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Conscious Consumerism: A design process for stylish sustainable apparel

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Abstract

The main objective of this paper is to explore current consumer behavior and perspective on sustainable apparel as well as future trends in the market place such as willingness to buy. I investigated the market for organic apparel brands, and identified potential areas of growth. My findings concluded that young consumers lack interest in sustainable apparel because they are not sufficiently educated in the topic and are not willing to sacrifice their style identity, consequently purchasing trendy fast-fashion items. The fashion industry is famously claimed to be the second most polluting industry in the world, so I designed a line of organic undyed knit tops made from hemp, linen and bamboo to encourage conscious consumerism and implement new sustainable consumer habits. Called *Conscious*, it was inspired by market trends and the current environmental impact of disposable fashion on the environment. Conscious offers styles that are affordable and timelessly stylish. This paper will expand on my design process approach which contributes to the current knowledge and understanding of sustainability in the apparel industry and textiles. This project is valuable because it is a creative approach towards repairing the apparel industry's unsustainable practices.

Introduction

When consumers buy clothing, they do not think about how they are going to dispose of it. Why do consumers not think about the environmental impact of their clothing? I raised this question when I found it difficult to find affordable, sustainable and fashionable clothing for myself. I wanted to know the reason why, so that I could design an attractive sustainable clothing line that would change the perception of sustainable clothing and encourage conscious consumerism. The questions I posed for research are, (1) What is the current environmental impact of the fashion industry? And, (2) Is there a market potential for stylish sustainable fashion?

The purpose of this project is to encourage conscious consumerism by bringing awareness to the implications of high disposable consumerism rates within the fashion industry, especially in fast fashion. I was inspired by my own difficulties finding sustainable clothing due to price and style. With that in mind, I developed a small collection of knit tops, called *Conscious*, which was creatively and strategically designed to be sustainable and timeless.

This paper will follow my design process and how it was influenced by the current research established in the fashion industry's business practices as well as its environmental impact. Areas of research include fast fashion practices, consumerism, and market potential. Part of my methodology includes a market analysis to identify a need in the sustainable apparel market for affordable fashion-forward clothing.

However, in order to understand the ecological effect of apparel manufacturing, it is important to understand fast fashion. Fast fashion is a business strategy that exploits the speed of their supply chain and distribution lead times to produce "hot and trendy" products within weeks.

However, the true value of fast fashion brands is held within their loyal customer base. Companies like H&M, Forever21 and Zara impact their consumers' purchasing behavior (Cachon & Swinney, 2011) by encouraging high consumption rates and disposable apparel preferences.

Unfortunately, the environmental cost of the apparel industry is the result of the hot sale prices of disposable clothing. Examples are "Two tees for just 9.99!" and "summer maxi dresses from 12.95!" The "get more, pay less" relationship that fast-fashion retailers have with their customers is a complication for the environment. The problem is that buyers might only wear the $12.95 maxi dress once and not hesitate to buy another. However, that dress already created an environmental impact through its shipping, packaging and laundering. It already polluted our earth, used up our natural resources and will ultimately end up in a land fill (Fluence, 2014).

The concept of environmental sustainability is acknowledged but not being addressed properly by the fashion industry. In terms of environmentalism, consumerism is part of the problem. But, this industry has the power to make an impactful movement due to its platform and global reach. By designing Conscious, I hope to generate a green movement in fashion that will positively inspire consumers to purchase in a more sustainable manner.

Literature Review

Fast Fashion

In order to understand the ecological effect of apparel manufacturing, it is important to understand fast fashion. Fast fashion is a business strategy that exploits the speed of their supply chain and distribution lead times to produce "hot and trendy" products within weeks. Fast

fashion brands must have fast inventory turnover rates to fulfill the affinity of their young consumer demands. There is high competition on cost, providing the "latest luxury fashion trends", (Turker & Altuntas, 2014) and young consumers' disposable income (Joy, Sherry, Venkatesh, Wang & Chan, 2012). Companies like H&M, Forever21 and Zara impact their consumers' purchasing behavior (Cachon & Swinney, 2011) by encouraging high consumption rates and disposable apparel preferences.

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Such high level of efficiency damages their sustainable supply chain management, which is a growing concern for scholars and business operators due to the major global impact the fashion industry has. This buyer-oriented practice not only influences the economic stand point of developed countries but the social conflicts in developing countries as well. Fast fashion manufacturing is mostly located offshore hiring women, young and poorly educated people. The current employment structure often forces labor and encourages discrimination, low wages and bad treatment. However, due to the need of external suppliers, it is increasingly difficult for companies to manage their supply chain entirely (Turker & Altuntas, 2014).

Fast fashion brands can respond quickly to the latest fashion trends by reducing the service life and quality of their products. Every three to five weeks, major fast fashion retailers

stock their brick and mortar store locations with new product to keep their customers coming back. Because of their quick disposability (when clothes are no longer in fashion), they are often not taken care of properly and thrown out without thought. When customers throw away garments before the end of their technical life, the effects contribute to higher global warming, freshwater consumption and freshwater ecotoxicity (Peters, Sandin & Zamani, 2017).

Slow Fashion Movement

Contrary to fast fashion, the slow fashion movement prioritizes ethics, sustainability and quality. Slow fashion is a broad concept that involves both consumption and production by combining corporate social responsibility with consumer responsibility and the ability to experience pleasure from clothing that is crafted to perfection (Collings, 2018). The slow fashion movement aims to create a long-lasting impact on the fashion industry by popularizing durable products that are season-less (Fletcher, 2010). However, the term "slow-fashion" is not to be taken literally, as the production process of slow fashion is not always as implies in the name. Rather, it is a mindful philosophy that respects the stakeholder's needs and concerns. Slow fashion incorporates corporate social responsibility, sustainability and transparency to address the stakeholders' needs (Pookulangara & Shephard, 2013). Stakeholders can include the retailers, consumers, business partners, community members and all the employees such as the designers, sales representatives and even the people making the clothes.

