

Dr. Katalin Medvedev	319 Dawson Hall	E-Mail: medvedev@uga.edu
Textiles, Merchandising and Interiors	305 Sanford Dr	Phone: 706-542-4307
	Athens, GA 30602	

**Purpose of the Study**

The purpose of the study is to gain understanding of designers' knowledge of and practices used in the sustainable development of fashion. Sustainable development involves the consideration of environmental, economical, and social implications of sustainable production and consumption. This study focuses on design practices of sustainable fashion designers in order to understand how design choices and decisions may impact or influence fashion sustainable development.

**Study Procedures**

If you agree to participate, you will be asked to ...

1. Participate in an interview about your design practice and how it may relate to sustainable development. Some topics covered may include how your design practice relates to environmental, economical, and/or social implications of sustainable production and consumption. This process will take about 1 to 3 hours. The interview will be audio recorded in order to assist in data collection and analysis. If you agree, you may be photographed during the interview process. These photographs may be used for activities beyond research analysis including but not limited to publications, presentations, or other promotional purposes.
2. After the initial interview you may be contacted for a second interview. In the second interview you will be asked to provide more information about any topics that arose from the first interview. Because you have already given informed consent, you will not be asked to sign another consent form. The second interview is expected to take about 1 to 3 hours.

**Risks and discomforts**

We do not anticipate any risks from participating in this research.

**Benefits**

Designers participating in this study may find that they have much to contribute in the growth of knowledge about design practices in sustainable development. This information may contribute a great deal in understanding the realities designers face in creating sustainable fashion products. Positive emotions, such as feelings of happiness, may be elicited by the interview questions. Participants may find that talking about their experiences to be beneficial not only for themselves, but for sustainable development in general.

**Incentives for participation**

You will receive no incentives (monetary or non-monetary) for being in the study.

**Audio/Video Recording**

Audio recording devices will be used. The recordings collected from the interview will assist in data collection and analysis. The recordings will be destroyed after data collection and analysis is complete.

Photographs will be taken upon your consent. These photographs will not be used for activities beyond research analysis. If you agree to this, please sign below.

Name: \_\_\_\_\_  
\_\_\_\_\_

Date:

**Privacy/Confidentiality**

The data collected through the interview process will identify you indirectly through the use of pseudonyms. Documents containing your information will not contain any personally identifying information at any time. Numbers will be assigned to your interview file to identify transcripts, audio files, and interviewer notes. After audio recording, digital files will be downloaded and saved in a password-protected computer. Only the members of the research team will have access to these files. Files will be deleted after analysis is complete. Other documents will be stored under lock and key. Only members of the research team will have access to these documents.

**Taking part is voluntary**

Your involvement in the study is voluntary, and you may choose not to participate or to stop at any time without penalty or loss of benefits to which you are otherwise entitled. If you decide to withdraw from the study, the information that can be identified as yours will be kept as part of the study and may continue to be analyzed, unless you make a written request to remove, return, or destroy the information.

**If you have questions**

The main researcher conducting this study is Dr. Katalin Medvedev, a professor at the University of Georgia. Dr. Medvedev is supervising a graduate student researcher, Erin Lawless, who will be conducting the interviews. Please ask any questions you have now. If you have questions later, you may contact Dr. Medvedev at [medvedev@uga.edu](mailto:medvedev@uga.edu) or at 706-542-4307. If you have any questions or concerns regarding your rights as a research participant in this study, you may contact the Institutional Review Board (IRB) Chairperson at 706.542.3199 or [irb@uga.edu](mailto:irb@uga.edu).

**Research Subject's Consent to Participate in Research:**

To voluntarily agree to take part in this study, you must sign on the line below. Your signature below indicates that you have read or had read to you this entire consent form, and have had all of your questions answered.

---

Name of Researcher

---

Signature

---

Date

---

Name of Participant

---

Signature

---

Date

Please sign both copies, keep one and return one to the researcher.

## Appendix B

### Interview Protocol Sustainable Development of Fashion Design

#### The Initial Contact

1. Introduce the researcher
2. Explain the purpose of the study
3. Answer any questions
4. Ask if interested in participating or not

#### The Visit for the Interview

1. Introduce the interviewer
2. Explain the purpose of the study
3. Explain the consent form
4. Give consent forms
5. Collect consent forms
6. Interview—see below
7. Thank participants
8. Answer any questions

**\* Participants may ask questions throughout the entire duration of the interview**

There are two levels of sustainability thinking: (Fashion and Sustainability)

- 1: Sustainability focused innovation in *fashion products*
  - Technical and market based solutions
    - Life cycle analysis
- 2: Sustainability focused innovation in *fashion systems*
  - Moral and ethical solutions
    - Business models
    - Economic goals

#### Research Questions

1. How do decisions made in the design process impact the sustainability of a fashion garment?
2. How do the design processes of sustainable fashion designers vary? How are they alike?
3. What influences fashion designers' ability to create products that consider environmental, social, and/or economic aspects of sustainable development?

#### Interview Questions

##### **General Questions (Conceptual: what they would like to do)**

What does sustainability mean to you?

- Do you identify as a sustainable designer? If not, what kind of designer do you consider yourself to be?

I would love to hear the story of how you became a (sustainable) designer.

- What motivated you to adopt your current (sustainable, fair trade, eco-friendly) design strategy?
- What have you learned through this process?
- What have you done successfully? What has been unsuccessful?

What are your long-term goals for sustainability?

What needs to change in order for fashion to become sustainable?

### **Design (Practice: what they actually do)**

- What do you consider when you are designing a product?
- What are the steps involved in your design process?
- What are your goals and/or responsibilities as a designer?
  - How do you prioritize your goals?
- How might your design decisions impact the sustainability of your products?
  - How do your designs impact the environment?
  - How do your products impact society?
- Do you think sustainable fashion is profitable? How/Why/Could it be?

### Materials

- How do you choose the materials you are going to use?
  - How are your fabrics made?
  - What are they made of?
  - Can you describe any finishes or textile treatments used for your fabrics?
  - How are your fabric's durability qualities?
  - Can you describe the fabric colors and designs available to you?
  - What are the caring requirements for your fabrics?
- What environmental implications might your fabric have?
- Can you describe any recent material innovations that you are aware of?

### Garment Design

- What considerations do you make during your garment design process?

### Aesthetics

- Please describe for me the importance of aesthetics in sustainable design.

### Co-design

- How might a designer/consumer collaboration impact product design and sustainability?
- What implications could this design process have on a consumer's relationship with your clothing?

### Cost

- How important is profit to you?
- Do you think there are financial benefits of designing sustainable products?
  - How do costumers react to the price of your items?

### Speed/ Time

- How might speed of the design/production/consumption process impact the sustainability of your products?
- Can you describe for me what your deadlines are like?



### Packaging

- How do you package your goods?
- How is your package waste managed?
- What do your consumers do with your packaging?

### End-use

- Why do you think your consumers purchase your products?
  - What aspects of your designs appeal to your consumer?
- What design considerations do you give regarding how your customers will use your products?
- How might design elements influence the functionality of your garments?
  - Which of your garments have/could have more than one function?

