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Spring 4-23-2024

## From Field to Fashion: A Journey in Sustainable Design and Regional Understanding

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### Recommended Citation

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# From Field to Fashion: A Journey in Sustainable Design and Regional Understanding

by

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Class of 2024

A critical essay submitted to the  
faculty of Macalester College  
in partial fulfillment of the requirements for the  
Degree of Bachelor of Arts  
with Departmental Honors in Theater and Dance

## 1. INTRODUCTION

Over the last 100 years, the fashion industry has quickly become a major polluter of the environment—whether it be discarded clothing, synthetic dye runoff, carbon emissions, or textile produced microplastics found in remote ocean. On the industry's current course, pollution is only going to increase.<sup>1</sup> Both designers and the brands themselves have the responsibility of leading consumers away from purchasing from large, corporate companies that feed into this pollutive cycle and towards utilizing the products of local textile industries that use biodegradable materials, local labor, local fiber, and non-toxic dyes. Designers are the creative origin of garments and therefore must commit to designing within this methodology but cannot do so without the support of the brands they work for as well. It must be a joint effort to change the industry long term.

This scholarly and creative research project investigates sustainability in the textile industry at large and on a regional scale. I am specifically interested in investigating the complicated state of past and present textile production in my local region of the Upper Midwest to present relevant information for Fashion and Costume Designers designing within this locality.

The research paper interrogates the flawed functioning of the textile industry and the problems designers who try to design truly sustainably face. These major shortcomings of the industry range from pollution from the production of synthetic textiles to the lack of basic workplace rights for many garment workers, all of which make it difficult to source textiles ethically and design sustainably. The scholarly portion offers an overview of the current state of

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<sup>1</sup>Ellen MacArthur Foundation. *New textiles economy: Redesigning Fashion's Future*, 21.

textile production, details what needs to change for the industry to become truly sustainable and suggests how designers can practice environmentally conscious design. Alongside fiber industry development initiatives, notably a push for a Midwestern linen revival, I highlight Midwestern fiber producers, processors, and weavers as well as present important historical context.

My artistic creation consists of an all-seasons, six-look capsule collection that considers the findings from such research and established ideas around biomimicry as I examine the relationship between fashion and sustainability. The garments will emerge from a soil-to-soil framework, that is: the pieces could be buried in the ground and not only decompose, but potentially allow for a negative carbon cycle, reducing pollution, waste, and emphasizing mindful use of natural resources. By creating an all-seasons, soil-to-soil capsule collection combined with academic research and local historical analysis, I aim to demonstrate how rethinking our design practices to be more locally minded and environmentally conscious is vital to ensuring a sustainable future for the fashion industry.

## 2. CREATIVE METHODOLOGY

In the creation of the collection, I will prioritize utilizing textile made from fibers produced locally, here defined as a 250-mile radius from Saint Paul, Minnesota. Unfortunately, for several reasons—from the demise of local looms to the way in which large-scale monoculture crops have impeded the growing of plants for the textile industry—at present it is impossible to use only locally-grown fabrics. I am aware of the limitations of our local textile industry—for example, commercially-produced linen is not available in the United States. I will utilize the aid of organizations such as Three Rivers Fibershed, Rust Belt Fibershed, and more to source as locally as I can. That said, even if not entirely locally sourced, I will create the collection with

only natural materials such as wool, linen, hemp, cotton, and other plant/animal fibers. All fibers and textiles will be, to the best of my ability, supply chain traced from fiber growth to finished garment. As I encounter obstacles during the design process, I will provide historical and industry context to explain why those obstacles are present in the first place.

The collection shall be designed under the guidelines of bio design, following ideas of biomimicry, both in aesthetic appearance and technical structure. Specific principles of biomimicry and biodesign are not defined in reference to fashion, but this positional philosophy generally includes concepts such as designing for diversity, adaptability, zero-waste, biological innovation, durability, and the ability to be reused indefinitely. The term *biomimicry* means the copying, adaptation, or derivation from biology.<sup>2</sup> I also take inspiration from the Biomimicry Institute's 2021 Report, *The Nature of Fashion: Moving Towards a Regenerative System*. In it, the authors interrogate the possibility of rewiring the fashion industry to function like a natural ecosystem, integrating closed loop cycles that work with the biological functioning of the planet.<sup>3</sup> One can imagine closed loop cycles to resemble Antoine Lavoisier's Law of Conservation of Mass: nothing is destroyed, only transformed. Designing and sourcing with zero waste and decomposition as a goal does fall within this design philosophy and can be replicated in a smaller capacity by employing biomimicry in garment design.

The biological elements that will inform both the garment design and construction for this honors project are plants native to Minnesota that are used to dye and make textile; the decomposition of these plants; and the natural visual identity of the Upper Midwest itself—the

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<sup>2</sup>Leslie Eadie and Tushar K. Ghosh. *Biomimicry In Textiles: Past, Present and Potential. An Overview*. (J.R. Soc. Interface, 2011) 761-775.

<sup>3</sup>Eleanor Banwell et. al. *The Nature of Fashion: Moving towards a regenerative system*. (Biomimicry Institute, 2021).

region's topography, seasonal color palettes, or references to its specific sites. Various methods may be used to achieve colors, shapes, textures, and design elements that mimic those found in nature such as embroidery, pleating, varying other techniques of layering and sewing fabrics, natural dyeing, eco-printing, block printing, and knitting. I also take design inspiration from the fibers I will employ in my collection—for example, the look of wool at the microscopic level or the shapes in a flax flower. The conceptual goal is to call the viewer back to a sense of place, where they presently stand, in order to contextualize the academic research visually.

### 3. PERSONAL POSITION

I grew up on a small farm about thirty miles southeast of Cleveland, Ohio. I spent my childhood learning the ins and outs of farm life, how to raise living things, and the systems that must be in place to do that effectively. I have always felt my relationship with the natural world to be a “never take more than you give” philosophy. From a young age, I deeply understood the importance of both caring for the environment and utilizing its resources mindfully, which is the basis of this project. Art and science have gone hand in hand in my life as long as I can remember. On the farm, my father's ceramic studio and the field where my parents held edible weeds workshops were two hundred feet apart, on a plot of land often donated to be used for archeological research.

I moved to Minnesota to attend Macalester in 2020, after spending a deeply formative gap year in Pune, India—a year that gave me my first close look into the garment industry. My first year of college in Minnesota was heavily dictated by COVID-19 and by the end of it, I still felt like I knew nothing about the place where I lived. I spent the summer and academic year following trying to change this; going elsewhere in the state, finding new restaurants,

neighborhoods, galleries, and more. I loved it. I then left for a year-long fashion program abroad at the Paris College of Art. While my time in Paris was foundational in terms of my knowledge of textiles, development of my design process, and fashion history, I missed home—and home had become the Twin Cities. This research is in pursuit of knowing this new home further understanding its context and mine within it. The idea for this project began in January 2023 when I started a course on textiles taught by Claire Jochum at the Paris College of Art but grew from seeds planted during my gap year—my interest in fashion and education has continuously shined a light on the juxtaposition of extreme craft and exploitation present in the industry. These issues are globally pervasive.

After finishing the year in France and returning to Minnesota, I began working as a documentary photographer for Three Rivers Fibershed's Sheep to Shawl project in which I followed the making processes of different designers and fiber artists on a journey of making garments from raw wool fiber, doing all of the processing by hand along the way. Talking to these artists and seeing them work with local fiber firsthand made me want to know more.

It moved me to discover, in the very early stages of this investigation, a genealogical connection to my project. My mother, adopted and brought to the United States from Canada when she was eleven months old, came into contact with her biological parents for the first time in 2020. Her biological mother passed away in April 2023. In the mélange of her papers and files, there was a 1901 census from Belfast, Ireland which listed my family members, their ages, and professions. In the faded ink, it described my relatives as linen growers, linen weavers, painters, and coat makers. It is an indescribable feeling to find comfort in the fact that one's interests are a culmination of those who came before us. I thank those who have done this place-

based textile work for hundreds of years, those who steward land consciously, and those from whom these ways of thinking originated from.

