Salon Session

Advancing the Fibershed Movement: Building Relationships Among Scholars and Community Organizers

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Topic: The focus of this salon session was to cultivate synergistic research by bringing together textile and apparel scholars and on the ground community members of place-based fibersheds. The primary goal of our salon session was to share, brainstorm, and discuss the most effective routes for supporting existing fibersheds and advancing action in establishing regional textile cultures and economies. In the quest to find sustainable alternatives within the fashion supply chain, fibersheds have become a source of serious inquiry. The concept of a fibershed is "focused on the *source* of the raw material, the *transparency* with which it is converted into clothing, and the *connectivity* among all parts, from soil to skin and back to soil" (Burgess & White, 2019, p. 7).

During our session, four research teams each gave short presentations on their inquiry concerning fibershed related topics. We then split into two separate brainstorming groups with our invited community members. In our brainstorming groups we asked our invited community members "what challenges are you facing related to bringing sustainability or circularity into your work" and "how academic researchers and educators could assist those working in the field to meet sustainability or circularity goals".

Results: In our brainstorming groups with our invited community members, we found the following themes:

- Difficulties in how to communicate across different sectors of the industry.
- A need to enhance education of the general public to increase appreciation and generate excitement about fibershed and fibershed related products.
- Community members expressed interest in more case studies focused on fibershed related businesses and topics.
- Community members suggested creating a network for communication.

Reference

Burgess, R., & White, C. (2019). *Fibershed: Growing a movement of farmers, fashion activists, and makers for a new textile economy*. Chelsea Green Publishing.

Bringing Local Wool Fiber Producers to Campus

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Background: Many large school buildings dotted the flat North Dakota prairies in the early 1900's. Most of these school buildings were used until the 1970's when many school consolidations took place and the school buildings were left in disrepair. Most of them were abandoned with all of the desks, books and school supplies still in the schools. One such school was built in Nome North Dakota in 1916. The Nome schoolhouse was the site of educational opportunities for many students and closed in 1970. The Nome schoolhouse sat completely silent until 2018 when two entrepreneurial women bought the building with the hope of returning the building to its former glory. These two women both owned their own successful wool fiber businesses - one in wool processing, spinning and yarn production and the other in needle felting supplies and online classes. They decided to join forces and move both of their businesses together. Therefore, Shepherd Industries was formed in 2018, a partnership between Bear Creek Felting and Dakota Fiber Mill ("About Us & Our School", n.d.). Dakota Fiber Mill was the only full-service fiber processing mill in North Dakota and they have been making yarn and roving from sheep, alpaca, goat, camel, Bison etc. since 2010. In 2017, they brought a felting machine to the mill and all waste and short fibers are felted into a variety of items. Bear Creek Felting designs and sculpts 3D needle felted sculptures using the wool from their flock of sheep. Shepherd Industries purchased the Nome School and are turning the formerly abandoned school into a fiber arts retreat center. The center will provide educational opportunities to learn about all types of wool fiber arts.

The Purpose and Format of the Project: One aspect of the fibershed concept is to focus on the source of the raw material (Burgess & White, 2019). We see this trend with food supplies and water supplies as well. If we can educate people about the sources of the fibers available, they may have more concern for their overall textile consumption and use. Currently there is not an active North Dakota fibershed. The hope is that the partnership with Shepherd Industries would start the process of having a local fibershed movement in North Dakota. The launching of the Fiber Arts Retreat Center can make a significant impact on North Dakota's regional textile cultures and economies and this project can be more successful with help from other community members. The proposed idea would be to host a Fiber Festival in Fall 2021 at North Dakota State University. The purpose of this fiber festival to support the Fiber Arts Retreat Center's educational effort, extend the educational opportunities by bringing the fiber business owners to the campus and teach attendees about the wool fiber source. Students from the textiles class would be asked to submit short videos in the spirt of a Reel or TikTok format using topics relevant to wool fiber such as characteristics, uses, fiber specifics and the concept of fibersheds. The videos that students create would be played during the festival. Participants at the festival would be able to sit and watch the videos and visit with fiber growers such as the owners of the Nome Schoolhouse project. The university also has an active wool production extension center that would be able to showcase the raw wool and the cleaning processes. The participants in the festival would have a clear understanding of wool fiber, how is it used and where it comes from.

