

原版风暴

服装专业双语教材 [2]

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# ***Garment Technology for Fashion Designers***

## 服装设计师完全素质手册

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# **Preface**

## **序**

For more than twenty years, I have been teaching design students at Shenkar College in Ramat Gan, Israel, and have always tried to duplicate in the classroom, and through projects, the actual conditions of the working situation. In the main, this has meant helping and encouraging the students to develop a practical and comprehensive perspective on the host of activities associated with the day to day work of a fashion designer. Three of the central subjects covered in this approach are direct materials and labour costs, garment technology and the operation of the design department.

Not every clothing factory has the luxury of resident clothing technologists, which means that the designer has to make most of the technological decisions at the sampling stage. In addition, the designer has to be familiar with the production methods and constraints of the factory where the garments will be produced. Attractive samples are unsaleable if they do not slot into the targeted price bracket. This is yet another important aspect of the designer's work.

This book attempts to provide students and designers with the means to make informed decisions regarding the subjects directly related to the total objectives of garment design.

*Gerry Cooklin*

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# **Acknowledgements**

## **致 谢**

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# ***Introduction***

## **引 言**

Garment design does not exist in a vacuum but is the end product of a chain of activities which can be said to start with the production of textile fibres. Various authorities have estimated that the time span between fibre production and the sampling stage is between six to eight months. For the clothing manufacturer, the internal chain of activities starts some time before the forthcoming season's materials are available because the company has to have some firmed-up ideas of what it intends doing before selecting materials.

The internal chain usually starts with the marketing department doing some formal or informal market research to evaluate what the market sector served by the company could be looking for and at what prices. Parallel to this, the designer has probably visited overseas couture houses to obtain indications of the possible trends for the next season. Marketing and design put their heads together and start formulating the framework of the sample collection. Fabrics and trimmings are selected and ordered and the designer starts to prepare the core designs which will represent the central theme garments of the collection. Core designs, when approved, will be the basis for developing planned groups of variations. The pre-sales design room processes are shown in Fig. 11.

In this context, garment design becomes goal directed planning because apart from developing the appeal factors of each design, the designer also has to take into account the many technical and commercial factors involved. So when designs have been approved and materials delivered, the design team has to start becoming very involved with the production of sample garments. This is the point at which this book starts, with the text directed at both designers and pattern cutters because in smaller factories they are likely to be the same person.

