

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

**3D contoured fabrics:
proposing a new product and
story for New Zealand wool**

**A thesis presented in fulfilment of the
requirements for the**

**Master of Design
in
Textiles**

at Massey University, Wellington, New Zealand

**Theresé Hollingsworth
2002**

ABSTRACT

The 90s saw significant changes in the way New Zealand wool fibre was marketed to maintain a position in an increasingly competitive global market. This research has suggested that New Zealand textile design has been under-utilised as a means of adding value to this commodity and set out to investigate how design in conjunction with technology and marketing could create a new product idea and propose a new story.

Investigations into design, technology and marketing were carried out within a generic product design framework for a defined textile interior product. Research ceased at the point at which a product story could be proposed.

Woven prototypes developed through studio practice explored a 3D contoured aesthetic for New Zealand wool fabrics incorporating specialist yarn technology, and manufacturing capabilities were assessed to determine whether New Zealand industry could feasibly produce the resultant fabrics.

Approaches to the marketing of New Zealand wool were investigated through case studies of businesses involved with the manufacture and marketing of wool fibre/product.

ACKNOWLEDGEMENTS

Thanks to:

Massey University's Textile Design programme for providing me with the knowledge, fervour and opportunity to embark on this course of study.

Amanda Bill, as Supervisor, for her encouragement and astuteness.

The following business persons associated with the New Zealand textile industry for generously giving of their time and knowledge:

Sheila Reimann, Deb Clinton-Baker, Hugh Bannerman, Jeremy Moon, Len Buttner, Tracy March, Jacqui Emslie, Surinder Tandon, Denis Maddever, Jack Watt, and finally, the design retailers of Wellington.

TABLE OF CONTENTS

	TITLE PAGE	i
	ABSTRACT	ii
	ACKNOWLEDGEMENTS	iii
	TABLE OF CONTENTS	iv
	LIST OF FIGURES	viii
1	INTRODUCTION	1
	RESEARCH AIM	4
	QUESTIONS	4
	OVERVIEW	5
2	LITERATURE REVIEW	7
	PRODUCT DESIGN MODEL	7
	DESIGN AND TECHNOLOGY	9
	MARKETING	15
3	METHODOLOGY	18
	PRODUCT DESIGN MODEL	19
	DESIGN AND TECHNOLOGY	20
	AESTHETIC	21
	FIBRE, YARN AND TWIST	22
	WEAVE STRUCTURE AND SETT	23
	FINISHING	23
	MANUFACTURING ASSESSMENT	25
	MARKETING	26
	PRODUCT DESIGN MODEL	26
	Participants	28
	BUSINESS CASE STUDIES	31

4 IDEATION TO GATE 2 32

DESIGN AND TECHNOLOGY MARKETING

IDEATION	32
GATE 1: First Screen	34
STAGE 1: Preliminary Investigation	34
GATE 2: Second Screen	36

5 STAGE 2 37

DESIGN AND TECHNOLOGY

RESULT 39

AESTHETIC/TECHNICAL ANALYSIS 39

AESTHETIC 39

Design 39

Handle 40

Texture 41

Drape 42

FIBRE, YARN AND TWIST 42

Innovation in Yarn Production - LincLITE 45

WEAVE STRUCTURE AND SETT 46

FINISHING 49

SUMMARY 50

MANUFACTURING ASSESSMENT 59

WRONZ 59

Suggested Finishing of Prototypes 59

Yarn and Fabric Production 60

INTER-WEAVE 60

Fabric Production 60

ALLIANCE TEXTILES (NZ) LIMITED 60

Fabric Production 60

SUMMARY 62

6 STAGE 2 MARKETING 63

RESULT	65
COMPARATIVE ANALYSIS	65
PARTICIPANTS	65
Wholesaler/Distributor	65
Retailers	65
AESTHETIC	68
SUITABILITY OF PRODUCT FOR OUTLET	70
CUSTOMER BASE	72
PRICING	74
NEW ZEALAND MADE/NATURAL FIBRE	75
SUMMARY	76

7 BUSINESS CASE STUDIES 78

RESULT	80
NEW ZEALAND WOOL BOARD	80
C B COLLECTIONS	82
DILANA RUGS	85
ICEBREAKER	91
SNOWY PEAK	95
COMPARATIVE ANALYSIS	101
MARKET SHARE PRINCIPLES	101
SEGMENTATION	102
TARGETING	103
POSITIONING	103
MARKETING MIX	104
PRODUCT	104
Branding	107
PRICE, PLACE/DISTRIBUTION AND PROMOTION	109
PRICE	110
PLACE/DISTRIBUTION	111
PROMOTION	112
SUMMARY	113
Market Share Principles	113
Marketing Mix	113