### Optimized lifetime

- Can you describe how your design efforts might influence your consumer to lengthen the lifespan of their garments rather than throwing them away after the first use?

### Care

- What considerations do you give regarding how your consumers will care for their purchases?
- How might design elements influence care practices?
- How do consumer care practices impact sustainability?
- Do you educate your consumers on best care practices? Why/Why not?

### Disposal/ End of Life

- What considerations do you give regarding how your consumers will dispose your garments?
- How might design elements influence disposal habits?

### Education

- What is your opinion about teaching sustainable design in school?
- How/Where did you learn about your current design process?

## **Production**

### Manufacturing process

- Where/How do you have your products made?
- What do you consider when you are looking to have your products manufactured?
- What other industries or companies do you work with?
- What resources are needed for production?
- Do you consider the resulting waste of your production? Why/Why not?

### Labor issues

- Do you consider labor issues during the manufacturing process?
- How do you guarantee that no labor issues occur during your manufacturing process?
- Do you personally know who makes your products?

- Have you formed relationships with the people who produce your products?

#### Fair Trade

- What does Fair trade mean to you?
- Do you think your products are fair trade? Why?

#### Local Production

- How might your products impact the local community where your garments are produced/sold/used?

#### Distribution

- Can you describe your supply chain?
- How do you transport your goods?
  - What is the energy and resource consumption associated with your transportation?
- Can you describe any resources available to you to help assess the implications of your distribution practices?

### **Consumption**

#### Consumers

- What do your consumers think about sustainable fashion?
- What role do consumers have in the sustainable development of fashion?
- How might your design efforts impact consumer habits?
- How do you communicate with your consumers?
- Do you educate your consumers on sustainable practices? Why/Why not?

## Appendix C

**Designer 1 Transcript**

Length: 70:42

E: Can you tell me a little bit about what you do and your company in general?

D: This is a women's wear collection. We're looking to branching into men's wear as well in the upcoming season. It's a contemporary price point, American made, sports wear collection. We do everything from tops, separates, dresses, and a little bit of cocktail and evening. Basically, the whole collection is made with the philosophy of zero-waste patternmaking as our number one most important qualifier for an item to be one of our products. The patterns are made whether it's with geometry, or origami, or appliqué, or any different technique that we use, the end result is to try and use 100% of the fabric that we cut off of the bolt for each product, on that product.

E: On the one product?

D: On the one product. There are instances where we are trimming this and cutting that off, and in the cutting process we have damaged goods and all these different things. So, with all of those left over materials, we save them and recycle them for other projects. We are constantly working towards eliminating that from the process.

E: So, you are trying to get literally no waste.

D: We are trying to get to zero. I'd say right now we are probably around somewhere between 1-3%. We have projects that are literally zero, and we have some that are probably 4-5%. There are some cutting techniques that are completely efficient, and there are some that are more wasteful. So, every season we try and eliminate the ones that are not as effective. We try and re-imagine the ones that work really, really well to make new, more creative, better designs that utilize those same techniques.

E: Can you tell me a little more about which methods are better and which are worse? How you learned? Which one's are the best you've found so far?

D: I'll start by saying this entire endeavor has been completely trial and error. I feel like there are a handful of other designers that are experimenting with zero waste. I've heard about a few design schools giving projects to their students about zero waste, but I do feel like in the actual market place—where you are really buying clothing—I definitely feel like I am sort of a pioneer in this endeavor. There isn't a whole lot of very wearable clothing that meets these criteria. This whole thing is just experimentation. I was trained at FIT. I have a four-year degree from their fashion design program. I graduated in the top 10 in my class.

E: Nice.

D: Thanks! And yeah, with highest honors, and it was a very, very good experience. But the

thing about FIT is that they teach you the traditional way to do everything. So, I learned traditional patternmaking, traditional draping, all of the standard sewing and design techniques that you then go into the industry and employ as a designer. I felt like this waste issue was a really big problem. And I thought, well, if I went to one of the top rated design schools in the country and I can identify the problem, and as a designer my job is to solve problems—how are we going to make this; what are we going to make it out of—those are the kinds of things that designers do, and I felt like I was able to address this issue creatively, and I just started trying. I originally started with a partner. We launched [the collection name] in 2010, 2011, something like that and, um...

E: Is that just made in New York 100%? What was that?

D: It's the same concept, but it is a different brand. We've since gone separate ways. I re-launched the collection under my name, and the aesthetic has changed slightly. But it's all just been constant experimentation. The first thing that I ever did was just try and see if I make a totally traditional pattern and I lay it out across my fabric, what's left over? And what can I do with it? And that's all. That's the initial starting point for this. Since then, it's gone into totally other realms. Like, can I design with one continuous strip of fabric so that I never have to waste any thing? Can I design, you know, backwards? [Can I] cut everything apart a then try to put it together in a weird way? Can I look at shapes and see if I can figure out if I can fit these things together like jigsaw puzzles? Can I design using only rectangles? All these different projects have come out of that. But the initial starting point is, if I just do what I already know how to do, what do I do with the leftovers?

E: Yeah. Which way was the most successful, you think, so far?

D: I think I've had successful designs and unsuccessful designs with everything.

E: Oh, really?

D: But I think that the most successful things have tended to be the simplest. You can't just measure success on the aesthetics. I think, aesthetically, I've had some really successful designs that have gotten a lot of attention, but have been a nightmare to produce, and that I make very poor margins on because I have to put so much labor or time into them. Or, maybe, they look amazing but they aren't very sturdy because there is a lot of hand sewing, or whatever it is. They might be super successful designs that aren't very practical for the consumer.

E: To actually, like, wear.

D: Exactly, and that is where I think this company sort of sets itself apart from a lot of other zero waste designers out there and people who are experimenting with it. We are very focused on wear-ability. I wouldn't necessarily say we are hyper-focused on sale-ability, because we want people who come in here to find something that doesn't look like everything else that they just found at J-Crew, or Macy's, or H&M, or wherever. You know, this is [brand name], so you're supposed to have something unique. But again, we're just selling tops, and skirts, and dresses, you know, we are not trying to redefine what a shirt is. I am just trying to show you a shirt you

haven't seen a thousand times. So with that in mind, we want to make sure that it fits like a shirt, and it's going to look good with things you already have in your wardrobe, and that you are going to feel confident and sexy wearing it. Those are all things that are really important. For me, the zero waste aspect of it sort of takes, I want to say, it takes a backseat in terms of my marketing priorities, but it is my number one qualifier.

E: So you don't really emphasize it too much when you are marketing the clothing out?

D: I try not to. I think that with the consumer, I find myself today in a very different position than I did when I started it. And when I started the company I thought, 'this is a niche product; I want to tell people about this aspect of design; I want to differentiate myself, and this is the way I am going to do that.' You know, this is a very hard industry to be in with a lot of super flaky people. If I am going to waste all of my time doing this, I am going to try to do something that is good for people. You know, that's how I can justify working in fashion (laughing), which seems so frivolous.

E: (laughing)

D: Um, but I love doing it. So, how do I make a product that I can feel really, really good about, and that I would want to wear if I was a consumer in that market? So, I went into it thinking everybody needs to know about zero-waste; this is the thing. This is it. This is THE (emphasized) thing that I need to tell everybody about. And what I started finding out was whether it was zero waste, or it was completely conventional, organic, made out of petroleum, people just like the designs. So, I should lead with the designs when I am trying to sell things.