I chose to pursue this research on fashion and sustainability as it is not only relevant to my academic studies, but because it directly draws from my lived experience and allows me to create a body of work with a reverence for nature and the land I have lived and continue to live on. I have been situated particularly well to take on this research and design project due to the combination of my academic interests and my upbringing as a whole: I speak the language of farming, know the struggles of being a small business owner and producer, and hold the interest in plant science that allows me to both learn and easily converse with people from these walks of life. The breadth of knowledge required for a productive conversation within the textile production sector of the fashion industry is often overlooked, if not underestimated. The industry requires excellent farmers, biologists, engineers, fiber processors, designers, and more to function efficiently. Without a shared mission and knowledge of the gaps we face, forward movement is impossible. I believe having common ground leads to more authentic work. Let us work together.

#### 4. WHAT YOUR CLOTHING REALLY MEANS

How can we call a garment “sustainable?” In the context of this honors project, I first consider sustainability to address environmental impact. Impact could be measured negatively or positively, through pollution, carbon emissions, and water usage from clothing production, to name a few. Environmental impact also differs between synthetic and natural fibers, but is generally less harmful if biodegradable materials are used. I discuss this more in depth throughout the paper.



Further, sustainability requires an ethical compass and must ensure the wellbeing of laborers across the supply chain. The issues within the fashion industry reflect larger questions surrounding environmental conservation and collapse, human rights, and consumer culture. Although my research specifically references the clothing industry, broader social change is necessary to catalyze sustainable solutions to these humanitarian and environmental crises. The report *The Transition to Good Fashion* puts the reason for the current lack of change plainly: “Incumbent interests and power dynamics sustain the status quo, and the prevalent economic model based on profit growth and efficiency works against internalizing environmental costs and social justice.”<sup>4</sup>

To produce something sustainably and ethically is to produce it transparently; this responsibility falls on the shoulders of designers and brands themselves. However, potential change from the administrative level lacks meaning without simultaneous change in consumer culture. The reality is that one cannot happen sans the other. The success of slow-fashion movements requires clothing consumers to purchase more intentionally, ignore trends, invest in quality over quantity, and pay attention to the traceability of their garments—traceability means that a consumer is aware of the environmental and social implications of each step it took to produce their article of clothing. As sustainability is becoming more and more trendy, consumers are increasingly asking for the ability to trace their garments back to the source. In an article for *Forbes Magazine* titled “Transparency Is What Conscious Consumers Urgently Need From Design Brands Today” writer Roddy Clarke says, “A lot of ambiguity comes from larger companies, so for consumers who are unsure as to the traceability of a design, opt for smaller brands and individual designers where the personal connection between maker and consumer is

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<sup>4</sup>Sophie Buchel et. al. *Report: The Transition to Good Fashion*, (Drift For Transition, 2018) 26.

closer and easier to trace.”<sup>5</sup> This article is from 2019; in the wake of a global pandemic and four years of continued environmental decline, this topic is now only more vital. This philosophy of consuming clothing sustainably and mindfully already has a widespread platform—but we still have much farther to go.

Garment making used to be an incredibly slow and thoughtful process until the development of industrial machinery. To grow fiber from seed, to harvest, ret, spin, and weave it into fabric used to take a very long time. Human beings have been wearing some kind of clothing since we began to advance evolutionarily; archaeological evidence shows flax—linen—cultivation as early as 36,000 years ago. In 1100 AD Iceland, textiles were commonly used as currency.<sup>6</sup> Throughout Europe in the Middle Ages, clothing and textiles were often preserved in association with the divine and used as grave goods along with precious metals and family heirlooms. Women dressed in intricate garments made with a variety of natural fibers, from linen to wool to silk woven with gold.<sup>7</sup> Textiles and clothing have long held a social currency as well: well-made, intricate regalia denoted higher status, bright colors indicated wealth, the quality of one’s clothing demanded respect. As discussed in Kate Haulman’s *The Politics of Fashion in Eighteenth Century America*, wigs, garment embellishments, ornate patterns, and exotic textiles all played roles in the perception of status and gender. Caring deeply about one’s dress could accelerate or diminish their position in society. Haulman writes, “‘Fashionable’ was a term of social approval or opprobrium, depending on who applied it to whom.”<sup>8</sup> Even everyday clothing

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<sup>5</sup>Roddy Clarke. “Transparency Is What Conscious Consumers Urgently Need From Design Brands Today.” *Forbes Magazine*, 2019.

<sup>6</sup>Michèle Hayeur Smith. *The Valkyries’ Loom: The Archaeology of Cloth Production and Female Power in the North Atlantic*. Gainesville: University Press of Florida. 2020.

<sup>7</sup>Gale R. Owen-Crocker. “Old Rags, New Responses: Medieval Dress and Textiles.” *Medieval Clothing and Textiles* 15, 2019.

<sup>8</sup>Kate Haulman. 49. Chapter “Fops and Coquettes: Gender, Sexuality, and Status.” *The Politics of Fashion in Eighteenth Century America*. 2011.

items were carefully made by hand, and worn and repaired over many years because they held great importance.

Clothing culture changed with the tide of the industrial revolution: the 20th century brought poor working conditions, synthetic fibers and dyes made from petroleum, and a disregard for the environment overcame the clothing industry. Today, fast fashion trends, mass overconsumption, and the under-utilization of clothing have worsened the problem. The outcome of this—the fashion industry is one of the top polluters in the world. According to The Ellen McArthur Foundation’s report “A New Textiles Economy: Redesigning Fashion’s Future,” industrial toxic chemicals from the dyeing and treatment of textiles are responsible for 20% of global water pollution.<sup>9</sup> Many of the chemicals used to make, dye, and treat clothing are known carcinogens, mutagens, and endocrine disruptors. These substances may cause numerous health problems in humans—including birth defects, hormonal imbalances, and endocrine-related cancers—not to mention a decline of wildlife populations.<sup>10</sup> And if the current practices in textile production are dangerous for consumers, they are even worse for those who work in the production process.

Garment workers are largely underpaid and daily placed in hazardous working conditions. One famous example of this negligence towards garment workers is the April 24<sup>th</sup> 2013 collapse of Rana Plaza, a garment factory building in Bangladesh. The tragedy resulted in the death of 1,134 people. Even after being warned of cracks in the structure, garment factory owners ordered everyone to work the next day, causing a massive loss of life when the building collapsed. Over twenty fashion brands produced garments at Rana Plaza, among them large commercial retailers such as J.C. Penney, Mango, Primark, The Children’s Place, Walmart,

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<sup>9</sup>Ellen MacArthur Foundation. *New textiles economy: Redesigning Fashion’s Future*, 21.

<sup>10</sup>Rebecca Burgess. *Fibershed*, 28-30.

C&A, and Benetton.<sup>11</sup> These major industry players produce hundreds of thousands of garments a year yet do not ensure safe environments and adequate wages for their workers. Since the accident, policies have been instituted in Bangladesh to ensure the safety and well-being of garment workers, backed by brands and retailers involved in production at Rana Plaza.<sup>12</sup> However, many of these large retailers continue marketing cycles of greenwashing—the act or practice of making a product, policy, activity, etc. appear to be more environmentally friendly or less environmentally damaging than it really is—and lack transparency in their production practices.<sup>13</sup>

Material waste is another pollution byproduct of malpractice in the fashion industry. Around 73% of all fiber used for clothing production ends up either in a landfill or is incinerated.<sup>14</sup> On our current trajectory, “Between 2015 and 2050 the weight of these [landfilled] clothes would accumulate to more than ten times that of today’s world population.”<sup>15</sup> This accumulation of waste raises greenhouse gas emissions, pollutes all aspects of our environment, and will soon be difficult to manage. Designing within a zero-waste process can help, but the textiles themselves are not the only polluter in the larger scope of clothing production and distribution.

The nature of our globalized fashion industry is such that often materials such as fiber, fabrics, dyes, yarn, and notions, as well as finished garments often must travel very far distances to reach various levels of the supply chain and subsequently the consumer. For example, carbon

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<sup>11</sup> Clean Clothes Campaign. *Who Needs to Pay Up?* Clean Clothes Campaign. 27 Mar. 2017, archive.cleanclothes.org/safety/ranaplaza/who-needs-to-pay-up.

