

University of Michigan  
Stamps School of Art and Design



**rove**

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## Introduction

Rove, focuses on using pre-consumer textile waste (PCTW) to make rethought and impactful products. PCTW is unused material after a production run that is bound for landfills because it's cheaper to dispose of than use. PCTW differs from deadstock fabric because it is the leftover material as opposed to rejected or damaged material.<sup>1</sup>

Since the Industrial Revolution, readily available goods have led to fast consumption and planned obsolescence, generating tremendous amounts of waste. Amidst this waste, is a massive quantity of material that can be categorized as PCTW. Every year, the global apparel industry alone generates 40 billion square meters of PCTW, which can cover the state of Vermont twice.<sup>2</sup> Reusing PCTW could cut down on the waste bound for landfills and incinerators, aid in conserving natural resources, provide low-cost raw materials for new products, and deliver a lower monetary and environmental processing cost than virgin fibers.<sup>3</sup>

Studies further demonstrate that consumers are interested in sustainably made, upcycled products yet there is a lack of potential options. Sustainably crafted products on the consumer market tend to either be too costly, or lacking in aesthetic appeal and/or ethical production standards that consumers in the 16-40 age bracket desire.

The Rove backpack is fabricated primarily out of PCTW which appeals

<sup>1</sup> "Deadstock Fabric Is NOT as Sustainable as You Think." virtue vice. Accessed April 10, 2020. <https://shopvirtueandvice.com/blogs/news/why-fashion-made-with-deadstock-fabric-is-really-just-greenwashing>.

<sup>2</sup> "HOW MUCH DOES GARMENT INDUSTRY ACTUALLY WASTE?" Reverse Resources. Accessed April 10, 2020. <https://reverseresources.net/news/how-much-does-garment-industry-actually-waste>.

<sup>3</sup> Lau, Yuk-Lan. "Reusing Pre-Consumer Textile Waste." SpringerPlus 4, no. S2 (2015). <https://doi.org/10.1186/2193-1801-4-s2-o9>.

to working individuals and / or students who rely on a laptop, commute day to day, need weather protective qualities, expect a sleek and modern aesthetic, and require weekday and weekend functionality. When sold as new products, the backpacks will change consumer perception, enabling people to understand that waste materials can be upcycled and made into new, desirable and durable objects. The research and development of these products will advance the future of circular economy<sup>4</sup> production by giving designers and manufacturers insight into the process of upcycling PCTW. Rove products will be moderately priced, durable, and incorporate current visual trends, appealing to a larger audience within and outside of the environmentally conscious community.

Rove is part of a growing practice of upcycling based product design. We've been inspired by brands such as Raeburn, Freitag, and Re/Done who restructure existing materials to make new, more valuable products. Artists like Nicole Mclaughlin and high fashion labels like Maison Margiela incorporate second hand items into wearable and usable sculptures. Their mission is to raise awareness for the sustainable design industry through their exciting products. We share this mission but use a unique material source (PCTW) unlike other brands or artists in order to express the same sentiment.

The greatest differentiator between Rove and the rest of the market is our use of PCTW and the design approach required to work with this unconventional material. Most designers create a product and then source the newly generated material for it. Our approach is to allow the PCTW available at any given time to dictate the form and function of our final product. While sustainably focused design collectives, studios, and brands already exist, no one is prioritizing the use of PCTW in the constitution of their designs like we are.

PCTW currently has no resale value and therefore has a more significant upcycling value than any second hand material. To our benefit, PCTW is always in pre-production conditions, meaning it is ready to be transformed and requires no time to be restructured or taken apart. Rove also has the potential to shape circular production systems beyond the individual consumers directly involved with Rove. The research and approaches we discover when upcycling PCTW will offer a template for other designers and producers to work from, benefiting the sustainable production industry as a whole.

<sup>4</sup> "What Is a Circular Economy?" Ellen MacArthur Foundation. Accessed April 23, 2020. <https://www.ellenmacarthurfoundation.org/circular-economy/concept>.