E: So, design seems to be what consumers go for?

D: Right. It's the original print; it's the unique appliqué details; it's the braids and all the cool things that we are doing. But, I arrive at all of those things because I put zero waste parameters on myself as a designer.

E: That's cool. That's so interesting. So, do you feel like consumers are becoming more aware of, like, once you tell them about zero waste stuff, do they become more interested in your clothing, or is it just kind of like, oh that's cool?

D: I think it's different for everyone. And, I think, the real thing that I try to hone in on with people is not so much that this collection is zero waste but the collective waste of this industry. So, one of the statistics that I've learned recently is that last year 114 billion tons of textiles went into landfills. When I tell someone that, and then I tell them that they can shop freely here and know that none of the products they are trying on contributed to that number, I think they think about it a little bit differently. You know, it's not so much about everyone else being evil, or me being good, or anything. It's about being able to support responsible business with your consumer dollars. If I lead with that foot, I find that people are less interested in the collection. But, when someone is trying something on, and you can say it didn't contribute to any of that. What I really feel strongly about, really, really strongly, is not so much educating the consumer, but talking with other young designers, and design companies that are successful right now, and sort of

banding together that we should demand this of ourselves.

E: So it really should be the designer? Which is really, that's why I am doing this project, because I am really interested in like, I feel that designers, at the beginning, have a huge role in the whole process.

D: Yes.

E: Could you tell me more about how you think designers' responsibility, and the whole process, goes?

D: Yes, absolutely. I mean, I read recently that more than 50% of a products carbon footprint is determined in the design phase of its lifespan. So, before anyone has turned on a machine, or made, you know, a stitch, or bought any fabric, or ordered anything, the designer has already determined more than 50% of the impact that this product is going to have on its environment. And I feel like we, as designers, need to be holding ourselves, and each other, responsible for that. I kind of get this weird chip on my shoulder sometimes, that, um, well of course you can make something beautiful when you are allowed to make as much trash as you want. But, could you make something that is really worth having if you were thinking about it a little more?

E: Like when you have these restrictions, can you still be successful?

D: (nods) Can you still be a good designer? Exactly. I really feel like, you know, in big business right now, it's very hard to get people to make a change. First of all, you have to go through so many hoops, and there are so many levels of corporate hierarchy to get to approve something.

E: So many decisions along the line...

D: Exactly, and there's a lot of legwork to be done there. So, what I am really interested in is teaching the design youth about this process, and about what some of the issues are, and getting them to start thinking creatively about it. Because, eventually, they will be running these companies. If zero-waste patternmaking is a course that everyone has to take in school, it will follow these designers throughout their careers.

E: Right, they won't be able to forget about it if they have already learned about it.

D: Exactly, and they won't need to reinvent it because there are people out there who are pioneering it for them. I want to be able to really bring that to more people and encourage them to use it in their own creative ways. You know, one of the things I really like about zero waste is that, as wide reaching as this industry is, from the impacts that our dyes have, to the way our cotton is raised, there are so many different sides of it. Like, it can make your head spin. The truth is that designers, themselves, really only control how patterns are made.

E: Really?

D: I mean, you can decide where you are getting your fabrics from. You can decide who you are

having dye your goods, but we don't dye fabric, and we don't mill yardage. We don't do all of those things, but we do design the clothes.

E: Okay, so this seems like it's the most- it's the biggest impact for what you have control over.

D: Right.

E: Okay, so would you, how important, from that point of view, how important would it be for the whole industry to talk to each other? Because it seems like, if there are a lot of issues in sustainability, and if you.... Well, first of all, when you design, how do you pick your fabrics?

D: So, the fabrics, for me, they have been an interesting journey. I started the collection thinking that I wanted to be completely organic, everything made in America, everything either recycled or upcycled, bamboo, organic cotton, all of those kinds of things, and I wasn't getting the reaction from the customer that I wanted from that. You know, people wanted things that were softer. People wanted things that were more durable. People wanted things that were more conventional. Then I started using just regular silks from whatever silk house that I could get low minimums of, and the reaction to the product has been incredible. And so, I am finding that as a zero waste designer, I want to be refining the materials that I am working with to be more ecologically friendly, but as long as I am not doing that, I may as well not waste anything.

E: Well, the interesting thing about fabrics, this is what I've learned, is that there is really no perfect fabric. Like, with organic cotton, yeah, it's organic, but cotton is the number one user of water and energy. So, I think, um, just educating yourself on the fabrics. Another interesting thing, which I wanted to ask you about, you talked about textiles in landfills, did you consider, that statistic, does that include only textiles from pre-consumer? Or does that include post-consumer waste?

D: That's everything. So, my understanding is that the fashion industry is the leading contributor to that number, but that's everything from post consumer to home goods, to, like, automobiles, all everything.

E: So, all textiles everywhere.

D: Yes, just textiles

E: Got ya. Do you consider post consumer waste, at all?

D: I've definitely considered it. I think that for the quality of product that I am interested in providing, it's not something that I can tackle right now. But, I have started sort of gestating this idea for post-consumer home goods.

E: Oh yeah, with your rugs.

D: With the rugs and stuff. These pillows are made out of and stuffed with fabric scraps, and they are my first attempt with pillows ever, so please excuse them.

E: No, they are very cute. I like them a lot.

D: You know, like, the look of them is really cool. You could definitely find something like this in a store, and this is made out of stuff that people were going to throw away.

E: Right! So, did you get that from the consumer, or is that from your waste right now?

D: This is from my waste. But, I am actually interested in sourcing this from like factories and cutting rooms.

E: Okay, got ya.

D: So it would be, like, basically made out of their trash. I've heard that some of the factories and cutting rooms around here are paying as much as \$500 a month to have their scraps taken away.

E: Oh, yeah. I saw that on your website. I saw that in your little about me.

D: (Laugh)

E: I know your products are very high end, and expensive, and really nice, but happens to them once the consumer is like okay, well this doesn't quite fit anymore?

D: This is really interesting. So two things: one, we're completely re-launching our sales model with this upcoming season. So, we have been wholesaling for the last, almost, four years, and, just on a personal level, I have decided that that's not what I want to be doing. The trade shows and the whole game of it is so crazy, and I'm sure you saw on my website that stuff gets pretty pricey. We are making everything in America. We are using really nice quality fabrics, and then I am actually designing everything. These are original prints, and I make patterns, and it is an expensive process. So, in order to sell it to a store, profit on it, and then have a store sell it to a customer, we are marking things up so high. So, for example, that skirt that is behind you, any of those printed skirts, they are all the same pattern. They would be retailing in a store for somewhere around \$245, and if I sell them direct to my consumer, I can sell them for as little as \$110.

E: Oh, wow. And you still get the same profit?

D: Exactly. Because that is what I would have been selling it to a store for. And that expands my market a lot because I only know so many stores, but the population is huge. So, we've already had like a little bit of a soft launch doing that, and we'll be going fully in that direction by, I'm hoping, the middle of September. We have had a really positive reaction to it. You know, some of our dresses that were selling for over \$400 are now under \$200.

