

MODULE 2: Paper: Biosynthetic Essay

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For centuries, the fashion industry has created garments with the textiles that were local to their regions or find ways to exchange materials with each other in order to create clothing and other wearable accessories. As our technology as a society developed the ways in which we dispose our wastes have also changed, its hard to tell if this change was for the better or for the worst. In the 1960s waste was usually burned on site in barrels or in pits this was an effective method for getting rid of waste but highly detrimental to the environment. In 1970 congress passed the Federal Resource Recovery Act which required federal government to set national guidelines for waste disposal. At this time, the regulation of waste was fairly under control but still left much to be desired in terms of helping the environment. Even in the year of 2020 improper and illegal waste disposal is an international concern. Even though there are some fashion brands and other brands alike are trying to become more “green” or “sustainable” we still have a lot more work to be done if we want to fix this waste issue.

Particularly in the fashion industry we need to develop more sustainable alternatives, there are many materials that are commonly used now that cause disasters for the environment. Polyester and nylon are primes examples of this, both materials are made using fossil fuels. Burning fossil fuels emits several pollutants into the air that cause harm for the environment and for public health. These emissions contribute to acid rain and the formation of harmful particulate matter. Cotton production also requires a significant amount of carbon dioxide, the development of Fast fashion means that cotton is created at a rapid rate but not only is the creation of cotton detrimental to the environment the disposal of cotton is equally as bad. With the dangerously high level of chemicals leaching into our environment and the toxic wastes created by clothing factories saturating the water supply in nearby water reserves along with the oceans that millions of people visit and swim

in regularly we have a civic duty to learn how to mitigate the hazards while still being able to maintain the fashion ecosystem alive and healthy.

There are several choices that we have from an environmentalist standpoint that would serve as a more effective sustainable fiber source than cotton, polyester, and nylon. Some companies have started to use more natural options for fashion fibers. Salvatore Ferragamo started to go back to their old roots of developing collections with innovative materials, the company launched a capsule collection on April 22 of 2017 which contained a patented material called “Orange Fiber” which is the only fabric in the world made with citrus fruits. This fabric was created in order to substitute leather and with the idea of wartime restrictions and the shortage of materials in mind. Normally when dealing with leather there is a very long process involved with creating the fabric in general and would not be realistic to maintain in time of peril or if there were to be a shortage of food since leather is made from cows which is not a very sustainable source. Contrary to oranges which could be grown in most environments and can be cultivated or preserved for long periods of time. With in mind the company created a twill that looks and feels like silk. (See Figure 1.) (Zargani, 2017). This idea allows for more than 700,000 tons of byproduct in Italy alone using the remains of an orange after squeezing the juice out of it. The product is



Figure 1 A look from the Orange Fiber capsule collection by Salvatore Ferragamo.

similar to silk with a soft, light feel and can also be printed on and colored just like traditional

textiles including techniques like inkjet printing and natural colored dyes. Conversely to manmade

Figure 2 A t-shirt produced at Duo Di Latte costs around \$60. (TRTWorld)

fibers the Orange Fiber does not require yields alternative to food consumption, but instead reuses something that would have been thrown away for a better purpose inherently saving land, fertilizers, and environmental pollution. Another alternative to harmful fashion materials is “Milk Fabric” a product first produced in the 1930s but remodeled from a chemical heavy process to a now 100% natural product that comes from turning milk waste into fabric and producing a silk like material. Italian fashion designer Antonnella Bellina uses citric acid and the milk in order to separate the whey from the protein creating a powdery substance which is then spun into a stringy silk like material then is woven into a fabric which is ready to make clothes from. The Italian designer is said to save up to 15kilos of water by using this method as it normally takes 1liter of water to make 1 kilo of the “Milk Fiber”. These products that are being created by Duo Di Latte were tested to be ideal for people with sensitive skin because of the natural form of the product it is antibacterial and anti-allergy (See Figure 2) (TRTWorld, 2018). The durability is the same as a normal cotton shirt as it can be printed on normally using the same methods the Orange Fiber products can undergo. This Italian designer takes it a step further by having her factories running on Solar energy which reduces the company’s CO2 emissions and makes their carbon footprint



smaller. As move more into the age of sustainability we are starting to see an influx in companies that are molding their branding after being more sustainable.



