

Overloaded

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Contextual review and concept: Overload is a phenomenon that describes the excessive amount of burdens. The concept was first introduced by Bertram M. Gross (Gross, 1964, p. 856) and then applied to several domains. The ensemble described below in more detail was particularly inspired by overloaded carriers used in transportation. These carriers are often seen in underdeveloped countries with limited access to public transportation. They tend to carry excessive amounts of products to maximize the value of time and profit. Among all causes of transportation accidents, overload is one of the riskiest factors to human lives (Liu et al., 2018).

Visually, the organic piles of the vehicle loads form a unique silhouette between the superabundance and weight balance. For example, in the “NeOrient” virtual exhibition, photographer Ryosuke Kosuge presented a photograph with a man with a coolie hat riding a bike with overloaded fish traps (Kosuge, 2020). Different shapes of the fish traps tied at the ends formed an outlandish balance on the wheels. The unique silhouette of the photo was adopted as the metaphor of the excessive burdens to the environment, human beings, and psychological well-being. The overload concept was executed in the ensemble as creating large quantities of trap shape manipulations by using digital technologies and papercraft methods.

Process, Techniques, and Execution: The design silhouette of the inspirational photo was cropped in Adobe Photoshop and laid on top of a female muse model in Illustrator until the construction was proportional. The silhouette was identified as a sleeveless top with an invisible zipper in the center back and a full circle skirt with hook-and-eye closure. The patterns were developed in CLO3D and simulated on a size 4 female avatar to adjust fitting and length. The digitized patterns were printed and cut from the vinyl fabric and then assembled by a home-sewing machine and by hand.



Figure 1. Laser cut trap shape manipulation



Figure 2. Simulated patterns and “fish traps” on CLO3D avatar

To manipulate the fish traps shape, a paper sculpture was prototyped with a square paper (4.25" x 4.25") folded in half and cut four times with half-inch spacing in between at a 45-degree angle (Figure 1). The mirrored cut edges on the unfolded paper were glued alternately on the front and back. The paper prototype formed a rugby ball shape, which is similar to the fish trap. The same methods were applied to the fabric after utilizing laser cutting techniques then assembled by hand. The digital traps were structured in Blender and imported to CLO3D as beads, and then mapped around the neckline of the avatar and back closure to construct the design silhouette (Figure 2). The ensemble was finished with reflective strips and hexagon textured vinyl fabrics (60% PU and 40% Polyester). The hexagon vinyl fabric squares were sprayed with silver shimmer paint on the back and manipulated the "fish trap" structures. The same fabric was also utilized as the skirt belt with hook and eye closure on the back. The sleeveless top and the skirt were made of strip textured vinyl fabric.

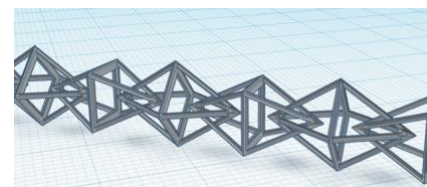


Figure 3. Pyramid chain 3D modeling

To complement the ensemble, a headpiece was designed in reflection of the coolie hat. A full circle with a 9.5" diameter was laser-cut and folded in half. A pyramid-shaped chain was constructed in TinkerCAD to mimic the hat hanging strings. Pyramid shapes (1" length) were 3D-printed with resin and assembled with glue to construct the chain (Figure 3). A hair clip was attached to a holding piece on the edge of the folded circle, and the two ends of the chain were stitched at the front of the circle.

Aesthetic properties, visual impact, and cohesion: The excessive layers of the "traps" formed organic aesthetic as the symbol of the confined capacity. 3D apparel design software, such as CLO3D and Optitex, included expeditious tools to create patterns and simulate fabrics on the avatar. Both laser cutting and 3D printing provided clean edge components to reduce hand-making errors. The top was adjusted due to the size difference between the digital model and the mannequin. By utilizing the virtual design software, laser cutting, and 3D printing technologies, the final ensemble appeared to be visually attuned.

Design contribution and innovation: The fish trap shape manipulation presented a creative way to use paper prototyping, 3D modeling, and decorative avatar simulation. The pyramid chain design experimented with 3D printing accessories in combination with assembling techniques. The final garment reflected the design concept and inspiration to advocate awareness of issues around overload in transportation safety, global resource preservation, and impulse-consuming behaviors.

References

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