E: People are going to be like, what a deal! So great!

D: Yeah, people are really happy about it. And, basically, you are able to afford a zero waste



product that's made in very limited quantity—we don't usually make more than 20 of anything—for the same price that you would spend on a dress at Macy's.

E: Yeah, and this is way more interesting (laugh).

D: (Laugh) You are basically getting a designer product—a ready to wear product—at a super affordable price. And it's not losing any value for anyone, which is really nice...

E: We were talking about once the consumers are finished.

D: Right. So, we have this amazing idea. I think it's going to take a little bit of time for us to be able to actually fully launch this, but we really wanted to close the loop on that and offer to take our goods back after people are done with them. We have two nice ideas. One is to then use them for post-consumer products, for example, pillows. And another would be, if they are lightly used, to resell them like vintage. So, you know, you aren't going to wear my shirt anymore because you have just decided you hate the color blue and you are getting rid of everything blue in your wardrobe, and I will say, alright, well, send it back to me free of charge, you get 15%, 20%, whatever, off your next purchase, and I then resell that lightly used garment at a really great price to a consumer who can't afford it or maybe couldn't get it when it was in stock, and now they can have one.

E: That's really interesting, really cool. I've heard a lot, read about people doing that. I am just curious, like, what do you think would be required of you to do that? Would you have to hire someone else to take care of the clothing? How do you see that happening?

D: This is a very small operation. We have, like, three people, basically, who work here, and then we have interns, but that's also a learning process so it's not all just, like, free labor! (laugh) And I really try not to think of it that way. We want them to be learning stuff, and it's hands-on, and they are definitely benefiting. But, yeah, it's not like having ten free employees (laugh). Basically, I feel like, if I can create a demand for it, I really just need someone who can manage my e-commerce website because just the printing out the labels and sending the shipping materials, and all that kind of stuff, that's a job. But the really nice thing is that we make everything here. Everything is coming back here. Our studio is everything. That's the whole company. We're not talking about being able to send things to China and then having them come here. My goal is to work towards a vertical model, and, eventually, I would like to be milling and printing my own fabrics and just having, really, no waste.

E: And having control over the entire process?

D: Exactly.

E: That's so cool. That's really cool.

D: I think it's gonna be a long road.

E: I'm getting chills talking to you. I'm so excited!

D: Cool! Thanks! I mean, my ultimate vision is to, basically, have this [references his studio], but have it be ground floor, so you would be able to come into the studio and shop and see where everything is made. I mean, kind of like an open kitchen restaurant.

E: Yeah, that's cool. So it's really, like, transparent.

D: Yes.

E: Because that is what a lot of people are talking about too, transparency in your process. And you really want to focus on that?

D: I really do. And, you know, I'm not going to claim that we are perfect, and one of the reasons that I'm getting out of wholesale is because there are ridiculous requirements. I have to flat pack, or pack on hangers, every single garment. And just the amount of plastic that we go through is insane. And I understand it from like the perspective of wanting to protect your investment. You know, these companies are investing thousands of dollars in inventory, and they want to make sure that their stuff doesn't get ruined in transit, and they want to make it easy for them to ship things out once they get into their warehouse. But, I can just see so many other alternatives to the way we do things. Like, okay, so we want to make sure things are in plastic because it's impervious to the weather when you are shipping things. Why don't we use plastic reusable containers to ship things in, and keep them flat packed individually? And then, when you pick up someone's entire order, put it into one container, and send it to them, and make sure it is something reusable. Or, maybe, if they send it back, they get a discount, or, you know, whatever it is. I know we want things to be easy, but sometimes easy isn't right. And it's easy to do anything as long as the management puts a system in place. And so, here, I really focus on, I have crazy ways of doing things, and I feel like sometimes I am driving everyone totally insane, but we reuse all of our paper. And I'm like, okay, so big pieces of paper go over here, and medium size pieces of paper go over here, and we're not buying post-its because we cut patterns constantly. I have all these little scraps of paper from all of our patterns. So, if you need to write a to-do list, here's a box.

E: Here is a little piece of paper, take it!

D: (Laugh) Exactly. And it's not that it's easier or harder, or this or that. It's just the way we have to do things so that we can be as responsible as possible. And part of the moving away from selling wholesale is so that I can hone in on how to ship more responsibly and consume less and, also, consume things that are reusable or recyclable. The single use plastics in fashion are out of control (emphasizes the word). For example, in our studio, the interns and the whole studio have, basically, a rule: we don't bring outside plastic bags in here. So, when interns are running errands, they bring tote bags with them. When we pick up fabric we always say no bag. That's, you know, that's just one little thing that we do. But the average consumer...

E: If everyone did that, it would make such a big difference.

D: Exactly. And this is what I am trying to focus on with talking to the interns and talking to the

students. Because, the student will eventually be the assistant designer who's in-charge of managing the interns, and they are going to say to their boss, 'I want to implement a thing where. I am just going to buy 10 tote bags, or bring 10 tote bags in from home.' Or maybe the company already has branded tote bags.

E: Or you have extra fabric, and you can just make a tote bag.

D: Exactly. And, you know, 'I'm gonna just have the interns sign a thing that they're not going to bring any plastic bags in here', and their boss is going to say, 'I don't care, I'm busy!' (laughs). You know, and they're going to save 6 to 8 plastic bags per intern per day.

E: Right. That's crazy. Wow. Okay, so in the education world, where do you see us now, and how do you see us progressing?

D: Right now I see very much that sustainability is an optional topic that you can learn about. Some places have classes about it. Some places have clubs about it. Some places offer symposium. I think there is a lot out there for the individual. But I think as a student, you know, you are often trying to just get through your core curriculum, and extras are, like, never gonna happen. It very much was that way when I was at FIT. And I was someone who really wanted to nail all of my core classes, because that, that...

E: You just wanted to be the best.

D: Right. I wanted to be the best in all of those classes, but that left me no time for anything extra. I think it's the educators' job to say, 'this is what you need to be learning about because this is our future.' And I am very concerned that some schools are focused on the old school way of doing things, and we need to be offering mandatory classes. We need to be insisting that students push the way they're thinking to better our industry, for the future, because they are the future of the industry. So, for example, at FIT we took a basic sewing class, a second level sewing class, and we learned patternmaking, and then our patternmaking built to the next level. So, you learn how to do everything. But at no point did anyone really challenge the way any of those things are done. And what I'm saying, what I'm offering, is that we are going to be working with paper; we are going to be working with pencils; we are going to be working with sewing machines, but we are not gonna do things the way they've always been done because that way is not working. So, you just learned for three years the way that you do everything. Now, lets turn it on its head, and start thinking about the way we should be doing things.

E: Interesting, I feel like it would be easier for students if you just started there.

D: Right.

E: Like, maybe do a lesson in how things are, because you want to, you need to learn about the industry, because that is a huge thing.

