Inside-Out, Back to Front

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Introduction: This design concept, Inside-Out, Back to Front is part of an ongoing qualitative research project that investigates tactile design strategies for vision-impaired people. The user-centered methodology has proceeded all parts of this study to make sure the proposed design concept meets the clothing needs of vision-impaired individuals. In two focus groups with 20 total participants, vision-impaired people were asked questions about their clothing needs, and material preferences to identify specific types of fabrics that provides the users a pleasurable tactile feeling. Inside-Out, Back to Front focuses on techniques that facilitates the identification of clothing elements for blind or vision-impaired individuals by using strategies such as adding raised textures to assist the user to locate specific parts of the garment as well as creating the same back, front, inside, and outside to reduce the user's need for touching the garment to identify the direction of it.

Literature review: There is a continuing popular belief, sometimes referred to as "sensory compensation," that blindness is accompanied by an improvement in the basic acuity of the other senses, particularly hearing and touch (Warren, 2003). The haptic (after a Greek word for touching) perceptual system uses a combination of tactile and kinesthetic information about the environment. Tactile information is gathered by stroking the fingers across an object to provide information about its texture, or by pressing on an object in order to determine how soft or hard it is, or moving fingers around the perimeter of an object to gather information about its shape (Lederman, 1993). Previously scholars such as Yang, Yuan, and Tian have examined assistive clothing pattern recognition for visually impaired people. In addition, apparel scholars such as Chang and Lee have studied special apparel needs of customers with visual impairment. This design concept is an extension of their work, focusing on clothing identification for vision impaired individuals by facilitating this task for them with assist from particular design strategies.

Concept: According to the statements of the participants of this study, they need to touch the neckline of their garments to find the label of the dress to identify the direction of their garment. However, apparel companies sometimes use a stamp or heat-press label instead of a woven garment label to indicate the back neckline of the dress. "Labeless" garments make it difficult for blind individuals to identify the direction of the garment, especially if the garment has a round shaped neckline as the front and back appears the same for them. Therefore, the design strategy was to create a garment for women that is reversible and at the same time is the same back and front so users can donn the dress without worrying if the garment is being worn correctly.

Patterns: The back and front of the dress are the same and the garment is fully reversible so wearers do not need to search for the inside or outside of the dress. Three different patterns were developed to reach the final and desirable result. Each pattern was followed by muslin and fitting test to assess if the garment fit well in both front and back. A shoulder dart helps the garment follow the shape of the body around the shoulder on both front and back. The dart is followed by a deep pleat that gradually expands towards the hem of the dress.

The pleat can be gathered right below the bust by means of magnets that are sewn inside the garment on both sides of the pleat. In this way, the garment gets shape below the bust. A round elastic cord was inserted around the neck and sleeve hems to fix properly the inside and outer layers to minimize the chance of sliding layers when the garment is worn.

Aesthetic: A knee length dress with a full skirt was designed to accommodate the focus group participants. According to the statements of the participants, too many buttons, separating zippers, and any other kinds of openings that might be easy for a normal person is complicated for blind individuals. Therefore, this garment has no openings. The collar of the dress is designed in the way that easily fits over the head, but does not look too large or too small. The raised texture in the form of padded shapes has been used in parts of the dress to assist the user to locate pockets without searching for the pockets for long time as well as add aesthetic feature to the garment. The pattern is made with foam inserted between the two layers. The foam was cut in the shape of rectangles and attached on the fabric first by the fabric glue on the specific spots and then contained by a line of topstitching that goes through both layers.

Color consideration: A beige color and a neutral color was chosen for the garment based of statements of the focus group participants. According to the statements of the participants, most of blind individuals use seeing eye dogs for assistance. Although these amazing animals greatly help people, their hair easily attaches to their garments and they always have an adhesive role to remove the hair from their garments. The color consideration for this garment helps the hair to be camouflaged in the dress.

Material consideration: Vision-impaired and blind individuals cannot safely iron their garments. According to the statements of the participants, ironing is a dangerous task for them. Therefore, the materials used in the garment were a 100% wool twill with cut pile backing and 100% cotton twill with a terry cloth loop. Both fabrics are heavy weight and were chosen because they would not wrinkle much.

Measurements: Female medium (size 6-8): Chest: 34”; Waist: 26”; Hip: 35”

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Reference:

Lederman, S.J. and Klatzky, R.L. (1993). Extracting object properties through haptic exploration. *Acta Psychologica*, 84, 29–40.

Warren, D. H. (1994). *Blindness and children: An individual differences approach*. New York: Cambridge University Press.

Yang, X., Yuan, S., and Tian, Y. L. (2014). Assistive clothing pattern recognition for visually impaired people. *IEEE, Institute of Electrical and Electronics Engineers, 44,* 2.

Chang, H. J., and Lee, S. Y. (2015). *Special apparel needs of consumers with visual impairments*. Poster presented at International Textile and Apparel Association (ITAA) Annual Conference, Santa Fe, NM.