A study conducted by the Department of Fashion and Image Design at the Hong Kong Institute found that “A majority of consumers prefer sustainable clothing made using up-cycled pre-consumer textile waste, but they are not being offered enough access to desirable products.” Background research done for this study also indicates that re-using pre-consumer textile waste (PCTW) could help eliminate the need for landfills and incinerators, conserve resources, solve the problem of disappearing natural resources, provide low-cost raw materials for new products, and deliver a lower monetary and environmental processing cost than virgin fibers.<sup>5</sup>

This study was influential in our decision to focus on PCTW as our main material source. Although we initially considered the use of second hand materials (POST-consumer textile waste), PRE-consumer textile waste has a higher upcycling value and would otherwise be bound for a landfill if it weren't for our intervention. Second hand materials, on the other hand, have the ability to be sold at thrift, consignment, or vintage stores and have a much less direct path from user to landfill.

Soetsu Yanagi's, *The Beauty of Everyday Things*, is a book about the importance of valuing our everyday objects. Moreover, it talks about the diminishing emphasis we place on the quality of everyday items around us. Yanagi begins by explaining how with the passing of time, the way we care for our everyday items has changed. It used to be the case that “...the more an object was used, the more its beauty became apparent.”<sup>6</sup> Today, however, the continuous use of an object reminds us we are one step closer to throwing it away. Throughout his book, Yanagi emphasizes the “need for a new age”. A new age where people value the quality of their less expensive everyday items, and a new age where rapid manufacturing doesn't force the creation of cheap and badly made objects.

Yanagi's new age is somewhat of a utopia. His statements fail to acknowledge the reality of the world we live in. With that said, Rove is driven by the lacking of quality that Yanagi speaks to, and our mission is to improve the quality of at least one object in hopes of altering consumer perceptions towards all objects.

In William McDonough and Michael Braungart's book, *Cradle to Cradle*, McDonough and Braungart address the true meaning of economic activity. While

<sup>5</sup> Lau, Yuk-Lan. "Reusing Pre-Consumer Textile Waste." SpringerPlus 4, no. S2 (2015). <https://doi.org/10.1186/2193-1801-4-s2-o9>.

<sup>6</sup> YANAGI, SOETSU. BEAUTY OF EVERYDAY THINGS. Place of publication not identified: PENGUIN Books, 2019, 9

many people, organizations, and even countries, associate economic activity with prosperity, McDonough and Braungart indicate that this is not always the case. "...if prosperity is judged only by increased economic activity, then car accidents, hospital visits, illness (such as cancer) and toxic spills are all signs of prosperity."<sup>7</sup> By coming to this conclusion we can establish that the very essence of the fast consumption market, which is to increase economic activity is morally flawed. Simply because more items are being sold does not mean we are prospering. Similarly, just because new materials are being used to create new products, doesn't mean we are prospering on all accounts.

Figure 1, Marcel Duchamp  
Fountain, 1917, photograph by  
Alfred Stieglitz



Sustainability as a cultural movement is a descendent of Dadaism, beginning with Duchamp and his ready-mades. The Dada movement came to fruition as a response to the social and cultural ruptures of World War I. Dadaism began as a mentality, one that was held by individuals, mainly creatives that believed there was a lack of order in society. Dadaist thinkers in Zurich like Hugo Ball wanted to bring together all sorts of Avant Garde thinkers in the form of organized events. Ball shared a similar goal to other Dadaists' which was to eliminate traditional forms of creating art in an effort to create "new" art that would ideally replace the old ways. Duchamp's ready-mades were one of the new, Avant Garde ways of making art, which included an unintentional sustainable approach to material choices.

Duchamp's ready-mades were one of the first examples of sustainable use

<sup>7</sup> Braungart, Michael, and William McDonough. *Cradle to Cradle: Remaking the Way We Make Things*. London: Vintage, 2019.

of materials in art, even if done unintentionally. Duchamp used found objects to dictate the form and function of his pieces instead of approaching his art with the opposite mindset. Traditionally, artists and designers have a vision for their work and then go about finding the necessary, new materials, to complete that vision. This approach is not very sustainable since it relies on the acquisition of new materials instead of the use of materials that are already available. With that said, the art industry has never been very concerned with sustainably made pieces. Art isn't mass produced, for the most part, therefore, material choices do not have a significant impact on the environment. For this reason it is particularly interesting that the sustainability and upcycling values exhibited in Duchamp's ready-mades, which are considered art pieces themselves, sparked a cultural movement that has influenced other industries.

