

FABRIC PRINTING BY HAND AND COSTUME DESIGN

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CHAPTER I

INTRODUCTION

A knowledge of the various ramifications of the world of fashion is as important as knowing how to draw the first roughs, or cut the first garment. This report attempted, within its limits, to introduce anyone with some visual training and with a real interest in fashion design to the practical aspects of design.

Whether the fashion designs will be "good" or "bad" depends on the young designers whom we are training today. The knowledge can be obtained only by thorough study of the elements of design — line, form, and color. The students of design must understand every angle of the trade for which they are training. These students must know each step in the construction of a garment, from its first cutting to its last finished seam.

Because a designer's idea may be more quickly and easily shown by sketching, some drawing ability is necessary to present the designs. It need express only the form and color of the idea: what sleeve is intended with what type of jacket; what flare for the skirt with what slimness of bodice.

Designers, or other workers in the clothing area, need a complete knowledge of the history of costume and the background of the craft. The designers must understand how the influences of daily life have affected the clothes of all time. Designers must understand the cycle

of costume influence and know how to use these cycle as an inspiration for their designs.

One cannot learn the art of fashion design by reading only one report. The purpose of this report is to use three different designs to illustrate how the fashion design works.

CHAPTER II

FASHION ILLUSTRATION

ROUGHES: The First Stage in Design

A series of rough ideas can be used to produce one final, well thoughtout design. These rough ideas will include variations, such as trying to place small details in new but workable positions or varying shapes and embellishments, or changing the cloth, color and texture and putting them together with differing methods and techniques. In the three designs (Plate 1 to 3) which follow a critical process of elimination was used. Every designer must start with a brief, or a set problem; such as, for instance, a particular category of clothing governed by price range, age group and function. The drawing and ideas must fit in sensibly with such categories and yet remain fashionable. The sketches are the initial experiments, and with experience it is possible to eliminate flaws in a design while actually making a drawing.

The drawings are called "roughs" and can be of any size the designer wishes. Usually fashion designers' roughs will be small, about four or five inches in height, and the finished drawing will be not more than ten inches high(1). A designer resident with a ready-to-wear firm will hardly ever have either the time or the need to do "finished" drawings, painted and textured. However, the free-lance designer will present the brief with color and texture and the relevant samples of material attached. Neither of



DESIGN 1

Plate 1. A Evening Gown of Blue Nylon Knit with
White Lace and White Motifs.



DESIGN II

Plate 2. The Chinese-Patterned Silk Tunic Over A
Tiny-Pleated White Nylon Knit Skirt.



DESIGN III

Plate 3. A Peasant Top of Green Silk with White Motifs.

these types of drawing is to be confused with the work of the fashion artist, whose job it is to convey an impression or a generalization. Ideally, the drawings of the designer have to be all things to all persons, that is, emphasize or generate style, fashion feeling, and at the same time communicate all the information needed for the construction and finishing of the clothes. The fashion illustrator, on the other hand, is not required to invent or be knowledgeable of the techniques of making up garments. By his drawings, the designer can also suggest the stance to be accepted and the accessories to be used; both of which are highly important points in the world of fashion. Having obtained as many statements in design as possible with the roughs, the designer's critical faculties need to be used to select the best solutions to the brief and show the content of the prevailing fashion. Even the most classic clothes are subject to subtle changes in various details which lose or gain chic from decade to decade. It might be the shape of the buckle or the buttons; the fact that the buckled belt is roughly tied together instead of neatly buckled, and so on. It is the designer who emphasizes the characteristics — neatness, carelessness, toughness, youthfulness or formality. This character or identity is as important as any seam detail or flattering new shape.

COLOR RENDERING

The next step in the design process is to paint the costume in the colors visualized. There are many variations

of tone, hair, and eye coloring so that each person becomes a different problem. The colors chosen for these three designs for this report are bright and light blue, and yellow green which are the most effective colors for the brunette type(2).

Color is emotive and can be particularly so in clothing. The line, proportion and detail of a garment are perhaps the most intellectual problems that a designer may solve. When considering color, however, the designer must remember that this aspect can exert a curious and powerful influence on personality(2). Color is the most emotional and unpredictable feature of design.

Fashion undoubtedly affects the popularity of colors, but frequently boredom occurs and a change is needed. A color may have become fashionable too quickly and therefore its exclusive quality disappears. Usually bright colors are the most quickly abandoned, as are extremities in shape.

DRAPE ILLUSTRATIONS

The principle governing draping is gravity, which makes and shapes folds. Draping falls from one or more points of support into folds — the number, size, length, and other characteristics of which depend chiefly on these points of support and the weight and resiliency of the material. Folds are also affected by the way the material is cut, whether on the straight or bias, and the way it is folded, lengthwise, or crosswise. Seams, gores,

and inserts also affect the draping qualities. The bend of the arm determines most of the creases in the sleeve, while in a sitting position, the knees are the principal points of support from which the folds radiate(3). Examples of these concepts can be found in Plates 4 - 6.

The lights and shades created by various types of folds that different materials must also be studied. Light is diffused by soft fabrics while definite planes of light and shade are created by crisp fabrics(3). Light and shade are of several kinds in draping, namely, high lights, medium tones, reflected lights, cast shadows, and deep shadows. All of these lights must be studied in a garment that has folds and creases.

Patterns in fabrics greatly complicate the drawing of draped designs and usually require simplification. The lines of the pattern should follow the contour of the folds, but the drawing should look correct rather than accurate. Confusion frequently results from too close adherence to accuracy, whereas simplification in the pattern may create a clearer and more interesting picture. For decorative purposes straight lines suggest dignity and calmness and mobility, whereas curved lines suggest life and gaiety. Curves should be drawn with smooth roundness while long lines should be drawn with a clean straight sweep.

FABRIC ILLUSTRATION

A great many patterns are formed by dividing the

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Plate 4. Drape Illustration of Design I.



Plate 5. Drape Illustration of Design II.