<sup>12</sup> Internal Labour Organization, *Rana Plaza disaster ten years on: What has changed?* <https://www.ilo.org/infostories/en-GB/Stories/Country-Focus/rana-plaza#compensation>

<sup>13</sup> “Greenwashing: the act or practice of making a product, policy, activity, etc. appear to be more environmentally friendly or less environmentally damaging than it really is.” Merriam Webster, online entry.

<sup>14</sup> Ellen MacArthur Foundation. *New textiles economy: Redesigning Fashion’s Future*, 20.

<sup>15</sup> *New Textiles Economy*, 40.

emissions from a plane route transporting textiles from New York City to Mumbai is approximately 2,644 kgCO<sub>2</sub>. According to the Guardian, there are 102 countries where the average citizen produces less CO<sub>2</sub> than this per year.<sup>16</sup> These facts lead us to another conclusion: one important method of reducing the toll on our environment is the localization of clothing production.

Solutions lie in front of us: fiber can be produced on our farms and woven locally. We can foster connection throughout all stages of clothing production to create an industry that sees its impact clearly. We can work with instead of against our natural environment, designing garments that are created with the flow of available materials, seasons, and whose waste is not actually waste at all, but food for other organisms. We can do much more too, but only through a deep collective effort. It will take years to shift the industry towards a more sustainable future, but it is necessary for us—fashion designers, consumers, wearers, and thinkers—to implement socially and environmentally responsible changes in our day to day lives now.

It is also imperative that we remember that no person is exempt from being part of this conversation. The fashion industry touches more aspects of everyday life than many people realize. Even those who may claim to know nothing about fashion, or care not, still get dressed every day. By putting clothing on your back, you are—whether you know it or not, want it or not—engaging with a concept that is far-expanding. Janet Hethorn and Connie Ulasewicz put it best, “Fashion is deep and goes directly to who we are and how we connect with one another.

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<sup>16</sup>Niko Kommenda. “How Your Flight Emits As Much CO<sub>2</sub> As Many People Do In a Year.” July 19, 2019. <https://www.theguardian.com/environment/ng-interactive/2019/jul/19/carbon-calculator-how-taking-one-flight-emits-as-much-as-many-people-do-in-a-year>

Some may think of fashion as frivolous, but it is at the root of the conversation that guides people how to respond to the changing world around them.”<sup>17</sup>

## 5.1 SOURCING FIBER AND TEXTILES LOCALLY

It is late July and I am driving through Northeast Minneapolis, a camera on my lap. I took a wrong turn getting off Highway 280, forcing a journey down stoplight-ridden Broadway Avenue in low summer heat. I am going to Summer Street Garden, a community garden in the neighborhood of Saint Anthony East. My now-friend Natalie Reece is there with her dog Lenny. When I exit the car, Natalie stands clad in a full brimmed sunhat and a garment that borders the line between sundress and ancient Greek-style tunic. She is up to her elbows in blue flax flowers planted just a few months prior, harvesting bunch after bunch, each tied around the center with the plant itself.

Natalie hopes to process her flax to produce Minnesota-grown linen but has already hit a major roadblock: It would take months to hand-process all the fiber. She intends to send the fiber elsewhere to be processed by machines that will take a fraction of that time, but the closest flax mill to her home in Minneapolis is in Port Williams, Nova Scotia—only a mere 1,922 miles away. With international border regulations around the importing of plants and seeds into Canada, there is question over whether this operation would even be possible. “I considered driving,” she said. The drive she refers to is no less than 30 hours but “...it may be more cost effective anyway,” she believes. This is a troubling notion considering that flax—linen—production is an estimated 1 million tons per year.<sup>18</sup> How can it be impossible to produce a fiber

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<sup>17</sup>Janet Hethorn and Connie Ulasewicz. *Sustainable Fashion: What's Next? A Conversation about Issues, Practices, and Responsibilities*. Bloomsbury Publishing, 2015.

<sup>18</sup>Sophia Opperskalski et. al. *Preferred Fiber and Materials Market Report*. Textile Exchange, 2022.

so largely consumed in the United States, a country with such a huge stake in the fashion industry? The answer is long and complicated. Perhaps, if more people had supported the local linen industry while it was still here, Natalie would not have any trouble processing her blue flax flower crop.

While sourcing textiles sustainably for fashion or costume design is a tall order, when designers, brands, or clothing producers source textiles and labor locally, it supports several different sectors of industry by creating opportunities for employment and funneling money back into the local economy. Furthermore, a key asset in local sourcing is the easier ability to trace textiles back to their origin. If a designer or brand can ensure ethical, non-pollutive textile production and support local industry, that would be fairly revolutionary.

Say, for example, a small clothing brand decides it wants to source wool fabric yardage sold at an independent fabric and notions store in its area. If we trace a piece of wool fabric back to the beginning of the supply chain, we will see how it supports the local textile economy and beyond. Wool fiber begins on the animal: sheep bred and raised by farmers and shepherds. Just the raising of sheep alone touches many people in the agricultural industry, from breeders to grain producers, to vets, shearers, contractors, and more. Ensuring animal welfare is another point to consider as well. Once the fiber is sheared, it gets sent to a scouring facility. These facilities are unfortunately not local—the closest ones being in Montana and South Carolina, see figure 1.<sup>19</sup>

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<sup>19</sup>Allison Herbert and Nicholas Wenner. *3 Maps Show How We Can Unlock Local Clothing Industries*. (Fibershed and Eco City Builders. 2020) Figure 2.

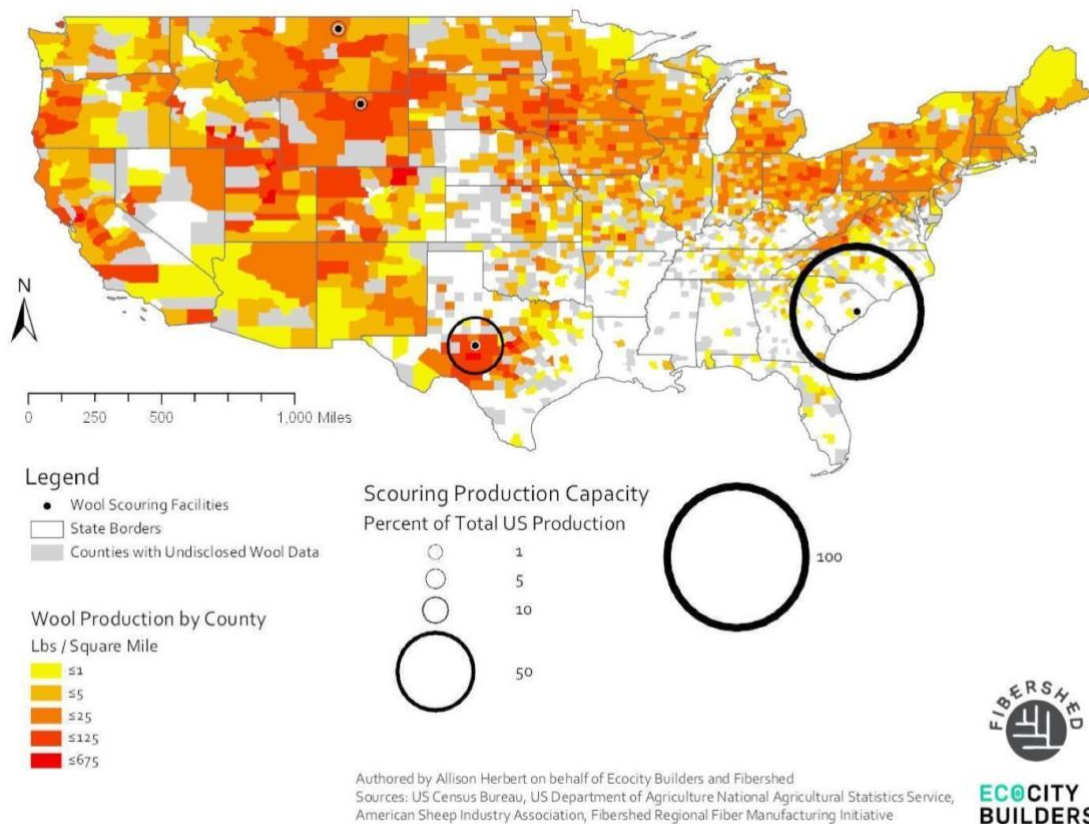


Figure 1: Scouring production capacity map of the United States (Allison Herbert from Fibershed and Eco City Builders, 2020).