Following the time of Duchamp and moving on to the middle of the 20th century, WWII became a key historical event that helped boost the United States economy. This was particularly the case thanks to the rapid production of goods during wartime. After the war, Americans had significant amount of purchasing power and were eager to contribute to their newly strengthened economy. As consumers began to constantly desire "new" products, fast consumption began to take its hold on the American people.<sup>8</sup> The 1970's saw the rise of ecological consciousness and particularly the green movement.<sup>9</sup> Finally environmental concerns were extending beyond the conservation of land and natural parks into the consumer product market. The next 50 years would continue to see a significant rise in environmental concerns and would ultimately lead to the development of the sustainability industry.

In 1994 John Elkington came up with the term "triple bottom line" to explain the true meaning of sustainability. While most people, even today, associate sustainability with environmental benefits only, it is actually more complex than that. Elkington argued that in order for something to be considered truly sustainable it has to meet three different categories which were outlined in the triple bottom line. Sustainability was the mixture of social, economic and of course, environmental values. When analyzing Duchamp's ready-mades and specifically *The Fountain*, it happens to meet all three of Elkington's triple bottom line requirements. Socially, the piece generated strong emotions within the public and sparked a debate within the art world that continues to this day. Economically, *The Fountain* has risen in monetary value and has even opened up a marketplace for objects that didn't previously have a market.

<sup>8</sup> "The Rise of American Consumerism." PBS. Public Broadcasting Service. Accessed April 23, 2020. <https://www.pbs.org/wgbh/americanexperience/features/tupperware-consumer/>.

<sup>9</sup> "A Brief History of the Modern Green Movement in America." WebEcoist, November 4, 2016. <https://www.momtastic.com/webecoist/2008/08/17/a-brief-history-of-the-modern-green-movement/>.

And environmentally, Duchamp is using his ready-mades as upcycling case studies which have influenced other artists into producing work with similar sustainability values. Going off of the triple bottom line definition, Duchamp's ready-mades should be considered sustainable and sustainably impactful pieces.

Figure 2, Maison Margiela  
Artisanal Shoelace Dress,  
2009



Maison Martin Margiela is a French luxury design house led by designer Martin Margiela. The Belgium designer is most widely known for his expensive designer clothing lines, however, he is also a strong supporter and implementer of the upcycling process in many of his designs. Margiela is influenced by traditional manufacturing techniques, embracing traditional sewing methods while also reusing old garments in the making of new items. One of the prime examples of his upcycling pieces is his dress constructed from 400 individual black shoe laces.<sup>10</sup>

Margiela's implementation of post-consumer garment waste into his designs is another piece of evidence for the demand that exists, even in the luxury sector, for upcycled products. Margiela's upcycled designs are purposefully made from noticeable waste items (shoe laces, straws, etc.) in order to make an environmental statement using the popularity of the Margiela name as a launchpad. Our use of PCTW won't be nearly as evident, and our impact won't be in raising awareness for the creation of excess waste but rather actively

<sup>10</sup> Menkes, Suzy. "Fashionable Recycling with Martin Margiela." The New York Times. The New York Times, January 28, 2009. <https://www.nytimes.com/2009/01/28/style/28iht-rbreef2.1.19750955.html>.

changing consumer and designer perceptions on the potential use of PCTW. We will also be filling a gap that exists between the high end sustainable products that are available and the lower quality, farmers market-esque products that are also on the market.