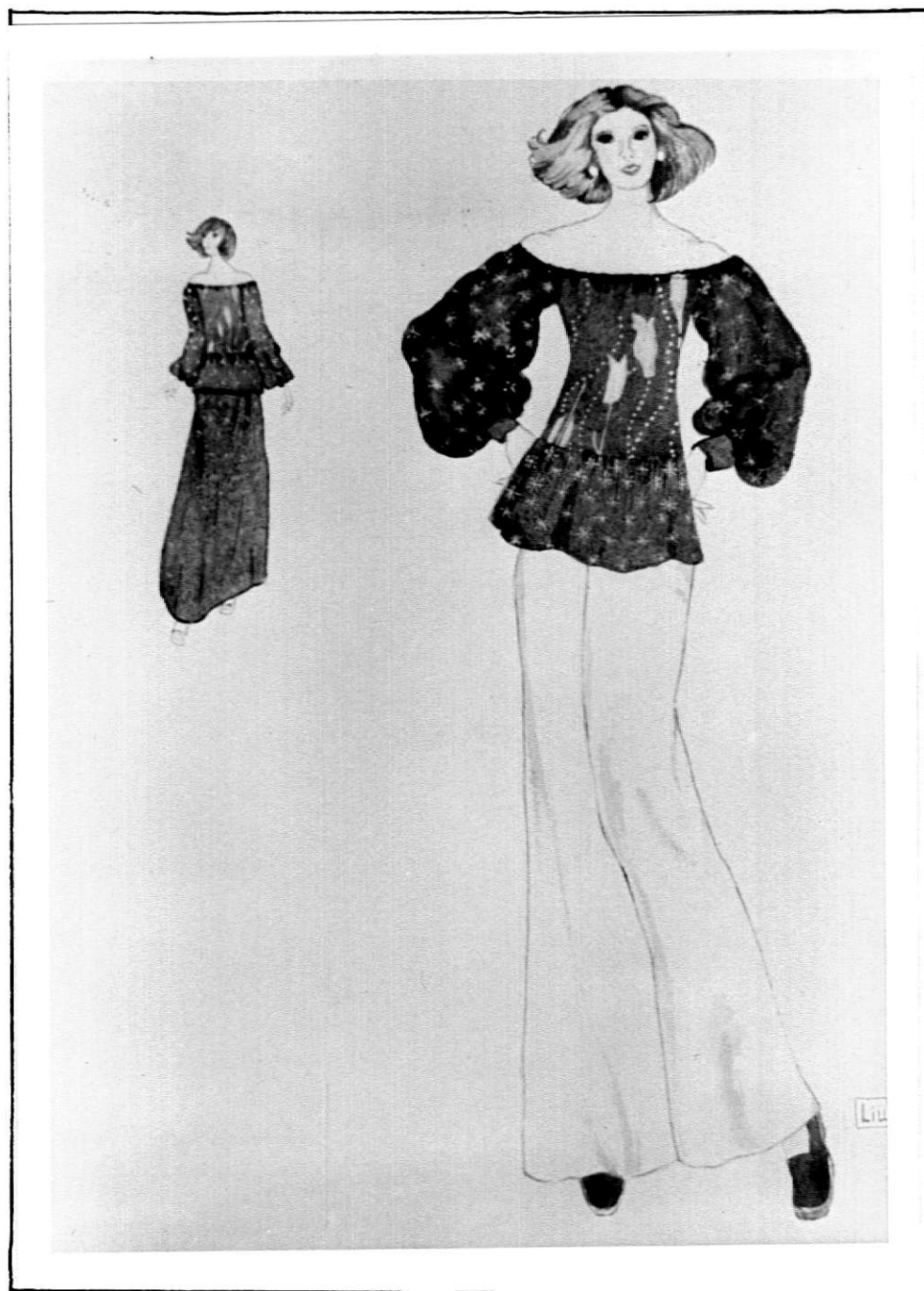


Plate 6. Drape Illustration of Design III.

repeat into geometric figures. Instinct may guide the designer in the division of the surface, but a study of accepted divisions is a good beginning towards originality. Possible combinations of geometric figures are practically unlimited. Generally, straight lines should be relieved with a few curves and angular figures interchanged with some floral detail, unless the effect is meant to be hard and severe.

The finished design is drawn, in a rectangular shape with the long side horizontal with several repeats showing. Sometimes the design is shown in a circle, which lends itself very well to some patterns. However, the rectangular shape is the most usual and is suited to the greatest number of patterns. The pattern itself will guide the number of necessary repeats.

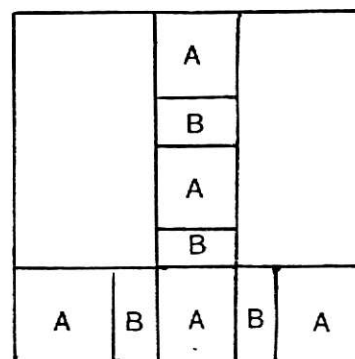
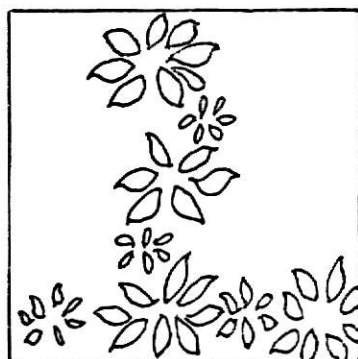
Each feature of a pattern repeats at intervals which are fixed by the size of the unit. Whatever the shape of the unit, it may be discovered in the finished design by careful examination, as can be seen in Designs 1 - 3 of Plate 7.

SWATCH DRAWING

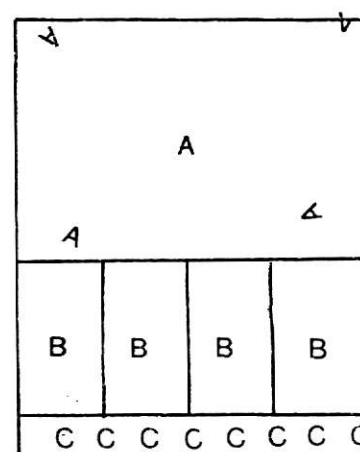
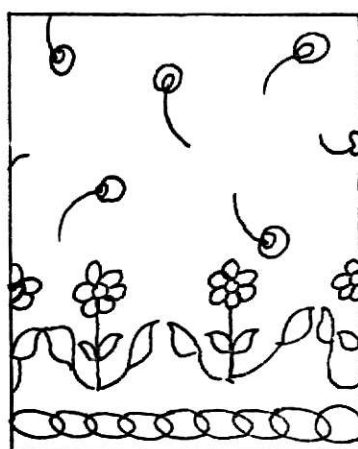
Swatches of fabrics pasted on a drawing illustrate the realistic effect of the material and are frequently used by fabric houses and department stores. Examples may be seen of Plates 8 - 10.

The paper used for the ground may be any high quality paper suitable for water color and should have a fine even

DESIGN 1



DESIGN II



DESIGN III

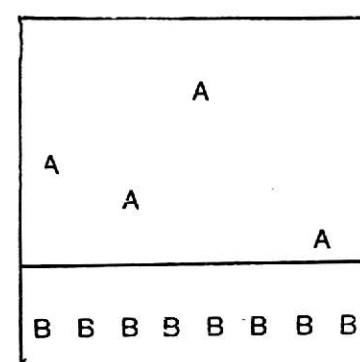
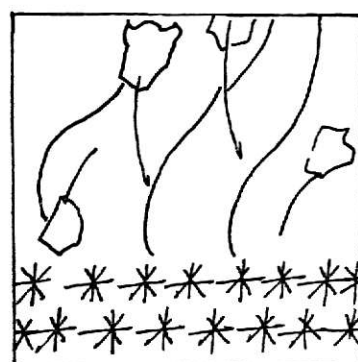


Plate 7. Fabric Illustrations.

surface for all ordinary work. A high quality paper is needed to withstand a reasonable amount of handling.