D: Right. You need to understand fit. You need to understand construction. You need to understand how people have always done things, so you can break all those rules. But for me,

you know, a seam finish is a seam finish, is a seam finish. But, when I have an extra piece of something or other hanging off of an armhole, what do I do with it in order to get my garment finished and not throw that piece of fabric away? The possibilities are really limitless. I see this being applicable to men's wear, children's wear. You know, it could be goth. It could be punk. It could be very feminine and girly. It could be rainbows and unicorns. It can really be anything. I'm not suggesting that we get all new machinery or start doing things in a way that people will never understand.

E: Right, its really just tweaking what we are doing now to improve it, to make it better.

D: Right. It's just adjusting it. I also think that this is a very over-saturated industry right now. Basically everyone who has ever produced a record has a fashion line. And, you know, every company is trying to out wheel and out deal everybody else. And then, every big designer has a mainstream line for some secondary store. What we really need to do is separate the men from the boys, so to speak. Who can really design a product that should be on the market, and who needs to go find another job?

E: (Laugh) I mean, yeah, to make it a little harder. That makes sense.

D: I think making it a little harder in order to sell a quality product is in order. I think that, you know, when you look at organizations like the CFDA, for example, they are starting to talk about sustainability. They are starting to think about it. But, the main awards that they do for the year, the Oscars of fashion, are still going to whoever had the prettiest collection. And I think that we need to be challenging whether or not they deserve to be rewarded for pretty.

E: Got ya. I'm curious about whether this sort of movement will happen from the designers stand point, or the consumer, or if it is going to be a mesh of everyone is just kind of together. What do you think is going to, what do you think could move this along?

D: I think, in general, we're in an information age. I think information is what's gonna really change people's minds. And I think it'll change designer's minds. I think it'll change consumer's minds. I think it'll change the buyer's minds. I think it's, it's really in a new time. And basically, when you think about fashion, you think about, like, the whole history of the industry. Like, oh my God, Paul Puree made women wear pants. That's like the craziest thing ever. And the Chanel suit, oh my God. Where are these milestone markers? And really, in my opinion, not since the Calvin Klein, Donna Karan, Tommy Hilfiger explosion of the late 80's, early 90's lifestyle branding, when lifestyle dressing and branding became a thing, has anyone blown the lid off of this industry. And I've really felt for a long time, someone has got to do that. And it's gonna be me or I'm going to die trying.

E: (Laughing) That's so awesome!

D: Thank you! And I think that the difference here is that, like I said earlier, a shirt is still a shirt, and I am not trying to change what a shirt is. I'm just trying to change the way things are made. A lot of people just don't realize how much clothing there is and how it's being produced the wrong way. And I think the way Whole Foods kind of changed the way people eat and think

about the produce, the organic, that it's better for me, I feel like zero waste has a very large part of this picture. Whether you are working with organic cotton, or micro fibers, or neo-printing, whatever, we should be wasting as little of it as possible. That is the future of consumption.

E: And, I love what you said about closing the loop. It's like, if, even if you save all this in the beginning, that's going to make a good impact, but if it ends up just going into the landfill anyway, then it's kind of like, what's the point?

D: Exactly.

E: It seems like what you are saying is that, ultimately, it should be a closed loop.

D: Yes.

E: Somehow, everything comes around.

D: I think we are in a funny place because the buyers really, like, have the industry by its balls (Laughs). You know? They're really holding control of everything. Because these majors stores are saying, 'this is what sells, this is what won't sell,' and consumers don't get to see a lot of what's on the market. I think that we need to shift the focus towards the designer. And we need to be picking out the designers who are doing the right things and highlighting them. So, in my particular direct to consumer—a lot of companies, Reformation, Everleen, these companies who are offering really high quality product, a lot of times with an eco impact or sustainability in mind—once you get that to a consumer without going through a middle man, at a price that they can really afford, they stop wanting to go back to that store that's only trying to sell them more stuff anyway. So, we need to be in a buy better culture of people who... I don't say this to be like—I'm gonna say it, then I'm gonna rephrase it—but, we need to be in a culture of sort of like respecting the designers a little bit more, just like you would with any professional. It's not because designers are so amazing, but you wouldn't go to a doctor, get an opinion, go to another doctor, get a second opinion, and then ultimately take your mom's word for it. You know, you need to trust the professionals.

E: Who are being taught.

D: Right, exactly. And I think what we are doing right now, as a culture, is we're trusting tastemakers and we need to be trusting professionals. And the designers can say, 'this is a well-made product, this is a responsible product.' The tastemakers are saying, 'that's cute.'

E: Yeah, I wonder if, do you think that shift is going to be able to happen?

D: I think, I think it will. Because when you think about the really great designers of the past, they are the tastemakers. So, one thing that I've been hyper focused on is not looking at other people's collections and not worrying about trends. I really couldn't care less about trends. Because I think that really amazing designers create them. Everyone else just follows them.

E: That's true. That's very true.

D: So, by bringing a product direct to consumers, I don't ever have to worry about selling something in the market place. I'm only worried, will a consumer want this? That's how you get innovative work out there. You know, you have to bypass the people who...

E: Who kind of choose.

D: Right

E: I feel like a lot of people, what I've been reading is a lot of people are kind of ashamed of fashion. The fact that it has become so, like, blah, like every thing is the same. It's like, here's a pink shirt. Here's a pink shirt. There's a blue shirt. It's the same thing. It's just like everything is very, the same. And I feel like people seem to be scared to go out of that comfort zone. It's very interesting. And you are not, and I love it.

D: I mean, I really wouldn't claim that I am such an amazing designer, but I will definitely fight that this is an innovative collection. I can't say it enough. These are skirts and dresses. But they are made unlike anything else that you are buying. And every season we will have something new. And, part of the frustration for me has been that over the last couple of seasons, over the last several years, I've designed a lot of pieces that no store ever bought, so I never produced them. And what I want to be able to do is really fill in all those gaps for the customer and say, 'I know that you're not used to seeing a pair of sweatpants here, and you're not used to seeing a cotton t-shirt here, and you're also not used to seeing a red carpet, Oscar's gown here. But I'm going to have that, that, and everything in between. So if you want zero waste products, you can get whatever you want here.'

E: Oh, I love the athletic wear, formal wear, casual wear, so they can get whatever they want.

D: Yup.

E: That's great.

D: I think by limiting myself to whoever, you know, the powers that be, whoever will buy this, we're stopping it from getting to consumers. I think by just getting rid of that, we'll see more change. What I'm hoping is that will inspire other designers to do something similar. One of the things that someone who I used to work with had mentioned to me is that when you get into the eco and green space, the quality of people who you are working with tends to change a lot. These are people who want good things for the Earth, for each other, and for their bodies. It stops becoming such a capitalistic thing. I want to make money just like everybody else, but I want to make sure that I am working on a product that I feel passionately about. I want to make sure that I am doing something that is good for my industry. To move it forward. A lot of the people in this space feel similarly. I'm sure you can share a lot of those sentiments. So, what I really want to do is go meet a bunch of young designers and tell them how to start their own businesses and bypass everybody so that they aren't worried about any of that bullshit (laugh), and they can get a good quality product out on the market. It's a lot simpler than we make it for ourselves.

E: Is it?

D: Yeah.

E: Interesting.