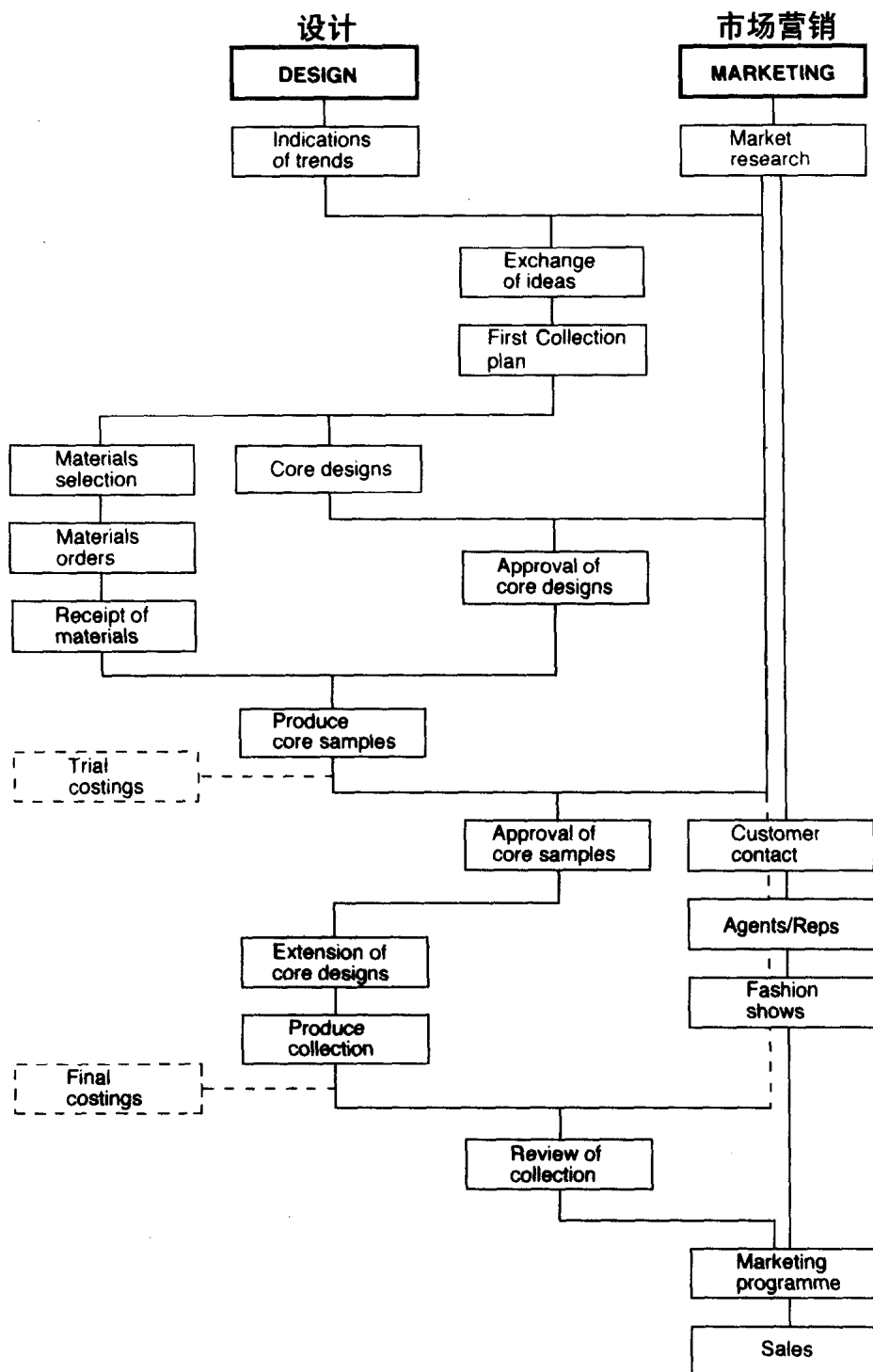


Fig. 11. Pre-sales design room processes.  
设计室在产品销售前的工作流程

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# ***PART 1***

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# ***COST CONSCIOUSNESS***

**成本意识**





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# ***The Designer and Garment Costs***

## **设计师和服装成本**

Under a free enterprise system it is accepted by the business world that money is the name of the game, and the clothing industry is no exception. The success of designs produced by a manufacturer can only be judged by the colour printed on the company's bank statement at the end of a season: red or black. There are many factors which can influence profitability, but in normal circumstances profitability originates to a large extent in the design section.

### **THE FRAMEWORK / 工作框架**

Where does it all start for the designer? The answer is a combination of two factors:

- Market specialisation
- The average garment concept.

This linking provides the designer with a reasonably accurate basis for initial cost estimates

### **MARKET SPECIALISATION / 市场专门化**

The clothing industry is divided into sectors according to garment types, and within each sector there are subdivisions or sections based primarily on price. For example, one sector could be men's dress trousers, with the sections having prices ranging from very cheap to highly expensive. The prices obviously reflect the total quality and fashion content of the products.

The majority of clothing manufacturers concentrate on serving and expanding their share of a specific section within a sector. As a result,

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they accumulate a great deal of expertise regarding the suitability of products, prices and production demands. Knowing this, the company is able to break down its average ex-factory price into the main components, such as materials, labour, overheads and profit. The results of this analysis provide the designer with an accurate indication of what can be invested in an average garment in terms of materials and labour. The proportions between these two cost factors can vary from style to style, but their total has to be on, or very close to, the target in order that a new sample will be able to slot into the correct price bracket.

#### THE AVERAGE GARMENT CONCEPT / 标准服装概念

Most production units, irrespective of the production system employed, are built around the average garment concept where this term refers to a typical garment produced by the unit. This typical garment has an acceptable work content and the balance between the various groups of operations is reflected in the staffing and equipment of the unit. This type of factory would have the capability to handle a reasonable range of cloth and/or styling variations without serious modifications regarding staff, machinery and layout.

The average garment concept is very widely used because of the production commonalities which exist between garments of the same type. In practice this means that regardless of individual styling, nearly every garment produced goes through the same standard operations. For example, the common operations for a unit producing skirts could be: overlocking, dart-sewing, closing side seams, zip setting, preparing and setting waistbands, top and underpressing operations, finishing and inspection procedures.

It is relatively simple for production people to supply the designer with the times for each group of operations in an average garment produced by the factory. By referring to these times and to an average garment, the designer can make fairly accurate estimates of the work content of each new design. In addition, the designer can evaluate whether the operations required will fit into the production balance of the factory.

Whilst nobody expects a fashion designer to be an expert in garment costing, designers must be aware of their influence on costs. Garments have to be evaluated for costs at the sampling stage because making samples without regard to price is often futile. So when necessary, the designer and pattern maker have to modify designs and patterns so as to bring a new sample into the correct price framework.