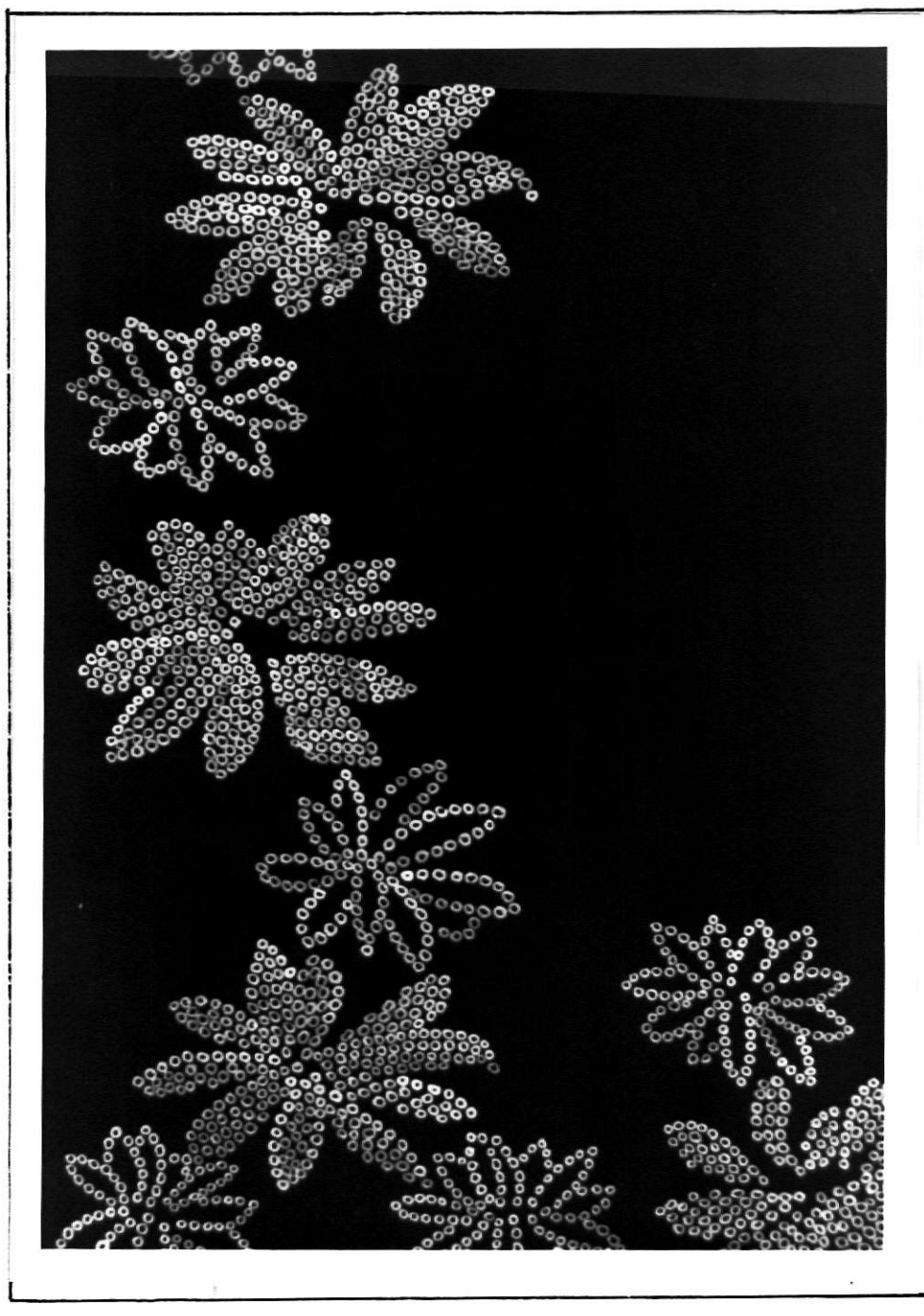


Plate 8. Swatch Drawing of Design I.

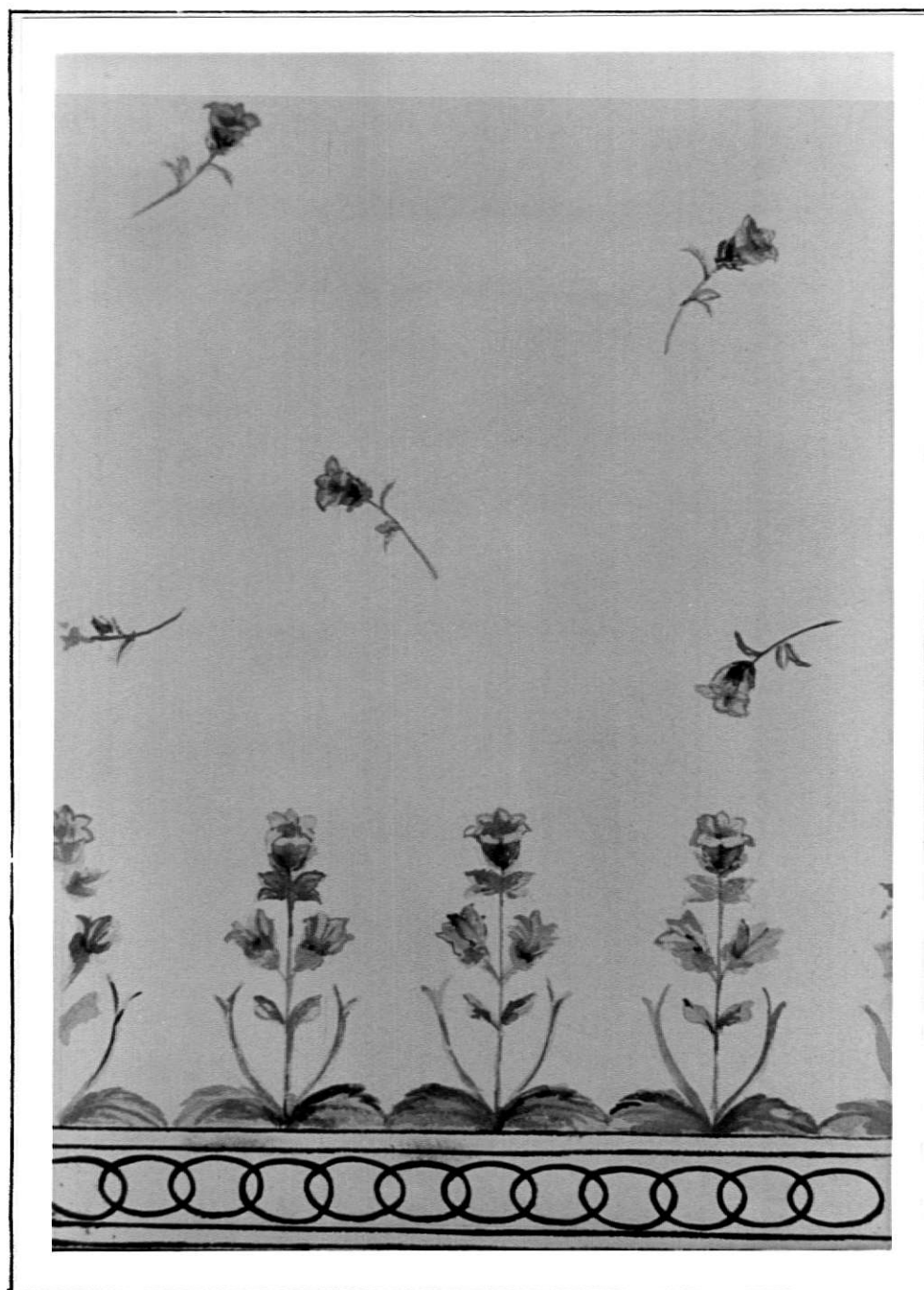


Plate 9. Swatch Drawing of Design II.