D: I was just thinking about this yesterday. When I started the collection, everyone told me 'you need to do research. You need to find your market. You need to know your target market. You need to get a marketing plan together. You need to figure out who's going to be selling all of this for you.' All of these different things. And what I really think I should have been doing was making a few dresses at a time and selling them.

E: Yeah? Interesting.

D: You know, figuring out where I could have some foot traffic so that I could just sell some dresses and meet some customers.

E: So really just kind of doing it on your own and not going the typical route, which sounds like your whole process. Don't go the typical way. (Laugh)

D: Exactly. That's never worked for me.

E: Yeah. So you have seen a lot more success doing your own thing?

D: Yes. I've also met a lot of people, you know, doing trade shows and things, who I hear their stories and I don't think that I'm alone in this. They go to do a trade show. They have a beautiful collection. They photograph everything. They show it somewhere during fashion week, and they don't sell anything because no one has ever heard of them before. It's a chicken, egg kind of thing. I'm not in any stores, but I won't get in any stores before a store buys from me. I sold this much, and I want to be able to produce it, but I can't hit the minimums from the factories. So, how do I do this? And I feel like really talented designers just need to be making clothes and selling them. You don't need to be selling them to a store. Just make ten dresses and sell them.

E: Well, especially with online shopping, it's such a huge thing. And I think the biggest thing with online shopping is, people are just like, 'I want to try it on before I spend so much money.' But, so I think, your idea of having a store front where people can just come and see, and experience things seems like a really great step in that direction.

D: We're also really focusing on pop-up shops for the upcoming year. We want to make sure that we are giving people an opportunity to touch and feel and try on, and know what their size is, know how we fit them, know what the quality of the product is like, and then continue to shop online after we've left town.

E: Right, that makes sense. One, and we're pretty much wrapping up here, but I just wanted to...

D: I could talk all day.

E: I really could too. I just, I don't want to spend all day, all of your day, because I know you have things to do. But I'm really curious about your decision to make everything here. What motivated you to do that?

D: A bunch of different factors. One is that, early on, I spoke to someone who said, 'what you are doing is really different, and you've got a lot of proprietary information in your creative patternmaking. So, I wouldn't go ahead and leave your patterns all over cutting rooms in New York City so people can find them.' If someone really wanted to reverse engineer one of my garments, it wouldn't be that hard, but you would have to put a lot more energy into that.

E: Versus just picking up the paper and being like, here, let's try this.

D: Exactly. Also, some of the reverse engineering, like, you probably wouldn't be able to do because it's a jig-saw puzzle. You would have to figure out where all of those pieces came from and that would be a nightmare. The other thing is that I like to be very, very close to the product. I started sewing all of the production myself. Now working with a small team, we're doing like an atelier style. My training is from people like Carmen Marc Valvo, Carolina Herrera, and even more contemporary designers like Daniel Vosovic and Marc by Marc Jacobs. Most of those places have a sample room, and they're making their own first couple of things. And then, at places like Carolina Herrera or Carmen Marc Valvo, when you have a seven thousand dollar gown, and you're only making eight of them, they just make them in their shop. And I saw how easy that was for the creative director to manage and oversee everything. I thought, I want to be making things every day. I want to be designing things everyday. My first full time job out of school was working in really big business, and all I did was sit and measure sweaters all day. I never got to design, I never got to, never made anything there. That's not what I want. I think that a slower, more artisanal way of doing things makes more sense. And then it keeps all the information inside, which is really nice. When I think about starting a company, I mean, my first thought is, why wouldn't you do it in a responsible way? And why wouldn't you create as many jobs as you can? You know? I don't really wanna just, like, have this company where I keep my overhead as low as I possibly can so I can make as much money as I can. Someone told me when I first started the collection that I should definitely be making everything in China because if I was making everything in China, I would only be responsible for finished goods. If someone shipped me something that I didn't like, it would be their problem and not mine. And I just said, 'I never want anyone to think that I'm that guy. I never want someone to think that I'm going to pawn one of my problems off on somebody else.' So, I basically make everything as big a problem as I possibly can in my life (laughing). I keep them as close to me as possible. And, I mean, most of the things that we're sending out or shipping, I've either touched them, cut them out, clipped threads on them, put labels on them, you know, sewn the buttons on myself because this is what I really love to do, and I'm trying to create an opportunity for myself to do it. I like to work. And I like other people who like to work. And we make a sick amount of clothing here. We make probably around a thousand garments every year.

E: Yeah. For such a small thing, I'm just like, wow! You guys just knock it out!

D: Yup!



E: That's awesome.

D: So I mean, we'll make ten dresses in a day and a half. With this new model, where I don't have to bring them to market and I don't have to ask anyone if I can make them, I'll have new things every week for people to see. And, you know, it's really fun because there's only ten of them. So if you like it, buy it. And if you don't, I'll have something new next week.

E: Right. What do you do if something doesn't get bought? Do you just store it? How do you handle that situation?

D: I don't know. It doesn't really happen that much.

E: That's good!

D: Our inventory is so small that, you know... I've had one product that I had a production issue with and they all just ended up being super duper tiny. So, I've marked them down to a really, really, reasonable price. When someone tiny comes in, there's no reason not to buy it.

E: True. That makes sense. So, with what you said before with the person that was like, oh, just go to China, and you don't have to take responsibility. Do you feel like that's the main mind frame of a lot of people of the fashion industry?

D: I do. I really, I really do. I mean, first of all, China should be commended for their impeccable craftsmanship. I mean, the technology, and the precision, and the work ethic that's coming out of there is really impressive. But it doesn't really, it's not a conscious culture in terms of eco-impact. And, I think, going to China and buying something made in China sounds amazing, but if I want something made in China, I should probably hightail my ass over there. I know, personally, that I graduated in the top ten of my class, and I had a very hard time finding a job in New York City. So, I would rather be creating opportunities for people here who want to be doing what I want to be doing and live here. I could pontificate about this for hours, but when I was working at that job that I mentioned earlier, my boss went to China and went to one of the factories. He basically said, you know, it's nice, they're very clean, where this company had their things produced, but it felt a little sad for him because there would be a 14 year old sitting there linking on sleeve, after sleeve, after sleeve to sweaters all day long. It's good that that person has a job and is able to provide for themselves, and I certainly understand not wanting to take a different road in life and having that be what you want to do, but I also think, having grown up in America and thinking about the American dream, I can't imagine living in a culture where that was my only opportunity at 14. I just didn't feel like it was something that I could support. I don't think there is anything wrong with it. It's just not where I want to be putting my consumer dollars.

E: Right. I really understand that because it was very much, like my trip to China, was just kind of, first of all, eye opening because it's really like, wow, in your face. And then, second of all, it really is, it's like the positives and negatives are right there with each other.

D: Yup.

E: So you're sitting there thinking, 'this is horrible, why would we even try this?' But then, I talked to a girl who grew up in a factory, and she told me that she was able to change her life that way. So, it's kind of...

D: Yeah!

E: It's very difficult. So I totally understand, you're like, 'I'm just going to keep it here.'

D: Right! Exactly. I think that by reducing waste and knowing where my product is coming from, everyone can do whatever they want to do, I have nothing to hide or be ashamed of about THIS business. And, that's the most I can hope for. You know, is just knowing that I can sleep at night. I know how much my employees get paid. I know that it's a fair living wage, above minimum wage. I know all those factors, and I know how everyone is treated here because I treat everyone who works here.