#### THE GARMENT COSTING / 服装成本计划

Also known as the bill of materials, the garment costing details the costs of every item attributable to the production of a particular garment. The sum of these costs plus the profit margin is the selling price which the

company will quote to customers. Whilst each company has its own method of preparing costings, generally the components of a costing are grouped under four headings: direct materials, direct labour, factory overhead and general overhead.

### **DIRECT MATERIALS / 服装材料**

Direct materials are all the materials and trimmings which go into the construction and finish of the garment. Typically, these materials would include cloth, lining, fusibles, buttons, zips, pads, tapes, labels, tickets, hangers and packaging materials, etc.

### **DIRECT LABOUR / 直接劳动力**

This covers the cost of all the labour directly involved in producing the garment and could include cutting, fusing, regular sewing, special machine operations, pressing, finishing, inspection and packing. Labour of all types and grades has a direct overhead which includes holiday pay, sick pay, fringe benefits, etc, and the statutory payments made by the employer for each employee. This is usually expressed as a percentage of salary and when this percentage is added to the employee's wage, it becomes the basis for calculating direct labour costs.

### **FACTORY OVERHEAD / 车间管理费**

There are different methods of calculating the factory overhead, but most of them use a combination of the following three elements:

- (1) *Indirect labour* This covers every person in the factory who does not directly perform a production operation, such as managers, supervisors, engineers, store personnel, clerks, maintenance staff, porters, canteen staff, security and cleaners, etc.
- (2) *Expenses* Included in this element is every fixed and variable expense incurred in operating the factory, such as rent, rates, utilities, insurance, depreciation, maintenance, air conditioning and the various types of energy generation required by a clothing factory.
- (3) *Indirect materials* Also known as consumables, this element contains all the materials not directly connected to the make-up of a garment. Some of the typical items involved are office materials, spare parts, marker paper, maintenance materials, chalk and pins.

The total of these three elements is the factory overhead and because it cannot be conveniently applied to specific cost units, it is generally expressed as a percentage of the direct labour costs. For example, if the costs for a given period are:

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Direct labour	£28,000 (including direct overhead)
Factory overhead	£33,600

the factory overhead is 120% of the cost of direct labour. From this, it is simple to calculate the cost of one minute's work for every production operator:

Labour rate per hour	£6.00
Factory overhead at 120%	<u>£7.20</u>
Total cost	<u>£13.20</u>
Cost per work minute	£0.22

Therefore the price of an operation is the rate per minute multiplied by the time allowed for the operation.

### GENERAL OVERHEAD / 总管理费

The general overhead comprises all the labour costs and expenses which are incurred in running the company, such as management, marketing, finance, insurance, warehousing, rent and utilities. The design department costs are usually allocated to this component.

Again, because of the practical difficulties of apportioning this component to specific cost units, it is expressed as a percentage of the total for direct labour, factory overhead and direct materials, as in this example, where all the costs are for the same period:

Direct materials	£84,000
Direct labour	£28,000
Factory overheads at 120%	<u>£33,600</u>
Total	<u>£145,600</u>
General overhead	<u>£65,520</u>

Therefore, conveniently, the general overhead is 45% of all the other costs. So the framework of a garment costing would be the sum total of these four components.

An example of a garment costing is shown in Fig. 1.1; the figures are for demonstration purposes only. Whilst the method of computation, detail, terminology and format can vary from company to company, the primary objectives of the costing are always the same: how much does the garment cost to produce?

### THE DESIGNER'S ROLE / 设计师的作用

The preparation of a garment costing is usually the work of a costing

GARMENT COSTING					
Style number	Comp. number	Market		Description	
6114	HC 20 664	Home	<input checked="" type="checkbox"/> Export	Straight Coat	
Season	Phase	Size range		Factory	
Winter	2	36-42		Wigan	

Item	Description	Supplier	Quan.	Price	Unit cost
Cloth	100% Wool - 4608	North Mills	2.60	9.40	24.44
Lining	Satin - 856	Lintex	2.40	3.80	9.12
Fusible	W311 - A	Fusmat	0.90	2.90	2.61
Buttons	1142 - Size 40	Fladon	6	0.20	1.20
Pads	Raglan - 16	Asleh	Pair	0.65	0.65
Threads	Regular	Stock	—	0.80	0.80
Brand label	{ Gerlin - 4	Stock	1	0.16	0.16
Size label	}				
Care label	100% Wool / Dry Clean	Stock	1	0.12	0.12
Ticket	Gerlin - A	Stock	1	0.15	0.15
Hanger	T6	Hangetti	1	0.35	0.35
Packing	Coat Bag - 8	Plastpac.	1	0.20	0.20