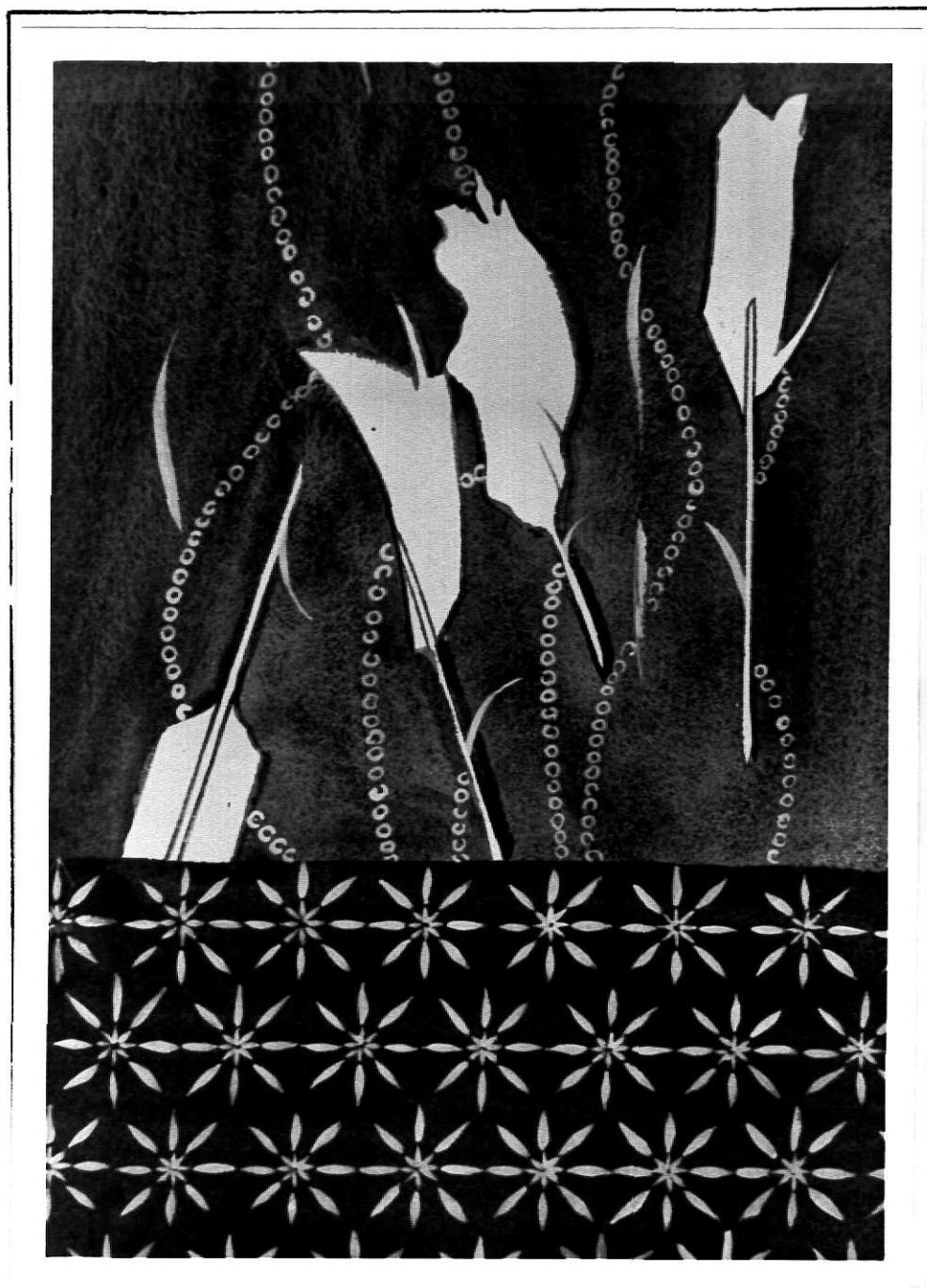


Plate 10. Swatch Drawing of Design III.

CHAPTER III

FABRIC SELECTION AND APPLIED TEXTILE DESIGN

BASIC QUALITIES OF TEXTILE DESIGN

A good textile pattern should conform, in general, to the qualities inherent in any good design. Much of the success of any design depends upon the handling of elements such as line, shape, color, and texture. The qualities of balance, center of interest, repetition, rhythm, and contrast, when used skillfully, are tools as useful to the textile designer as to the painter and the sculptor.

When a design is to be printed, lines should never be stiff, jerky, or box like, but should exhibit continuity, variation in width and length, and should possess "character". In these designs, shapes should have interesting contours, should be treated freely, and should be correlated.

In addition to the qualifying elements listed above, a textile design is affected by the mechanical limitation of equipment which is available. In the case of printing, the type of fabric, as well as the printing method and the type of equipments to be used must be considered. For example, small details which look well on smooth surfaces cannot be printed on rough-textured surfaces. The method of production will affect the size of the repeat of a design. For example in silk screening, the size of the screen will limit the size of the repeat.

A good textile design is one that has a unified

composition, serves the purpose intended for it, and represents the culture that created it. It may echo the past or anticipate the future, but it must above all else reflect the actual source of its origin.

FABRIC CONSTRUCTION

Before any textile fabric can be printed, it is necessary to identify the fiber content, so that suitable dyestuffs can be selected. The burning test was used to indicate the broad category of fiber type(5). For this report, a 100% nylon knit and a 100% pure silk fabric was selected(Plates 11 - 13).

A nylon knit was selected for Designs I and II for the following reasons:

1. Nylon knit has excellent wrinkle resistance.
2. It is an easy-care fabric.
3. It has high heat-settability. Pleats, creases and embossed designs should last for the life of the garments.