Environmental Impact of the Fashion Industry

Today, the fashion industry is full of contradictions. Consumers are expressing a concern for the environment and an interest in slow fashion but continue to purchase inexpensive clothing with devastating environmental impacts. The clothes that we wear make up 14% of our

ecological footprint (Ma, 2016). Eileen Fisher, high-end retailer designer, has famously stated and repeated, “The clothing industry is the second-largest polluter in the world, second only to the oil industry” (Szokan, 2016). If the fashion industry continues to grow at the same rate, by 2050 the amount of plastic in the ocean will outweigh the amount of fish (Feitelberg, 2018) and the clothing industry will have consumed more than a quarter of the Earth’s carbon footprint. That will be the effect of synthetic material production and disposal. The fiber lifecycle includes fiber production, fabric manufacturing, weaving and disposal (Muthu, 2014), and all stages of the fiber lifecycle have environmental implications.

Although synthetic fibers require far less water and pesticides than natural fibers, synthetic fibers are far more polluting due to CO2 emissions during manufacturing, non-biodegradable waste and micro-plastic release during wash. Thirty-five percent of micro-plastic pollution comes from washing fabrics like polyester. When washing one garment made from synthetic fibers, it can release up to 700,000 micro-plastic fibers into our water supply (Brodde, 2017). Microplastics are contaminating widespread particles from the breakdown of larger plastic debris. Consequently, these particles can be ingested by a wide range of marine life (Dris, Gasperi, Saad, Mirande & Tassin, 2016).

The most popular synthetic fiber, polyester (made from petroleum) is used in up to 60% of our clothes. Fifteen to thirty-one percent of marine plastic pollution can be accounted for by tiny particles released by households (Brodde, 2017). Alternatively, natural plant fibers are more environmentally friendly because the growth of plants intake CO2 from the atmosphere, and natural plant farming consumes less energy than synthetic fiber production (Muthu, 2014).

However, cotton is a very thirsty and pesticide-dependent plant. Globally, cotton production and consumption make up 2.6% of the total water used (Chapagain, 2006), while the

Earth's fresh water that is healthy enough for human, animal and plant consumption is only 0.65% of the total water on this planet. The cotton production industry is responsible for purchasing 11% and 24% of the worldwide sales of pesticides and insecticides respectively (Basit, Latif, Baig, & Afzal, 2018). This crop accounts for a quarter of the pesticides used in the United States (Claudio, 2007). Alarmingly, it is estimated that only 0.1% of the applied pesticides impact the target pests, and the remaining 99.9% are left to damage the natural ecosystems (Rieple & Singh, 2010).

For one kilogram of fiber, during the production stage; the energy used for polyester and cotton are 97 MJ and 60 MJ respectively, oil/gas used are 1.5 kg and 0, fertilizers used are 0 and 16 g, water used is 17 L and 22,200 L, carbon dioxide emission are 2.3 kg and 30 kg, and the approximate costs are 0.78 euros and 1.13 euros (Muthu, 2014). The data confirms that polyester production is cheaper and less sustainable. However, cotton production uses 1,306 times more water!

In terms of water consumption, one kilogram of cotton fiber production can use more than 20,000 liters of water (Basit, Latif, Baig, & Afzal, 2018), while a single T-shirt consumes 2.70 liters of water during the cotton production stage (Fluence, 2014). Consequently, conventional cotton production is experiencing increased concern about the environmental damage caused. Water pollution, soil erosion and emission of greenhouse gasses are only some examples.

According to the Environmental Protection Agency (EPA) (2018), discarded clothes account for the majority of textile municipal solid waste (MSW). In 2015, textiles made up 6.1 (6 million tons) percent of the garbage generated that year. In total, 16.03 million tons of textile waste were generated, only 2.45 million tons were recycled and 10.53 million were landfilled.

The amount of textile waste spiked in 1980, when the total amounted slightly over 2 million. The EPA has determined that textile coatings and finishes (like dyes) are hazardous air pollutants when landfilled due to the use of solvents in the production process.

Synthetic materials like polyester, nylon and acrylic will take hundreds of years to biodegrade. On average, Americans trash about 80 pounds of textiles per person a year. The EPA estimates that recycling all the clothing tossed away by Americans in one year, would have the same effect as taking away 7.3 million cars and their carbon dioxide emissions off the road.

Sustainable Fashion Movement

Organic cotton farming has proven to add benefits to the production process, especially in developing countries through the health and well-being of their farmers, monetary mark-up and the long-term reduction of crop failures and farm debts. However, finishes on organic cotton such as dying currently have no effect on the certification of organic cotton but still add to the environmental effects of the fashion industry, such as that of acid waste.

Similarly, fiber blends including organic and non-organic fibers are not certified throughout the entire value chain but can stimulate a growth in the organic market and increase awareness but also consequently turn away knowledgeable and environmentally concerned consumers. The significant premium added to organic products at the retailing stage affect sales, branding and reputation (Rieple & Singh, 2010). However, organic cotton makes up only 0.03% of the global cotton produced. Sustainable alternatives to conventional cotton such as organic cotton, hemp and bamboo are far less water and pesticide-dependent crops (Claudio, 2007) which are increasingly being used in eco-friendly apparel.

Henrik Lampa, H&M's sustainability development manager said that only 0.1% of the clothing collected by charities is recycled into new textiles (Wicker, 2016). According to the Council for Textile Recycling (2018), only 20% of donated clothing sells to second-hand retail outlets. In 2012, 84% of unwanted clothes in America went to a landfill or incinerator (United States Environmental Protection Agency, 2018).

We are more likely to dispose of cheaper, mass-produced garments than pricier ones. Companies that export and distribute second-hand clothing are finding it hard to sell fast-fashion second-hand items because they are not made to last.

Ironically, there is a "fast fashion paradox" in which the fast fashion consumers are also concerned with being environmentally friendly but do not apply the same principles to buying clothing. Currently, in the eye of the consumers, the benefits of fast fashion outweigh the negative environmental effects. However, they hold very little knowledge of unsustainable production and consumption (Park & Kim, 2016).

The concept of environmental sustainability is acknowledged but not being addressed properly by the fashion industry. In terms of environmentalism, consumerism is part of the problem. But, this industry has the power to make an impactful movement due to its platform and global reach.