Anticipated Results: One of the anticipated results is to develop increased public knowledge of wool and wool fiber. Students, faculty, staff and community members would be able to have a better understanding of what wool is and why it is an important product in the textile pipeline by attending the fiber festival. The increased knowledge would help with consumption and distribution of wool products and in turn, the development of regional textile cultures and economies. In addition, students in the textile class can gain practical knowledge of how wool is used and build capability to develop various wool products by engaging with the attendees. By taking part in the fiber festival, students can be connected with the local fiber industry and contribute to the advancement of the fibershed movement in North Dakota.

Outcome: The NDSU Farm to Fashion Fair was held in September. The fair included 5 informational booths from sheep producers, a wool fiber processing mill, a spinner and knitter, a historical costume collection and a booth from the academic department. Students in the ADHM 366 Textiles course created short videos about wool fiber, wool fabric and wool processing. The videos were played during the fair. The open house style of the fair allowed participants to wonder through at their own pace and have questions answered. About 85 people attended the fair. The fair was held for two hours in a room in the student union on campus. Attendees found the event very interesting as they could see demonstrations on wool processing, cleaning, spinning and knitting. Attendees liked videos that were created by textile students as the videos were informative and fun. Overall, the event provided the local community with an educational opportunity that can increase awareness of the local wool industry and the quality of wool fiber.

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Colorado Fibershed: Exploring Economic Development Opportunities for Colorado Fiber Producers and Small Businesses.

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The pandemic has caused significant disruption to the global fiber, textiles and clothing (FTC) supply chain and US clothing brands are exploring ways for their supply chains to be shorter, quicker, and responsive to market needs. Regional fiber systems are critical to climate stability and resilient rural economies. The Colorado mountain and plains region is a unique place where wool fiber sourcing and production has long been undertaken by small to medium farms, enterprises, and individual designers. According to 2018 USDA's National Agricultural Statistics Service Survey (Meyer, 2018), Colorado is among the top producers of wool in the US, however, little is known about the diversity of fiber resources produced, processed and commercially available in Colorado's rural communities. The Colorado Fibershed project aims to examine Colorado's fiber industry more closely to understand the physical and social infrastructure currently available, as well as the market potential of and possible strategies to strengthen Colorado's rural fiber industry. Colorado has immense economic development opportunities related to the FTC industry. This is large project including multiple stakeholders and disciplines involved. Specific aspects that will be presented during the salon session will include a) market size of Colorado fiber industry b) opportunities and barriers of Colorado fiber farmers to produce, market and sell their products. The following methodology was used to collect preliminary data:

Analysis of Secondary data: Analysis of secondary information sources available from Colorado Dept. of Agriculture reports, Economic Development, Colorado Economic Activity Study etc. was undertaken to understand the current industry statistics. It needs to be noted that specific and robust information related to fiber production is difficult to find in these reports. The below information provides some information related to fiber production in Colorado.