Research has shown(6) that relaxed cloth finishing is the major factor in producing quality silk with good suppleness and wrinkle recovery. Relaxed finishing of degummed silk permits the development of a high degree of yarn crimp. If silk cloth is finished under taut conditions, the fabric will be stiff and wrinkle easily. Silk crepe fabric was selected for the following reasons:

1. It has smooth surface.
2. The absence of short fibers causes silk fabric to shed

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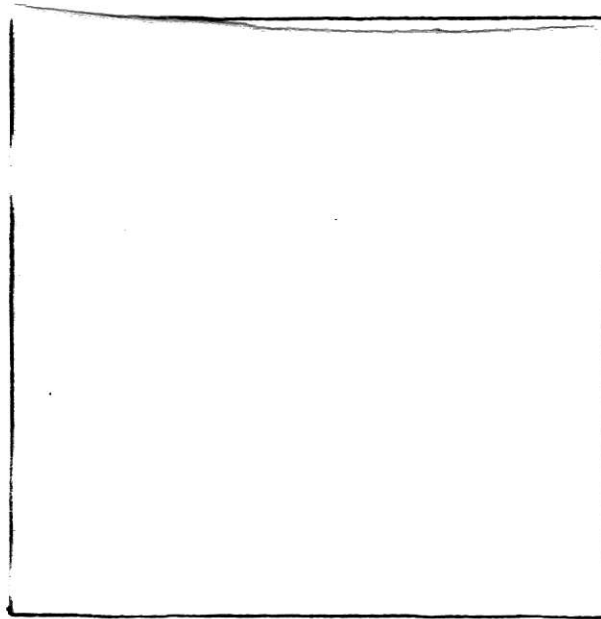


Plate 11. Original Nylon Knit Fabric for Design I.

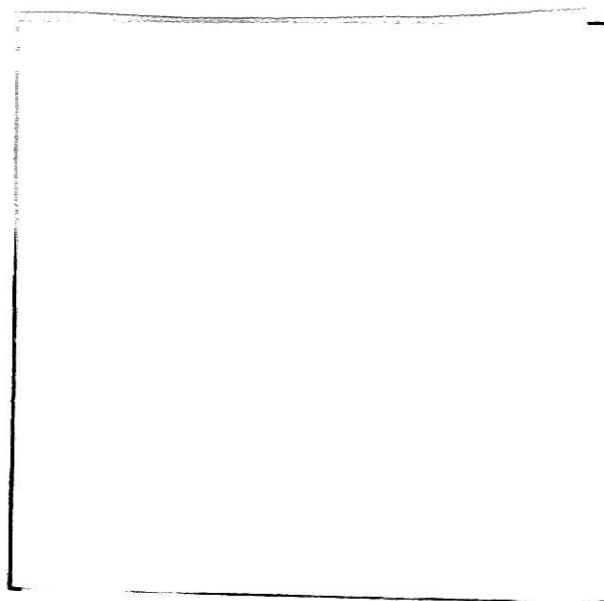


Plate 12. Original Silk Crepe Fabric for Design II.

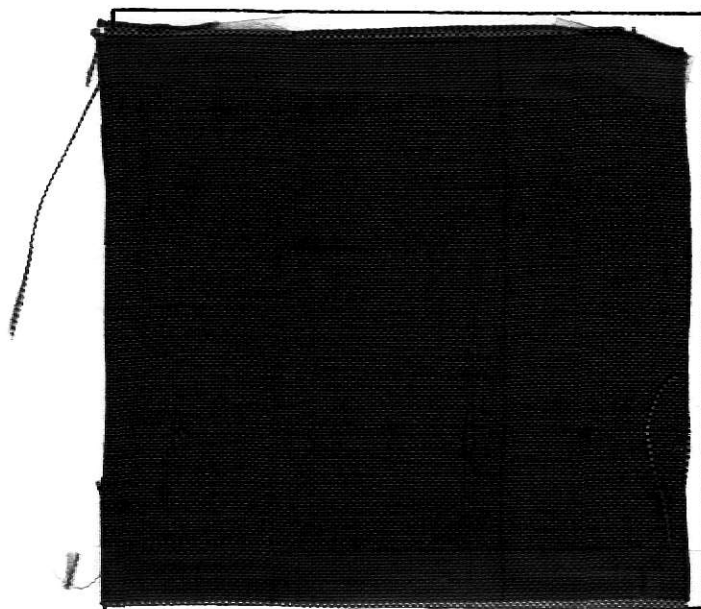


Plate 13. Original Italian Silk Fabric for Design III.

dust and to give up dirt readily.

3. If handled properly, silk can be washed easily.

A printed textile fabric can be produced by a wide variety of methods. All methods represent ways in which the creative talent of the designer may be transferred on to the fabric. The following printing methods were chosen for this report: (1) batik printing; (2) screen process printing; (3) direct hand painting. Of the above methods, screen printing is the most widely used industrially and commercially.

BATIK

"Batik" is an Indonesian word describing a form of resist printing has achieved an unrivalled degree of craftsmanship in the island of Java.

In batikting, hot wax is applied to the fabric with a brush or a tjanting which is a small kettle used for applying the wax.

Beeswax and Acid Blue 45 dye were used for this batik work. The following formula was used for the preparation of solutions for dyebath:

Liquor ration: 100:1

Dyestuff: 1% of the weight of the sample of cloth

H_2SO_4 : 3% of the weight of the sample of cloth

Na_2SO_4 : 5% of the weight of the sample of cloth

The procedure used for the batik printing in this report was as follows:

1. The temperature of the wax was maintained at approximately 275°F.

2. The fabric was thoroughly wet before being dipped into the dye.
3. The dye was thoroughly dissolved, strained, and evenly distributed in the dyebath.
4. Enough cold water was added to cover the fabric. The dyebath was kept at an even temperature between 60°F (16°C) and 100°F (38°C).
5. The cloth was immersed in the dyebath and stirred for 10 minutes and then at intervals for 4 hours.
6. After dyeing, the fabric was rinsed in fresh water and dried.
7. The material was dried and the wax was removed by placing the fabric between clean sheets of plain absorbent paper laid upon a thick pad of newspaper and pressing with a hot iron. The process was repeated until the wax was removed from the fabric. The papers were changed when they became saturated with the excess wax(8). (Plate 14)

SILK SCREEN PRINTING

Silk screen printing consists of forcing an ink, by pressing with a squeegee, through the mesh of a netting screen stretched on a frame, onto the object to be printed. Before silk screen printing was performed the entire silk crepe fabric was dyed with light turquoise blue as a background color for Design II. The dye used was Cibacron Turquoise Blue 6G-E, a reactive dye, which was suitable for application to natural silk(9). The dye solution was derived from the following formula:

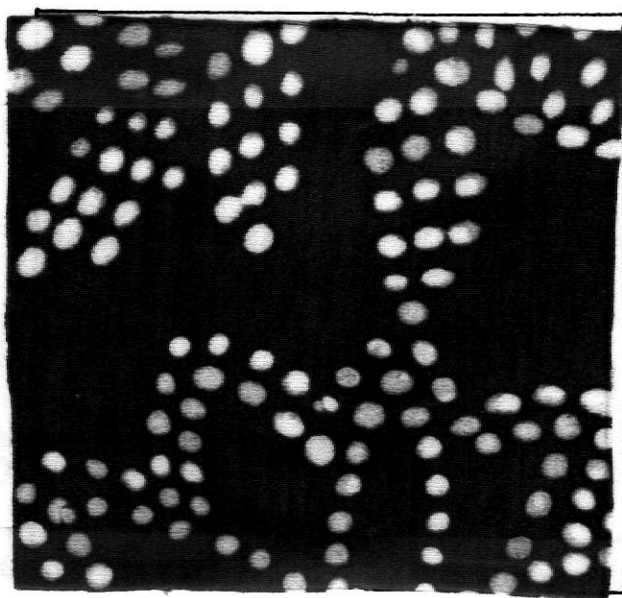


Plate 14. Nylon Knit Fabric Dyed with Acid Blue 45.