Consumerism

Fast fashion embodies unsustainability by shortening the lifespan of clothing and increasing resource consumption. Young consumers face a dissonance regarding ethical concerns and their desire for cheap luxury-inspired clothing. Mindless consumption has a major environmental impact and creates an ongoing cycle with an appetite for fast fashion.

Luxury fashion trends come and go on the runway with lightning speed. Today's trends swiftly saturate yesterday's. As individual identity quickly evolves, the need for material representation does as well. Cheap retailers have success because of their availability to provide the feeling of inclusivity to consumers by making symbolic fashion goods more widely available to the public (Busch, 2018).

Consumers buy into fast fashion because of the luxury appeal. Fast fashion is the best alternative to high-end style without sacrificing their expense because it satisfies a luxury dream. On the contrary, slow fashion is able to appeal to consumers by combining sustainability with quality. Therefore, if dreams drive consumerism, consumers must no longer purchase disposable apparel routinely and make sustainability/craftsmanship their dream (Joy, Sherry, Venkatesh, Wang & Chan, 2012).

Some scholars agree that the best way to encourage consumers to adopt sustainable fashion is by the retailers educating them because consumers often look to retailers for guidance. Raising awareness to green fashion must become mainstream and part of the culture. Well-known sustainable concepts such as "Organic" and "Fair trade" must be conceptualized with apparel production (Fitch, 2014).

Sustainably produced clothing can offset the culture of over-buying and the negative effect on the ecological environment and satisfy the consumers' hunger for identity representation through consumerism. The current state of the industry and contemporary social concerns demand for consumer change in terms of purchasing behavior and change. However current studies show that consumers rate their own fashion more importantly than the overall effect of fashion on the environment. (McNeill & Moore, 2015).

However, some consumers are growing disenchanted with such mindless consumption and its effects. Turning to boycotting and consumer resistance movements to define their ethical and political preferences (Joy, Sherry, Venkatesh, Wang & Chan, 2012), this behavior is part of a new-coming identity (Busch, 2018). Consumers are starting to believe that their personal purchasing power impacts their personal environmental footprint (Joy, Sherry, Venkatesh, Wang & Chan, 2012).

Some retailers, like H&M and Patagonia offer vouchers to customers to encourage recycling. H&M, for example offers discounts to customers who bring in old garments to be recycled and transformed into new H&M garments (H&M Group, 2018). Patagonia also recycles and re-sells its own products in their stores. This concept encourages producer responsibility, but some believe it actually encourages more consumerism ("Patagonia", n.d.). Recycling goes hand-in-hand with consumerism because clothes are going through the system faster and faster seeking anybody who will pay anything for it. Eventually, the clothes that nobody wants make their way to the developing countries.

Sustainable Fashion Market Potential and Retailer's Social Responsibility

Consumers are increasingly aware of sustainable items, especially organic and fair trade as they are familiar terms (Ritch, 2014). According to Rothenberg and Mathews (2017), "green consumers" are readily available in the retail market. However, during the decision-making process of young consumers, price is more important to them than the sustainability of its production.

If companies are not willing to sacrifice their reputations and want to be leaders and innovators in the fashion industry, they have to work on their sustainable supply chain

management. The power in the fashion industry has shifted from the retailers to the consumer, so if consumers demand sustainability, it will impact business practices.

Driving higher sales and profit can be a higher incentive than corporate social responsibility. But, consumers now hold all the power. With the rising number of environmentally conscious consumers, retailers and apparel manufacturers will have to adjust their business models accordingly to incentivize sales. The environmentally conscious consumers or "green consumers" are a demographic that is being more widely researched and understood. They are sincere about their green lifestyle intent, but don't find their own lifestyle green enough. Interestingly, they do not expect businesses to be perfect, but they support companies who are taking steps to improve their practices and make strong commitments. However, sometimes they exaggerate their own green lifestyle, tend to not trust green campaigns/environmental campaign from business, are aware that they lack knowledge in environmental concerns, are still eager to learn and they want environmental protection to be easy and require less sacrifices. The psychographs of these consumers include that they are usually young adults, have children who influence their decisions, and are mostly women who tend to make purchases for men. In the United States, teenagers and children tend to be more concerned with the environment and are more aware of green alternatives, ultimately influencing their parents purchasing power (iisd, 2013).

Leaders in the sustainable fashion industry are estimating that within the next five years, consumers will conduct extensive research in the origin of product before making a purchasing decision. "Mindful consumption" includes the sourcing and production of a garment, as well as the care for, washing and wearing for years. A survey conducted at FIT, revealed that one third of respondents declared that social responsibility and sustainability are important to them

(Feitelberg, 2018). However, research has concluded that they have little knowledge of the environmental impact of fashion apparel production (Ritch, 2014).

The consumers that respond saying ethical (such as sustainability) issues are not influencing their buying habits, agree that they are aware of them but their knowledge in such issues is not significant enough to influence them. Another reason is they feel they do not have a real choice when shopping, since most of the clothing available is produced the same way.

Consumers are more likely to purchase organic products because it directly affects their health, not because they are concerned by the effect of harmful chemicals on the people producing the product or the environment. They feel that they cannot avoid purchasing "unethical" clothing because there is no or low availability of fashion products that satisfy their aesthetic needs. They consider that social responsibility is solely the responsibility of the companies, and they do not want to have to think about it (Joergens, 2016).

Although organic apparel manufacturers and retailers typically do not make claims about health-related benefits, consumers tend to believe that organic apparel will improve their personal health, or not affect, versus traditional non-organic clothing. (Dickson & Hustvedt, 2016). If the food industry has successfully associated sustainable foods with health benefits, the fashion industry can do the same while addressing larger environmental needs (Ritch, 2014). Consumers anticipate a price premium on organic clothing (Mathews & Rothenberg, 207), but lowering prices will work to incentivize a higher amount of consumers to purchase sustainably rather than discouraging them.

Environmental sustainability is a social contract, not only about a relationship with the environment, but also with consumers themselves. Consumers are expressing their willingness to

recycle and give back to the planet, but when it comes to fashion, they want more "fashion" sustainable items, not "plain and dull" items (Joy, Sherry, Venkatesh, Wang & Chan, 2012).

