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Title: Pieced Back Together

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Design Statement:

In my previous creative design research, I have explored the capabilities of digital fabrication tools to manipulate materials, create precise shapes, and 3D-print original objects for garment designs. Working with these tools forced me to carefully consider their role in the making process and their relationship to established garment construction methods. Reflecting on my previous research, I recognized how incorporating this technology altered my approach to making as design, materials, and process informed each other. Intentionally embracing this multi-faceted approach led to the design of this garment. During the creative design process both practical and aesthetic reasons to include digital tools in the design and making process were intentionally chosen to work more efficiently, manage creative risk-taking, and expand the creative power of the hand.

Instead of eliminating the touch of the hand in my work, bestowing an unmistakable digital aesthetic, using the hand to program the laser-cutter opened opportunities to work with precision in a digital environment. Additionally, working digitally allows design problems to be worked out before cutting to minimize risk and waste less material. (McCullough 1996) The concept for this garment was to embrace this working process to make multiples of components that would be assembled into a dress. The first step to designing this piece was to choose the materials that would make up the component design. The material needed to have some weight and cut cleanly in the laser-cutter, so denim was chosen. Denim is a widely used textile with significant social, functional, and semiotic history that not only continues to be one of the most-worn textiles in the world but is one that has often been used for innovative methods. (3dprint.com 2018) Its durable qualities and cotton-based fiber offered resilience as it underwent experimentation and transformation. Still, some stabilization was necessary for the cut edges to not fray away. Prototypes of laser-cutting denim in various weights or with fused stabilizers were completed, with additional testing including “weathering” the prototypes in the washing machine to gauge durability and the appearance of a “worn-in” aesthetic.

The component shape was also developed during these tests; a flower-based shape was selected, but slight differences in scale and petal number were tried. Additional embellishment using laser-cut acrylic was incorporated during this phase of the design process, as materials exploration in the digital fabrication lab was treated as an open-ended process with room for creative discovery. The results of this testing led to the final 6-sided flower shape. These flowers were cut from denim fused with a woven black cotton on the backside to provide stability. Acrylic accents were cut to mirror each petal for embellishment; holes were cut for sewing them to the denim. In addition to the denim and acrylic, expired credit cards were cut and punched to

serve as "washers" for the acrylic pieces. After these pieces were cut and prepared, each was assembled by hand using thread and gold seed beads. The components were then tossed in the washing machine set to the gentle cycle to fray the edges and soften the pieces. (Figure 1) The further manipulation of precise, digitally-developed component design with intense, hand-worked detail and the washed weathering process removes the semblance of rigidity indicative of digital fabrication; however, without the laser-cutter the process would have required a prohibitive consumption of time. These components were developed at a size that allows them to be sewn together in an engineered fashion to create the garment. Attempts to assemble them using a flat paper pattern as a guide failed; instead, the garment was assembled by directly placing and pinning the pieces across the dress form to create a sleeveless tunic. To highlight the detail of the components and embellishments, a simple red sleeveless bodysuit was made to wear underneath. (Figures 2,3,4,5)

Figure 1

Figure 2

This design development process incorporating digital fabrication allowed creative risk to be harnessed in a successful garment. This altered construction process both removed the ability to completely design the piece before beginning the materials manipulation and allowed responsive creativity to be incorporated at each step of the making process. In this way, the machine and hand produced a combined aesthetic. The results of this making process reveal how digital tools can empower hand-worked processes by eliminating tedious, repetitive activities. Instead of eliminating creativity, the time and energy saved can be redirected to risk-taking in the work that will elevate the value and desirability of the components, and eventually the final piece. Future expansion on this research would include the creation of different types of components that place focus on functionality, changing fashion, or size changes. Additionally, the flower shape

used in the final version did not nest well and created significant waste in the cutting process and could be digitally modified to address this in future projects.

Figure 3

Figure 4

Figure 5

This garment design exemplifies the broader approach to design thinking and making that digital technology enables. As Loh, Burry, and Wagenfeld state, "Digital Fabrication has its own sense of authenticity, which is not related to the aura of the object, but to the integrated workflow as continuous designing" (Loh, Burry, and Wagenfeld 2016, p 204). Using digital technology has led to a shift in the way I approach creative design work to a making process that enables and encourages one to be resourceful and take risks while incorporating meaningful elements in design. It highlights the designer's opportunity to affect the end product through expanded knowledge of the tools, processes, and materials available.

Bibilography:

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