After the wool is cleaned and scoured, it is processed at a fiber mill: cleaned again, carded, and spun into yarn. Sometimes these woolen mills also operate as weaving mills, and sometimes the wool gets sent to a separate weaving mill. Within the 250 miles radius from the Twin Cities that I set for this project, there are several woolen mills and weaving facilities that do a lot of work to uplift the local fiber industry, such as Ewetopia Fiber Mill (WI), Badgerface Fiber Mill (MN), Orchard Acres Textiles (MN) who also offer for-sale yarn goods that are produced by local shepherds. After fabric is woven and made, there are even separate clothing production facilities that help small, local brands and designers to create their products, such as



Clothier Design Source in Minneapolis. These facilities have different staff, specialists, technicians, artisans, and administrators. To illustrate this cycle further:

## Who is involved in the making of clothing?

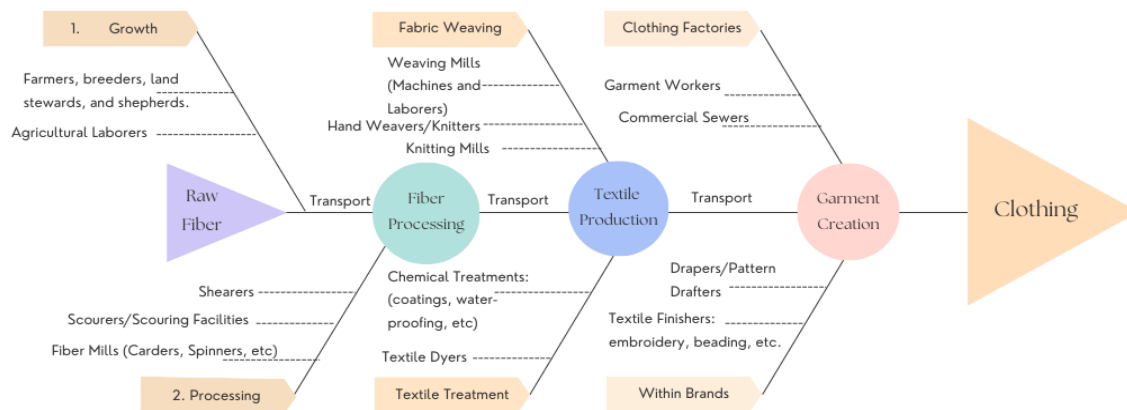


Figure 2: “Who is involved in the making of clothing?”<sup>20</sup>

While there is no shortage of local yarn available for knitting or craft purposes, very few weaving mills use local fiber for fabric yardage. Though there are weaving and commercial knitting mills in the area that could sponsor local garment production, the origin of the fibers they utilize to make textile is often unclear. For example, Minnesota Knitting Mills offers various possibilities of natural, recycled, and synthetic fibers for use in the creation of fabrics on their website—but I note that there is no such information about the origin of these natural fibers.<sup>21</sup>

<sup>20</sup> Flow chart created by the author.

<sup>21</sup> Minnesota Knitting Mills. <https://www.mnknit.com/fibers-materials/>

For this project, I chose to work with Small Dog Weaving Mill in Cumberland, Wisconsin, located about an hour and a half from the Twin Cities. The owner, Marian Quanbeck Dahlberg, is a professional weaver and fiber enthusiast who has worked with Fibershed, a nonprofit focused on localizing fashion industries and supporting regional fiber economies. She is passionate about “fostering a sustainable regional textile industry” to “contribute to the growth of the local economy, reduce carbon footprints, and support local artisans.”<sup>22</sup> Small Dog Weaving Mill was the first regional weaving mill in the Midwest that weaves local fiber and puts local fiber growers first. The wool purchased at Small Dog Weaving Mill comes from local shepherds, processed into yarn at local fiber mill, allowing it to function perfectly in the circular textile cycle we are trying to emulate. Dahlberg has made it her mission to help re-establish the local textile industry, and hopes soon there will be enough flax grown in the United States to weave domestic linen.

## 5.2 SUPPLY CHAIN REALITIES + SUSTAINABLE DESIGN CONSIDERATIONS

Unfortunately, the mass globalization of the fashion industry has caused a shift away from small-scale clothing production, which in turn led to national supply-chain gaps. These holes in the journey from fiber to fashion differ depending on the fiber itself, but the story is almost always the same: small industries cannot compete. In the given example of wool, the lack of regional processing facilities, the financial limitations of individual businesses, and the need to keep up with a fast-evolving industry make it very hard for local producers to measure up. When it comes to brands or designers themselves attempting to design in this capacity, it could nearly be a full-time job just to find all viable options. Most businesses do not have the time or

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<sup>22</sup> Small Dog Weaving Mill. <https://www.smalldogweavingmill.com/>

financial resources to devote to this cause—competing against large brands with multi-person sustainability advising teams is an impossible task.

For example, sustainable sourcing requires someone to think all the way down to the nitty-gritty parts of a garment. Biodegradable options for buttons, zippers, and other notions are typically slim. Beyond biodegradability, it is also important to ensure these items are sourced ethically and that the labor involved in their production is not exploitative, making them even harder to locate. While wooden and mother of pearl buttons are widely-used decomposable options, one contributes to deforestation and the other the killing of animals. Even if this is not always the case, little information is available about material sourcing practices for small notions such as these, making full transparency in the production process extremely difficult. When it comes to hardware—clasps, fasteners, grommets, and so forth—there is not a truly sustainable alternative to metal. A key factor to consider here is not only biodegradability, but durability, as to an extent one becomes just as important as the other.

When designing sustainably, one must consider whether or not a garment may be recycled and/or repaired. It is a good thing if you are able to select high-quality metal hardware that will last through the lifetime of your garment. Hardware can always be removed from the original garment and recycled or reused. It does not go against the argument of using natural fibers to use something as long lasting as metal hardware, as the truth is that no matter what, clothing will continue to be produced. If we can produce a finite amount of an item that can be reused over and over again, rather than reproduced/remanufactured at the expense of our natural resources, that strategy can help us design in tandem with our environment's natural processes and thus be less wasteful.

It is necessary to note sustainability and resourcefulness as ideas designers have been working with for a long time. In this regard, I am specifically looking at and referencing the work of John Galiano and his repeated use of *bricolage*, an industry term that comes from the French word meaning “an object constructed out of what is around or available.”<sup>23</sup> This philosophy is relevant to sustainability as it encourages the use of scrap material, found objects, and the re-use of old materials. I will be employing this in the sourcing of material for my work while remaining in my set parameters of biodegradable garments. Since the textile industry not only serves the clothing industry but also home interiors, there is ample cotton, linen, and wool textile from donated clothing and home goods that end up in thrift stores or donation bins. Beyond the thrift store, I will be sourcing close to campus as well—fabric scraps in the costume shop, clothing from in the free swap, damaged linens from my home, and more, to divert waste.

This kind of sourcing also stands as one method of making up for gaps in the local supply chain, and helps designers challenge the way we have typically approached textiles for clothing production. Where I could not source cotton jersey new locally or in a way in which I could trace it, I found plenty of 100% cotton jersey tee shirts to upcycle from. It takes a bit of extra work, but makes one less item destined for the landfill.