Liquor ratio: 100:1

Dye: 2% of the weight of the cloth to be dyed.

Na_2CO_3 : 2% of the weight of the cloth to be dyed.

NaCl : 2% of the weight of the cloth to be dyed(7).

Screen printing is relatively simple method of printing which can be carried out without the use of complicated and expensive equipment. Screen frames are usually constructed of smooth and well seasoned wood. Wood which is soft with a low water absorbency, resistant to warping and to varying degrees of humidity and heat, is suitable. The frames must be made very rigid and the corner joints can be strengthened with angle brackets. Nylon organdy was selected for covering the frames. The main reasons for choosing organdy rather than were accuracy of fitting in a design, fineness of lines and size of motifs(10).

A solvent adhering film was used and all of the parts that were to be printed were cut out and peeled off. The cut stencil was turned over, with the backing sheet side up. A sharp stencil knife was used to cut the design.

The film was adhered to the nylon organdy with a special adhering liquid. The liquid, which was a basic lacquer solvent(acetates, toluol, etc.) softened the lacquer film and made it very tacky. A clean soft white cotton rag was folded into a pad shape and soaked with the liquid. This was applied on the nylon, which was flush against the film. The liquid penetrated through the nylon and softened the film. A few minutes was needed for the film to dry. The basking sheet was removed from all print-

ing areas except the design.

The stencil was now adhered. Large open areas called "leaks" between the extremities of the film and the frame may occur. The "leaks" must be sealed by squeegeeing lacquer filler over the open areas. This process should be from the under side of the frame(12).

It is important that the lacquer is dry. The frame may be viewed against a light source to discover pin-holes. If there are any pin-holes, another coat of lacquer must be applied and dried.

The frame was now ready for the paint especially made for silk screening. The paint was thick, light, oil paint which was mixed to match the color desired in the original design. The paint is usually very thick and must be thinned down with additions of thinning varnish. The final consistency of the paint is quite important for clean, sharp printing(13).

When the paint was finally mixed, it was poured along the edge of the nylon within the printing frame. When the squeegee reached the other side, it was rested against the frame and the screen was lifted. The screen should be held down with the right hand and the squeegee drawn across the screen with the left hand, going from left to right (Plate 15).

When the printing was finished, newspapers were inserted under the screen. The excess paint was picked up with cardboard squares, and saved for reuse. A piece of cloth soaked with kerosene to dissolve the paint from

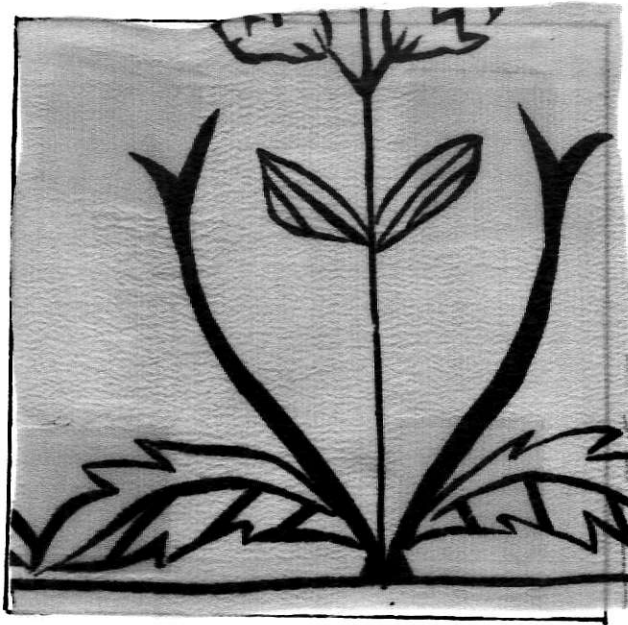


Plate 15. Silk Crepe Fabric Done by Silk Screen Printing

the screen was used. The screen was wiped with a dry rag and the process repeated until screen was thoroughly cleaned and dried.

There are some variations in the removal of the film from the nylon. The most widely used method is to place newspaper or flat sheets of wrapping paper beneath the screen. A piece of cloth and the silk are saturated with "film remover" or any lacquer solvent. The film melts and begins to stick to the paper. The process is repeated until film is dissolved.

DIRECT HAND PAINTING

In Design III, the direct hand painting technique was used(Plate 16). A hand-painted design often emerges from the character of the lines used. In this report, free-flowing and abstract floral lines were used to increase interest. The design needed to be carefully plotted to obtain appropriate space relationships. Subtle balances of color and value and careful treatment of line are important factors in hand painting of textiles.

Modern hand-painted textiles should reflect the free expression now found in so many phases of modern art. These designs should appear to have been painted with a light, free brush, they should also be dynamic in structure, spacious in feeling, and appealing in subject matter.

Many good textile paints may be purchased. For this study, speedball oil printing inks which are water proof were used .

When painting the design, the article to be painted

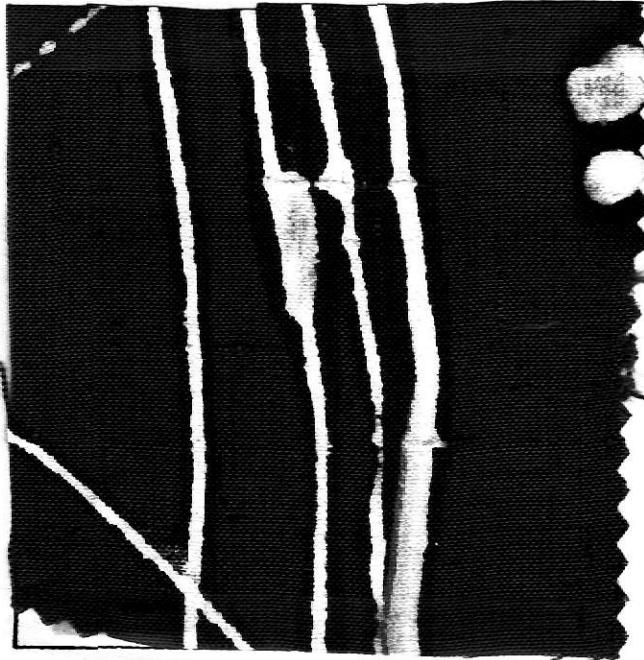


Plate 16. Direct Hand Painting Done on Italian Silk
Fabric

must first be washed. The fabric should be kept as taut as possible during the painting process. The material may be fastened to a table top or board. Light pencil guide lines or dots to chart the course of the design can be marked on the fabric. The painted design should appear spontaneous and free-flowing. The paint should dry and the color is set by pressing with a warm iron.