8 PRODUCT STORY 116

EXTERNAL ENVIRONMENTAL FORCES	116
MARKET SHARE PRINCIPLES	117
MARKETING MIX	120

9 CONCLUSION

THE ROLE OF TEXTILE DESIGNER WITHIN THE PRODUCT DESIGN MODEL	122
COOPER'S MODEL FOR TEXTILE PRODUCT	125
COMMONALITIES/DIFFERENCES IN DESIGN, MARKETING AND TECHNOLOGY	126
THE CONTRIBUTION OF DESIGN, TECHNOLOGY AND MARKETING TO THE PRODUCT STORY	126
3D CONTOURED FABRICS	127

GLOSSARY	129
----------	-----

REFERENCES	133
------------	-----

APPENDICES	
------------	--

LIST OF FIGURES

Figure 1.1	[periodical]	Postic, J. <i>"Cumulus" by Larsen.</i>	2
Figure 1.2	[model]	The Author. <i>Research Overview.</i>	3
Figure 1.3	[model]	The Author. <i>Content Overview.</i>	6
Figure 2.1	[periodical]	Donnelly, F. <i>Organic Forms within symmetrical arrangement in 2D and 3D Product.</i>	10
Figure 2.2	[table]	The Author. <i>Table of NZ Sheep Characteristics.</i>	12
Figure 2.3	[book]	Von Bergen. <i>Extract from von Bergen's table of 'Single Yarn Twist of Woolen [sic] Yarns'.</i>	14
Figure 2.4	[report]	New Zealand Wool Board. <i>New Zealand imagery used to promote product internationally.</i>	16
Figure 3.1	[model]	The Author. <i>Methodology Overview.</i>	18
Figure 3.2	[model]	Cooper, R. G. <i>A Generic Stage-Gate New Product Process.</i>	20
Figure 3.3	[diagram]	The Author. <i>Double weave draft worked on point paper.</i>	21
Figure 3.4	[diagram]	The Author. <i>Example of weave draft created in Scot-Weave Dobby Design programme.</i>	22
Figure 3.5	[diagram]	The Author. <i>Method for calculation of warp shrinkage.</i>	24
Figure 3.6	[model]	The Author. <i>Marketing Principles and Processes</i>	26
Figure 3.7	[table]	The Author. <i>Discussion points with retailers concerning prototypes</i>	28
Figure 3.8	[periodicals]	Various periodicals. <i>Style Categories.</i>	30
Figure 4.1	[periodical]	Cohen, L. <i>Blankets/Throw-rugs Magazine Feature.</i>	33
Figure 4.2	[sketch]	The Author. <i>Initial sketches for organic forms.</i>	33
Figure 4.3	[periodical]	JAB Anstoetz. <i>"'Carré' Crashed Throw".</i>	35
Figure 4.4	[book]	Grosicki. <i>Watson's example of Cloqué fabric.</i>	35
Figure 5.1	[model]	The Author. <i>Stage 2: Design and Technology Overview.</i>	37
Figure 5.2	[fabric]	The Author. <i>Effects of yarn on design forms.</i>	39