## 6. FIBER CHOICES FOR DESIGN: THEIR REGIONAL CONTEXT AND REASONING

### 6.1 Flax

Flax for clothing production was first brought to my attention during a 2021 summer internship with Rust Belt Fibershed, a Fibershed affiliate spearheaded by twins Jess Boeke and Sarah Pottle. Rust Belt Fibershed’s geographic region is defined as a 250-mile radius from

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<sup>23</sup> Liana Satenstein. “Fashion Word of the Day: Waste Not, Want Not.” (Vogue Magazine, 2014). <https://www.vogue.com/article/bricolage-fashion-word-of-the-day>

Cleveland, Ohio—outside of the focus region for this project, but close enough and with a similar climate to the region of my research to make it worth mentioning. Jess and Sarah started the Cleveland Flax Project five years ago to try and revive the linen industry in the Midwest, similar to Dahlberg’s mission. As their website explains, the carrying out of this project has led to “deep and meaningful conversations with so many community members on the importance of ‘materialism’ in the sense of being connected to the materials we use and their origins.” This idea encapsulates the essence of this research and creative work as a whole—connecting designers and clothing consumers to the lifecycle of their textiles creates a commitment to sustainability. Once people are aware of the deep faults of the fashion industry, it is not something they can unlearn.

While flax for linen production might not immediately come to mind, it is necessary to mention when considering the Upper Midwest in the design process. The collection following this paper interrogates the crosshairs between artfulness and functionality—this in combination with flax’s ability to thrive in this region’s climate make it an ideal fabric choice. Flax grows best in northern climates, but it is not a plant widely known to be grown for textile there. It is the same plant that produces the edible flaxseed commonly found in grocery stores. But in regards to sustainability, flax is durable and fast-growing. It is resistant to pests and, unlike cotton, growing its crop does not need the use of pesticides. It is a very low maintenance plant that can be a great cover crop, and produces appealing blue flowers. Growing flax well demands that one plants the seeds very close to one another, forcing the plant to grow straight up and elongate the fiber within it. Flax is used to create linen, a fabric highly regarded for its beauty and rustic, timeless look. A very lightweight fabric, linen is ideal for the summer months but also good for layering in the winter.

As I mentioned previously, the local sourcing of linen is impossible. The fiber itself is largely grown in European countries such as Belgium and Lithuania, though it often travels to China for processing.<sup>24</sup> Even though the Upper Midwest and Canada are considered the hotspots for flaxseed production in North America today,<sup>25</sup> none of these plants are in use for fiber production. But there was a time when they were. In research done for the Minnesota Historical Society, Janelle Kaye states that Windom, Minnesota, a small town about 150 miles from the Twin Cities, was once dubbed the Flax Capital of the World. In the 1940s, agriculture researchers claimed the county produced over 50% of the world's flax, leading the federal government to install a \$224,000 processing facility to use flax fiber as the new jute—a popular fiber used in military goods such as camouflage netting and shipping bags. The war ended before the facility was finished, and soon flax production died out. Kaye writes, “During the early 1950s, area farmers changed from the production of flax to the production of corn and soybeans... By 1959, the number of acres of flax had dropped to about 5,000. After 1970, numbers were too low to be counted.”<sup>26</sup> The decline of flax production was fast and drastic, leading it to almost completely die out by the 21st century.

Yet, the linen industry did well in the United States until the 1900s. N.B Harte explains in an article that during the colonial period, linen was the biggest industry activity in America.<sup>27</sup> He goes on to say one reason for the decline in stateside linen production was the increase in linen trade with Great Britain, a country with an already well-established industry. Yet, this is not the only reason for America's loss of linen. In “Use of Flax in America,” Donna Parker cites labor

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<sup>24</sup> *Flax (Linen)*, Online Materials Index Entry, Council of Fashion Designers of America. Accessed November 14, 2023.

<sup>25</sup> Donna C. Parker. *Use of Flax in America*. (Western Kentucky University, DLSC Faculty Publications. Paper 5. 2007) 5.

<sup>26</sup> Janelle Kaye. *Flax Day*. (MNopedia, Minnesota Historical Society) Accessed November 14, 2023.

<sup>27</sup> N.B. Harte. *The British Linen Trade With The United States In The Eighteenth And Nineteenth Centuries* (Textile Society of America Symposium Proceedings, 1990). 605.

shortages, settlement patterns, and a lack of mechanization of the flax-processing process as other reasons for its decline.<sup>28</sup>

Far and wide, the largest agreed-upon cause of the decline of the linen industry in the United States was the invention of the cotton gin. The easy industrialization of cotton made it a cheaper fabric that was faster to produce than linen and soon linen phased out. Cotton production has been both unethical and unsustainable since it began in the United States, the industry being built on slave labor. On top of continuing cycles of human rights violations, cotton requires pesticide use and on average more water than linen production.<sup>29</sup> On the negative side of linen production, its processing is an extremely labor-intensive process. With the absence of industrial machines in the United States to aid producers, the cost of labor alone would make any locally-produced linen extremely expensive. Until there are ways to commercially process U.S. grown linen domestically, the fabric remains a rare, inaccessible commodity.

The linen I sourced for this honors project collection is woven in Wisconsin by Marian Quanbeck-Dahlberg at the previously mentioned Small Dog Weaving Mill, but the fiber itself was grown in Belgium. At the rightful price point of \$120 per yard, this textile is too expensive for many small brands to work with. Without the generous funding from Macalester College, as a student I would not have been able to purchase it either. I chose to still use it, despite its origins being in Europe. It is still my goal to support the local textile economy. Dahlberg's position as the only linen weaving mill in the region is an important venture to support as a designer residing here. Beyond this, linen as a fiber is still relevant to this region's history, a sustainable fabric option that represents great future possibilities for our local industry.

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<sup>28</sup>Parker, 3-4.

<sup>29</sup>*Cotton*, Online Materials Index Entry, Council of Fashion Designers of America. Accessed December 6, 2023.

## 6.2 Wool

I will use wool as another main fiber in the creation of this honors project collection. My research indicates that our region has a rich history as an ideal location for shepherding and producing woolen goods, a track fitting for our climate. Minnesota's harsh winters and intense summers call for wear that is both warming and cooling, qualities wool possesses. On a microscopic level, wool fibers are crimped in a way that creates pockets of air. These countless pockets are what allow wool to be thermoregulating and keep the wearer incredibly warm. At the same time, the outer layer of the fiber is made up of microscopic scales that make the material both hydrophobic and hygroscopic, meaning that it repels water and absorbs it from the skin, cooling the wearer.<sup>30</sup> Such properties are inherent to the fabric, making wool a textile that is not only suitable for all seasons' wear, but scientifically fascinating. The importance of wool to northern climates compounded with its functionality and benefit to the environment make it a fiber with a necessary narrative to tell.

Faribault Woolen Mill is crucial in the Upper Midwest's fiber story. This over-150-year-old woolen mill is located in Faribault, Minnesota, about 50 miles south of the Twin Cities. German-born Carl Klemer began Faribault Woolen Mill as a wool carding service in 1865. According to Bob Klemer, Carl's great-grandson, Faribault Woolen Mill was one of approximately eight hundred woolen mills across midwestern states such as Minnesota, Wisconsin, Iowa, Illinois, Michigan, Indiana, and Ohio in the early 1880's. By 1945, the year Bob Klemer was recording his family's history, only forty-five mills remained.<sup>31</sup>

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<sup>30</sup> Lavalan: Wool fiber insulation. <https://www.lavalan.com/functional-benefits/>

<sup>31</sup> Bolt Simons, Lisa M. *Faribault Woolen Mill: Loomed in the Land of Lakes*. 43.



Faribault Woolen Mill continued to receive local and national demand even as textile mills across the country were in steady decline. The mill experimented with synthetic fibers to try and keep up with larger industrial producers, but quickly realized that the maintenance costs and a necessary rehaul of dyeing and finishing procedures that the shift to weaving these fibers required just were not worth it. Faribault Woolen Mill stuck to wool and its business continued: an article written in 1954 claimed the mill produced six thousand blankets and robes a week, using a million pounds of wool yearly. In 1956, the U.S. Navy ordered 66,666 blankets from the mill.<sup>32</sup>

Faribault Woolen Mill's wool has historically come mostly from surrounding areas, thus it sources from local farms. Until 1945, the mill relied on wool largely from its home state of Minnesota, as well as from Iowa. To keep up with the industry's quick globalization, Faribault began sourcing finer wools such as merino from New Zealand.<sup>33</sup> In 2014, CMO and partner of Faribault Woolen Mill Bruce Bildsten participated in an interview by Taylor Rebhan for Shinola, a leather goods producer located in Detroit, Michigan. When asked about wool sourcing, Bildsten replied,

Most of the wool comes from the western U.S. through cooperatives of ranchers in a brokerage system [mostly in Montana and Idaho]<sup>34</sup> and we're careful to make sure the animals are treated fairly. We also source some from Australia and New Zealand for finer wools—fine Merinos. Those two places dominate wool production for the world. But

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<sup>32</sup> Bolt Simons, Lisa M. 46-48

<sup>33</sup> Bolt Simons, Lisa M. 42

<sup>34</sup> Bolt Simons, Lisa M. 95

blankets don't require that kind of wool so we're able to source most of our raw material right here at home.<sup>35</sup>

Although their final product is not clothing, Faribault Woolen Mill is a great example of how local fiber industries can thrive when they are prioritized by producers, a practice that the mill has carried since its founding.

