

**A Practical Investigation into Flat Bed Weft Knitting, its
Relationship to Digital Technology and it's Use to
Accommodate and Enhance Women's Three
Dimensional Body Shapes, Particularly those Outside
UK Standard Sizes.**

by

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Background

It is predicted that the end of the Multi-Fibre Agreement (2005) and consequent competition from the Far East will be detrimental to the European Textile and Fashion Industry.¹

Discussion about standardisation of garment sizes² has led to debate over bespoke clothing³. (Berry, 2000) Research in the USA⁴ reveals that larger sized consumers seek better fitting, comfortable clothing; customisation's underlying principle. (Berry, 2000) It is possible that the declining British knitting industry (Orton, Gurdeep and Courtney, 2004) can move into associated niche markets.

The 'outsize' clothing market is expanding; currently twenty four million adult Britons are overweight⁵, whereas in 1980 only 2.5 million were classed as such. (Laurance, 2004) The average British woman has a proportionally larger stomach and waist than her 1950's counterpart, and is a size 16.⁶ Paradoxically, women of size 16 and above find clothes shopping frustrating, humiliating and fruitless. (Shabi, 2004) This contiguity presents an interesting and novel area of investigation.

UK consumers spend £23 billion a year on clothing⁷, when viewed in the context that two thirds of British women are overweight (Laurance, 2004)⁸, a picture develops of a dissatisfied yet growing market.

Aims and Outcomes

Is the primary value of knitted fabric on larger bodies its inherent stretch? This research questions whether such a method of achieving fit is satisfactory by exploring shaping methods in combination with direct body shape data. It also challenges the 'norm' of the size 12 woman, (disproved by SizeUK findings)⁹ and the horror of fat which is demonstrated from haute couture (Evans, 2003, p85-96) to the high street (Shabi, 2004).

¹ Mowbray J., October 2002, Industry at the Crossroads, *World Congress: Knitting for the 21st Century*. pp 1-3.

² Langenegger, Rolf, 2002, *One Size for Europe – a garment sizing system for Europe*, Avantex Conference, Frankfurt.

³ Strunk, G., 2002, *Technological Prospects and Limits of Made-to-Measure Wear from the Apparel Manufacturers Point of View*, Avantex Conference, Frankfurt.

⁴ National Textile Centre, USA. (Project 198-A08).

⁵ Overweight is assessed at a BMI of 25-29.9 and obesity at a BMI of 30 or greater. <<http://nhlbisupport.com/bmi/bmicalc.htm>>, Accessed 24.11.2004.

⁶ SizeUK findings. Shabi, One Size Fits All, *Guardian Weekend Magazine*, 16.10.2004.

⁷ Shabi, *Guardian Weekend Magazine*, 2004.

⁸ There are 24 million adults in Britain with a body mass index of 25 or above, which is the clinical level for obesity, whereas in 1980 only 2.5 million British were obese. Jeremy Laurance, "'Sick Nation?' and 'Portrait of a Nation Addicted to Fatty Food, Alcohol and Tobacco'," *The Independent* 16 November 2004.

⁹ Results of the SizeUK survey conducted in 2001-2002 showed that the average British woman weighs 3.3kg more than her counterpart in 1951, and is on average a size 16, 5ft 4" tall with bust 38", waist 34", hips 40.5". Also that the 'hourglass' figure is dead, as the average hips are 6.5cm bigger and waists 16.5cm bigger than in the 1950s. {Shabi, *Guardian Weekend Magazine*, 2004, p26.

Outcomes are anticipated to include creating a vocabulary common to both designers and technicians, thereby enabling the production of bespoke knitwear for larger women.

Methodology

Case study, qualitative methodologies allow multi-method, reflexive and evolving research within a selected participant group, whilst siting the question in its real-world setting. (Marshall and Rossman, 1999) A pilot study has commenced, the results of which will be available by June 2005.

An electronic survey, derived from the Heath Carter endomorphic somatotypes, (Carter, 1980) is gathering additional body shape information.

Measuring

Measuring the body is by traditional methods and exact body ‘clones’ of the participants facilitate experiments. Measurements are between pre-established landmarks; negative spaces are gauged and stance documented, establishing the body’s proportional girth and silhouette. Drawings, photographs and video provide a visual record and data for knit prototyping.

Knitting

Samples are knitted on a 12gge Shima Seiki 102ff machine and SDS1 system at the University of Brighton. This versatility pursues a thread of the research; enabling bespoke knitwear through a dynamic, digital relationship with the consumer.

Consistency of yarn is established, which pre-supposes the price point of custom made knitwear will initially justify a quality fibre. (Berry, 2000).

Single jersey is the selected structure; it is supple and not as complex to ‘read’ as other structures when shaped around the body. Purl fabric constructions provide permanent surface-pattern-to-stitch ratios to show distortion. (Smirfitt, 1975), (Spencer, 1983) Narrowing, increasing, stitch quality, gathering, progressive doubling and fléchage will add three dimensional shape.

Tests of knitted shapes on the body will make particular note of wrinkling, strain, bulk, flare and drape.

Conclusion

Relationships between body shape and fabric is currently found to be the most contentious over protruding parts of the body, specifically bust, hips, stomach and particularly around the shoulders. Space between body and knitting over concave body areas is directly influenced by the degree of ease introduced elsewhere. The investigation of ease and its application to specific areas represents the ongoing practical content of the research.

Author Keywords: Bespoke knitwear; Innovation; Body size; Knitting; Endomorph

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