Along with Duo Di Latte there are several other companies that have taken on the moniker of sustainability in order to thrive in the climate of eliminating waste and shrinking the carbon footprint. Some companies are creating collections that consider sustainability one of the most prominent and effective examples being Patagonia. Being known for their weatherproof materials and outdoor resistant gear they were one of the early pioneers for defending environmental ethics in the activewear community, they apply this concept well by utilizing recycled materials and switching to organic cotton. Patagonia also has a program which they call “Worn Wear™” where they sell used Patagonia garments on a secondary website (Wornwear.patagonia.com) or the original Patagonia website and then when you stop using it you can trade it in with any Patagonia store in which they will pay you with store credit and sell your used item to another customer after they wash and clean it for you. Patagonia has done the research on this technique and uses this statement as the metric for their branding. “Buying a used garment extends its life on average by 2.2 years, which reduces its carbon, waste and water footprint by 73%.” (ThredUp, 2018). Other companies like Levi's the global leading denim and apparel company based in California, USA are taking part in the process of creating their garments ethically using sustainable practices and giving back to the community reusing fabrics and so on. Levi's vision statement is, “We are the embodiment of the energy and events of our times, inspiring people with a pioneering spirit.” (n.d) (www.comparably.com, Levi Strauss & Co. Mission, Vision & Values",n.d.) In this time of pollution and poor business practices Levi's statement holds true. They are practitioners' sustainable practices, in 2020 they have significantly reduced water use by using the Water<Less™ technique which continues to “wash” their jeans with stones but have removed the

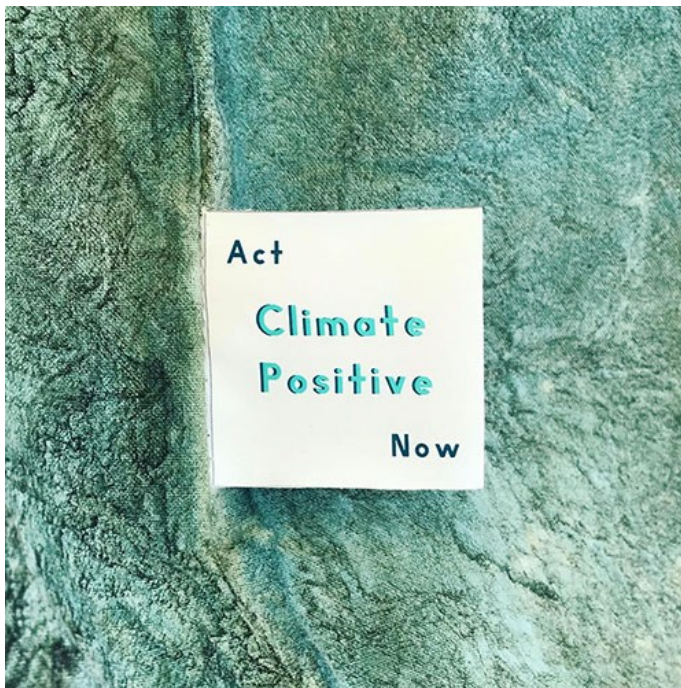


water from the process and cut down the amount of wet-washing cycles has been cut down by combining stages in the process.

Although I mentioned that there were certain sustainable garments that were able to undergo the traditional methods of dyeing clothes in figures 1 and 2 earlier but what about doing away with traditional harmful methods of dyeing clothes in general? Normally the indigo used for your average pair of jeans are synthesized and are not water soluble which means that it's a toxic chemical that will be corrosive to workers and deadly to marine life if you were to come into contact with it. Michelle Zhu a biotech from San Francisco that works at Tinctorium is attempting to mirror the way the indigo plant makes and holds its color. She stated that "Because bacteria are powerful multipliers, when you put them in the right conditions, we can grow these organisms to create dye product in a much more scalable and sustainable manner that isn't reliant on petroleum" (Woollacott, 2020). The company is already working to make jeans that will be purchasable and comparable to the price of the average jean on the market currently. Along with companies like Tinctorium there are other companies that are experimenting with new ways express themselves through fashion in a sustainable way, Post Carbon Fashion is different approach to changing and adapting the current processes of sustainability. They call it Regenerative Sustainability Activism, this strategy takes a more active approach trying to make sustainability more commonplace so industries don't have to veer too far off of the normal path in order to partake in the environmentally friendly practices. One example of this provided by the postcarbonlab.com website is to "design garments that have photosynthetic or pollution-filtering properties. This will allow the fashion industry to have an output for carbon negativity (climate positivity) rather than reducing or offsetting the footprint." (Post Carbon Fashion 2020)

I believe firmly in the decision for companies and individuals alike to become more sustainable and to take more of a responsibility when it comes to the waste that we are intentionally putting out in the world and unintentionally putting out into the earth. All of the products and techniques that I have gone over have been affordable and accessible ways to achieve that goal. While I am unsure if many people in the public will actually purchase/partake in these efforts the option will continue to remain as long as we have an issue of pollution. Ultimately the choice is with the people, companies and industry can only make it easier for people to make the choice as well as doing their part as well. Images like Figure 3 (Open Cell Resident: Post Carbon Lab 2020) are just about as much as companies can do to convince people along with the products and services that they are offering. We all have to work together in order for sustainability to become the normal, the companies are starting to do their part now we have to support them.

Figure 3 Post Carbon Lab advertisement



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