One of the reasons why I chose to work with wool is its local availability. The fiber itself originates from local Minnesota and Wisconsin shepherds. Beyond its rich historical presence in Minnesota, wool is a fiber that is durable, malleable, sustainable, and beautiful. Wool produces a large variety of fabrics—from thin, flowy crepes to thick, warm tweeds—and for this reason is a designer favorite. It is hand processed and woven by Minnesota native, Dahlberg, and so the wool fabric produced for this collection carries meaning that holds great resonance for the fashion industry as a whole. It represents exactly what designers interested in sustainability try to achieve: environmentally circular, ethically produced textiles that place adequate weight on their worth, and the worth of everyone it took to make that fabric along the way. In the face of an industry wrought with extreme capitalism and disregard for the planet and those within it, it is a radical choice.

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<sup>35</sup> Taylor Rebhan. "Introducing The Shinola Supply Blanket By Faribault Woolen Mill." Shinola Journal. 2014. <https://www.shinola.com/our-stories/introducing-shinola-supply-blanket-fairbault-woolen-mill/>

## 7. COLLECTION DEVELOPMENT + DESIGN

### 7.1 Concept

This honors project was inspired by a deep reverence for the place I currently reside, the people and artists working in it, and a long-held value system of putting local above all. My broader aim was and is to display an interconnectedness of our world that is further empowered by a root in local community. This *community* can be defined at two levels; the local groups I find myself a part of or the systems of communication between all living beings growing in this geographic space. Creatively, I am looking at the interactions between my chosen fibers, the local flora, its soil, and their life cycles. Since I designed this body of work from a soil-to-soil framework, processes of decomposition also stood out to me visually. When designing with sustainability, process, and place in mind, biomimicry is an obvious umbrella to work underneath. This collection is meant to be transitional, malleable, and in many ways a representation of long-needed change.

The garments are seasonless, and combine utility and contemporary art. The design achieves this aesthetic via customization opportunities and layering, a strategy that grants the user the ability to mix and match the collection entirely; the combination of timeless, functional silhouettes with removable elements brings the collection closer to *haute couture*, while still falling into the category of ready-to-wear.

Although my general aesthetic inclination leans more towards femininity and womenswear, I do not consider these garments to be for women only. This collection is largely for the person recently informed about the state of our fashion industry and it makes a case about several ways in which this person can begin the process of integrating themselves into it. The garments demonstrate:

1. Clothing with versatility; how one garment could be worn for different purposes across seasons and occasion.
2. A visual reference to their locality, the Upper Midwest.
3. The impact that local, sustainable, and ethical production has on our local economies and communities; the resourcefulness and resilience in using what is available.
4. Clothing culture in a world that is suffering from mass environmental devastation, pandemic, and war.

## 7.2 Garment Shapes and Structure

I began my visual research on a residency in Ely, Minnesota at the Tofte Lake Center. I felt strongly from the beginning of this process that there was a need to radiate *place*. To make this collection impactful to those who will understand the geographic context of this work, I needed to embody this physical community. Architects and interior designers often take this concept as a point of departure, as it contributes to our sense of comfort and openness to a space or idea itself. A tiki bar looks out of place in Minneapolis, just as a warmly lit, après-ski style restaurant would not fit in Miami. This concept, which brings together a sense of place and community belonging, is transferable to fashion design.

To begin defining the visual identity of the collection, I started with my surroundings: beautifully bare, Scandinavian inspired cabins and studios dotted the Tofte property, coming to a crux against the bank of Tofte Lake. The water as well as the land surrounding it were serene and harmonious—two words I have tried to cling to in this work. Each day I did a little foraging; butter-yellow goldenrod was abundant and made great, although pungent, dye. To get a feel for

the shapes and lines of the plants I found, I made charcoal rubbings and drew my surroundings. It was there that biomimicry came to me as a design philosophy to work within, as there seemed no better way to pay homage to a place than to honor the things living within it. The result was the initial musings of my thesis collection, *From Field View*.

During the fall, I began to research biomimicry in fashion design. I found examples of it in designers I already admired such as Stella McCartney. McCartney uses biomimicry both in aesthetic and material—she often employs various motifs inspired by nature ranging from florals to abstract prints, and her use of mushroom leather has been innovative to say the least. McCartney's commitment to circularity was something I consistently looked to in the creation of this project and forced me to think about how this kind of design plays out on a more global, commercial scale. In her collections, you see repeated use of the same fabrics and shapes that allow the designer to use up as much waste as possible, a goal I tried to achieve by building it into the visual identity and design of the collection itself. Beyond material, McCartney's fluid combination of traditional menswear and womenswear silhouettes into a single look was inspiring to me from the perspective of garment versatility. I emulated this in my collection through the juxtaposition of tailored garments (jackets, vests) and more experimental shapes.

The collection also references the work of Elena Velez in terms of alternative garment cuts and themes of collapse and industrialization. Velez's work calls me to investigate the tension between biomimicry, utilitarianism, and beauty. Having grown up in the Midwest, her work emulates the aforementioned concept of place through a combination of metalwork and feminine shapes; a comment on the visible effects of industrialization on the Midwest landscape. My research pulls on that concept directly—the demise of the Midwestern textile industry in the post-1940's is just one small, largely invisible effect on the region, but there are many others. I

looked to Velez for inspiration of material, silhouette, and general presentation. At her runway shows, she may cover her models in plaster or paint, extending the message beyond the garment itself. This is a theatrical approach to showcasing a collection—Velez is weaving material, environment, and experience together via the model and the persona they take on.

Since the 1940s were a turning point for the textile and fashion industries and the world, clothing culture of that time became an obvious point of departure for me. I looked at the most popular silhouettes of the time—Chanel’s classic tweed jacket, for example—as well as those created by other designers taking a more practical approach to war-time fashion design, such as Elsa Schiaparelli’s “Cash and Carry” collection. Her collection featured jackets and dresses with gigantic pockets—an ideal place to quickly stash your important belongings in the case of evacuation or bombing.<sup>36</sup>

Generally, the customer who would be purchasing from my collection would probably not be in need of such a garment. However, what Schiaparelli inspired me with was the concept of utilitarianism in couture—the tension between high fashion and heavily practical garments. Such tension is at the heart of the collection’s identity. I aimed to balance the design with experimental shapes and textures, like an asymmetrical puff skirt inspired by the underside of a mushroom,<sup>37</sup> with versatile garments: suits, denim, A-line skirts. To add versatility, I sought inspiration in workwear’s functional/alterable design and applied it to a fashionable, ready-to-wear or *prêt-à-porter* context. The incorporation of functionality as a concept included making the sleeves of the linen suit removable, so that the wearer could change the garment to better fit year-round use.<sup>38</sup> I also employed this concept with the wool look, but to function for not just

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<sup>36</sup> Viewed at the Musée des Arts Decoratifs “SHOCKING” Exhibition in September, 2022. Paris, France.

<sup>37</sup> See Figure 1 in Appendix.

<sup>38</sup> See Figure 2 in Appendix.

season but occasion. With a three-tiered jacket, sleeve, and skirt ranging from mini to floor length, these two garments can carry the wearer from casual to evening events. The attachment of the layer via lacing also allows the wearer to have more creative freedom with the garment itself. There are various ways to experiment with lacing on the detachable pieces, making it possible to play with volume, silhouette, or general garment aesthetic.