Figure 3, Nicole McLaughlin, Camera Strap Sandal, 2018



Nicole McLaughlin is an independent designer who manipulates new and used objects and uses them to create unique clothing items. Starting off as an intern at Reebok sorting through waste fabric and taking the occasional thrift store visit, McLaughlin shares a similar interest for material manipulation which fostered Sarah and I's collaboration. What started off as a hobby and an opportunity to work with her hands, turned into a full time job and yet another inspirational upcycling case study for McLaughlin.<sup>11</sup>

McLaughlin's camera strap sandals are an excellent example of the type of upcycling that has inspired our own final backpack designs. Exceptional craftsmanship, use of waste materials, and a unified aesthetic are all present in this piece. Looking as though this were produced originally for the fast consumption market, it is in fact made to help combat the effects of that very same market. Our goal is for our final backpack design to incorporate the same aesthetic values and ambitiously eliminate as much PCTW as possible from the fast consumption industry.

<sup>11</sup> Servantes, Ian, Ian Servantes, Ian Servantes, and Ian Servantes. "Nicole McLaughlin Ventures Out on Her Own With Upcycled Customs." Highsnobiety. Open Menu All News Work from Home Style Sneakers Spring Sales Magazine Shop Search, November 6, 2019. <https://www.highsnobiety.com/p/nicole-mclaughlin-profile/>.



## Methodology

Our methodology followed three stages of development all crucial to the creation of the final Rove prototype: 1. Material exploration 2. Consumer research 3. Prototyping and iterations. Within those three stages we received feedback, discovered new information, and encountered obstacles which forced us to adjust our process accordingly. Nonetheless, these three stages accurately represent our process.

### Material Exploration

This stage began with our initial material choice, second hand items. Since the early stages, we were interested in using waste generated by the fast consumption industry as the focus of our project and second hand or used items seemed like a logical material source. We visited local thrift, consignment and vintage stores around Ann Arbor and learned the difference between all three. We also began manipulating second hand items into bags and backpacks.

**Top Left:** Figure 4,  
Secondhand duffle bag  
flattened to use as fabric



**Top Right:** Figure 5, Duffle  
bag cut into pieces to match  
backpack pattern



**Bottom Left:** Figure 6,  
Prototype of a bag made from  
secondhand sleeping bags



**Bottom Right:** Figure 7, Duffle  
bag pieces sewn together to  
form flat backpack skeleton



Figure 8, Duffle bag pieces  
sewn together to form  
assembled backpack skeleton



As our research developed however, we discovered a different waste category that had no market value whatsoever. As previously mentioned, while purchasing and using second hand items can be considered sustainable in itself, those items do in fact have a market value. The new material we discovered, pre-consumer textile waste (PCTW), had no market value and therefore proved to be a more sustainable material option.

Figure 9, PCTW from Michigan  
Upholstery Department



The discovery of PCTW led us to begin searching for this material. We targeted specific manufacturers that we had connections with and could more

conveniently visit such as the University of Michigan's upholstery shop and TMC Furniture in Grand Rapids, MI. We visited the University's upholstery shop first and found an abundance of PCTW. We discovered hundreds of rolls of fabric, varying in pattern, material and length that were all bound for a landfill at the end of the year. More importantly, we discovered that all this material was free for us to use. The upholstery shop was extremely enthusiastic about handing over their material to us as it would save them significant disposal costs at the end of the year. Seeing as our visit to the upholstery shop was such a big success, we reached out to Stamps alumni Blake Ratcliffe who is the co-owner of TMC furniture in Grand Rapids, MI and inquired about potential PCTW in his facilities. Upon visiting his factory, we discovered a similar amount of PCTW. Textiles, however, weren't the only source of pre-consumer waste that was available. Blake provided us with panels of birch ply wood and steel tube, in addition to the rolls of fabric.

We gathered all of our PCTW from both the upholstery shop and TMC Furniture, and were particularly excited by a nylon coated PVC material. The material had strong, durable qualities and a weatherproof finish which made it ideal for the creation of a backpack. As a result, we decided to focus our design around this material.

## **Consumer Testing**

We next considered more specifically who our target audience would be. We wanted to appeal to people within and outside of the environmentally conscious community who would most directly benefit from our backpack both through its design, function, and material choice. We decided a 16-40 year old range would make up the majority of our customer base, specifically working professionals and students. Before conducting interviews we assumed our target customer would be someone who would rely on a laptop on a daily basis, would need weather protective qualities in a backpack, would expect a sleek and modern design, and would require weekday and weekend functionality (meaning it is formal enough to bring to the office but also casual enough to use during the weekend).