Figure 5.3 [fabric]	The Author. <i>Contouring comparison of face and back.</i>	40
Figure 5.4 [fabric]	The Author. <i>Example of fancy loop yarn used for textural effects.</i>	41
Figure 5.5 [fabric]	The Author. <i>Texture achieved through colour and yarn.</i>	42
Figure 5.6 [fabric]	The Author. <i>Lycra weft inserted every 4th pick.</i>	43
Figure 5.7 [fabric]	The Author. <i>Comparative effects of high twist yarns.</i>	43
Figure 5.8 [fabric]	The Author. <i>Effects of frequency of high twist yarn on weft contraction.</i>	44
Figure 5.9 [fabric]	The Author. <i>High twist weft inserted every 4th pick.</i>	44
Figure 5.10 [fabric]	The Author. <i>First sample to exhibit significant contouring using lincLITE.</i>	45
Figure 5.11 [fabric]	The Author. <i>Effects of juxtaposed weaves and yarns.</i>	46
Figure 5.12 [fabric]	The Author. <i>Effect of plain weave/sateen weave conjunction.</i>	46
Figure 5.13 [fabric]	The Author. <i>Effects of additional plain weave picks.</i>	47
Figure 5.14 [fabric]	The Author. <i>Corrugations formed through Double Weave stitching.</i>	47
Figure 5.15 [fabric]	The Author. <i>Effect of sett imbalance.</i>	48
Figure 5.16 [fabric]	The Author. <i>Irregularity of contours caused by open sett.</i>	48
Figure 5.17 [fabric]	The Author. <i>Effects of shrinkage caused through dyeing.</i>	49
Figure 5.18 [fabric]	The Author. <i>Sample 27, Selected Prototype.</i>	51
Figure 5.19 [diagram]	The Author. <i>Weave Draft "double o ribs – 3 Mar i".</i>	52
Figure 5.20 [fabric]	The Author. <i>Sample 28, Selected Prototype.</i>	53
Figure 5.21 [diagram]	The Author. <i>Weave Draft "double o ribs – 3 Mar ii".</i>	54
Figure 5.22 [fabric]	The Author. <i>Sample 39, Selected Prototype.</i>	55
Figure 5.23 [fabric]	The Author. <i>Sample 40, Selected Prototype.</i>	56
Figure 5.24 [fabric]	The Author. <i>Sample 45, Selected Prototype.</i>	57
Figure 5.25 [diagram]	The Author. <i>Weave Draft "double o ribs – 1 May ii".</i>	58
Figure 6.1 [fabric]	The Author. <i>Stage 2 Marketing Overview.</i>	63
Figure 6.2 [model]	The Author. <i>Selected woven prototypes presented to retailers for response.</i>	64

Figure 6.3 [table]	The Author. <i>Retail Analysis.</i>	66-67
Figure 6.4 [table]	The Author. <i>Response regarding suitability of product for outlet.</i>	70
Figure 6.5 [table]	The Author. <i>Response regarding customer pricing expectations.</i>	74
Figure 6.6 [table]	The Author. <i>Response regarding importance of NZ made/natural fibre.</i>	75
Figure 7.1 [model]	The Author. <i>Overview of Business Case Studies.</i>	78
Figure 7.2 [promotion]	CB Collections. <i>2001 Product Swing-tag.</i>	83
Figure 7.3 [web page]	CB Collections. <i>Home Page showing the designer's Endorsement.</i>	83
Figure 7.4 [periodical]	Next. <i>CB Collections magazine promotion.</i>	84
Figure 7.5 [periodical]	ProDesign. <i>Article in which "Key Suppliers", including Dilana are listed.</i>	87
Figure 7.6 [newspaper]	Gregg. <i>Sunday Star-Times "At Home" Feature on John Robertson.</i>	88
Figure 7.7 [web page]	Dilana. <i>'Gallery' 4 featuring rugs of artist Martin Poppelwell.</i>	89
Figure 7.8 [catalogue]	Icebreaker. <i>Double page spread from 2000 Catalogue.</i>	91
Figure 7.9 [catalogue]	Icebreaker. <i>Icebreaker nostalgic soft adventure.</i>	92
Figure 7.10 [catalogue]	Icebreaker. <i>Page layout variations from 2000 catalogue.</i>	93
Figure 7.11 [catalogue]	Icebreaker. <i>Wool as technical fibre.</i>	93
Figure 7.12 [web page]	Untouched World. <i>Untouched World 'kite' trademark/logo from website.</i>	96
Figure 7.13 [newspaper]	Export News. <i>Untouched World flagship store, Christchurch.</i>	97
Figure 7.14 [web page]	Untouched World. <i>Web page featuring U.S. President Clinton at page top.</i>	99
Figure 7.15 [brochure]	Today & Tonight. <i>Tourist information booklet containing Untouched World advertisement.</i>	100
Figure 7.16 [table]	The Author. <i>Comparative Table of Market Share Principles.</i>	101
Figure 7.17 [promotion]	Icebreaker and Untouched World. <i>Promotional material aimed at differing psychographic groups.</i>	102
Figure 7.18 [table]	The Author. <i>Marketing Mix analysis.</i>	105

Figure 7.19 [table]	The Author. <i>Product Values analysis.</i>	106
Figure 7.20 [table]	The Author. <i>Branding analysis.</i>	108
Figure 7.21 [table]	The Author. <i>Price, Place/Distribution and Promotion analysis.</i>	110
Figure 7.22 [table]	Icebreaker. <i>Advertisement in QT Magazine Visitor Information.</i>	112
Figure 7.23 [promotion]	Untouched World. <i>Advertisement in Today & Tonight Christchurch & Canterbury.</i>	113