

Life of A Plastic Dress

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This creative scholarship was inspired by a design challenge I designed for a Junior level Design Studio; the challenge and garment were developed to highlight the environmental impact of design choices in all phases of the garment's life cycle, including end of life. The apparel industry is a complex system involving materials, people, and manufacturing, and it impacts our environment differently in each phase of the design and development process. As an instructor, I considered that educational objectives should progress beyond replication for my students, so they could better understand how to apply and synthesize these to create original ideas. (Anderson & Krathwohl, 2001) This thinking led to the development of this project incorporating design and materials research, Clo 3D, zero-waste patternmaking, natural fibers, and an end-of life decomposition study. Cotton has a complex history, but remains an important natural fiber for comfort, aesthetic, and sustainability reasons, while zero-waste patternmaking has been established as an effective student design challenge (Hall & Orzada, 2014), as well as an ideal way to connect digital patternmaking such as Clo 3D with creative design. (McQuillan, 2020) These project components are compelling for skill-building and knowledge acquisition but can still feel distant from the environmental impact of apparel products; therefore, circularity and end of life impact would be explored by burying the completed garments for several months, then un-earthing them to evaluate the decomposition process on the textiles and notions. This project was supported by an external cotton materials grant, meaning all student projects were made of cotton. The need for a synthetic comparison inspired the design and development of a polyester zero-waste garment to be buried along with the student work. The purpose of this garment would be to provide a visually impactful comparison to the decomposition of the natural fibers in the student work.

The design of the dress was loosely based on an original pattern design from my earlier work, as this pattern's creative shapes suggested an interesting and creative conversion to zero-waste. Using this pattern as a guide, a rough diagram of how the shapes might be converted was drawn in Adobe Illustrator, using the original pattern measurements as a guide for the width and height of the zero-waste pattern. This rough diagram (figure 1) was initially used as an in-class exercise to help students understand zero-waste design. Each student was given a printout of the paper diagram below and as a class we worked through taping it together to make a small dress (figure 2). I then imported this rough diagram into Clo 3D and demonstrated to the students how to work through finessing this zero-waste pattern for specific fabric widths, applying the appropriate digital fabrics, and working through iterations in 3D. After conducting this demonstration and exercise in class, I realized this was the perfect garment to fully develop and execute in 100% polyester as a synthetic comparison to cotton when the garments were buried.

After conducting the demonstration in class and choosing to complete the design development process, I sourced a polyester fabric in my closet leftover from a previous wedding gown commission to use in the garment. The width of the fabric was used to resolve the final zero-waste pattern plan using Clo 3d and 3D prototyping to evaluate fit and aesthetics. Because the dress is symmetric, only one-half a pattern plan was needed, and it laid across a folded cut of yardage to incorporate a fold-cut center front. A dramatic flared skirt is created by an internal

squared cut. The pattern plan was printed, and fabric cut and sewn. Polyester thread was used, and because this design uses ties to cinch the waist, no other closures were needed. (Figure 3)

Once the project was completed, and students turned in their garments, both the cotton and polyester garments were buried. An excavator was used to dig two large holes in the ground where the garments could be placed, location documented with photos, and covered. The garments remained in the ground for over five months. They were then unearthed using the excavator and examined. For the cotton garments, the clayey soil contributed to a decomposition that maintained the form of the textile but melded it into the clay itself. Lighter weight cottons were significantly degraded, heavier cottons were softening, while synthetic notions and threads were intact. The zero-waste polyester garment was stained but completely intact. (Figure 4)

The buried garments were returned to the students, along with photo documentation of the garments, including the polyester garment. In their final reflective reports, students recognized how harmful mixed fibers and treatments were for the environment when applied to cotton garments. They noticed the polyester materials used such as my garment, threads, notions, and zippers remained intact. The project made students consider sustainability and the impact of textiles on the environment in a direct way, and how choices made in the design process both contribute or discourage a circular economy. For the students, this project reinforced the value of hands-on projects that connect students on a personal level to the topic. It adds relevance that makes a much larger impact than simply talking or reading about these issues. While students often discuss choosing natural fibers for sustainable reasons, they now have a much deeper understanding of why this is important. As a researcher, the project resulted in a stunning visual example of what happens to our clothing beyond the use phase. Because synthetics such as polyester can feel soft, fluffy, and gentle, the average consumer is likely completely removed from the reality of how indestructible their clothing is, and how harmful this is to our environment. While I am sharing this in this academic setting first, I would like to find a way to use the imagery to share beyond the academic community to all consumers. The physical reality of how the polyester garment is stained but completely intact is quite impactful against the decomposition of the cotton garments.

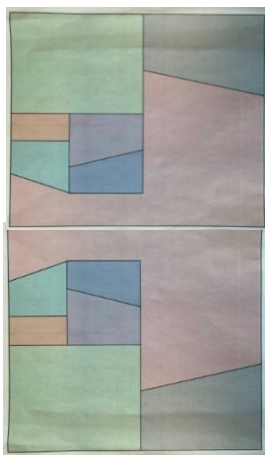


Figure 1



Figure 2



Figure 3



Figure 4

References

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