E: Yeah, you're like, 'Me! Not other people that I don't know.'

D: Exactly. I feel like I need to be inspiring the people who work here, especially the interns and people who are still learning and starting their careers, who come through here, to work hard and work for themselves. I don't necessarily mean own their own businesses but it's—the best way to say this is illustratively. I had an intern at the beginning of the summer who said that she read this New Yorker cartoon and it was showing two different ways of business. One was a big boss sitting behind his desk with ropes coming from the desk and all of the employees pulling the desk and the boss with his arms up and his feet on the desk. The other one was all the employees on the desk and the boss pulling the desk with all of the employees. She said, 'I feel like you are totally THAT boss.' I always want everyone to feel like we're working here. We don't have that sort of you-tube culture where we take breaks for hours at a time and do nothing and then we say, 'oh, the samples will come in from China because someone over there is working.' We do everything here. When something doesn't get done, I finish it. That's just the only way for me to feel proud of this business.

E: That makes sense. When I think about the rest of the fashion industry, and what you are telling me, it sounds so amazing. It also sounds like a lot of people are just going to be like, I don't even want to try to do that, so...

D: Yeah, I got a great piece of advice right when I was starting the collection—had the idea to start the collection—from a family member of mine who said, 'I mean, if you're into it you should do it because everybody wants to be apart of something, but nobody wants to start it.' I felt like I could see that a revolution needed to happen, and I had nothing going on, so why not start it?

E: That's amazing. Like really brave! I know now you can sit and be like, 'Oh, well...you know.' But it's just that step is extremely brave... financially, and just like, successfully, for yourself.

D: No, yeah, it's definitely been exhausting. I've wanted to quit many, many times. I have faced

a lot of very uncertain moments. I think this was a big deal when, God what is his name, that loony... Mitt Romney, was running for president (laughing)

E: the loony (laughing)

D: And he said, 'start a small business, go barrow money from your parents.' Nobody has money to barrow right now. It's a very, very difficult economy. I was very fortunate to have the experience of being on Fashion Star. That paid my bills for a really long time.

E: Oh! Perfect. That's great.

D: I had small investments in my business, but in terms of what a business can spend in a year and what a business can make in a year, I was nowhere near where I needed to be. At points I had double digits in my bank account. It was very, very scary. The difference here between, 'I want to be a famous designer, and I want to have things at the Oscars, and I want to win a CFDA award,' is that's just for me. I really want to make sure that my generation of designers is not responsible for putting things into landfills the way that people who came before me were. And that has really kept me going on days when I didn't want to do it anymore.

E: Right. I feel like that's a necessity when you are doing this sort of thing. So, you talk about zero waste, and you are so passionate about it. Did this just kind of come out of you learning, in your life, or just being in school and realizing?

D: It was a mix of things. I heard a professor say something in passing once that if someone could make a pattern where you didn't have to waste any fabric, they would make a million dollars. And I was like, well, it's not that hard. Like, come on (laughs). But that was, I think, in my first semester of school or something. It was a passing moment.

E: Right, but it planted a seed though.

D: Right (laughs). And then, in my last year at FIT, the Clinton Global Initiative sponsored this competition for designers to do an eco-friendly pair of jeans. I submitted an entry to that competition and I did not win (laughs). But my professor who saw it was like, 'you have a really interesting concept here.' Most people said, 'I'm going to use organic cotton. I'm going to use natural dyes.' And I said, you know, 'I'm an American, and I'm thinking like an American,' a Native American, and that whole Native American philosophy of using every part of the animal inspired me to use every part of the fabric. And, she was like, 'this is a very interesting concept, you should definitely keep thinking about this'. And, I was like, 'okay, whatever.' I graduated. I got a job. Once I was sitting in that job and we had a meeting about costing, you know, costing out all our garments. We had a sweater that we just couldn't get the price down because we had 20%, 27% waste on that garment. And I was like, 'what does that mean?' And they said, 'well, that means when we cut out the patterns, 27% of the fabric isn't being used.' And I said, 'what happens to it?' And they said, 'ehhh (raises shoulders) throw it out.' And I was like, 'wwwooooahhh.' So, let's just imagine, because this is a very large company, we're going to use round numbers. I don't know what the actual numbers were, but we'll use 100,000 because that's not unlikely for this company. Let's say they're making 100,000 sweaters. Let's say they take 1

yard each. If you're wasting 27%, you just put 27,000 yards of fabric into a landfill.

E: (whisper) Ahhh, that's awful.

D: That is. Psychotic. So, I politely excused myself from the meeting, went to the bathroom, cried my eyes out, and was like, I need to quit my job, I can't, I can't do this anymore. Because, not just that, but we didn't even recycle bottles in our office. You know? It was just like, ahhh, styrofoam plates, put them in the trash can. And I was like, if I have to work in this industry, if I have to work in the world, I can't be contributing to this. I just can't do it. I felt like one of those people who was going to have a psychotic break, and I was gonna have to go work in a grocery store for the rest of my life. Not that there is anything wrong with that, but I wouldn't be able to be apart of industry or business, because I couldn't handle it. I found this particularly interesting because my sister, who is nothing like me, has very similar feeling towards waste and consumption, and she eventually just moved to Alaska because she just couldn't be near people. It's just too crazy, what we are doing to this earth.

E: Yeah. No, I've been learning a lot, and once it's learned, it can't be unlearned. And like, literally, every moment of my life, I feel like I'm just thinking about it. Even when I have no options, and I have to throw a bottle in the trash can, I just like, like, Starbucks for instance. I will go to Starbucks and get a coffee, and there is no recycling. They use plastic cups like, all day, everyday.

D: All day, every day.

E: Constantly. And I'm like, why don't you have recycling? So, I literally take the plastic cups home with me and recycle them. And it's just kind of like, yeah, it's easy. I feel like a lot of people are just kind of blind to what's going on.

D: Yeah. Yeah. One of the big things that really did it for me was the concept of "away". Nothing ever goes away.

E: True. I just read something about that, like, I read that sentence last week.

D: Once I sort of realized that, I was like, nothing I'm doing is gonna go away. Every single piece of trash I've ever made, since I was a child, still exists. Somewhere. So, I gotta focus on cutting that number down.

E: That totally makes sense. I had that feeling. I was fortunate enough to travel to Ghana, when I was in undergrad, so like two years ago. We were in this neighborhood. And there's a hill, and the hill dropped, like part of the land had fallen off, and you could see layers of trash hanging out of it. And I'm like, these people live here. They don't have places to put their trash, so they are literally living on it. And it was just kind of like, wow. And then the more I learned, I just kind of realized, the more I've dug into sustainability, the more I'm like what! I don't know!

D: Yeah, and when you think about industries like beauty, and entertainment, and all these different things, fashion, you know, it's not so unreasonable that the creative people should be

coming up with creative solutions to what to do with all of this stuff instead of just making more of it.

E: Right. I feel like, also, one thing that is great about your garments, because they are unique, people will be more attached to them.

D: Yeah, I hope so.