After conducting interviews our assumptions were mostly validated. We interviewed people that fit this demographic, including our peers, faculty, and working professionals outside of Stamps and narrowed down a list of

common features that were most desirable in a backpack. These included: a sleek design, one or two tone colors, space for a 15" laptop, space for a phone and laptop charger, inner pocket for smaller things, larger outer pocket, and durability/ weatherproof qualities. Initially we were also interested in including an expandable component for the backpack but found that it interfered with the sleek design. In addition, most of our interviewees found it unnecessary.

## Prototypes

Throughout our prototyping and iteration phase we created a multitude of cardboard and paper prototypes but only two fully functional prototypes made from our acquired PCTW. The first fully functional prototype, which was created before the consumer testing phase, was made from PCTW yellow nylon coated PVC. It had a width of 11.5" and height of 16.5" with half inch margins on either side for sewing purposes. The backpack was constructed using four different material panels that when assembled created a cub-like shape and included a main zipper as well as a the expandable component (which we later eliminated). The majority of the backpack was assembled using our industrial sewing machine but we were forced to hand sew a few components as well. The main problem with this prototype was the size. The overall size both height and width of the prototype wasn't large enough to fit the items we later identified in our consumer research, in addition, the backpack was barely large enough to support a 15" laptop.

**Left:** Figure 10, First PCTW prototype



**Right:** Figure 11, Material used for first prototype before assembly



In our second prototype, we fixed the sizing issue and incorporated all of the feedback we received from our consumer research. Our new prototype was 13" in width and 18" in height and had an inner laptop sleeve, a large outer