Today, consumers are more involved in environment issues than ever before, and the market for sustainable fashion will become a mainstream megatrend in the United States because of brand imaging. Companies actively communicating their "green" efforts will educate their customers about social change and corporate social responsibility. However, more important is discussing the customers' personal benefits from purchasing sustainable apparel (Chang & Jai, 2015).

Methodology (Creative Process)

Target Market

Fast fashion companies target young female consumers who have little information about the social implications of their purchasing power and who hold the highest levels of fashion consumption demands (McNeill & Moore, 2015). Often these qualities are paired with low income. Conscious targets the fast fashion market to encourage conscious consumerism by raising awareness and educating them about sustainable production policies and materials. +++

Enhanced Design

Products of high quality design are long lasting in terms of style (Jung & Jin, 2016). My trend research will identify long-term trends that have succeeded in the past, and are predicted to do so again. However, if slow fashion cannot entirely eliminate fast fashion, my designs are an example of a transitionary concept. Conscious will help consumer (mainly fast fashion

consumers) transition into a healthy and sustainable consumer lifestyle at the same rate in which the industry does.

Fabric

The fabric holds the essence of my collection because it is what makes the clothing organic and leaves a positive impact on the environment. I purchased three fabrics: (1) organic 100% bamboo viscose jersey, (2) organic 55% hemp, 45% cotton blend jersey, and (3) organic 100% from Etsy.com. These fabrics were chosen because of their fiber make-up as synthetic alternatives and their lightweight quality, which made them ideal for draping on a dress form. Instead of designing a garment first, then finding the fabric with ideal weight and make-up to execute the design, silhouettes were designed around the qualities and limitations of the organic fabrics.

All the fabrics are undyed to keep the essence of the natural fibers, as well as to reduce pollution due to fabric finishes at the end of the product lifecycle (disposal). That way, designs remained as pure as possible, and the natural pigments were used as a source of inspiration.

With regards to environmental aspects, regenerated fibers are very important. Bamboo viscose is a regenerated cellulosic fiber with the properties of both synthetic and natural fibers. It is made from the jute of bamboo plants which grows rapidly, with very little irrigation and requires less land compared to the thirsty cotton plant. The mechanical properties of viscose are similar to synthetic fibers in terms of comfort and durability. During erosion, bamboo viscose acts as a natural fiber and is biodegradable (Basit, Latif, Baig, & Afzal, 2018).

Linen originates in the Mediterranean region of Europe. The main producers of linen fibers are the Soviet Union, France and Poland. This fiber has good moisture absorbency and breathability as well as low elasticity and resiliency (Muthu, 2014).

Hemp fibers are extracted from the stalk of hemp plants. China holds the largest hemp fiber production share, followed by France, the United Kingdom, Romania and Hungary. Advantages of hemp production are that they require less pesticides due to their fast growing speed which doesn't attract a lot of pests. Additionally, hemp plants do not deplete the soil, instead enrich it and retain soil moisture. Compared to cotton, hemp fiber production harvests 250% more fibers per acre (Muthu, 2014).

Mood Board

Figure 1. Mood Board

I created a mood board that closely resembled the texture and natural pigmentation of the fabrics used. I conveyed the beauty of the fabrics first by making the cotton the focal point. With this mood board, I am reminded of the production process from start to finish. In terms of style and silhouette, I was inspired by the fashion designer Jacquemus. His styles are classic, edgy, minimal and neutral.

Trend Forecasting

Pixie haircuts, track pants, high-waisted jeans, chokers (Williams, 2018), tiny purses, scrunchies, kitten heels, slip dresses, baggy jeans (Block, 2018), dad sneakers, fanny packs, tiny sunglasses and tube tops are all trends from the '90s and early 2000's that are back in 2018. They have saturated all of Instagram because they are being worn as street styles by influencers (Fisher, 2018).

In the future, WhoWhatWear (2018) predicts that more 90's trends are on their way, and here to stay. They are barely-there straps, spaghetti straps, and strapless everything, among others. The resurgence of the '90s is a reminiscing trend that we can expect again in the following years (Block, 2018) because in fashion, what goes around always comes around, many times. All styles are usually re-born decades later. However, the '90s fashion silhouettes are back in less than twenty years. Carefree, minimalism and comfort are how I describe that decade.

The inspiration photos on the mood board are from Jacquemus SS18. In his own words, he says "My name is Simon, I like blue and white, stripes, sun, fruit, circles, life, poetry, Marseille and the 80s." ("Simon", n.d.). He is also inspired by elements of nature and earth tones.

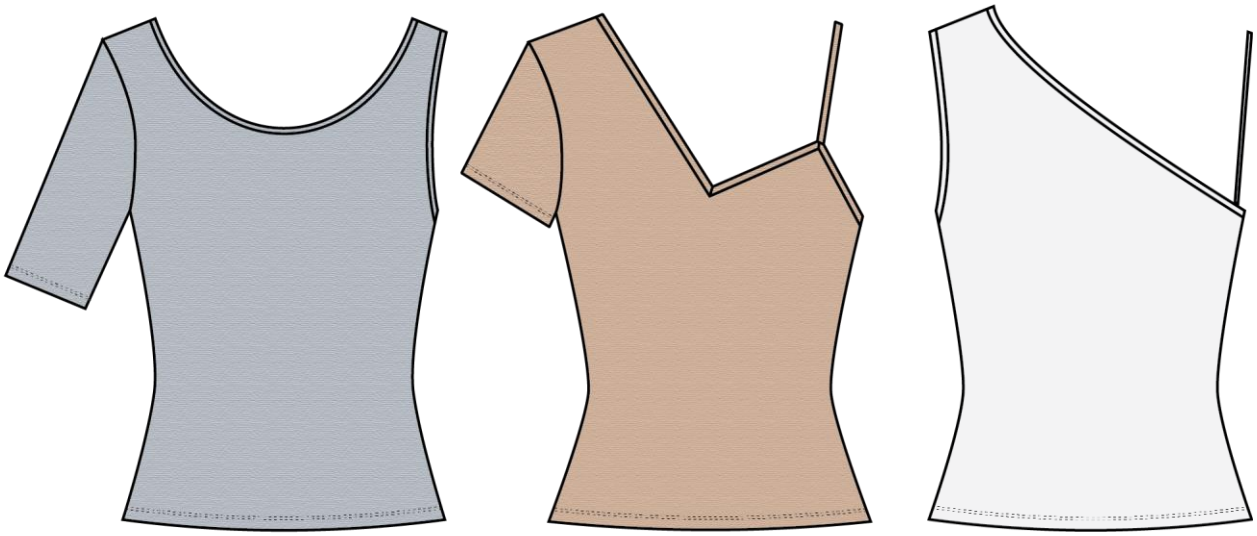
The Jacquemus brand resonates with my own, so I took elements from it as well as elements from the ‘90s trends to create a unique style that expressed earth and minimalism. While thinking about geometric shapes, I got the idea to design a line of asymmetrical knit tops. To keep the line cohesive, all designs needed to display minimal modernism. Each top was designed with a set neckline (V-neck, scoop and off-the-shoulder) with different sleeve types on each side (34 length, thick strap, spaghetti strap, and shirt sleeve).