### 7.3 Color, Texture and Textile Manipulation

I chose to use a variety of fabric and texture to reference different plants and organisms throughout the collection. I spent time studying the biological makeup of the fibers used in the collection, wool and linen in particular, as their production locally was a founding pillar of the research portion. In the visual research phase, I experimented with patchwork, pleats, ruching, and patterning to mimic repetitive patterns seen in the cell structure of those fibers. Wool, for example, is composed of small scales layered on top of one another. The layering creates the aforementioned pockets of air for thermoregulation and also contributes to wool's ability to be water resistant, flame retardant, and antimicrobial. In the initial patterning and mockup process, I attempted to recreate these scales by splicing up a basic skirt pattern block into asymmetrical pieces that could be sewn back together like a puzzle. I found that this attempt gave me the lines I wanted, but not the volume or the sense that they were overlapping. After several different iterations, I settled on a more subtle reference to the wool cell, one that worked within my concept of layering or adjustable garments for a seasonless look.<sup>39</sup>

As for color, to design in this soil to soil, local-first capacity meant that I had a very limited color range to work with. I am an amateur natural dyer, but wanted to include the

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<sup>39</sup> See Figure 3 in Appendix.

reference of native or locally grown plants in the collection. This resulted in the use of yellow onion skins and Hopi Red-Dye Amaranth as dye agents. The yellow onion skins created a bright, golden ochre color. The amaranth was less successful but yielded a beigey-pink color. Upcycled cotton was used for both as the linen came in its natural color, a darker beige, and the wool I deemed too risky to dye based on its fragility and cost.

Overall, most of the visual design choices beyond initial inspiration were based on the availability of material and dyes. I felt this approach was fitting as the overarching theme of this project was to showcase local production capabilities, both in the ways they are exciting and lacking. I began to create the garments during the winter season. As I interrogated what *place* meant to me at that time, many of the feelings that surfaced were ones surrounding the stark airiness that winter in Minnesota brings. I brought this energy into a seasonless collection largely in the color choices; sticking with hues one can find year-round in this northern state—pale neutrals, creams, soft blues and greens, and the occasional pop of color. The collection is meant to carry a lightness amidst the heaviness around it, texturally transport the wearer through each season, and remind us of where we call home.

#### 7.4 Waste + Problem Solving

Waste management, among other material issues, were continuous throughout my design process. The design process, in total, was generally slow for this reason. I had to be extremely methodical in order to fit within the constraints of sustainability that I set for myself, as well as financial limitations. I created mockups for each individual piece, sometimes multiple, prior to the final version of the garment. I was largely able to do this using the scraps found in the costume shop, but it was often difficult to find large enough pieces for bigger pattern pieces,



which required me to use a bolt of cotton muslin as well. This was necessary, even if a bit more wasteful, to reduce waste and save money later on. I was working with a very limited supply of each of my bought fabrics, the linen and wool both being handwoven for this project specifically. Because of this, I had to make sure the design was exactly the way I intended it to be before making any cuts whatsoever in the final fabric. Altering the designs to make them fit on my given yardage was also an aspect of this frugality; at times bodices had to have a tighter fit, or sleeves a bit shorter than intended. To try and make up for the waste from the muslin mockups, I repurposed many of my mockups for linings and interfacing for the final pieces as well.

Still, I ended the cutting process with a large pile of scraps. I was able to use some of these for the very thin interfacing I needed for inserting grommets and button holes into the more delicate handwoven fabric, but the majority of the scraps were still leftover. I decided to incorporate two pieces in the collection for the purpose of reducing waste. These two were the patchwork raglan bomber jacket and the asymmetrical puff skirt. I took two different angles for these two garments: the first, the bomber jacket, was meant to be a nod towards war-time bomber jackets, made into a softer silhouette with a raglan sleeve and light fabrics. The patchwork and embroidery elements contributed to this garment feeling more feminine and allowed me to utilize oddly-shaped scrap pieces from the scrap bin. The second, the skirt, was inspired by the underside of fungi. Decomposition was a subject of interest in terms of design since one of the main objectives of this work was to create a collection that could fully biodegrade. For this garment, I utilized strips from the edges of cut fabric and organized them from short to long then back to short, making an even progression throughout. I ended up with a wave shape, and then I sewed each strip together in that order. After I lined and gathered this large piece of patchwork fabric, I attached it to an asymmetrical knit waistband, making a ruffled and voluminous look.

One problem that arose as I looked for scraps I could incorporate was their fiber content. I stayed committed throughout this project to only using biodegradable fibers, even in the development process. However, most scraps no longer have tags or labels that list the fiber content. This made it impossible to know exactly what fibers were in each fabric, though I did conduct burn tests to determine whether a fabric was composed of natural fibers. This is how I identified fabrics to the best of my ability, but it is not an exact science. I had to let go of the idea of perfection very quickly.

From start to finish, this design project was a lesson in flexibility. As a student who still has much more to learn in regard to technical garment construction, economic design, and more, creating this body of work was a challenge. I took on the roles of fabric buyer, pattern maker, cutter/drafter, sewist, creative director, dyer, and marketer, having not done many of them at this scale in the past. It often took me several tries to get a pattern right, natural dyes were hit or miss, and designing without the use of any synthetics took a lot of thought. The process forced me to consider exactly how much of our contemporary clothing uses synthetic fibers, and how, sometimes, it even has benefits.

What synthetic fibers have done for everyday garments is allowed them to have a greater level of comfort and versatility. In my design process, I was also considering garments that would be wearable for a wide variety of body types. This became very difficult to carry out with typical solutions, as any fabrics with spandex as well as elastic were out of the question. Instead, I used knitted fabrics, ties, and lacing to achieve the same use. However, this approach often gave the garments a very rustic quality, one that I felt I had to continuously push against in order for the collection to remain fresh and contemporary.

Thus, this work challenged my identity and visual aesthetic as a designer. I tend to gravitate towards color, grand volumes, and natural prints, all of which were hard to come by in the making of this collection. As a usual maximalist, rustic minimalism is not my forte, but I had to learn how to turn it into something that I could embrace. It reminded me of parallels between the fashion and costume sides of my education—narratives guide our work and there is always a larger, more important story to tell.

## 8. CONCLUSION: MOVING FORWARD

If committing to the philosophy of sustainable design as I outlined in this paper seems like a herculean task, that would be because it is. The unfortunate realities of the fashion and textile industries are a result of systems of capitalism, a global devaluation of clothing, and shifts in consumer culture towards an overconsumption of cheap and fast fashion. As designers, I believe most of us want our work to empower other people and add good to the world—instead of contributing to social and environmental injustice—and it can be frustrating to feel as if everything we do contributes some kind of harm. The truth of the situation is that to create 100% sustainable designs is quite impossible, only a designer with unlimited time, money, and a responsive global network could even begin to approach it in a realistic way that could work in the long term. We too are subject to financial constraints, quick turnarounds, and the need to make a profit in order to support ourselves and our work. Beyond making a profit, we share the hope that our work will be accessible to a large audience—and garments created in such a sustainable way carry too high a price point to ever be truly accessible. So, you may be asking yourself, what is the point?

My answer to this question is that the implementation of small-steps practices of sustainability can make a much bigger difference than we may think. Any progress towards a better industry is good progress, one that you and your clients can feel good about participating in. Whether it be simply choosing natural fibers instead of polyester, researching where your fabric is produced, or buying yarn from local farmers, every small step can and will put us closer to an industry we can be proud of. The easiest way to begin is educating yourself and fellow designers and clothing consumers about the truth of the industry, and initiatives towards a more sustainable future. Organizations such as Re/Make, Fibershed, The Ellen MacArthur Foundation, Fashion Revolution, the United Nations Alliance for Sustainable Fashion, and the Clean Clothes Campaign are great places to start. The better informed we are about our industry, the more intentional we can be in our own design process.