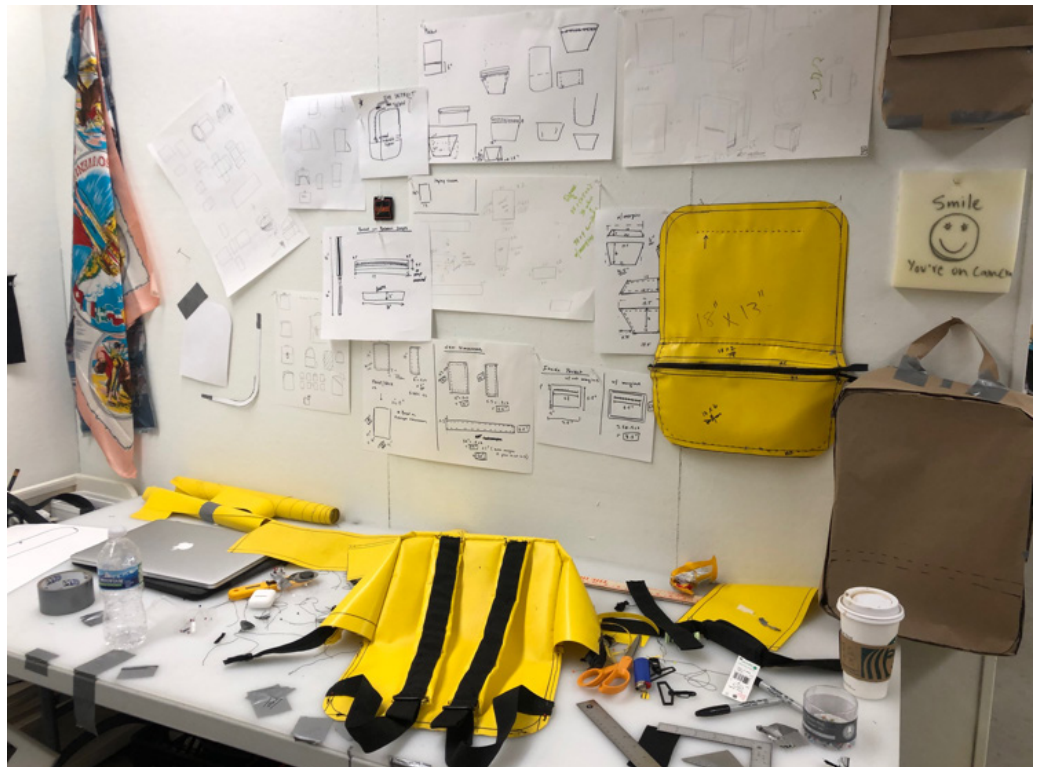
13

pocket, a small inner pocket, adjustable padded straps, and a handle on top. The expandable component was also completely eliminated to simplify the design of the backpack. We also chose to alter the construction of the backpack. Instead of the backpack being a rigid rectangular like shape, we rounded the edges and eliminated the four panel assembly method. Our new method of assembly would include a front and a back panel as well as two side panels that would wrap around the front and the back pieces instead of connecting like a cube.

Figure 12, Final Prototype



Figure 13, Workspace



**Left:** Figure 15, Front of final prototype before completion

**Right:** Figure 14, Back of final prototype before completion



The second prototype became our last and final prototype which we delivered to our manufacturer in Detroit.

### Creative Work



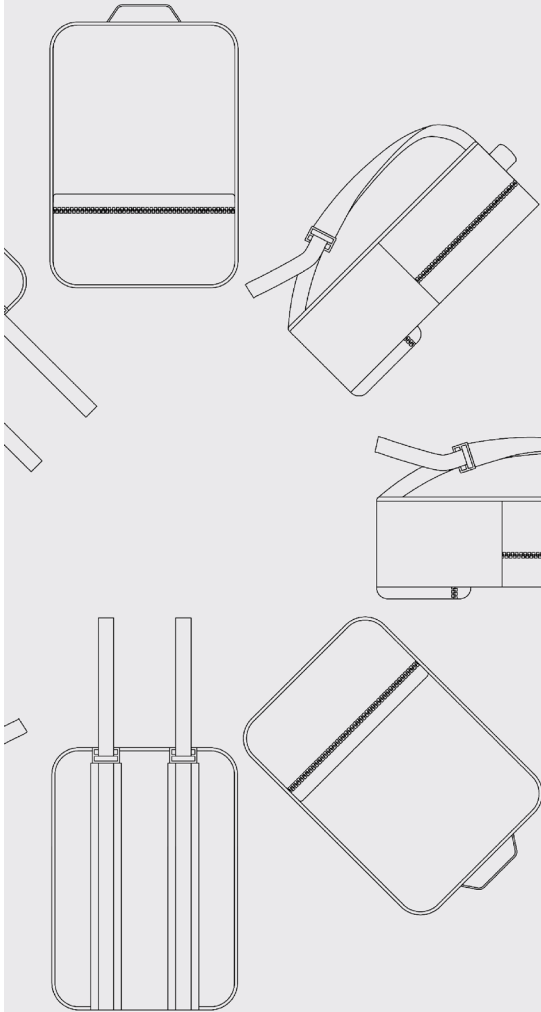
rove

## 01 thesis

rove is a brand that upcycles  
pre consumer textile waste  
and creates rethought and  
impactful products



## 02 research



Through our research, we discovered a unique waste category known as

### **pre-consumer textile waste.**

PCTW is excess material following a production run which is typically thrown away because it is not cost efficient for manufacturers to use. This waste category has no market value and a direct path to a landfill. After speaking to local manufacturers in Michigan, we realized that there is an abundance of PCTW in facilities across the country that manufacturers would be eager to donate to avoid disposal costs.



## 03

We partnered with the University of Michigan's Upholstery Department and TMC Furniture in Grand Rapids, Michigan and were given hundreds of rolls of PCTW. We analyzed all of the material and were particularly excited by a nylon coated PVC. It had strong, durable qualities and a weatherproof finish which made it ideal for a backpack.



**Our first prototype  
using PVC coated nylon**



## 04 result

We wanted to appeal to users within and outside of the environmentally conscious community who would most directly benefit from our backpack both through its design, function, and material choice. We decided a 16-40 year old range would make up the majority of our customer base, specifically younger working professionals and students. We interviewed people that fit this demographic, and narrowed down a list of common features that were most desirable.