Wool: Currently, the Colorado fiber industry consists primarily of wool. In 2019, Colorado was the fourth largest producer of wool in the United States, producing approximately 2,200,000 pounds of wool (USDA, 2019). As a point of comparison, the two largest producers – California and Wyoming – produced approximately 2,400,000 pounds of wool (USDA, 2019). In Colorado, sales of wool increased from $3,990,000 in 2013 to $5,250,000 in 2020 (USDA, 2019; National Agricultural Statistics Service, 2021). In 2021, Colorado had 445,000 head of sheep and lamb (up from 425,000 in 2020) (National Agricultural Statistics Service, 2021). In 2020, 370,000 of those head were shorn for wool, resulting in 2.5 million pounds of wool with an average fleece weight of 6.8 pounds (National Agricultural Statistics Service, 2021). The price per pound in 2020 was $2.10 (down from $2,60 in 2019) – resulting in a total value of $5,250,000 (National Agricultural Statistics Service, 2021). Mohair: Colorado also has a smaller revenue stream from mohair production, which netted approximately $14,000 annually from 2013 to 2018 (with a temporary decrease to $13,000 from 2015 to 2017) (USDA, 2019). Hemp: While Colorado has a significant amount of hemp acreage, there are still many barriers to using that that hemp for fiber and textiles. The main challenges are the lack of hemp infrastructure for fiber as well as a lack of

skilled workers in the modern agri-industry (Hemp News, 2021). Additionally, registered hemp acres in Colorado halved in 2020 as compared to 2019 – going from 88,743 acres to 36,225 acres (Hemp News, 2021). However, there is hope that the new management plan (passed in August of 2021) will foster regrowth in the industry (Hemp News, 2021). The USDA approved Colorado's State Hemp Management Plan, which details how hemp producers will operate within federal guidelines, includes information on how producers can research the refinement of hemp for fiber purposes (USDA, 2021).

Stakeholder (fiber producers, industry and trade organizations) interviews/roundtables: Interviews with three sheep ranchers and farmers, owner of natural fiber milling company, CSU extension agents, community member who owned a blanket company and tour of Wool pool (cooperative of wool producers from four nearby counties active in wool production) community warehouse) were conducted to understand the needs and opportunities of Colorado FTC industry. Findings from these initial interviews and interactions are provided below in two themes:

Barriers

- Low price for wool ($1.50/lb), cannot generate steady stream of revenue and profit.
- Cost of wool per pound has been stagnant for the past decade.
- No incentive for quality and clean wool. Farmers must travel to other states/fiber fairs to get good price.
- Lack of testing for wool fiber locally.
- Limited opportunities to sell black and other kinds of wool.
- High processing costs and limited processors locally
- Consumer perceptions of wool (e.g. scratchy, unethical-PETA)
- Not enough wool available locally for large-scale project
- Lack of understanding/involvement of Colorado Wool Growers Association
- Lack of consistent shearers

Opportunities

- Pandemic resulted in increase in consumers interest in locally sourced artisan wool.
- Online shopping and social media opportunities for wool fiber producers.
- Excitement among small and medium sized fiber producers for local fiber system.
- Cooperative for wool producers.
- Research on other models of success stories for fiber cooperatives.
- Colorado wool is very clean due to snow, can get higher price.
- Connecting with other fiber community artists and members.

With the pandemic poised to alter company strategies (e.g. regional and transparent supply chains), government policies (e.g. hemp fiber, coal-free) and consumer preferences for specialized apparel products (e.g. unique, sustainable, and local) it is important bring together local Colorado FTC fragmented industry. This project will help the team develop Colorado based whole fiber system model to evaluate and then propose a range of economic development opportunities that can increase resilience and sustainability of FTC production in the face of changing interactions between environmental, social and market forces. This project will

enhance the way research is conducted and communicated in Colorado and beyond, through extensive and tailored engagement with relevant academic, policy & wider stakeholder community. This project will also provide important insights that will influence policy and local labor workforce development.

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Mapping the Anthropocenic Fibershed: Re/sourcing Waste as Raw Material for Textile Production

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Identification of the problem being addressed: Although not yet an official era, the term Anthropocene reflects the ways in which human activity has become a world shaping force, and highlights the urgent need for planetary stewardship to ensure a sustainable future for human society and the nonhuman world (Payne, 2019). As virgin resources grow more scarce, there is incentive to focus on bi-products and waste as a resource and raw material. Recent reporting (Ellen MacArthur Foundation, 2017) offers a vision of a fashion system that is circular, ideally creating no waste by design, while strategically capturing value from recycled content. Goal three of the report findings suggest the radical improvement of recycling by transforming clothing design, collection and reprocessing.

