

Reinventing the Windbreaker: Windbreaker Hanbok

Saemee Lyu, California State Polytechnic University, Pomona

Keywords: Sustainability, Hanbok, Heat cutting, 3D printing

The windbreaker is one of the biggest activewear markets with annual increases of sales due to increasing outdoor activities from climate changes. The global retail sales of jackets and coats where the windbreaker is a significant component is forecasted to generate about 94.5 billion U.S. dollars by 2021 (O'Connell, 2019). This steady rise in the popularity of windbreakers made a sizable impact in the apparel industry. Recently, a good majority of the sportswear, casual wear, and designer luxury brands opt to design their unique versions of a windbreaker (Goh, 2018; Greatrex, 2005). Windbreakers offer practical functionalities for outdoor activities, such as being light weight and wind/water resistant, as well as providing temperature/moisture regulation and additional safety features such as ambient light reflection, LED light illumination, etc. Recent advances in technology enable windbreakers to be better equipped with more advanced functionalities for various sporting activities regardless of time of the day or weather (Zaczekiewicz, 2019). Due to the windbreaker's popularity, design elements to improve its practical functionalities have been developed to a great extent. However, the production of windbreakers raises environmental concerns regarding the utilization of chemicals for synthetic fibers and post-consumer wastes that are mostly discarded in landfill (Whang, 2006). Despite these concerns, effective solutions for environmentally friendly use of construction materials for the windbreaker have not been extensively explored. This paper proposes an upcycled design by reinventing the windbreaker to achieve both sustainability and functionality for a global application.

The first objective of this study is to create a sustainable garment using recycled materials to minimize negative environmental impacts while satisfying consumer needs for garment performance. The second objective is more aesthetically motivated; this design aims to combine styles and functionalities from both Eastern and the Western garment features to create an innovative East-West fusion. This design is inspired by Hanbok (Korean traditional clothing) chosen for its diverse design elements possessing distinguishable Eastern looks (Kang & Kim, 2013). The inspiration for the garment is drawn from Durumagi, an outer coat featuring coverage from upper torso to bottom area. This style was selected since it can be worn on many occasions while meeting the necessary physical attributes of a windbreaker. In relevant literature, there are a few examples showing windbreaker designs but there is a lack of studies that pursues a windbreaker design combining both Eastern and Western design elements and also using recycled materials for sustainability; Hahn (2014) developed Durumagi using digital printing technology with new fabrics while Lyu (2018) developed a contemporary Hanbok design using recycled materials for women's top and bottom pieces. Per existing literature, creating a unique multicultural windbreaker design by salvaging textile waste could gain more traction in field of upcycled apparel design.

For a unisex design, two versatile colors, blue and black, were chosen for the body of the jacket and the two other emphasis colors, blue-green and silver, were chosen for decoration purposes. To satisfy the sustainability criterion, three recycled garments were purchased from local Goodwill® stores and two types of fabric scraps were obtained from an apparel production lab. The fabrics from the recycled garments include: 1) Fabric 1 made of 100 % nylon coated with 600 mm acrylic from an athletic men's pant (blue), 2) Fabric 2 made of 100 % polyester from athletic men's pants (charcoal grey), and 3) Fabric 3 made of 100 % polyester from athletic men's pants (black). The fabric scraps obtained from the

production lab include: 1) Fabric 4 made of 100 % polyester (blue-green) and 2) Fabric 5 made of 100 % nylon coated with polyurethane (silver).

In this design, each fabric was carefully chosen to be able to satisfy the essential weather resistant functionalities of the windbreaker. For the body of the jacket, blue Fabric 1 was utilized to effectively provide the overall garment with water and wind resistant capabilities. The original pant was partitioned into several pieces: one whole back piece, two front pieces, and four sleeve pieces. Fabric 2 also provides wind resistant capabilities and is used to create Sup (placket) and Kkeutdong (cuffs) as well as the side panels. The garment has a full lining created using Fabric 3 for a clean finish and to achieve effective temperature regulation.