It is also necessary to remember that you will not be alone in this venture towards sustainable, ethical design. Many fashion, textile, and fiber communities are banding together all over the globe with this same shared mission. Fibershed, for example, has over 71 affiliate organizations ranging from Minnesota to Scotland to Sri Lanka, enrolling 180,000 plus acres of cotton in their Climate Beneficial™ program.<sup>40</sup> Rust Belt Fibershed, the aforementioned Fibershed affiliate based out of Cleveland, Ohio, had over fifty farmers growing flax for linen in their 250 mile radius in 2023.<sup>41</sup> More and more clothing brands are joining the side of more ethical production, even large corporate companies like American Eagle Outfitters with their Real Good™ initiative,<sup>42</sup> hoping that within the next few years, all of their denim will be

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<sup>40</sup> Fibershed. *Annual Report 2023*. Accessed online on March 29th, 2024.

<sup>41</sup> Number verbally given by Jess Boeke at Rust Belt Fibershed's Regional Symposium on January 26th, 2024 in Cleveland, Ohio.

<sup>42</sup> From the AEO Inc. website: "The 'REAL Good' badge was developed to identify AE and Aerie products made from more sustainable raw materials, like recycled fibers, or products that were manufactured using more sustainable techniques, such as in a factory that meets expectations for AEO's Water Leadership Program. REAL

produced under that umbrella. Small brands, like Faan Eco Basics, have successfully implemented this kind of production from the very beginning, thoroughly following their supply chain to produce organic, Midwestern made wardrobe staples.<sup>43</sup> We are seeing over and over again that this kind of clothing production can be possible, even if difficult.

Through this research and the collection I designed in reaction to it, I hope to have provided a glimpse of what once was and what could be possible for the garment and fashion industry. Although there is much work to be done to improve this industry, each day more and more designers, farmers, textile artisans, and general fashion and fiber enthusiasts join the effort towards clothing production that benefits our climate and those within it. Through building community, public awareness, and global understanding, we can work together to create better alternatives to our current methods of production. To put the message concisely to my fellow designers: the conservation of the planet and the protection of all people depends on our commitment to sustainable and ethical production, and must always be at the heart of what we do.

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Good styles include lots of feel-good, good-for-the-planet materials that have been sustainably produced and/or sourced.” <https://www.aeo-inc.com/sustainability/>

<sup>43</sup> <https://www.faanware.com/>

## 9. APPENDIX

### 9.1 Photo references

Figure 1: Mushroom skirt



Figure 2: Linen jacket with removable sleeves



Figure 3: Wool cell inspired look with removable layers





## 9.2 Supply Chain Trace

### Look One



1. Linen lining: 100% linen tablecloth found in the Salvation Army in Minneapolis
2. Outer pleated fabric: cotton, found in costume shop scrap.
3. Linen skirt: 100% linen, traceable to Kokka Fabrics where it was woven, dyed and finished by the same company in Japan. Kokka prioritizes natural fibers, ethical practices and “have maintained close relationships with local weavers, dyers, and printers in Japan for decades.”<sup>44</sup> Bought at the Sewing Lounge in St. Paul, MN
4. Bolero top: cotton jersey t-shirt from the Macalester Free-swap, dyed with onion skins

<sup>44</sup>Kokka Fabrics, “About Us” <https://kokkafabrics.com/pages/about-us>

## Look Two



1. Vest top: made from various cotton scraps found in the Macalester College costume shop and torn linens from home.
2. Mock neck top: upcycled from a ripped 100% cotton thrifted turtleneck, dyed with a combination of Avocado and Hopi Red Dye Amaranth.
3. Linen overlay: costume shop scrap.
4. Denim pants: 100% cotton designer deadstock from Treadle Yard Goods in St. Paul, MN—unable to trace further.

Look Three



1. Linen suit jacket: inner lining made from garment mockup, scrap cotton muslin  
Outer fabric: 100% linen grown in Belgium, handwoven in Cumberland, WI at Small Dog Weaving Mill.
2. Bralette top: outer fabric + lining the same as the suit jacket, lace is removed from a vintage cotton pillowcase that had ripped.
3. Pants: Handwoven linen/alpaca blend by Small Dog Weaving Mill.

## Look Four



1. Corset top: 60% linen, 40% cotton made from an unwearable pair of suit pants in costume storage.
2. Linen skirt: 100% linen, costume shop scrap.
3. Raglan patchwork jacket: linen, cotton, and wool made from my own cutting scraps as a way to divert waste, or from scraps in the costume shop.

Look Five



1. Asymmetrical crop top was knitted with yarns from Anthology Yarn Co. in St. Paul, MN.  
This yarn comes from Midwestern Merino/Corriedale sheep, wool spun in Wisconsin and hand-dyed in Minnesota.
2. Asymmetrical maxi skirt is made from a variety of natural fibers: wool, linen, and cotton.  
It is composed entirely from my own cutting scraps as a way to reduce waste.
3. Bralette is an upcycled cotton jersey tee shirt.



## Look Six



1. Wool satin/sateen fabric handwoven by Small Dog Weaving Mill in Cumberland, WI (Marian Quanbeck-Dahlberg). The wool comes from Dresow Family Farm in Lonsdale, MN (Stacy Dresow). After shearing it was processed by Rachel-al-Paca-Fiber in Hastings, MN (Rachel Boucher).

Leather cordage was made by Harkin Leather Goods (OH) by Courtney Phillips, leather sourced from Pergamena (NY). Organic cotton thread was used for all pieces and came from Organic Cotton Plus, sourced from a manufacturer in The Netherlands. The majority of buttons came from Haulin' Hoof Farm Store in Ohio, a regenerative farm that makes buttons from local and

ecologically harvested wood. They are finished with natural oil and beeswax. Some buttons (inside of linen suit) came from The Yarnery in St.Paul, and are made of recycled cotton.

*All photos are by Emilia Odom, illustrations by the author.*

## Acknowledgments

This project, from research to runway, could not have been completed without teams of people and generous funding. Thank you to the Macalester College Theater and Dance Department for four years of support and for helping to fund this project. I thank the Macalester College Sustainability Office for choosing me as the recipient of the Small Project Fund, a grant allowing for student projects focused on sustainability.

I am grateful to Dr. Cláudia Tatinge Nascimento, who has been foundational in my educational journey. I appreciate your advocacy, honesty, and dedication. I thank MaryBeth Gagner for her technical expertise, kindness, and willingness to share a space with me, and Trevor Bowen for his creative mind and design advising. Thank you to the rest of my Honors committee, including Joëlle Vitiello and Megan Vossler, as well as Roopali Phadke, who served as a reader.

I thank the Midwestern community of fiber producers and enthusiasts for being so open and excited to help me with this project. A special thank you is necessary to Marian Quanbeck Dahlberg of Small Dog Weaving Mill, whose handwoven fabrics made this project successful. Thank you to Jess Boeke and Sarah Pottle of Rust Belt Fibershed for allowing me to enter this world in the first place and helping me find purpose. Thank you to Natalie Reece, your excitement for this project was deeply motivating.

To my family: thank you for raising me into a person that I am excited to be. Dad, I will be forever grateful to have gotten your creative mind and tenacity for the joy and work in making art. Mom, you have taught me how to grow things (myself, plants, and more) and how to chase every avenue for our dreams. Madeline and Ezra, for raising important questions and never feeling out of reach. Aoife, for your initial guidance that gave me direction in the first stages of



this project. Little Rú, for your love of trains, especially the imagined one that connects all of us siblings, and big smile.

The runway presentation of my collection, *From Field View*, was carried out by a wonderful production team. They are listed as follows:

PRODUCTION MANAGER: Wu Chen Khoo

PRODUCTION ASSISTANT: Audrey Symczek

STAGE MANAGER: Miles Latham

LEAD STYLIST: Frankie Fults

STYLIST ASSISTANTS: Maggie Wang, Kendall Kieras (Head piece artist)

HAIR AND MAKEUP DESIGN: Grace LeCrone

MODELS: Keeley Eichorn, Cecilia Gomez Jimenez, Rebecca Porter, Sophia Segura, Claire Rochelois, Grace LeCrone

PHOTOGRAPHER: Emilia Odom

VIDEOGRAPHER: Rory Donaghy

PUBLICITY + DEPARTMENT COORDINATOR: Jenn Ponder

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