**17\" x 12\" x 5.5\"**

05

**features include:**

internal pockets for  
valuables and a 15-inch  
laptop

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adjustable, padded straps

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front pocket  
for smaller belongings

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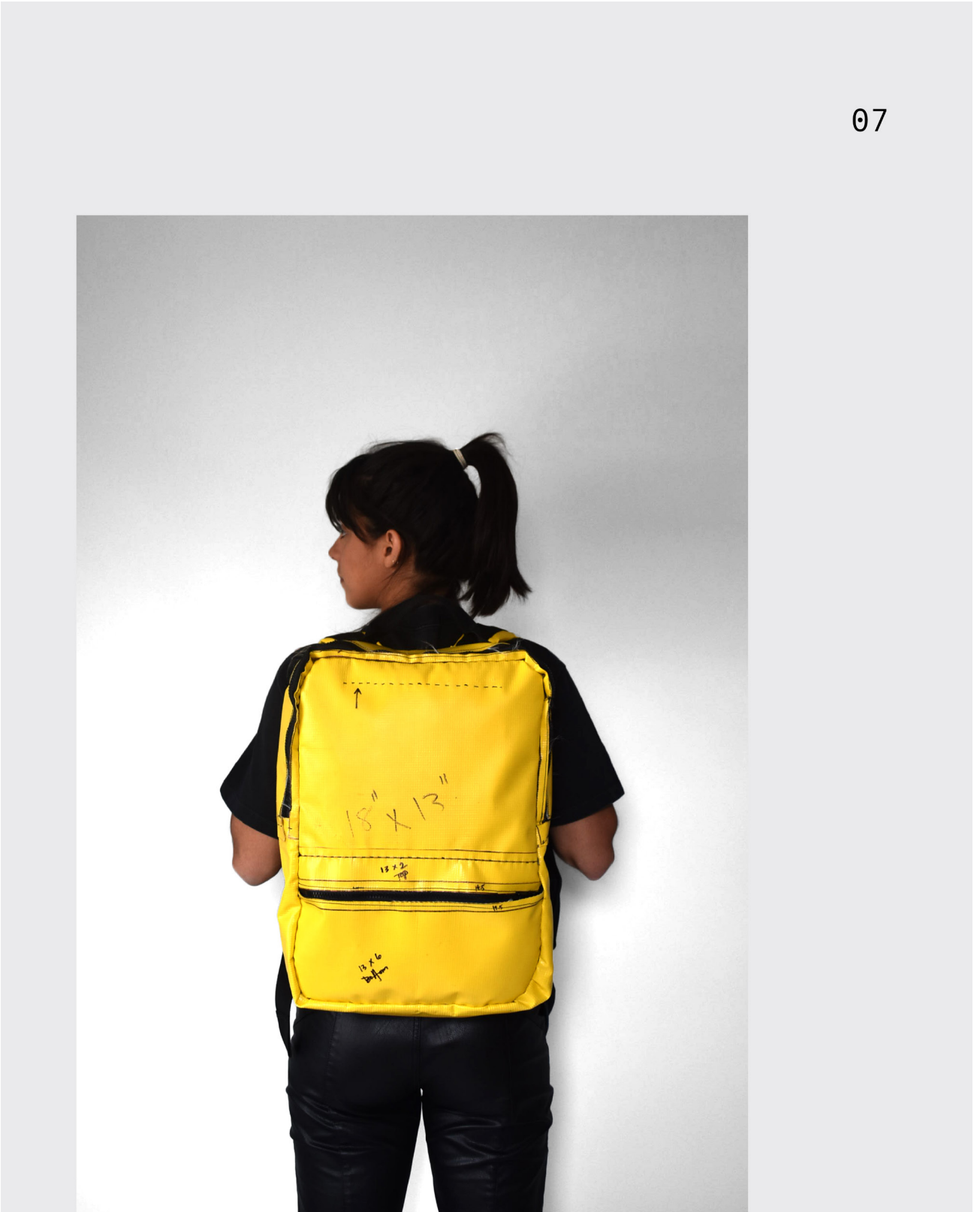
PVC Coated Nylon for  
durability/weatherproofing