My thought process behind the varying silhouettes was to create a concept that is fresh by combining traditional necklines and sleeve styles in a nonconventional way. However, due to the use of traditional silhouettes, the goal was to create timeless styles that can be worn today and twenty years from now while remaining a fresh concept. See table A and figure 2 for the unique combinations of each top.

Table A. Knit shirt combinations.

Fiber	Neckline type	Sleeve types
Hemp/Cotton	Scoop	¾ sleeve, thick shoulder strap
Linen	V-neck	Short sleeve, spaghetti strap
Bamboo viscose	One-shoulder	One-shoulder, spaghetti strap

Figure 2. Hemp/cotton blend, linen, bamboo viscose



Market Analysis

Table B. Market Analysis.

Retailer	Price Point	Composition	Photo
H&M Conscious https://www2.hm.com/en_us/productpage.0516000034.html	$12.99	**Fitted Long-sleeve (black)** Stretch jersey, organic cotton 93% cotton, 3% elastane Imported Also offered in: light pink, light gray, white, burgundy, dark blue stripes, dark gray, khaki green and dark blue	
Pact Apparel https://wearpact.com/women/apparel/tops%20&%20shirts/three%20quarter%20sleeve%20henley%20tee?id=wa1-whe-spu	$30.00	**Three quarter sleeve henley Tee (spruce)** 100% organic cotton, GOTS Fair Trade Also offered in: black, heather, dark berry and slate	
Alternative Apparel https://www.alternativeapparel.com/meegs-printed-racerback-eco-jersey-tank-top-01927ea	$32.00	**Printed racerback eco-jersey tank top (green camouflage)** Eco-Jersey TM (50% polyester, 38% cotton, 12% rayon) Contains organic & recycled materials Imported Also offered in: stars, gray camouflage, ivory ink stripe, gray stars, leopard and blush camouflage	

Threads 4 Thought https://www.threadsforthought.com/store/women/tops-tees-shirt/felicity-tee.html?color=cayenne	$44.00	**Felicity tee (cayenne)** Organic cotton/recycled polyester rayon blend Imported Also offered in: black, capri	
People Tree https://www.peopletree.co.uk/women/tops/laila-roll-neck-top-in-black	$55.00	**Laila roll neck top in black** 95% organic cotton, 5% elastane Fair trade	
FREELY https://freeflyapparel.com/collections/womens-tops/products/womens-bamboo-flex-henley	$64.95	**Women's Bamboo Flex Henley** 47.5% Viscose from Bamboo / 47.5% Polyester / 5% Spandex Also offered in: Alpine blue, heather tide, heather denim, heather black	

See table B. Sustainable retailers offer basics such as T-shirts, V-necks, turtlenecks, and tank tops in solid colors and basic patterns like stripes, polka dots, and organic patterns. They are lacking in creativity and innovation. Cashing in on over-priced basic apparel is not enticing new customers or competing with the ferocity of fast-fashion brands like Forever21, who can sell a trendy cotton T-shirt for $3.90 ("Cotton-blend", 2018).

A price point like H&M's Conscious collection is more competitive, being a fast-fashion brand themselves. H&M is lauded by environmental activists and positions itself as an industry leader in sustainability due to their loud sustainability campaigns, and extensive sustainability reports. However, their business model relies on high volume, which is the biggest problem it faces in terms of production, transportation and their carbon footprint. They are increasing their brand transparency and encouraging the industry and consumers to change. The H&M Group sustainability website outlines reports benchmarks such as currently using 59% of their cotton from sustainable sources and using 100% cotton from sustainable sources by 2020 (H&M Group, 2017). Still, H&M's Conscious collection is also failing to introduce the trendiness that other H&M collections do.

My designs on the other hand, offer basics with a twist. The extra creative push is what the sustainable apparel industry is lacking. Introducing sustainable apparel that is innovative and fashion-forward will also introduce new customers to conscious consumerism. Conscious' target market are the fast fashion consumers, and Conscious is positioned as a transitionary brand. Conscious is transitionary because it is blending the business model from slow fashion and fast fashion. The goal is to encourage conscious consumerism, so the price point and quality is the happy middle of both business models.

Price

(Actual Price)

I calculated the actual price of Conscious, to help estimate the wholesale price of Conscious if I followed the fast-fashion business model. To calculate the actual price, I added the total cost of materials ($48.80), shipping expenses ($23.40) and the total cost of labor ($918.60).

All of my materials were purchased online at Etsy.com from two vendors; Mr. Greens Eco-Friendly Rags from the USA and Vancouver Bamboo from Canada. According to PayScale, the average hourly wage for a dressmaker in America is $15.31. I used this number to calculate the cost of my labor. I averaged the total number spent in the sewing lab into 3 parts, for each shirt constructed. In total, the actual cost of Conscious was $967.00. See table C.

Table C. Actual Cost

Fiber	Price/Yard	Yards Purchased	Cost of Material	Hourly Rate	Hours Worked	Cost of Labor	Total Cost
Hemp/Cotton	$7.00	2	$14.00	$15.31	20	$306.20	$320.20
Linen	$7.25	2	$14.50	$15.31	20	$306.20	$320.70
Bamboo Viscose	$9.95	2	$19.90	$15.31	20	$306.20	$326.10
Total			$48.40 (+$23.40 shipping)			$918.60	$967.00

Conscious was hand-made which made the cost of labor the highest expense. Even more than the cost of materials, which in uncommon in the fashion industry due to the outsourcing of labor. If Conscious were to be mass-produced outside of the United States, the cost of labor would decrease dramatically.

