Yinyang: The 3D Printed Future of Fashion

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3D printing, innovation, embellishment, harmony

Mentor Statement

Yinyang is an outcome of the final project my student created while s/he was taking my graduate course during the spring semester, 2018. Every student, whether s/he is a graduate or undergraduate, in this class was required to produce creative scholarship developed from her/his own research project as a final project. My student chose to delve into the subject of 3D printing technology and its current and future use within fashion industry for her/his research project. S/he presented a new possibility of using 3D printing; direct 3D printing on textiles. S/he conducted numerous experiments (i.e., 3D printing applied directly on various types of fabrics, such as meshes and different types of organza) until s/he found that silk organza gave her/him the best result.

I chose to sponsor *Yinyang* because it was one of the best works among all the garment produced by the class that met the research requirements (e.g., connection between the paper and creative work, technical proficiency, and originality). This design project was a good example of how an extensive research on the interested subject could broaden the designer's spectrum of creativity. S/he successfully demonstrated her/his mastery of the fundamental knowledge and skills for garment construction combining traditional techniques, new 3D technology and materials. The design of this outfit was cohesive to her/his aim to introduce new possibilities of 3D printing technology to "revolutionize the fashion industry."

Design Statement

"Yinyang" combines the technology of 3D printing (3DP) and traditional textiles with the aim of pushing the possibilities of technology to revolutionize the fashion industry. In the past, the industry has viewed 3DP as an unconventional technique used for prototyping and novel or experimental design. Designers and retailers view 3DP not as a material that will entirely replace current textiles but as a way to provide customers with exclusive and customizable products (Vanderploeg et al., 2017). This extravagance of customization may be the entry for high-end luxury brands to integrate 3DP into marketable designs (Sedhom, 2015). Industry players have envisioned a trend of hybridization where 3D printing technology is coupled with traditional methods to produce hybrid creations (Sim, 2017).

Techniques such as the direct 3DP on textiles offer new possibilities of using the technology in designs without entirely committing or transitioning into fully 3D printed fashion items. Direct 3DP is a method that consists of beginning the printing process, pausing it to lay down fabric directly on the print bed and then continuing to print thus effectively integrating the textile and 3D material. This technique allows designers to think of 3DP as a tool for surface embellishment which doesn't disrupt the entire design process but exposes designers to the technology.

The 3D model for this embellishment on "Yinyang" was designed with inspiration gathered from rhinestone motifs which would work well with the technology's strength in geometric shapes and were also reminiscent of traditional embellishment design. The CAD 3D model files were created using the online source TinkerCAD. Taking methods from traditional block printing techniques, I created two designs which would alternate and extend the pattern seamlessly by repositioning the fabric over the print bed.

"Yinyang" serves as a visualization of the harmonious combination of traditional sewing construction and textiles with new 3D technology and materials. The color choice of black and white aligns with the *yinyang* symbol and emphasizes the contrast of the white 3D printed embellishment upon the black organza. Organza provided sufficient strength and drape while also having a slightly open structure to allow the 3D material to attach to the fabric. The silk organza also symbolizes fragility while representing a traditional couture textile of choice whereas the 3D printed material is strong and considered an unconventional material within the fashion realm. The contrast between the textiles is also seen in the light transparency of the organza versus the drape of the solid, heavy satin. A modern take on the mandarin collar was chosen to pay homage to the Chinese origins of *yinyang* while also communicating new and modern advances in both silhouettes and technology. Imbalance yet aesthetically pleasing form is found in the asymmetrical silhouette and hem of the garment. Fullness draped on the right side appears to defy gravity as the hem falls to a point while the left remains flat, straight, and short. The flat drape of this left side allowed for the 3D print embellished panel of silk organza to lay smoothly over the chest, shoulder, and back. The front embellished panel was layered underneath the white silk organza to intrigue the viewer to look closer and to the back where the panel laid on top to fully reveal the 3D printed embellishment. "Yinyang" was designed without a closure, except for snaps in the collar, as the garment fits over the wearer's head and then drapes from the body. This garment was constructed with traditional construction techniques such as French seams within the sheer organza, clean finish fold-and-stitch satin seams, and hand tacked bias facings on the neck and arm openings.

References

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