Title: ***Allelomorph***
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Keywords: Dress-body relationship, transformability, symmetry-asymmetry, 3D printing technology, sustainability

Design Statement

Allelomorph is one of the creative outcomes of a research project that aims to examine the physical and conceptual relationship between dress and body in various socio-cultural contexts and ultimately to define the ways in which dress is established based on different perceptions of body in terms of meaning and form. *Allelomorph* is part of a solo exhibition of the designer's creative works resulting from this research.

Sociologists have defined the body as an imperative component for human activity and have argued that it is constrained by the society in which it is situated (Helman, 1992; Shilling, 1993; Elias 1991). Entwistle (2004) introduced the concept of "the dressed body" which recognized both body and dress as socio-cultural embodiments and phenomena. It is natural to think that perspectives toward the body have been determined in a particular socio-cultural context and are only accepted within that context. Eastern and Western cultures had established substantial disparity in their understanding of the body. The Western body is a substantialized form consisting of body parts, organs, muscles and skeletal structure and separated from the outside world, whereas the Eastern body sits at the interface where the inner and external world meet (Zito, n.d.). Consequently, each culture, with such different perspectives toward the body, has constructed a distinct dress-body relationship. In the West, the dress and body are interrelated and integrated. Hollander (1993; 85), who reads the body shape in close relation to the clothes, argues that western dress is a "visual arrangement" created by a combination of body shape and clothing shape. Dress physically frames the body and reflects the perpetual changes of ideal body shape that occurred in western costume history. On the contrary, the Eastern dress and body displayed an independent relationship, since neither form is dictated by each other. The body becomes invisible within the clothing (Hay, n.d.) and there is no physical resemblance between dress and body.

The design of *Allelomorph* aimed to visualize the distinct 'dress-body relationship' established in Eastern and Western cultures through a form of a single garment. First, the designer focused on ambiguous boundaries between dress and body in the form of a continuous transformation between three-dimensional body-conforming and two-dimensional body-defying silhouettes of the garment. This transformability was achieved by employing 3-D printing technology (Stratasys Fortus 400 Fused Deposition Modeling technology with ABS-M30 Thermoplastic) that allows flexibility and for the contour of the garment to be manipulated into body-fitting or flat modes that float away from the body after assembly. Hexagons and triangles with varying numbers of hinges with pins were printed and joined together to form the side panels of the vest (Fig.1). Some of the 3-D printed triangles were designed with 4 small holes on one side for the purpose of joining. The geometric patterns of the 3-D printed pieces were taken from the motifs commonly used for the Korean traditional roof decoration called

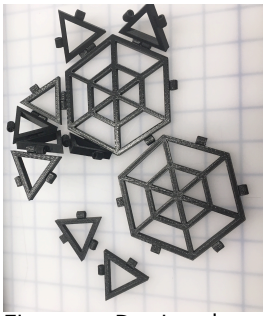

Figure 1. 3D printed hexagons and triangles with varying number of hinges and pins

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At a glimpse, *Allelomorph*, consisting of a strapless dress and vest, appears to be in a perfect symmetry but there are a number of innovative design elements creating a subtle asymmetry within this design. First, each side panel of the vest made of 3D printed pieces was assembled in a different configuration, therefore it can be manipulated into different silhouettes (either more body-fitting or more independent of the body). Secondly, there are openings (i.e., vertical slits in different lengths dispersed from top to hem) along the skirt seam lines, which are intentionally placed to create asymmetry. Parts of the tulle underskirt can be pulled through these slits to create interest and contrast in texture. Lastly, 5 sets of ties sewn inside the skirt at the waist and at various levels from top to hem allowing the designer (and wearer) to give a myriad of silhouette options. The length can be adjusted, as well as shape and size of the silhouette. The title *Allelomorph* represents how a pair or series of alternative or reciprocal design elements can be juxtaposed within a single garment and produce a hybrid form.

The designer used sustainable design methods as soon as s/he learned most Korean traditional fabrics come in narrow widths ranging from 13 to 22 inches: s/he minimized fabric waste by using the full width of textiles and no-waste cutting of fabric into length shaped to fit the body by means of pleating. The skirt of this dress was made of 5 long and narrow panels of Korean ramie (59 inches long and 13 inches wide). To utilize the fabric panels without producing waste, the edges of each panel were narrowly overlapped, from a central panel outward, and top stitched with a ¼ inches overlap seam**.** These joined panels also have the intentional openings in the vertical seams for the underskirt to show.

The main colors used for this project are black and white, reflecting the harmonious union of *yin-yang* symbols, an ancient underlying philosophy and practice that informs every facet of Eastern culture. The main materials are Korean traditional silk and ramie, mesh-neoprene and tulle. In order to emphasize the formative uniqueness of each design, the elements of color and surface motifs were purposefully not introduced.

This design project resulted employing an innovative approach to realizing different dress-body relationships established in the Eastern and Western cultures and demonstrating how new technology can be applied to broaden the spectrum of creativity and feasibility through the design process.

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