(Wholesale Price Estimate)

To estimate the wholesale price of the Conscious Collection if it were outsourced and mass produced, I followed Everlane's cost breakdown. Everlane is a pioneering retailer succeeding in exceptional quality, ethical factories, and radical transparency. They offer contemporary basic products. Everlane is similar in concept and price to Conscious. On average, Everlane's markup is 2-3 times the true cost of the garment production. On average, the labor associated with each garment is about 80% of the materials cost and the transportation cost is

about $1.79 for each garment (Everlane, 2018). The cost of materials equals on yard of fabric (not accounting extra fabric used for samples). See table D for the wholesale price estimate of Conscious.

Table D. Estimated wholesale price.

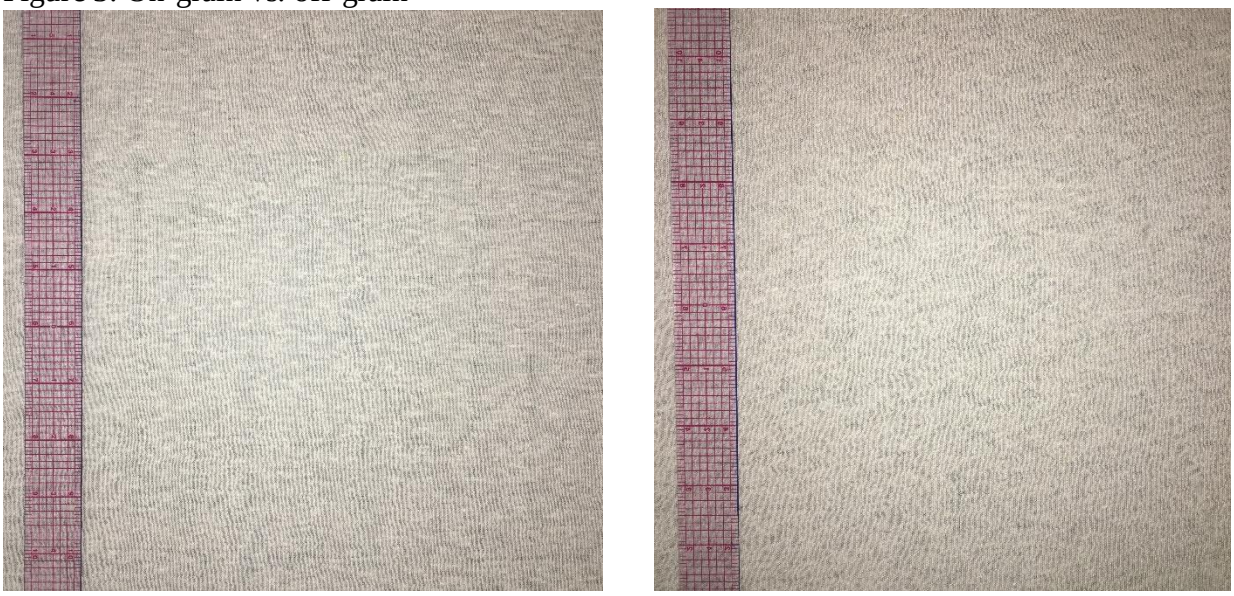
Fiber	Materials	Labor	Transportation	True Cost	Retail Price (2x markup)
Hemp Cotton	$7.00	$5.60	$1.79	$14.39	$28.78
Linen	$7.25	$5.80	$1.79	$14.84	$29.68
Bamboo Viscose	$9.95	$7.96	$1.79	$19.70	$39.40

The estimated wholesale price demonstrates that Conscious is on average, below the market price point of current sustainable brands while offering styles that are fashion-forward, trendy and timeless.

Garment construction

(Fabric Preparation)

Figure 3. On-grain vs. off-grain



The fabric preparation consists of laundering, preshrinking and returning the fabric to grain. Pre-shrinking is necessary so that the final garments don't shrink during post-purchase washing. When garments shrink post-purchase, they shrink in abnormal patterns, altering the shape and fit of that garment. Pre-shrinking is done in the dryer, after washing. However, during the washing process, the fabric is twisted and pulled in the wash cycles, changing the natural grain of the fabric. When a fabric is "on-grain", the lengthwise (weft) and crosswise (warp) threads are at an exact right angle. It is essential for all fabrics, especially knits, to be on-grain so that the garment doesn't twist during wear. To return the fabric to grain, it was pulled in the opposite direction, mimicking the pulling effect of the washing machine. See figure 3.

(Draping)

Figure 4. Draping

Step one of the draping process is developing a knit foundation as a working pattern. Draping is more efficient than drafting on paper, because the Conscious designs are form-fitting. Traditionally, a foundation is draped on only half of the dress form and reflected on the center front. However, due to the asymmetrical nature of the Conscious designs, draping the foundation on both sides of the dress form was necessary. Marking the center front is vital for future steps. See figure 4.

Step two is altering the knit foundation on the dress form by marking directly on the fabric with tailor's chalk. The seam allowances are marked at this point to guide the cutting. Since this is a working pattern, chalk marking can be made and erased as necessary. This step is not taken lightly, as the design elements of Conscious are held in the shape and silhouette.

The final step is trimming the seam allowances and cutting the excess fabric directly on the knit foundation to create the desired silhouette. At this point, all notches are marked on the

working pattern. Corrections can still be made to this working pattern, if the draped outcome is not what is desired.

(Pattern-making)

Figure 5. Patternmaking

Step one of the pattern-making process is unpinning the draped working pattern and tracing on paper. Pressing the working pattern will help recover the fabric's elasticity. To account for the human error in the draping process, the working pattern on paper is folded along the center front to smooth and trim the side seams, shoulder seams and necklines. By doing this, the working pattern is symmetrical in terms of fit and widths. See figure 5.

