

Reborn Phoenix

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Concept Statement

Fenghuang (鳳凰), a Chinese phoenix, is an imaginary bird combining a chicken's head with the shape of various animals, such as a swallow's chin, snake's neck, turtle's back, and fish's tail. It symbolizes "precious and auspicious" and has been widely used in various fields such as architecture, decoration, instruments, and clothing throughout Northeast Asia from ancient times. In Korea, Fenghuang pattern meaning virtue and grace, was mainly used for the queen's court dress in the early Joseon Dynasty, and later, it was worn by noble women to pray for birth, prosperity, and comfort. Recently, as K-pop artists such as BTS and Blackpink wear Hanbok with patterns of gold or silver leaf as stage costumes or daily clothes (*The Top 5 Moments for BTS and Hanbok*, n.d.), the popularity of wearing those showy costume are soaring among Korean Gen Z because they think it is cool (*Trend*, n.d.). According to Joo & Jeon (2014) there have been various attempts to adopt or modify traditional clothing elements (form, color, pattern & detail) in Korean vernacular fashion design. However, fusing traditional cultural sources with new technology is still promising. As the Fenghuang has been used in the court robes of queens and high-ranking women in the past, this design intends to add value to the wearer by applying it to contemporary women's clothes with new technology.

Aesthetic properties

The original image belongs to the folk painting and an inlaid Hwagak (ox horn) box in the Joseon Dynasty. In the case of folk paintings, the phoenix is expressed with the sun, paulownia, and characters, and the contrast between rhythmic lines and complementary colors gives a modern feeling. In addition, the phoenix on the box also conveys a strong dynamic with a clear contour and complementary color contrast. To implant these traditional aesthetics into our modern life, the images were reborn and applied by digital and 3D printing on jumpsuits and a top, respectively. Each clothing item was made of transparent polyester organza to reveal the beauty of superimposing, one of Korea's representative aesthetics (Kim, 2009), and fused Western clothing items and Korean detail, such as flat pattern construction and sagged sleeves. On the other hand, the Fenghuang pattern was 3D printed in vivid green filaments in contrast to the brownish layers to add a more vibrant mood.

Design methods

First, the phoenix on the folk painting was digitally printed on a transparent organza, and the image of the Hwagakham was 3D printed on the top. Historically, phoenixes have been mainly

embroidered or expressed by gold leaf in traditional costumes in Korea. Instead, this study tried to express Fenghuang patterns in a modern way through digital and 3D printing. The design process is as follows.

- i) The clothing pattern for the jumpsuit was drawn on paper, and it was corrected through toile fitting and then digitalized on a life-size using Illustrator CC.
- ii) The printing pattern was customized to the life-size front and back parts. Considering the layer, the original images were mapped to the desired location over the digital CAD pattern.
- iii) Geometric patterns were gradually reduced to 95% of the actual size of the pattern block and then placed on the original image. It gives the clothing a sense of space by creating a vanishing point in the middle, like a one-point perspective.
- iv) The phoenix image for the top was modeled in 3D Illustrator CC, sliced with a PrusaSlicer, and printed by Original Prusa's i3 MK3S+ with Filamentum's 98A TPU filament to increase flexibility when actually worn. Based on the study of Cheung & Choi (2023), the nozzle temperature was set to 240 degrees, the Z-axis was set to 0.30, and the printing speed was set to 20 m/s. The printed panels were placed on the front and back of the bodice, and sleeves were attached according to the flat construction of the Hanbok. First, the phoenix on the folk painting was digitally printed on a transparent organdy, and the image of the Hwagakham was 3D printed on the top. Historically, phoenixes have been mainly embroidered or expressed by gold leaf in traditional costumes in Korea. Instead, this study tried to express Fenghuang patterns in a modern way through digital and 3D printing.

Implication

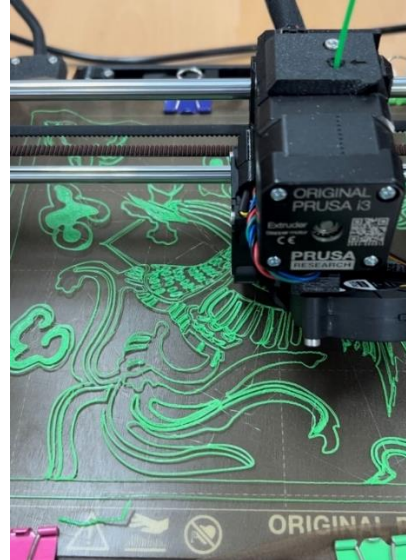
This study is meaningful in that it connects the past and the present and inspires future fashion design by expressing traditional materials through new technologies such as digital printing and 3D printing. In particular, traditional methods of expressing patterns, such as gold foil and embroidery, are difficult for individuals to do at home, but surface decoration through 3D printing provides opportunities for individuals to print the design directly onto the fabric or garment they want. In addition, it will be an opportunity to awaken the value of tradition to the younger generation and understand their culture more deeply. Hopefully, this study will give insight to students studying fashion design and practitioners considering historical and cultural sources in fashion design development.



[Fig. 1] Gosado (故事圖), Anonymous, Korean Empire, Painting



[Fig. 2] Hwagakham (華角函), Joseon Dynasty, Ox Horn Inlaying



[Fig. 3] 3D Printing on fabric

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