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06



When looking at the Rove backpack the most important thing to note is the material choice behind it. All Rove products will be made using PCTW, the backpack included. While the strength and durability of the material is perfect for a backpack, it is important to keep in mind that the material qualities could've been different and could've led to the production of a completely different product. The PCTW we receive from manufactures dictates the form and function of our products, and it is not limited to textiles. Wood, metal, and plastic manufacturers across the country have a significant amount of pre-consumer waste in their facilities as well. With that in mind Sarah and I hope to design products using pre-consumer waste of all forms. In addition, the simplicity of the backpack allows us to construct it using many different materials which can drastically change based on availability. Our mission is to allow material to dictate the form and the function of our products, and the designs of these products should always support this ideology.

The images above are the final documentation of our prototype. While production of a commercially ready Rove backpack came to a halt due to COVID-19, we were able to document our final prototype on last time.

## **Conclusion**

Rove is the most comprehensive project I have ever taken on and certainly does not end with the creation of the Rove backpack. In fact, the backpack was merely a case study for the future of Rove. Due to COVID-19, however, manufacturers across the country are using their facilities to produce personal protective equipment. As a result we had to dissolve our partnership with our manufacturer in Detroit and were not able to produce a commercially ready backpack as we had previously planned. Through the Entrepreneurship Department at the University of Michigan, Sarah and I received the optiMize grant to continue working on Rove after graduation. Once it is safe to do so, our goal is to begin manufacturing and selling the Rove backpack, establish PCTW partnerships with manufacturers and continue with future product development.

This project has experienced significant setbacks due to the COVID-19 pandemic. Yet, through it all Sarah and I are reminded that the true definition of sustainability as defined by John Elkington, involves positive social, economic, and environmental impacts. In order to make Rove products truly sustainable we must not ignore the impacts of COVID-19. As designers, we were always taught to anticipate the future needs of people in order to create products that solve their long term

problems. Although COVID-19 has created an extremely difficult situation, it has also given us the opportunity to envision what the world will look like once this is all over. We hope to re-design and continue designing Rove products that will not only survive but thrive in the new world.

- Braungart, Michael, and William McDonough. *Cradle to Cradle: Remaking the Way We Make Things*. London: Vintage, 2019.
- “A Brief History of the Modern Green Movement in America.” WebEcoist, November 4, 2016. <https://www.momtastic.com/webecoist/2008/08/17/a-brief-history-of-the-modern-green-movement/>.
- “Deadstock Fabric Is NOT as Sustainable as You Think.” virtue vice. Accessed April 10, 2020. <https://shopvirtueandvice.com/blogs/news/why-fashion-made-with-deadstock-fabric-is-really-just-greenwashing>.
- “HOW MUCH DOES GARMENT INDUSTRY ACTUALLY WASTE?” Reverse Resources. Accessed April 10, 2020. <https://reverseresources.net/news/how-much-does-garment-industry-actually-waste>.
- Lau, Yuk-Lan. “Reusing Pre-Consumer Textile Waste.” *SpringerPlus* 4, no. S2 (2015). <https://doi.org/10.1186/2193-1801-4-s2-o9>.
- Menkes, Suzy. “Fashionable Recycling with Martin Margiela.” *The New York Times*. The New York Times, January 28, 2009. <https://www.nytimes.com/2009/01/28/style/28iht-rbreef2.1.19750955.html>.
- “The Rise of American Consumerism.” PBS. Public Broadcasting Service. Accessed April 23, 2020. <https://www.pbs.org/wgbh/americanexperience/features/tupperware-consumer/>.
- Servantes, Ian, Ian Servantes, Ian Servantes, and Ian Servantes. “Nicole McLaughlin Ventures Out on Her Own With Upcycled Customs.” *Highsnobiety*. Open Menu All News Work from Home Style Sneakers Spring Sales Magazine Shop Search, November 6, 2019. <https://www.highsnobiety.com/p/nicole-mclaughlin-profile/>.
- “What Is a Circular Economy?” Ellen MacArthur Foundation. Accessed April 23, 2020. <https://www.ellenmacarthurfoundation.org/circular-economy/concept>.



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