E: Well, you know, I've talked to people and they're like, 'I'm going to buy ten shirts and whenever I'm done I'll just throw them away.' But when you are actually hearing the story behind a garment, and looking at it, and seeing the work put into it, and being able to understand it, it's like, okay, well that's special and I, you know, I want this to be around a little longer.

D: Yeah.

E: Is that something you might be trying to go for? Or is that a happy result?

D: Absolutely. I actually think about my own personal wardrobe, and I really only buy investment pieces. And I don't shop very much. But when I buy something, like—I've had this shirt, which I just got a stain on today. I've had this shirt since 2008. I still wear it a couple times a year (laughing). And, it's one of my shirts. I only have that many shirts, and I don't get sick of a shirt and get rid of it. I spend, like, triple digits on a shirt, and then I wear it until it's not a shirt anymore. That's just kind of how I buy. I find that sometimes you spend a lot of money on something, and it's a piece of junk. But, in general, when you know the brands that you're investing in, and you find out a little bit about the quality of products that you're buying, if you will spend the extra 5 to 20 dollars on something, you can usually have it forever. You're buying into more than just actually having a piece from that collection or that shirt, you know. You're buying into supporting a brand. So, I try and make sure that I am supporting companies that support my values like, making in America, or eco-friendly fabrics, or whatever it is, small production, fair labor. So, yeah, you have a lot of power with your dollar. I think it's just as powerful to not shop as it is to shop at some place bad.

E: Right. Okay, well, this has been such an amazing interview.

D: Cool! I'm so glad you feel that way.

E: Really, I'm so... I'm just like, woah. I'm so glad I got to meet you.

D: Likewise.

E: I feel totally the same way about pretty much everything you are talking about.

D: Cool!

E: It's just nice to hear someone who is in the industry and is thinking about it. Because I sit here and I'm reading about it, and like, I studied design in undergrad, Fabric design, not fashion. So, I

know screenprinting and all that. But this has just been something that I've adopted into my life, and it's kind of taken it over.

D: I know that feeling!

E: Yeah. Once you know, you can't un-know! And you just have to keep going.

D: Yeah.

E: Okay, let me make sure that we talked about...

D: Take your time!

E: Well, I feel like this has been great!

D: I'm so glad! I hope it's helpful. You know, feel free to call, or follow up if there is something you missed.

E: Yeah, that's actually what I was going to ask. Now that we've talked about so much, I don't know what we've missed! So, if I have any questions, I'll just send you an email, and we can maybe do a phone conversation, or something.

D: That would be fine! That would be amazing.

E: Thank you so much! Ah! I'm so happy right now!

D: Good! I'm so glad!

E: It's just so nice to meet someone who is so passionate and so willing to share their information.

D: It's my pleasure! Thank you for listening.

E: Yeah, I'm so thankful for that.

D: It's also, like, it can be kind of a downer of a topic.

E: It can be!

D: But, I try to keep a very hopeful attitude towards it.

E: Right. That's how, when I first started learning, I was just kind of like there's nothing I can do! But, as I've, you just have to kind of push through that, and if everyone just did a little bit, it would make a huge difference.

D: Right. Right. Those changes really add up. And I personally just feel like this is a very small

contribution right now, and I know how small this collection is, but my vision is...

E: Not small.

D: Right (laugh). For my own brand, yes. But I also, I mean, I'm developing a series of practical and teachable techniques for zero-waste.

E: I would love to learn those. I would love to do that.

D: So, I feel like the sky's the limit. Let's teach some people and make your own zero waste products. Start your own collection, or, you know, make just one product, whatever it is. If you can fill a niche that people need, and you can do it in a way that other people aren't doing it, that's better for the environment...

E: And just better overall. Like, I'm taking, actually, right now I'm just studying International Trade and Merchandising, in my graduate school, and I really wasn't fashion based, but I've kind of been sucked into it as I've been working, so I'm actually taking a patternmaking class next semester.

D: Oh great!

E: So, I'm very interested in learning about that and being able to apply, kind of what you have been talking about, and just learn first hand, kind of what that is like.

D: So, this is what I'm going to tell you from a zero-waste perspective: you are going to learn patternmaking, and you are going to see right away how it's so all over the place, and how could you ever fit these things together. With patternmaking, the first thing that you do is figure out what your grain line is on the fabric, you know, warp and weft kind of thing, so you're a textiles major...

E: Yup! I got it (laughs). I've woven fabric; I get that (laugh).

D: Exactly, so what is your straight grain? Then you have a series of rules for how to make things, and when you're done, you sort of try to figure out what is the most efficient way to cut this out. When you're thinking about zero waste, it's not backwards by any means, but it's a different set of steps. The first question is, how wide is my fabric? The first question is always how wide is my fabric. You have to work backwards from that. You have to put the parameter down before you start designing.

E: So, you just get the fabric and then you come up with the ideas for whatever you want to make.

D: So, I might say, I have an idea for an approach, or I have a detail concept, but it might not work with this width of fabric so I need to go find something else so that I can wrap, or maybe I need two widths, or whatever. As soon as you use everything for that idea, you start looking at what's left.

E: Okay, so cool. Oh, real quick question.

D: Anything!

E: You design all your fabric?

D: Yes.

E: Can you tell me a little bit about that process, like how, and how do you print it? Where does the fabric come from?

D: They've all been digitally printed from a company in the United States. I think they are in North Carolina? South Carolina? They're great because they do everything from digital files. They have no minimums, so that allows me to make sure that my waste is as low as possible. But basically, I know that there's like Print Master, or whatever it's called, and all this amazing software, and I'm doing it on Photoshop and Illustrator.

E: Well that's how I learned, honestly.

D: I'm making digital files, and I'm uploading them and printing them on fabrics. But basically, I find that the prints are a way for me to incorporate some of my personal, artistic expression. So, the flora print was a collaboration with a dear friend of mine. The kaleidoscope print is made out of two of my grandmother's paintings that I sampled and created something original from. The heaven and hell print is my own original artwork.

E: Nice.

D: Ultimately, I'm moving in the direction of basically printing everything because I'm realizing that by printing information directly on the fabric, I can eliminate paper from the patternmaking process.

E: So, you're moving to patternmaking on the computer?

D: I'll probably have to do it, draft it, by hand, but I won't have to copy it and then cut it with the fabric every time.

E: Okay, cool.

D: If I can get the information directly on there and incorporate the original prints at the same time.

E: That sounds, perfect. That sounds really great.

D: It's a slow process, but we're hoping to have our first completely digitized collection by February.



E: Okay, cool. And then aside from digital printing, you also do, like that shirt (pointing to a shirt in the studio)

D: This is crochet.

E: Crochet. So you do crochet and what other techniques do you use?

D: We have the braided pieces. I don't know if we have any out here right now.

E: I know what you are talking about. I remember seeing them.

D: So, basically, we can make endless braids and just sew them up however we want. And that's totally zero waste. Then, we also do a lot of appliqué. So, this sleeve for example, the pieces that you see here would have made this whole piece a rectangle, and we stitched them back, and it really enhances the look of the garment, but it also creates the shape that we need to make a sleeve.

E: Okay, cool! That's great.

D: Yeah!

E: Very cool. All right, well I think we are good.