

Sustainable Fashion Development: Applying Transformational Design

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Introduction

Fashion is like the high-speed rotation of a tire, where styles with a specific set of aesthetic characteristics that are adopted by a group of people during a limited period of time change frequently (Ruppert-Stroescu & Hawley, 2014). Participating in the fashion system involves selective human behavior influenced psychological desires and social needs; people represent their self-identity, social order, self-emotion taste, hobbies and social habits by their clothing preferences (Wilk, 2002). Consumers in the United States change styles rapidly to keep up with fashion (Lang, Armstrong, & Brannon, 2013), and apparel overconsumption is depleting both renewable and non-renewable natural resources (Cao, Frey, Farr, & Gam, 2006).

Engaging the sustainable design theoretical frameworks of C2C (McDonough & Braungart, 2002) and empathic design (Niinimäki & Koskinen, 2011) with transformational design, a method to create products that can be adapted by the user (Zhen Wang, Wang, Lian Yu, Sun, Liu, & Min Wei, 2014), the purpose of this research was to create *The Moment* (Figure 1), a product line that extends the use time of clothing by providing consumers more options for diverse styles within one garment to increase wearing frequency and ultimately reduce the frequency of new purchases and subsequent waste.

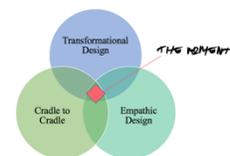


Figure 1:
Intersection of
Theories

Method

A design process that included discovery, incubation, prototyping, and building was employed. The discovery phase of the design process included interviewing members of the college-age target market and observing consumer behavior in three stores known to attract that target market: Madewell, Forever 21, and Urban Outfitters. A consumer profile was developed and product characteristics were defined: utilizing second-hand jeans, employing a pastel color scheme, and including dresses, separates, and overalls. It is important to keep jeans out of the landfill as the 1.5 pounds of cotton used in one pair of jeans needs time to biodegrade (Khalil, 2015). Incubation included determining inspiration (Figures 2 & 3), developing a theme, sketching, and exploring transformational methods. Prototyping included testing four possible transformational methods. Eyelets and lacing were chosen based on time to make, ease of use, style options, aesthetics, and uniqueness. Over 80 sketches were developed, and from them four were chosen for realization based on principles related to aesthetic cohesion and



Figure 2: Mood board



Figure 3: Trend board

transformability (Figure 4). Sample patterns were made, fit to a fit model, and adjusted until optimal fit and aesthetic properties were obtained. During the building stage, the patterns were strategically cut from the second-hand denim, components were assembled, and grommets added.

Results, Conclusions, and Future Study

The specific transformational method for this sustainable fashion collection was to separate each piece of the garment in a modular system where consumers are able to rearrange and restyle their clothing (Baldwin & Clark, 2006). In addition, the metal and denim components can be recycled (Tuncuk, Stazi, Akcil, Yazici, & Deveci, 2012, Urbanchuk, 2011). For example, the long dress (Figure 5) can be transformed into different lengths and can be separated into a skirt, top, bandeau, and tote bag. Offering different styles from one garment increases the use and relevance of the garment.

These garments break the traditional relationship between the garment and the consumer. Rather than passively accepting garments from the market, consumers can style different looks by combining different items of *The Moment* line. Further study will determine to what extent these transformational designs will build a strong relationship between the consumer and the garment, discourage garment disposal, and reduce waste.



Figure 4: Four chosen styles



Figure 5: Style 001 transformations

References

- Baldwin, C. Y., & Clark, K. B. (2006). Modularity in the design of complex engineering systems *Complex engineered systems* (pp. 175-205): Springer.
- Cao, H., Frey, L. V., Farr, C. A., & Gam, H. (2006). An environmental sustainability course for design and merchandising students. *Journal of family and consumer sciences*, 98(2), 75.
- Lang, C., Armstrong, C. M., & Brannon, L. A. (2013). Drivers of clothing disposal in the US: An exploration of the role of personal attributes and behaviours in frequent disposal. *International Journal of Consumer Studies*, 37(6), 706-714.
- McDonough, W., & Braungart, M. (2002). *Remaking the way we make things: Cradle to cradle* (Vol. 1224942886). New York: North Point Press.
- Niinimäki, K., & Koskinen, I. (2011). I love this dress, it makes me feel beautiful! Empathic knowledge in sustainable design. *The Design Journal*, 14(2), 165-186.
- Ruppert-Stroescu, M., & Hawley, J. M. (2014). A Typology of Creativity in Fashion Design and Development. *Fashion Practice: The Journal of Design, Creative Process & the Fashion Industry*, 6(1), 9-36.
- Urbanchuk, J. M. (2011). Life Cycle Analysis For Denim Fiber Recycled Cotton Insulation. Retrieved from <http://fabricmate.com/wp-content/uploads/2016/09/Cotton-Armor-Insulation-LCA.pdf>
- Wilk, R. (2002). Consumption, human needs, and global environmental change. *Global Environmental Change*, 12(1), 8. doi: doi:10.1016/S0959-3780(01)00028-0
- Zhen Wang, W., Wang, Y., Lian Yu, S., Sun, L., Liu, J., & Min Wei, X. (2014). Design for mutual transformation between outdoor wear and camping tent. *International Journal of Clothing Science and Technology*, 26(4), 291-304.