Cradle-to-Cradle Denim: Fringed Dress and Poncho Design

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"Upcycling" is the operation of transforming used products or waste materials into new products or materials of higher quality and value (Kay, 1994). The success of upcycled products leads to achieving long-term production sustainability. According to McDonough and Braungart (2002, 2013), upcycling motivates designers to design and utilize secondhand products. This idea of sustainability is based on a "cradle-to-cradle" approach instead of "cradle-to-grave." Globally, the textile industry is considered the second-largest source of environmental pollution (Ng & Wang, 2016). Numerous studies have found that large amounts of pollution are created from the production of cotton through every processing phase (Fletcher, 2008; Laursen et al., 2007). Due to the facts that cotton is the primary fiber for manufacturing denim and that denim is a high-demand material/product, upcycling denim can dramatically reduce negative environmental impacts (Kozlowski et al., 2012; Young et al., 2004). Thus, it is important that apparel designers adopt sustainable life cycle principles to ensure that discarded materials will be upcycled.

However, there are only a limited number of examples of sustainable fashion practices utilizing creative manipulative techniques that can enhance a product's quality in consideration of functional, expressive, and aesthetic aspects to revitalize the discarded clothing and reduce waste. As Parsons (2015) stated, some contemporary design scholars consider that applying techniques of manipulating fabric in designing garments constitutes a way to eliminate fabric waste. The purpose of this design was to revitalize discarded clothing by adding value through upcycling while producing a sustainable novel design made with secondhand denim. The inspiration for this design was previous contemporary works of upcycling denim and 3D texture created by professional designers such as Issey Miyake and Junya Watanabe. The structural reconstruction method involved changing the material's identity by manipulating fabric via the application of surface design techniques, such as *North American* smocking, weaving, fringing, and laddering to create three-dimensional texture (Wolff, 1996).

The conceptual framework for apparel design that incorporates *the FEA consumer needs model* (Lamb & Kallal, 1992) was used to explain the meaning of the design and to guide the design process. In this model, the first step should entail identification and study of the target consumer as a core to build the design; only then should the designer consider the consumer's desire, preferences, and needs of this design based on the cultural context. The consideration of each design aspect of the FEA criteria depends on the aspect's application in the design: the functional aspect relates to its usefulness and involves a satisfying fit, flexible movement, and donning and doffing elements; the expressive aspect relates to the meaningful aspects of the dress and involves the value elements and the impression that gave; and the aesthetic aspect relates to the satisfying and beautiful appearance and involves the art elements and the body and garment relationship. Thus, the main idea was to focus on producing upcycled denim design that targets a contemporary young woman who supports the artistic and sustainable lifestyle by adopting FEA criteria to revitalize the discarded clothing. By applying the functional criteria to the fringed dress and poncho garment, the bust/waist darts on the dress enabled a satisfactory fit, the loose wide style for the poncho and the sleeveless style for the dress gave comfort and ease of movement, and the closures met the elements of wearable finishes, such as hooks-and-eyes and zippers. The design appeared expressive through the value element as a result of upcycling and sustainability. Also, the aesthetics of the denim texture effectively accommodated the sharp creases and work in retaining the three-dimensional surface. The use of two colors of opposite-sided denim and different hues of blue color achieved particularly interesting effects, and the use of metallic beads accentuated the design details. Utilizing the vertical, horizontal, and curved lines achieved attractive results. Further, the relationship between the creative forms created by manipulating techniques and the human body form is harmonious.

The Cradle-to-Cradle Denim Design included two pieces: the fringed dress (top/skirt) and the poncho. The design was sketched using Adobe Illustrator software. The garment was made by using five secondhand pairs of blue jeans that were collected carefully from the men's section at a local thrift store. The process began with first disassembling the five men's used pairs of jeans. A total of 20 rectangular pieces of denim came out of this step; the waistbands and the pockets were excluded for another project. The second step involved drafting the pattern for each part of this garment: a flat pattern for the top of the dress, a flat pattern and a smocking

pattern for the bottom of the dress, and the traditional weaving pattern for the poncho. The third step entailed making a prototype using muslin fabric for testing the garment. The fourth and final step featured the creation of the unique textile surface design by applying the specific selected techniques of manipulation.