Relevant background information and purpose: According to the USDA term "sustainable agriculture" means an integrated system of plant and animal production practices having a site-specific application that will, over the long term, satisfy human food and fiber needs. This exploratory research will focus on fiber needs. Textile and apparel represent one of the most globalised industries which can have negative impacts on the environment and social equity. Our project expands the notion of "fibershed" identifying waste as a resource, demonstrating that local production that applies waste as value can be a sustainable development strategy with economic, environmental, and social benefits. The use of waste as raw material for fiber production is not a new concept. Rice stalks, feathers, and other waste products could find new life in fiber form. As competition from energy and food producers for other crops puts pressure on fiber resources, the creation of fiber from waste material is generating more interest. We view wastes (food, agricultural and textile) waste as a source of sustainable textile creation.

Methods or approaches utilized to address the problem: For this study, the research team researched regional (Delaware) agricultural crops (corn, melon, soy, dairy, berries) as well as other waste sources from farm and food production including consumer facing food outlets. Researchers sourced food waste from area restaurants (vegetable waste, avocado) as well as textile waste from unsold clothing through Goodwill of Delaware and Delaware County. The research team sourced regional plants (goldenrod, walnut) in addition to waste in an effort to best identify regional opportunities.

The broader research project has employed multiple-methods including problem-based and participatory discovery learning, design thinking, exploratory creative methods, all of which considers the end of life of materials at the beginning of the design process or entry point into life cycle inquiry. Given the virtual nature of the salon, we envision sharing (walking participants through) an interactive gallery where narrative work, design process, design artifacts, exploratory mappings and case studies will be situated. Tasks for Mapping the wasteshed (the most recent iteration of this project) included: Mapping the regional waste-scape (as contemporary fibershed.) As an exercise in sourcemap, the research team mapped waste and

waste-stuff from landfill to local restaurant, in an effort to make the space of landfill and of waste visible. As well, the researchers tested locally sourced waste-materials from surrounding areas to develop novel textiles and textile colorations. The experiential design and sampling of a collection of wasteshed textiles included second generation composite textiles and textiles dyed with waste as coloration of both food and fiber including food waste, textile waste.

How the results or anticipated results will advance the fibershed movement:

(1) Determining and design post-market manufacturing opportunities for textile salvage "bale" as well as regional materials (animal protein, agricultural waste, food waste.) reducing the burden of waste destined for landfill; (2) Delivering an educational mission to engage the community in prevention (extending the life of clothing and clothing longevity) recycling and disposal of textile products; (3) Mobilizing people to use their own skills and ideas to satisfy their needs-encourage their sense of self as human beings and revitalize relationships with others to build a greater understanding of the way goods meet our needs, and constrain, distort or enhance the quality of our lives. We envision a hyper-local beneficial lifecycle as a module that can be shared. The research team builds on efforts to implement circular design methodology and adopt sustainability thinking methods to reduce the burden placed on landfills by overconsumption and waste, redistributing waste responsibly by maximizing embodied energy and potential.

Moving forward, an analysis of textile production and coloration processes will be compared for technical feasibility and cradle-to-cradle impacts. The researchers aim to evaluate consumers' acceptance and develop a costing exercise. To scale textile development, the researchers met with regional brands to collaborate on small-run piloting of waste-shed textiles in 2022.

- Lobo Mau: shredded textiles used for housewares.
- Of Dress: coloration of a capsule collection of wasteshed textile.
- UD Sustainable RAD (research through applied discovery) Lab: cut pile/simulated fur.

