

Lucent: Lightweight Waterproof Jacket

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Functional Clothing, Ready-to-wear, Textile innovation

Bust: 35", Waist: 32", Hip: 36"

Lucent is a lightweight and waterproof activewear jacket, achieved by exploring creative pattern making by using a half-scale dress form design process. The initial prototype of this jacket was draped on an Alvanon half-scale dress form (size six curvy) as part of the pre-pilot testing of the Half-Scale Forum created by Susan Ashdown at Cornell University during the Spring of 2015 (Creative Patternmaking, 2016). Throughout the experience, participants were guided through an iterative process of designing in half-scale and reflecting on the process. Iteration is an integral part of the design process because the making of iterative prototypes underwrites a process of critical thinking beyond the first solution.

Modern half-scale dress forms created from 3D body scans are regarded as a novel technical fit tool used by designers (professional and students alike) to create patterns accurately on a small scale because it saves space, time, and investment in fabric (Alvanon, Inc., 2012). In using modern half-scale forms, which are duplicates of full-scale forms in reduced form, the design process is streamlined to create patterns directly from the half-scale form whereas in the traditional use of half-scale forms, final patterns were created in a separate process (Ashdown et al., 2008). Researchers continue to push the application of half-scale forms by creating custom forms in active body positions (Vuruskan & Ashdown, 2015) and 3D printing custom forms (Ashdown et al. 2008).

The *Lucent* jacket was created using this process. The name, Lucent is shortened from *translucent*, meaning "permitting the passage of light: transmitting and diffusing light so that objects beyond cannot be seen clearly (Merriam-Webster, 2016)." The initial concept for the jacket was inspired by the functional clear plastic race capes worn by cyclists to protect them from rain during races. The cyclists' jackets are transparent so that their bike jersey number and logos are still somewhat visible underneath. Luminosity is achieved by using white colored ripstop nylon that is so lightweight (1.3 oz./ yard) it is translucent. The fabric utilized in this design is impregnated with silicone, making it waterproof. Furthermore, the major seams are sealed with Bemis tape, blocking against gusts of wind and sealing in body heat. Finishing touches include a hood and flying joke that further aids in shedding water off the head and shoulders. The garment has a full front zipper, letting the wearer vent if the layer gets too warm.

In the pattern cutting, the intention was to create a design that achieves volume that relates to the human body. This project was an exercise in creative pattern making, which is an approach to which generate innovative silhouettes through uniquely cut patterns that embolden the wearer and intrigue the viewer. Lucent both detaches from and "dances apart from the shape of the body" in the front through spiral-shaped pattern cutting. The back of the jacket flows away from the body through curved princess lines. In addition to selecting lightweight ripstop for the functional properties, it also catches the wind and further enhances the movement of the design. Furthermore, the fabric is so lightweight that significant amounts of the material may be compressed into a small area. In this design, a drawstring is threaded through the outer edge of the jacket (center front through hood). When gathered, the volume of the jacket can be controlled to concentrate the fabric in one area look in the front. The wearer can adapt the shape to their needs.

The jacket is done in the style of Stella McCartney RTW for Adidas 2013 RTW collection. In an interview with Stella, she explains that her collection is about empowering women to pursue sports in a courageous way, "We wanted to celebrate bringing sports outside for summer and encourage people to look

different and express themselves in a bold way. There's a lot of sportswear out there, and I really feel that we still bring something different to the market (Catliff, 2012)." This design also gives homage to 1960s mod designers such as André Courrèges, known for the experimental use of "space-age" materials like PVC. Other modern designers that continue to play with translucent materials in functional/active apparel include Lacoste Fall 2013 RTW, Wanda Nylon RTW 2014, among many others.

The half-scale process contributed to the continuing development of the design because this method allowed me to visualize the design concept in an intermediary form. The initial problem-solving process began by creating a tech sketch in Adobe Illustrator. At the sketching stage, decisions were made about the design look and construction details. Creating half-scale patterns and sewing up the first concept in half-scale allowed me to visualize the garment in an intermediary step. The half-scale process was useful to explore techniques, evaluate the look for cohesion, creative expression, and appraisal of the design to communicate the initial inspiration. Because the critical evaluation was done in the half-scale stage, there was less reluctance to modify the design, allowing the designer to be more open to changes. I was able to see and make changes to parts of the design that were otherwise not addressed in the sketching and patternmaking stage. For example, the underlayer was perceived through the critique process as looking like a "circle skirt," which was not the intention. For the full-scale concept, I reduced the fullness of the design. Additionally, I nearly overlooked the design of the sleeves in half-scale and was able to bring them into the axiomatic function design story of the garment. It was not obvious that the armhole was too small to be functional on the half-scale garment. Therefore, the armhole was dropped on the bodice layers and the sleeve pattern in full-scale. A partial full-scale sample was created to check fitting. After a fit of the bodice and sleeve were approved, the garment was cut from the fashion fabric. After each major seam had been sewed, the seam tape was applied according to the tape specifications using a heat press. All garment components were joined with a Juki 301 industrial lockstitch and all seams were taped.

Because fabric weight has been noted as an issue when designing in half-scale (Ashdown et al. 2008), the researcher intentionally chose a lighter weight fabric for the half-scale sample and fabric with more body for the full-scale test. This strategy seems to work well, where the body of the half-scale garment are replicated in the full-scale work. Facing the center front, hood, flying yokes, and back vent openings with the same fabric did affect the drape of the garment. Future research will explore ways to maintain a finished edge without adding additional fabric bulk.

This method contributed to the creative development of the work by facilitating discussion and iteration. The half-scale sample challenged me to think beyond the initial design. The iterative half-scale process facilitates a dialogue between the creator and the object, sparked new ideas, clarified ideas, and reignited the creative process.

Citations

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