To augment the functionality of the Eastern style garment, Western style design elements such as inseam pockets and hood were strategically added to the design. The hood is detachable through five sets of metal snaps and made with Fabric 2 for the side panels and Fabric 4 for the center panel. The hood has a lining made with Fabric 3 and mesh fabric from the black men's pant. The waistband was cut from the grey pant and subsequently attached to the hood opening to provide additional durability as well as the desired shaping effects. Blue-green Fabric 4 was used for Git (the main collar) for added visual impact. To further increase the decorative elements of the design, embossed pebble shapes were created on the fabric surface using a fusible interfacing. The silver Fabric 5 was used for Dongjeong (a narrow strap on the collar) to achieve color contrast.

One of the more unique features of Hanbok is the decoration on the placket and cuffs with heat transferable gold/silver foil attached onto the surface to add to the subdued elegance of the design. However, there are some sustainability concerns due to the use of chemical treatments. Additionally, the finish washes off easily, resulting in the garment not being durable. To solve this problem, an alternative cut-out technique was explored. To provide stability to Fabric 2, the fusible interfacing was attached underneath prior to the heat cutting process. The flower patterns on the surface of Fabric 2 was hand-cut using a hot knife and the silver Fabric 5 was under layered to be visible through the cut holes. The silver fabric provides an additional benefit of light reflection which enables the garment to be worn during night-time activities, hence fulfilling consumer needs for performance of the windbreaker.

For decorative purposes, three buttons were designed and printed using a 3D-printer to reduce unnecessary overhead in production of the findings/trims. One cube-shaped button was created for jacket closure and two tube-like ornaments were created and inserted into the edges of the waist drawstring for decoration. Parts of the flower patterns used for the placket was also used for the button and ornaments for cohesion of the design concept. The flower patterns shown on the garment is inspired by traditional flower symbols available from the official Korean Culture Portal (2019), representing peace, wealth, integrity, and fidelity. The button and belt loops were created using the elastic cord from one of the recycled pants. All materials described in the garment creation process were obtained from recycled garments or textile waste except for the metal snaps and interfacing.

This design provides an example of combining functions and design elements from Eastern and Western garment concepts while encouraging the use of recycled materials to ensure sustainability, which is an important world-wide concern. The design and thought processes explored in this paper provide a guideline in sustainable apparel product development and hence could help accelerate the growth of the global sustainable fashion market.

References

- Goh, Y. (2018) The Best Windbreakers Will Help You Survive Spring Weather in Style. *GQ*. Retrieved from <https://www.gq.com/story/the-best-windbreakers-for-spring>
- Greatrex, T. (2005). Windbreaker. *Encyclopedia of Clothing and Fashion*. 3, 433-434.
- Hahn, K. (2014). Magma Shrouds. *International Textile and Apparel Association Annual Conference Proceedings*. 71(1). Iowa State University Digital Press.
- Kang, G. R., & Kim, J. H. (2013). A Study on Fashion Design Incorporating Korean-Style Motifs- Focusing on the Comparative Analysis of the Shape of Hanbok (Korean traditional clothes) Skirts and Skirt Silhouette. *Journal of the Korean Society of Costume*, 63(6), 140-149.
- Korean Culture Portal (2019). Traditional design patterns, Retrieved from <http://www.culture.go.kr/english.do>
- Lyu, S. (2018). Athleisure Hanbok. *International Textile and Apparel Association Annual Conference Proceedings*. 75(1). Iowa State University Digital Press.
- O'Connell, L. (2019). Retail sales of the global jacket and coats market 2012-2021. *Statista*. Retrieved from <https://www.statista.com/statistics/734428/global-jacket-and-coats-market-retail-sales-value/>
- Wang, Y. (Ed.). (2006). *Recycling in textiles*. Woodhead publishing.
- Zackiewicz, A. (2019). Despite Business Disruptions, Activewear Seen Growing. *WWD*, 4. Retrieved from <https://search-proquest-com.proxy.library.cpp.edu/docview/2321864740/fulltextPDF/74934CD86E7E4B4DPQ/1?accountid=10357>