Step two is tracing the working pattern once again on paper to create the official pattern. Seam allowances, notches, descriptions and grainlines are marked at this point. See figure 6 for the final patterns. See Table 4 for seam allowance measurements. The last step in patternmaking

is drafting the sleeves. They are drafted on paper to simplify the process because most dress forms don't have detachable arms.

Figure 6. Final Patterns.

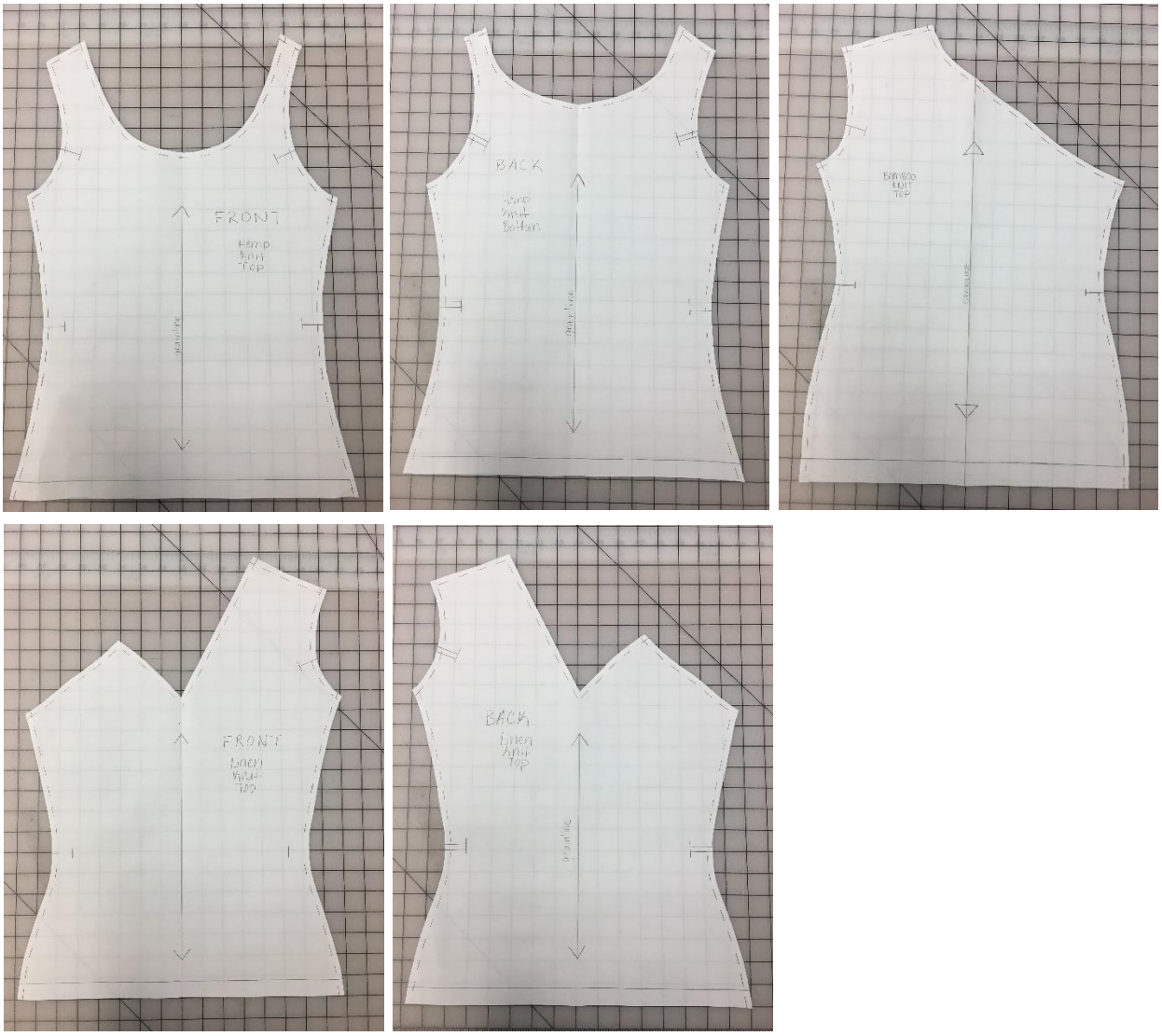


Table E. Seam allowances.

Fiber	Side Seam	Shoulder Seam	Neckline	Armhole	Hem
Hemp/Cotton	0.25"	0.25"	0.25"	0.25"	1"
Linen	0.25"	0.25"	0.25"	0.25"	1"
Bamboo	0.25"	0.25"	0.25"	0.25"	1"

(Construction Instructions)

Hemp/Cotton top:

1. Cut pattern pieces.
2. Mark pattern pieces (notches and seam allowances).
3. Serge side seams and shoulder seams together (right sides together), pinning at notches.
4. Serge sleeves together at side seam.
5. Serge armhole to sleeve cap, pinning at sleeve cap and matching side seams.
6. Press hem inside and sew straight stitch with twin needle, ¾ away from fold.
7. Self-fabric wrapped binding: See Figure 7.
    a. Cut 1.25” wide strips on grain.
    b. Cut 10% smaller in length than the opening.
    c. Serge short ends of band together.
    d. Fold binding in half, lengthwise (wrong sides together).
    e. Fold lengthwise edges towards the center to form two more creases.
    f. Serge in the round, matching side seam to binding’s seam (right side of binding facing wrong side of the garment).
    g. Wrap binding along raw edge of garment.
    h. Stitch in the ditch on right side of the garment.
    i. Folding along seam line, turn binding to the right side of the garment.
8. Press garment.

Figure 7. Wrapped binding.

Linen top:

1. Cut pattern pieces.
2. Mark pattern pieces (notches and seam allowances).
3. Serge side seams and shoulder seam together (right sides together), pinning at notches.
4. Serge sleeve together at side seam.
5. Serge armhole to sleeve cap, pinning at sleeve cap and matching side seams.
6. Press hem inside and sew straight stitch with twin needle, ¾ away from fold.
7. Spaghetti strap:
    a. Cut 1/2” wide strips on grain.
    b. Fold band lengthwise and serge raw edges.
    c. Invert strap.
8. Self-fabric binding: See Figure 8.
    a. Cut 1” wide strips on grain.

b. Cut 10% smaller in length than the opening.

c. Serge short ends of band together.

d. Fold band in half lengthwise (wrong sides together).

i. For V-neck point:

1. Staystitch V
2. Draw a point 1/2” from each widthwise edge
3. Connect the point to the corners of the band.
4. Cut and trim along line.
5. Pin band to the opening aligning V and serge in the round, matching side seam to binding’s seam. Attach spaghetti straps at this point.