Production	Min.	Price	Cost	Materials	39.80
Cutting	6	0.20	1.20	Production	16.33
Fusing	2	0.15	0.30	Gen. overhead	22.45
Sewing	55	0.17	9.35	Total cost:	78.58
Specials	6	0.17	1.02	Profit	11.78
Under pressing	6	0.15	0.90	Commission	4.75
Top pressing	11	0.18	1.98	Total:	95.11
Finishing	4	0.15	0.60	Selling price	95.00
Inspection	4	0.17	0.68	Prepared by	QZ
Packing	2	0.15	0.30	Date	18/5
Total:	96	Total:	16.33	Approved by	QZ
				Date	20/5

Fig. 1.1. Example of garment costing.

服装成本计算举例

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clerk who collates all the relevant information and calculates money values. Before the costing process starts the design room needs to check and approve the basic viability of the sample garment. Skilled marker planners can reduce materials requirements, and production engineers can accurately analyse work content, but if the sample garment is carrying excessive costs of materials and/or labour, there is very little that these people can do to make the garment an acceptable proposition. So the designer has far more responsibility than just designing garments.

# 2

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## ***Pattern Cutting and Materials Utilisation***

### **服装样板裁剪和材料利用**

This chapter examines the critical influence of the garment pattern on the pivotal activities in a clothing factory. There is no doubt that pattern cutting, whether performed manually or with a CAD system, is the most important technical process in the production of clothing. Apart from effective design interpretation, the pattern cutter has a major responsibility to provide the basis for the most efficient usage of materials.

#### **MATERIALS UTILISATION / 服装材料的利用**

Over the years, various researchers have established that approximately 85% of the materials purchased are in the finished garment, with the remainder for one reason or another ending up as waste. This figure is called the materials utilisation percentage and it is a crucial cost factor in the price of a garment. Materials generally comprise about 50% of the cost price of a garment with labour representing approximately 20%. So an improvement of, say, 5% in materials utilisation is worth far more than a 5% reduction in production time. Whilst the pattern cutter cannot personally prevent excess materials usage in the cutting room, there are a number of procedures which can be employed to ensure that the garment pattern makes the minimum possible demands on materials requirements. These procedures are grouped together under the heading of pattern engineering.

#### **PATTERN ENGINEERING / 制板工程**

The overall objectives of pattern engineering are to improve the utilisation factor of a garment pattern through prudent modifications which do not degrade the design integrity. A line has to be drawn between the



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enhancement of materials utilisation and the maintenance of the design objectives. If the sweep of a fully flared dress is reduced by four to five centimetres or the width of a skirt waistband is decreased by two or three millimetres, would these modifications make any material difference to the final appearance of the garment? If pattern modifications are planned, they should be considered with a large measure of common sense.

The central procedures of pattern engineering are pattern accuracy, major modifications and making up allowances.

### PATTERN ACCURACY / 样板的精确性

Pattern accuracy is a fundamental subject. It is said, with justification, that apart from cutting mistakes, the accuracy of a pattern cutter can be judged by the amount and size of the cuttings found on the sewing room floor. Production operators are not supposed to be cutters and if they have to remove surpluses from components because of incorrect pattern alignments or erroneous allowances, then only the pattern cutter is to blame. Apart from the wasted materials, the production operators are to some extent prevented from doing the work they are paid to do, so this situation is a two-fold loss for the company. It can be eliminated to a large extent by greater precision on the part of the pattern cutter.

### MAJOR MODIFICATIONS / 样板的主要改动

These modifications could include seam displacements, slight reductions in flare, splitting very large components, separate instead of extended facings, etc. Some examples are shown in Fig. 2.1. These, and other similar major modifications, require a pragmatic type of flexibility from the designer and pattern cutter because, design considerations apart, every saving in materials is a potential advantage for the company.

It is worth remembering that whilst many of today's consumers are design and quality literate, they are still not clothing technicians, so a small element of 'bluff' is permissible.

### MAKING UP ALLOWANCES / 缝份

This covers seam and hem allowances and facing widths. According to an American survey (Hudson, 1989), seam and hem allowances together account for approximately 5.5% of the material used for the actual garment. So it is up to the pattern cutter to ensure that all these allowances are the practical minimum possible.

### SEAMS / 缝型

The most important properties of a seam are strength and flexibility and these are determined by a number of technical factors plus the char-