Contouring Method for Zero Waste Design

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Contextual Review and Concept:

Typical methods of patternmaking often produce waste through irregularly shaped pattern pieces to achieve desired garment fit (Carrico & Kim, 2014). Zero waste patterning methods have the potential to entirely eliminate fabric waste by using "patterns made from whole cloth, interlocking pattern pieces, or multiple size or garment pattern layout methods" (Carrico et al., 2022, p. 1). Previous designers have employed zero waste methods to bolster sustainable practices such as the use of spiraling (Moretz, 2020) and gradable zero waste designs (Carrico, 2020; Stannard, 2021).

In order to achieve desired shaping, zero waste pattern cutting often produces pattern pieces that are challenging to sew (Rissanen & Mcquillan, 2016). The concept for the present design was to use knitted ribbed panels to provide contouring to geometrically shaped pattern pieces. This concept was laterally derived from Vionnet who used bias and innovative draping techniques to avoid "traditional side seams, armscye seams, or overarm seams on kimono sleeves. Darts are not used in traditional ways eithers," (Bryant, 1991, p. 73) rather she used bias techniques and geometric shapes to achieve fit in her designs (Kirke, B. (1998). In line with Vionnet's creative solutions for avoiding darts, this design applied knitted rib in areas where traditional darts would provide shaping to enhance the zero waste method.

Aesthetic Properties and Visual Impact:

The current design relies on the formal aesthetic properties of line and color to create visual impact (Sproles, 1981). A monochromatic color in cream was used to accentuate the vertical lines of the design. The knitted ribbed panels augment the design by adding the aesthetic property of texture in the same colorway. Primary connections via congruent colors throughout the parts of the garment add coherence to the design and clarity to the visual relationships within the design (Delong, 1987).

Process, Technique, and Execution:

The ideation process for this design began by exploring the concept of using square or rectangular formed knitted rib panels to shape non-curvilinear geometric shapes and to produce a contoured gown. This design was constrained by the size of a deadstock length of Italian cream silk crepe measuring 57" x 113'and donated angora yarn in cream. The fabric was cut in two equal halves to create the front and back pieces. The pattern was initially developed on a half-scale dress form, measuring the bust span plus ¼" (half scale) seam allowances to create the

center front panel. The length of the panel was determined by the length of the fabric. As the bust is an area of high shaping requirements, the bust apex determined the convergent point of the sleeves and the knitted panels. The kimono style sleeve was measured from the bust point to the shoulder and doubled for the back (i.e., the shoulder was essentially a fold line). The remaining portion of the fabric was used for the two gored skirt panels (see figure 1). The length of the gored panels was measured from the bottom of the front panel, the remaining gap between the skirt panels and the sleeve determined the size of the knitted panels. The half scale design was reproduced in full scale using the same method. A knitted rib swatch was worked on a Brother™ KH-970 knitting machine with KR-850E ribber attachment. A Brother™ KL-117 Knitleader was also attached in order to achieve the correct gauge for the knitted rib panels. The swatch indicated that the Knitleader be set to 15.7cm. The 7.5" x 13" knitted panel pattern were worked in 1x1 rib on the machine using the cream angora yarn. Due to the translucence of the silk fabric, non-knitted areas were French seamed. Knitted areas were surged in place to accommodate for necessary stretch. The front and back of the dress are identical and can be worn in either orientation to have the same effect; the knitted panels contract or expand to accommodate the landscape of the body form.

Cohesion:

The intent for this design was to add to the applied knowledge on the topic of zero-waste fashion design through the contextual lens of historical inspiration. This design employed the additional sustainable step of using deadstock to create a contoured zero-waste design that reduced the complexity of construction that is often inherent in zero-waste designs. The knitted rib shaping concept resulted in a final contoured design that was comprised of minimal and simple geometric shapes, easily assembled with zero fabric waste while achieving the desired silhouette.

Design Contribution and Innovation:

The present design builds on zero-waste pattern techniques by contributing a method by which shaping can be added to geometric pattern pieces using knitted rib in areas usually requiring fabric cutting and fabric waste to shape the garment (i.e., bust, waist, and hip). Typically, the extra pieces cut to provide shaping in some zero waste designs result in the need to design extra details such as additional pockets or embellishment in order to use waste fabric from shaping areas. The current design resulted in uncomplicated pattern shapes that required simple construction without the need to redesign uses for waste pieces.

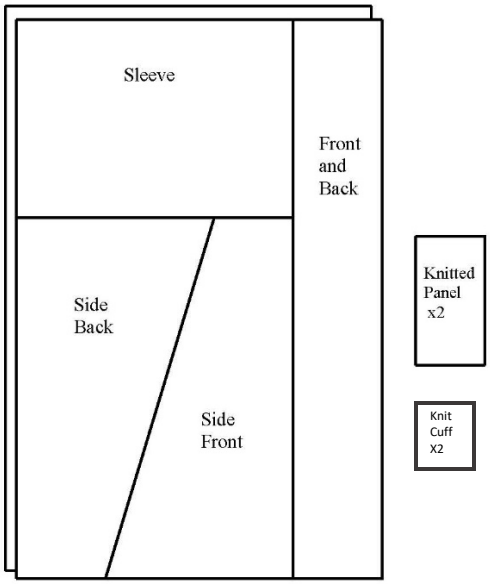

Figure 1. Pattern piece layout and cutting diagram

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