CHAPTER IV

DESIGN AND CONSTRUCTION OF GARMENT

DRAPING

Draping is a method of patternmaking in fashion design which permits the designer free and accurate expressions of ideas. It is a three-dimensional process of designing. The designer, working from a sketch, gives three-dimensional form to an idea for a garment. Proportions of design details can be related to the human body, and the effect of the fabric as it flows and drapes is readily apparent.

The medium for draping is usually muslin, a plain weave fabric of unfinished cotton. The direction of the grain is easily visible, and its relatively low cost permits free use for experimentation and development. Muslin can be marked with pencil lines, and the finished muslin pattern, which is the end product of draping, can be used repeatedly. Although garments are usually draped on a dress form, the muslin pattern, pinned or basted together, is also used for adjusting the fit on the human body.

Once the basic principles of draping have been mastered, the designer is free to translate an endless variety of ideas into finished garments.

There are three basic types of muslin:

1. A coarse weave of medium weight used by beginners in draping because the grain is easily recognized.
2. A lightweight, finely woven fabric used for soft

draping. This type of muslin was selected for this report.

3. A heavy weight, firmly woven fabric used for draping tailored garments. This is also know as toile muslin(14).

The first design used in this study was a three-piece evening gown. The skirt and the bodice are separate in cut but of the same material.

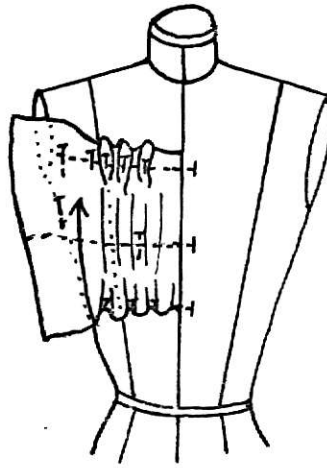
The procedure for draping the front of the bodice (Plate 17A) was as follows:

1. The straight lengthwise grain or selvage was pinned to the center front of the form at the top of the section.
2. The fabric was smoothed across the bust line and pinned at the bust so that the cross-grain was level.
3. The fabric was pinned to the form at the underarm to support the cross-grain so that it was either level or very nearly so under the arm. For full gathers along the edge a larger amount of ease may be desirable(15).

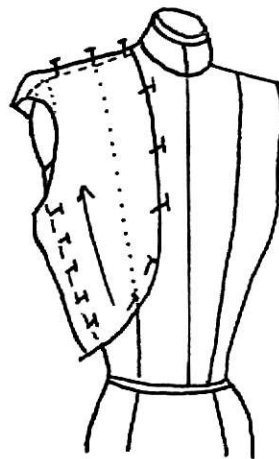
For the back section of the bodice, the procedure used was the same as for the front. When gathers are used as a form of fullness, they should be used throughout the entire design wherever fullness appears.

The dirndl skirt is a straight skirt cut with extra fullness that is gathered into the waistline(14). To drape the dirndl skirt(Plate 17B), the following steps were followed:

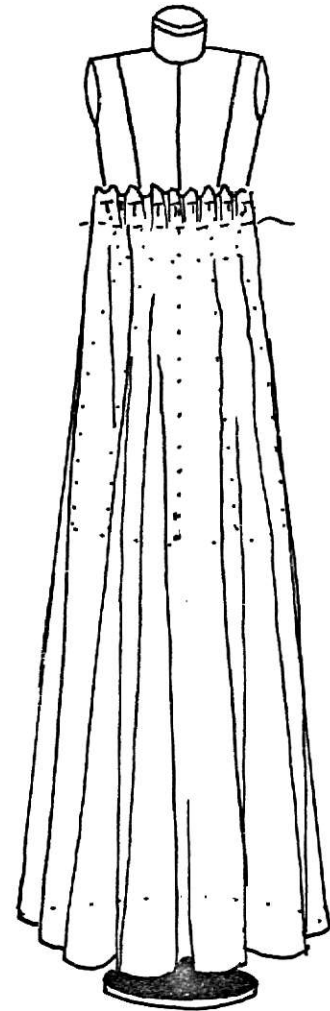
1. Using a double thread, a line was marked with long basting stitches 2 or 3 inches from the top and parallel to it.



A: BODICE



C: JACKET



B: SKIRT

Plate 17. Procedure for Draping Bodice, Skirt and Jacket of Design I.

2. The center line of the front section was pinned to the center line of the form.
3. The thread was drawn up to fit the high waist line and to adjust the skirt on the form. The gathered line was pinned to the high waist level marked on the form.
4. The waistline was marked from the center front to the center back with pins. The skirt was removed from the form, the lines were smoothed out, and the markings were transferred to the opposite half.
5. The waistline was machine gathered by using several parallel rows of stitches.
6. All the gathering threads were drawn up at the same time to make all of the rows equally tight(15).

The second design was a shift with keyhole neckline. The keyhole neckline may be draped by pinning style tape over the muslin on the dress form in desired shape. Style tape can be easily shifted until pleasing proportions are achieved, eliminating any unnecessary markings. Style tape indicating the shape of the neckline should be continued in a smooth line to the back so that the front and back necklines are perfectly coordinated.

In draping the shift design (Plate 18) the following procedures were used:

1. Center front was pinned at neckline, chest, and apex.
2. Letting the muslin fall straight down from the apex, the hip line and center front were pinned. It was necessary to make certain that the hip line on the muslin fell directly over the taped hip line on the

