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Farvasi: A Response to Ecological Concerns

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Bust: 34", Waist: 26", Hip: 35"

In apparel industry, each stage of production cycle produces extensive waste: fabric is left on the cutting room floor, muslin is used for multiple fittings, and a large amount of paper is used in the patternmaking process. Further, huge amount of energy is consumed through their production process. This amount of waste and energy is leaving considerable ecological footprint.

The United States population is growing from 328 million in 2019 to 403 million in 2060 (Vespa, Armstrong, & Medina, 2018). Therefore, the population's need for apparel products will increase in accordance. Consumers are now more aware of environmental issues and their purchase behavior is positively influenced by social responsibility of apparel brands (Brosdahl & Carpenter, 2010; Cone Inc., 2008). However, it is still an important responsibility of apparel designers to contribute and reduce the negative environmental impacts of the industry through the application of ecofriendly techniques. Felting is an ancient technique that uses wool fiber as an environmental-friendly material to produce garments using a renewable resource. Nuno felting, developed by Polly Stirling in 1990, is a more recent felting technique that applies wool in combination with other fibers like silk (Schofield & Kilfoyle, 2014). The advantage of this technique is to produce lighter garments able to be worn in different weather conditions (White, 2007). Also, 3D seamless felting is a pivotal technique within the medium of felt. This technique produces garments without any need to sewing machines.

The current project aims to bridge the contemporary world to cultural treasures through its inspired design and importantly, to produce a zero waste and biodegradable garment via integration of Nuno and 3D seamless felting techniques and application of CAD systems. The garment is intended to present a dramatic dress to the women who care about environmental issues in addition to the beauty aspect of clothes.

Farvasi was inspired by the most powerful spiritual symbol of Persian culture, Farvahar, which stemmed from Zoroastrianism, dating back to 600-530 BC. Zarathustra was the first to suggest the four-element theory (Habashi, 2000). According to this profit, air, water, earth, and fire are four "sacred" elements in the environment and should be treated with love and respect. Humans and animals need air to breathe, water to drink, fire to cook food, and earth to grow plants for their survival. This has caused Zoroastrianism to be known as the first ecological religion (BBC, 2009) with emphasis on the three core principles of nice thoughts, nice words, and nice deeds.

Farvahar conveys significant meanings in its different parts. The side wings (A) include three rows of feathers, representing good thoughts, good words, and good deeds. The lower feathers (B) symbolizes bad thoughts, words, and deeds. The two loops (C) convey the message of looking forward for the good in life and turning away from the bad. The middle circle (D) emphasizes circle shape of earth and its endless spirit. Finally, the ring held by the left hand (E) represents loyalty and faithfulness (Pandey, 2015).



Four colors of superfine merino wool and 100% silk fabric were selected to convey the ecological concern of Zoroastrian: green (earth), blue (water), white (air), and orange (fire). The wide shoulders in three colors represent the three principles embedded in Farvahar wings. The enlarged width of the shoulders symbolizes goodness (wings) overcoming badness (lower feathers). The circle collar and circle buttons placed at the center back are presenting the endless spirit, loyalty and faithfulness.

The process began by creating a pattern using the Gerber PDS to eliminate the waste of paper at the stage of patternmaking. The fit was evaluated on a virtual model in Runway Optitex 11 to omit the waste of muslin in pre-production. The finalized pattern was printed and applied for front and back bodices, accounting for the expected shrinkage during the felting process. After arranging the wool fibers on the silk fabric, soapy hot water was sprayed and the fibers were rolled with a bubble wrap. The combination of heat, moisture, and agitation caused the wool fibers to migrate into the silk fabric. To make a seamless garment, the flat patterns were separated by a plastic wrap and the fibers on the both sides came together and were felted. The garment was placed on a dress form and custom shaped into a 3D object. After forming, felted feathers were applied to the dress via needle felting. Lastly, the felted buttons and loops were hand stitched to the opening center back.

With the use of felting techniques and CAD systems, Farvasi was produced with renewable fibers, least amount of energy consumption, and zero material waste to help with reducing environmental issues.

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**References**

- BBC. (2009). Religions - Zoroastrian: God, Zoroaster and immortals. Retrieved from <http://www.bbc.co.uk/religion/religions/zoroastrian/beliefs/god.shtml>
- Brosdahl, D. J., & Carpenter, J. M. (2010). Consumer knowledge of the environmental impacts of textile and apparel production, concern for the environment, and environmentally friendly consumption behavior. *Journal of textile and apparel, technology and management*, 6(4).
- Cone Inc. (2008). 2008 Green Gap Survey Fact Sheet. Retrieved from <http://www.conecomm.com/>
- Habashi, F. (2000). Zoroaster and the theory of four elements. *Bulletin for the History of Chemistry*, 25(2), 109-115.
- Pandey, A. (2015). *Proposal to Encode the 'Fravahar' Symbol in Unicode*. Retrieved from <http://www.unicode.org>
- Schofield, S., & Kilfoyle, S. (2014). Entangled: Fiber to Felt to Fashion. *Kent State University Museum*. 5.
- Vespa, J., Armstrong, D. M., & Medina, L. (2018). *Demographic turning points for the United States: population projections for 2020 to 2060*: US Department of Commerce, Economics and Statistics Administration, US Census Bureau.
- White, C. (2007). *Uniquely Felt: Dozens of Techniques from Fulling and Shaping to Nuno and Cobweb: Includes 46 Creative Projects*: Storey Publishing.