9. Press garment.

Figure 8. Binding & V-neck.

Bamboo top:

1. Cut pattern pieces.
2. Mark pattern pieces (notches and seam allowances).

3. Serge side seams and shoulder seam together (right sides together), pinning at notches.
4. Serge sleeve together at side seam.
5. Serge armhole to sleeve cap, pinning at sleeve cap and matching side seams.
6. Press hem inside and sew straight stitch with twin needle, ¾ away from fold.
7. Spaghetti strap:
    a. Cut 1/2” wide strips on grain.
    b. Fold band lengthwise and serge raw edges.
    c. Invert strap.
8. Self-fabric clean finish binding: See Figure 9.
    a. Cut 1” wide strips on grain.
    b. Cut 10% smaller in length than the opening.
    c. Serge short ends of band together.
    d. Fold binding in half, lengthwise (wrong sides together).
    e. Serge in the round, matching side seam to binding’s seam. Attach spaghetti strap at this point.
    f. Folding along the seamline, turn binding to the inside of the garment.
    g. Edgestitch band in place.
9. Press garment.

Figure 9. Clean finish binding & spaghetti strap.

Final Garments

Figure 10. Final Garments. Bamboo top, linen top, hemp top.

Limitations

When sewing, knit fabrics require different guidelines and sewing techniques than woven fabrics because of their stretch and weight. For example, knits seams are finished with an overlock machine and the seam allowance is ¼" less to allow for stretch and recovery. Because unraveling is a possibility with lightweight kersey knits, they are treated with fray check. Contrary to woven fabrics, most knit fabrics have the most stretch on the cross-grain rather than the bias. That is why knit bindings are cut on the cross-grain. On knit seams, fusible interfacing, elastic tape or stay tape can be used to control them. In my case, I decided to exempt from these because it added bulk and restricted the stretch and fit of my garments.

The major limitations I experienced were due to fabric sourcing. The fabrics were purchased online at Etsy.com, because of limitations in affordable organic options. Upon delivery, the hemp/cotton blend and linen fabrics were more lightweight and transparent than expected. Also, the stretch recovery was very low, which affected the construction process, as it didn't have much forgiveness. These fabric limitations were tackled by creating mock garments

in the fashion fabric and samples of all the seams and bindings considered for construction. Construction was approached in a timely manner, with precision and patience.

Also, the bamboo viscose fabric was misleading. In the description, the product was labeled as bamboo stretch natural jersey. In the caption, it was labeled as organic, with 5% spandex, however in the certification paperwork, it was labeled as Bamboo Viscose. Consumers who are not knowledgeable may get confused about the origin of bamboo fabrics. Regenerated cellulosic fibers act as a synthetic fiber, with no real natural fiber benefits such as wicking moisture, antibacterial properties, hypoallergenic properties and high absorbency. The bamboo fiber market is guilty of high greenwashing, in terms of personal health benefits. Although viscose fibers will act as biodegradable fibers when disposed of, the bamboo purchased for Conscious will not be 100% degradable, due to the spandex content.

The most unexpected limitation was determining what type of seam finishing to use because the hemp and linen style have very little elastic recovery. Knit neckbands present many challenges but have a purpose to add structure. Interestingly, I used a different type of neck band for each top, depending on style, aesthetic and stretch. For example, the clean finish binding was used for the off-the-shoulder design because it looked best aesthetically. The hemp top used a wrapped binding because it is the traditional seam binding used for similar tank tops. The linen top used a self-fabric binding because it was necessary to create the V-point.

Another limitation was the grain of the fabric because it can be very difficult to detect. If the fabric is not returned to grain, the final product twists into an irregular shape and fit. See figure 11 for the linen fiber sample, which was sewn without returning to grain. As you can see, the garment twisted, created drag lines and altered the fit and aesthetic quality of the garment.

Figure 11. Garment off-grain.

To account for limitations, an extra one yard of each material was purchased. Trial and errors were anticipated, and the extra fabric provided sufficient material to create samples and a final garment in each fiber.

Discussion/Conclusion

Industry research has concluded that the fashion industry's current production process has a destructive ecological environmental impact. Fast fashion retailers have complex supply chains that are speeding up in order to meet consumer demands. In order to properly address the clothing industry's effect, fiber production, apparel disposal and consumerism has to be addressed and improved. Currently, consumers are interested in sustainable apparel, but they are not properly educated in the topic enough for it to make an impact on their purchasing behavior.

The fast fashion consumer is the appropriate target market for Conscious because of their compulsive buying habits, limited spending budget and interest in fashion. Like most consumers, they are not actively engaged in environmental causes due to lack of information. Young

consumers are starting to learn about corporate social responsibility, but are unaware of the detrimental effects of their buying habits. Conscious aims to help transition fast fashion consumers to purchase sustainably, without sacrificing price and style.

Part of the problem is the use of synthetic fibers that continue to pollute the environment and water supply long after production and purchase. Conscious offers a resolution by designing organic knit tops made from natural fibers. Bamboo, linen and hemp offer synthetic and cotton alternatives that are eco-friendlier and consume less water. Organic is a term that all consumers are familiar with and associate with personal benefits therefore stimulating conscious consumerism.

The challenge in sustainable fashion, in order to make it widely successful and positively impactful, is not making it exclusive (Busch, 2018). It cannot be assumed that slow fashion relies on the same business principles as fast fashion simply by designing timeless garments instead of trendy ones and producing higher quality at a higher price (Stefko & Steffek, 2018). Sustainable apparel must be affordable.

Corporate social responsibility is not the only solution. Socially responsible consumer behavior can spark an industry-wide movement toward making green fashion the standard. I stress a need for consumers and manufacturers to change their consumption practices. However, products need to be beautiful first, and eco-friendly second. Eco-friendly on its own doesn't work as a concept to persuade consumers to purchase ethically.

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