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Maintaining Design Aesthetics

Case studies investigating grading for body shape variation; the translation of garment designs to fit fuller figured women

An essay presented in partial fulfilment of the requirements for the degree of
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Abstract

Fit problems continue to plague the women's fashion design industry. Complete garment fit for women whose bodies are not the standard size or shape can be difficult to find or non-existent. Yet, fit is an essential design feature. In this design-led research project, I have used techniques of grading to translate design details into other sizes, while maintaining the design aesthetic. This mode and process of grading and fitting complex designs to a variety of body shapes is sensitive to line, shape and form and ultimately reveals the potential to cater to a wider garment-wearing audience.

Selecting various fuller figured women's body shapes to use for parallel case studies allowed techniques for analysis of shape and its effect on pattern to be developed, and shape-based-grading rules created. A collection of draped dresses developed in the base size acts as a challenging test for this shape-based-grading model. During shape-based-grading, pattern pieces are morphed to reflect the underlying body shape of the fit models in the case studies. Using Gerber Accumark pattern design software facilitates the incorporation of body shape into grading practice and the translation between the 2D and 3D realms. Shape-based-grading is used to develop patterns that fit fuller figured women and yet maintain the design aesthetic.

The process of shape-based-grading has been successfully implemented when applied to non-complex designs of fitted straight grained dresses. When applied to an intricate draped dress, shape based grading was successful in achieving fit, however, the design aesthetic was partially compromised by complications related to fabric behaviour. Fabric behaviour was incorporated into the grading for the draped dress, and patterns fully maintaining the design aesthetic are presented for each fit model in the case studies.

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Ethics

This project is a series of parallel case studies requiring the participation of human subjects to act as fit models during the design and fitting process. The ethical requirements set out in the Massey University ethics application, information sheet, and consent form has been followed. Following approval for my application to use four human fit models, I have removed any identifying markers on the fit models. For this purpose, I developed a stand-in face that would allow the reading of the garments and images to be consistent and unimpeded by the disguising of the face. This face is a merging of several different faces. This was only possible for front view images. For the side images the face has been disguised by blurring the image of the face.

Terms and Abbreviations

	Terms
The scientific study of the measurements and proportions of the human body (Oxford University, 2010).	Anthropometry
The straight lines on a graph that are used as reference for the measurement of an object. The x axis is horizontal and the y axis is vertical. These x and y axes are at right angles to one another (Moore, et al., 2001).	Axes (x/y)
The starting reference for grading. Master patterns are developed and trued for the sample size and then graded to other sizes within the given size range (Moore, et al., 2001).	Base Size
A general description, as the word suggests, for a lack of distortion (Taylor & Shoben, 1990).	Balance lines
A template of the basic pattern/shape upon which design details can be superimposed (Cooklin, 1990). Blocks are used for flat pattern design and consist of the minimum number of pattern pieces for a basic fitted garment. They are free of fashion details. They do not have seam allowances and all darts extend to their respective pivot points. Known in America as slopers (Moore, et al., 2001).	Block
The process of entering the pattern piece, along with its identifying information, into the computer. The information is translated into the format required by the specific computer so that shape and size of each pattern piece can be worked with and manipulate (Moore, et al., 2001).	Digitizing
A patternmaking system that relies on fabric in creating design (Joseph-Armstrong, 2008).	Drape
The amount of ease in a garment necessary to allow the wearer to move freely (Moore, et al., 2001).	Ease
An individual whose body measurements reflect those of the sample size for the target market for which a manufacturer produces. The fit of garments is tested and perfected on the fit model (Moore, et al., 2001).	Fit model

Girth	Circumference body measurement (Moore, et al., 2001).
Grading	The process of systematically increasing and decreasing the dimensions of a master pattern into a range of pattern sizes for a specific design (Moore, Mullet, & Prevatt Young, 2001).
Grade rules	The written record of the designated movement required to grade a pattern for a range of sizes. Each grade point on a pattern piece requires a grade rule (Moore, et al., 2001).
Hand/ Handle	How the fabric feels to the touch, its weight and responsive movement (Joseph-Armstrong, 2008).
Lining	An additional layer of material attached to the inside of a garment (Oxford University, 2010).
Morphing	Undergo or cause to undergo a gradual process of transformation (Oxford University, 2010).
Mannequin	A model of a human body representing a specific size (Campbell, 2005).
Nest	An illustration of a set of pattern pieces showing all sizes within a size range stacked along a common reference line. The nest illustrates the differences in each successive size (Moore, et al., 2001).
Pattern	A diagram of each of the component pieces required to construct a garment (Moore, et al., 2001).
Prototype	A test sample of actual materials used to test the product for fit, durability and design translation. Provides the most accurate measure of materials and production costs (Fasanella, 1998).
Shape-based-grading	A system of grading that morphs the master pattern to various underlying body shapes (Freeth, 2010).
Toile	An early version of a finished garment made up in cheap material so that the design can be tested and perfected (Oxford University, 2010).

Abbreviations	
Centre Back	CB
Centre Front	CF
Side Seam	SS
Computer Aided Design	CAD
Ready To Wear	RTW
Made To Measure	MTM
Two-Dimensional	2D
Three-Dimensional	3D
centimetre	cm
millimetre	mm
Bust	B
Under Bust	UB
Waist	W
High Hip	HH
Hip	H

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