The reality is that in most regions, in this time of the anthropocene, waste is the prominent local material. According to Mcdonough and Braungart, local materials have less effect on soil and water and often provide the most feasible solutions to local problems; local business bolsters local economies and promotes citizen awareness. To address social aspects of the wasteshed and to function as a tool for consumer education/citizen awareness, the researchers are continuing collaboration with Goodwill of Delaware and Delaware County with qualitative and social practice research merging experiential retail, visual merchandising with wardrobe studies and the anthropology of clothes. Reclaiming the value of waste offers an opportunity to build a sustainable economy, strengthen community, and broaden prosperity, while solving a local waste issue.

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Design in Place: A Framework for Strengthening Cultural and Environmental Awareness through Design and Craft Making

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Problem: There is a necessary shift towards sustainable futures, and an importance is placed on the process by which textile objects are designed to maximize transparency and value. Furthermore, there is a lack of connection between designers of these objects and local cultures and environments where the materials originate. Therefore, it is increasingly critical that design practitioners be introduced to concepts of environmental and social equity earlier in the design process, since value is about cultural, social, environmental, and economic factors (Walkers & Takamura, 2015).

Background, Purpose and Format of the Project: The Design in Place (DIP) model was created to engage participants in experiential design projects where the process of immersion, analysis, framing and translation of cultural and environmental experiences in the context of a place are effectively and equitably translated through the craft/design works completed in the project. Our aim is to share the DIP model and how we have utilized it to connect local culture and environment through craft making. Here we describe examples of three projects where the model was implemented. The model was developed and taught as part of a secondary (grade 6-12) program in Waimea, Hawaii focusing on Wauke, and Kapa Cloth. The model was then tested through 2 additional case studies — one focusing on Henequen fiber cultivation and craft in the state of Yucatán, Mexico and the other on Flax production in the State of Ohio, USA. The projects represent a range of learners and age cohorts. The presentation will facilitate further conversation about organizing and leading equitable and successful design courses afield.
Development of the DIP Model – Endemic: Hawaiian Print Studio, Summer 2016: The initial course, Endemic: Hawaiian Print Studio, was developed for a diverse group of middle school and high school students in 2016 on the Big Island of Hawaii. It aimed to teach Native Hawaiian cultural literacy and traditional craft-making through field studies. It was critical to expose students to sites of cultural significance and introduce craft methods from local indigenous experts, which fostered an authentic experience and challenged cultural stereotypes. Their observations inspired hands-on making including printmaking ('ohe kāpala), kapa making using the inner bark of the Wauke [po'a'aha] or commonly known as paper mulberry. Students also created natural dyes with plants/materials from Honopua Farm located in Waimea. Students developed new symbols that translated traditional stories of Native Hawaiian culture in a contemporary context, ensuring socially equitable outcomes. Students learned to design authentically through their first-hand experiences with the people and places that they visited, thus reinforcing our pedagogical approach for this course. From this experience, faculty located and synthesized three frameworks (as described in the Methodology) that emphasize place-based and experiential design research/design thinking, which inspired the development of the DIP Model.

DIP Case Study 1: Telas Ecologicas- International Textile & Apparel Association (ITAA) Study Tour to Yucatan, Winter 2017: A study tour was developed for textile design educators,

professionals and college students, focusing on the creative immersion of participants within the craft culture of the state of Yucatán, Mexico. The goal was for participants to understand 1) how regional crafts are made utilizing local organic materials, 2) how their design and development was/is dependent on local geography, and 3) to contextualize textile craft of the region from the Mayan community perspective. The participants gained first-hand understanding of the tangible properties of endemic natural fibers used in textile-making —including 1) Agave Fourcroyeds (commonly called Sisal/Henequen), 2) Sansevieria (commonly called Lengua de Vaca or Snake Plant), and 3) Carludovica palmata (commonly called Jipi Japa or Toquilla Palm). Through guided visitation to sites of cultural and environmental significance and through hands- on textile-making workshops guided by local subject matter experts, artisans, and designers, the participants produced artifacts that demonstrated their deeper understanding of the craft processes, tools, and materials. Reflection and documentation of their experiences in journals was also emphasized.