For execution, the lower part of the dress (skirt) used the smocking technique. The pattern of *North American* smocking was drawn on the wrong side of the fabric by marking grids/dots on the grain. The *Bones* style was chosen from *Lattice* designs and stitched manually using a needle and thread by following the instructions of the technique (Figure 1).

Figure 1. The Bones Style of Smoking

After the steps were completed, the rectangular pieces were cut appropriately and sewed together vertically (side to side). The fringing and laddering techniques were used as well to create the unusual effect of hem-finishing. For the upper part of the dress (top), after the bust darts were created, six small rectangular pieces were cut and sewn together vertically (side to side). For the poncho, the weaving and laddering techniques were applied to create the unique textile woven surface design. The designer used an open back wooden chair with spindle detailing. Using the chair was an ideal way to form the woven piece by spinning two distinct sets of denim straps. Tying the straps on three sides of the chair was necessary to balance the form of this homestyle spindle (Figure 2). The straps were cut in two sizes: 11⁄4”/24” and 11⁄4”/42” to create the warp and weft. The ladder technique was applied for every strap to create a dynamic look for the poncho. Fringing techniques were used for the edge of the bottom of the poncho. The designer created four woven pieces separately (front/back) then connected them by leaving an open part in the center for entering the head (Figure 3).

Figure 2. Homestyle Spinder for Weaving

Figure 3. The Woven Pieces

For finishing the pieces, two straps 2" width on shoulder were made and sewn in a crisscross position from the backside. A single-layer binding was made from the same jeans and used to finish the neckline. A 20" length metal chain zipper was used on the side of the dress with two hooks-and-eyes for closure. For the poncho, the neckline and the seam-sides were finished and secured by tightly tying the end of every strap.

The design provides an example of applying a scientific framework in developing used clothing by upcycling men's used pairs of jeans as contributions to enhancing sustainable design practices. This contemporary project provides an inspiration for professional designers to consider three-dimensional surface techniques and discover new methods when using secondhand denim for upcycling.

References

Fletcher, K. (2008). Sustainable fashion and textiles: Design journeys. *Environmental Science and Technology*, *45*(21), 9175–9179.

Kay, T. (1994, October). Salvo in Germany: Reiner Pilz. *SalvoNews*, 14.

Kozlowski, A., Bardecki, M., & Searcy, C. (2012). Environmental impacts in the fashion industry: A life-cycle and stakeholder framework. *Journal of Corporate Citizenship*, *45*, 17–36.

Lamb, J. M., & Kallal, M. J. (1992). A conceptual framework for apparel design. *Clothing and Textiles Research Journal, 10,* 42–46.

Laursen, S. E., Hansen, J., Knudsen, H. H., Wenzel, H., Larsen, H. F., & Kristensen, F. M. (2007). *EDIPTEX: Environmental assessment of textiles*. Danish Ministry of the Environment, Environmental Protection Agency. https://backend.orbit.dtu.dk/ws/portalfiles/portal/7635219/EDIPTEX.pdf

McDonough, W., & Braungart, M. (2002). *Remaking the Way We Make Things: Cradle to Cradle*. North Point Press.

McDonough, W., & Braungart, M. (2013). *The Upcycle: Beyond Sustainability—Designing for Abundance*. North Point Press.

Ng, F. M., & Wang, P. W. (2016). Natural self-grown fashion from bacterial cellulose: A paradigm shift design approach in fashion creation. *The Design Journal*, *19*(6), 837–855.

Parsons, J. L. (2015). Historical patents as inspiration for digital textile and apparel design. *Clothing and Textiles Research Journal*, *33*(4), 280–296.

Wolff, C. (1996). *The Art of Manipulating Fabric*. Krause Publications.

Young, C., Jirousek, C., & Ashdown, S. (2004). Undesigned: A study in sustainable design of apparel using post-consumer recycled clothing. *Clothing and Textiles Research Journal*, *22*(1–2), 61–68.