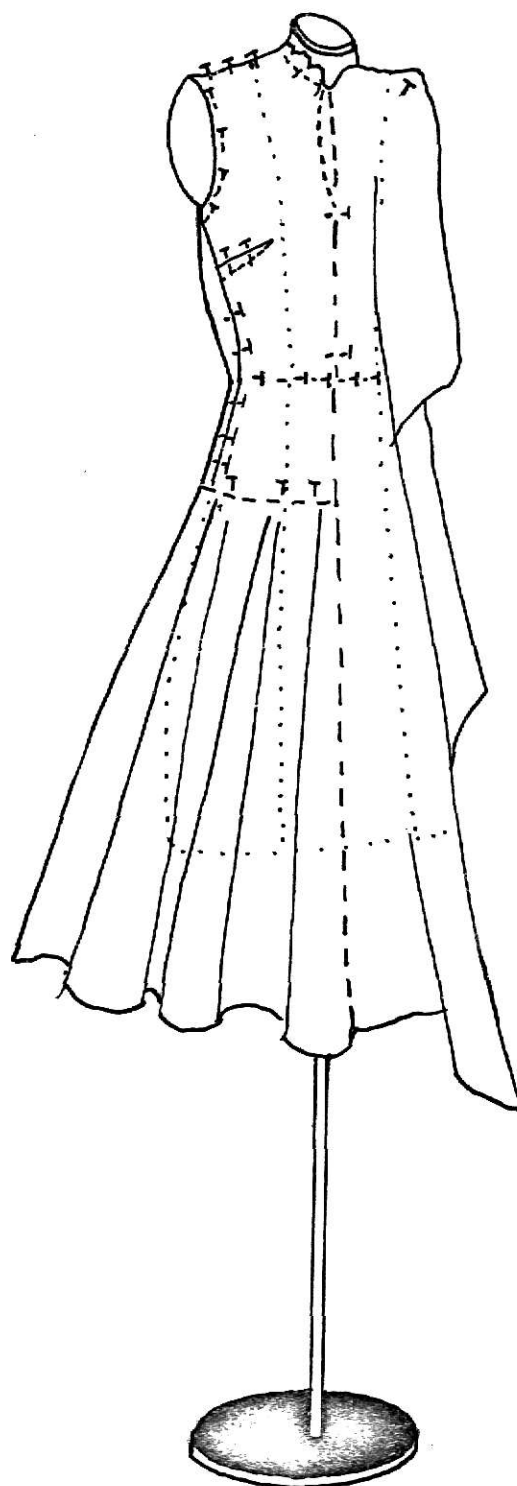


Plate 18. Draping The One-Piece Dress of Design II.

dress form.

3. Adequate ease about 1 inch was left and the hip line was pinned.
4. The chest area was smoothed, and the arm hole was pinned.
5. The neckline, shoulder, and armhole were draped.
6. The muslin was removed from the dress form and the neckline, shoulder, and armhold was trued. The dart was trued and pinned.
7. Replaced on the dress form in order to drape the back (16). The draping of the back was the same as in the front.

The third design was the peasant top. Extra fullness at the bodice and the waistline between flares was added. The effect was similar to that achieved with the dirndl skirt, but with not as much gathering at the waistline. (Plate 19)

COMPLETION OF GARMENT DETAILS

One must know certain characteristics of the fabric to be used for a garment before the pattern can be placed and cut out. Most fabrics need some prior preparation before the pattern is laid out. For example, there is a fold or a decided lengthwise crease in the material, this crease and all wrinkles should be removed by pressing.

Some hand sewing is used in the construction of practically all garments. In better quality and coutour garments much of the finishing is done by hand and considerable amount of the decorative features involve

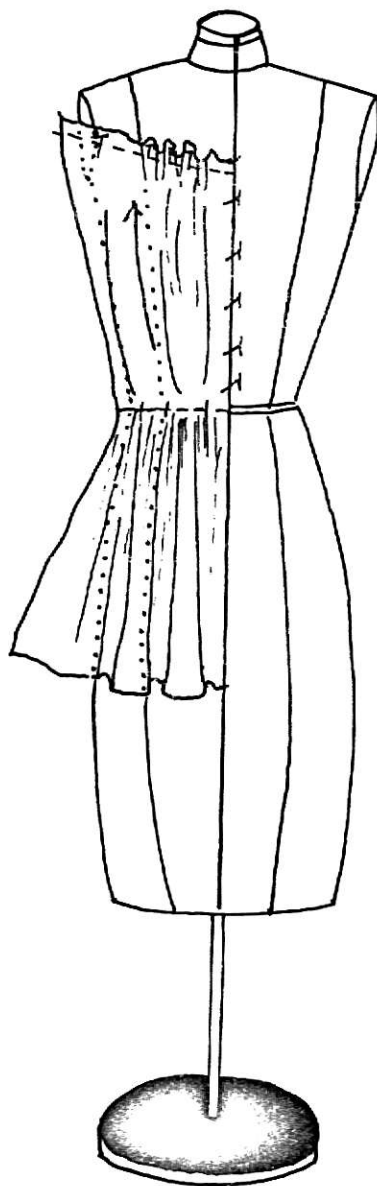


Plate 19. Draping The Bodice of Design III.

some handwork.

In clothing construction one operation of paramount importance that marks the difference between the appearance of an amateur's work and that of an expert, is pressing. A fairly general rule that should be followed is to press immediately after stitching two or more sections of a garment together and before attaching them to another section.

The successful costume is a result of careful study in broad areas of learning. Artistic principles must be applied (by the designer or by the person who sews) in the matters of choice of color, combination of colors, use of texture and texture contrasts, pleasing lines and appropriate lines for the individual figure, and effective proportion and good balance. The influences of fashion play a leading role in the ultimate success of a costume. The fabric (fiber content, weave, finish, etc.) determines the character, use, and care of the garment.

CHAPTER V

EXTENSIONS AND CONTINUATIONS

Although a considerable amount of work has been done with the three designs, there is a great deal of work remaining to be completed. More work can be done in Design I in which hot wax was used as a "resist" element on nylon knit. Dye also can be resisted in a number of different ways; quite simply by folding or crumpling the material and dipping rather than immersing in the dye liquid. The fabric might be knotted or twisted or coiled before immersing it in dye. It might be pleated, the pleats being held in position with stitches, or fastened with string or elastic bands. Parts of the cloth could be bound or stitched and objects could be tied in the cloth to form shapes. Other resists, such as ceramic wax, may be considered. The wax is easily washed out with hot water.

The study on Design II in which silk screen printing was used on silk crepe fabric could be continued. The film method was used in this study. There are other techniques in silk screen process, which may or may not be used in combination with each other. The tusche method, the most practical way for the artist to put the technique into his reproductions, can be used.

Abstract fabric design may make this work easier and better. Skillful techniques for fashion drawing and fabric printing are also recommended for the future workers.

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FABRIC PRINTING BY HAND AND COSTUME DESIGN

by

THERESA T. LIU

Shih Chien Home Economics College, 1973

AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the

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MASTER OF SCIENCE

Department of Clothing and Textiles

KANSAS STATE UNIVERSITY
Manhattan, Kansas

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This report attempted to use three different designs to introduce the simple way for sketching clothes and drawing the dress on the figure. Also discussed were the basic qualities of textile designs and the textile printing process. The report then explored the techniques used in cutting the finished fabric, draping the dressform and the final completion of the garment.

In Design I, a evening gown of blue nylon knit with white lace and white floral motifs was sketched. The Batik printing method was chosen for this design. Wax was used for this batik work and Acid Blue 45 dye stuff was selected for dyeing the background.

A Chinese-patterned silk tunic over a tiny-pleated white nylon skirt was sketched for Design II. The silk screen printing method was selected for this design. A piece of nylon organdy was stretched tightly on a wooden frame, lacquer type films were adhered on the fabric and oil printing inks were prepared for this process.

In Design III, a peasant top of green silk with white motifs was sketched. Direct hand painting technique was used with white oil printing ink which was prepared for this process.

It is most important to know how to use the correct fabrics to properly carry out the design ideas. All three designs required a great deal of time to practice pattern muslin on a dressform. Only when the desired effect was achieved were the actual fabrics used and the garment completed.