DIP Case Study 2: Where Fashion and Fiber Meet- Connecting Design Students to a Flax Fibershed, 2020-Present: Following research into the impact of connecting fibersheds to design students, an educational program in conjunction with the FASH 2070 Textiles course at the University of Cincinnati's School of Design was created using the DIP model. Students spent a class learning about the history of flax in Ohio. They also processed flax grown on a community garden plot, turning it into yarn. This gave students a firsthand understanding of not only how a fiber can be turned into a fabric but also the difficulty of doing so and what qualities of the fiber allow it to happen. Presently, students are learning about natural dyes created from locally foraged plants. They will hand paint and dye flax yarn that they can then use to make their own weavings at the program's flax plot. The hope of this portion of the program is to allow students to connect to the environment around them and see the plethora of local resources and inspiration that lies right outside of their classroom door. After each portion of the program, students are asked to reflect on what they have learned not only generally but through their unique lens as fashion design students.

Methodology: The DIP model was synthesized from three existing learning frameworks: 1) the Experiential Learning framework by Kolb which focuses on the interaction of a student and their physical learning environment 2) the Foundation of Place by Gruenwald which focuses on the development of socio-ecological, place-conscious education, and 3) Project Zero's Agency by Design Initiative which focuses on maker-centered learning and empowerment. The DIP model consists of four sequential phases: 1) Immersion 2) Analysis 3) Framing and 4) Translation. The Immersion phase focuses on experiencing place firsthand. Phase 2 — the Analysis phase— is meant to evaluate deeply through reflective observation of the place to challenge preconceived notions and draw initial conclusions based on concrete experience. Phase 3—Framing—brings Phase 1 and 2 into practice through hands-on learning, technique, analyzing context, constraints, learning from instruction by experts, instruction and then identifying shifts to develop a sense of responsibility and personal positioning within the context of the culture and environment. This includes maker centered "learning by doing" and practicing empathic learning through tactile experience. The last phase is Translation— appropriately interpreting culture and place by

generating new designed artifacts inspired by it. By synthesizing the findings from the previous phases, participants introduce novel design approaches WHILE translating inspirations in an equitable manner by respecting, and designing within the boundaries of the craft process, materials, and methods. This phase is also about honoring symbolic meaning and attributing the inspiring communities.

Conclusions: This model introduces place-based creative inquiry, design research and appreciation for handmaking and slow design. These projects focus on teaching craft provenance alongside environmental aspects that influence the design and making of those crafts including immersion into the physical environment, local cultural literacy, and making connections between nature and its impact on design. The key takeaways for the participants across this study were more equitable design perspectives, and greater appreciation of fiber cultivation, processing, and its significant role in craftmaking + design. Facilitators must consider the following in adapting this model: 1) Acknowledgement and attribution are at the core of this framework — It is essential to yield sensitivity to the communities involved, avoiding creating without context. Facilitators should consider the consequences of their presence in the place/culture and find out in advance if an immersive experience is invited by the community. It is important that the leader conduct preparatory work upfront and receive consent that the project is supported. It is essential to have conversations with community leaders to determine what is most appropriate. 2) Facilitators should factor in time to prepare participants— considering their experience, biases, misgivings/fear of travel, learning about cultural norms/customs, foundational language, etc. 3) This model is intended only for the purpose of education — it is not to be used for profit or as a business model framework, 4) Any work where the development is inspired by a culture or place should be openly communicated with and attributed to communities and locations with expressed permission of that community. The DIP framework has the potential to enact on-the-ground change towards building a better connection between farmers, local subject matter experts, designers, students, and craft practitioners. We hope that the model can be useful to other educators in planning and leading their own projects where focus is placed on environmental conservation, particularly for fiber processing used in heritage crafts, and how to connect design communities with the origins of their materials.

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